

Cerato

Software Reference Manual



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(c) 911 dialing to an appropriate public safety answering point ("PSAP") for emergency service is limited when using a VOIP phone and Soft Phone Product co-located with and connected to the switch Product at Customer's enterprise location because VOIP communication service may be interrupted, delayed, lost or terminated due to various causes including but not limited to power outage, excessive bandwidth consumption, termination of service with or by the network service provider and/ or other T1 provider, product, equipment, software, system and/or network failures or computer viruses. It is strongly recommended that Customer make alternative 911 dialing available to employees and other individuals at Customer's enterprise via traditional wire line service over the PSTN.

(d) Prior to initiating the use of Products in conjunction with any IP network including Internet telephone service for VOIP communications, Customer shall notify, in writing, each employee and any other person authorized to use the Products for such VOIP communications (individually and collectively "User(s)") of the following limitations:

911 DIALING TO AN APPROPRIATE PUBLIC SAFETY ANSWERING POINT ("PSAP") FOR EMERGENCY SERVICE IS NOT AVAILABLE WHEN USING ANY PORTABLE VOIP PHONE OR SOFTPHONE PRODUCT AT A STREET ADDRESS THAT IS DIFFERENT FROM THE STREET ADDRESS OF THE END USER'S ENTERPRISE WHERE ITS SWITCH IS LOCATED AND CONNECTED VIA AN IP NETWORK CONNECTION TO THAT REMOTE LOCATION. DO NOT USE SUCH PORTABLE VOIP PHONE OR SOFT PHONE PRODUCT AT THE REMOTE LOCATION TO PLACE 911 EMERGENCY CALLS BECAUSE SUCH PORTABLE VOIP PHONE OR SOFT PHONE IS NOT CAPABLE OF COMMUNICATING THE STREET ADDRESS OF THE REMOTE LOCATION.

EMERGENCY 911 CALLS SHOULD BE PLACED OVER A WIRE LINE PHONE AT THE REMOTE LOCATION WHICH IS CONNECTED TO TRADITIONAL PUBLIC SWITCHED TELEPHONE NETWORK ("PSTN") FOR LOCAL SERVICE OR OTHER PHONE THAT IS CAPABLE OF COMMUNICATING THE STREET ADDRESS OF THE REMOTE LOCATION TO HELP INSURE THAT SUCH EMERGENCY 911 CALLS ARE ROUTED TO THE APPROPRIATE PSAP OPERATOR RESPONSIBLE FOR RESPONDING TO EMERGENCIES AT THE REMOTE LOCATION.

USERS MUST WARN ALL INDIVIDUALS AT THE REMOTE LOCATION THAT SUCH PORTABLE VOIP PHONE OR SOFT PHONE PRODUCT CAN NOT BE USED TO PLACE ANY SUCH EMERGENCY 911 CALLS FROM THE REMOTE LOCATION BECAUSE OF THIS LIMITATION. USERS MUST INSTRUCT ALL INDIVIDUALS AT THE REMOTE LOCATION TO PLACE ANY 911 CALLS FOR EMERGENCY RESPONSE TO THE REMOTE LOCATION FROM A WIRE LINE PHONE AT THE REMOTE LOCATION WHICH IS CONNECTED TO THE TRADITIONAL PSTN FOR LOCAL SERVICE OR OTHER PHONE THAT IS CAPABLE VCS e 100 Administration Guide 8 OF COMMUNICATING THE STREET ADDRESS

OF THE REMOTE LOCATION TO HELP INSURE THAT SUCH EMERGENCY 911 CALLS ARE ROUTED TO THE APPROPRIATE PSAP RESPONSIBLE FOR RESPONDING TO EMERGENCIES AT THE REMOTE LOCATION.

(e) If Customer permits any User to use the VOIP phone or Soft Phone Product at a remote location connected to the switch at Customer's enterprise location, it is strongly recommended that Customer affix a non removable label on the hand set of each VOIP phone or Soft Phone Product, prior to any such use that displays the following clear and conspicuous warning.

DO NOT USE THIS PHONE TO DIAL 911 EMERGENCY SERVICE CALLS UNLESS USER IS PHYSICALLY LOCATED AT THE FOLLOWING ADDRESS: (INSERT CUSTOMER'S ENTERPRISE ADDRESS WHERE THE PSAP WILL RESPOND TO 911 EMERGENCY CALLS DIALED THROUGH THE SWITCH).

(f) Customer agrees to defend, indemnify and hold harmless Teltronics, its subsidiaries, affiliates and their respective officers, directors, employees, distributor, agents and suppliers from any obligations, claims, suits, demands, causes of action, losses, liabilities, fines, penalties, damages, costs, or expenses, (including without limitation, attorneys fees), arising on account of any injury or death of persons, or damage to property asserted or incurred by or on behalf of any User, governmental entity or any other party arising out of or resulting from (i) any of Customer acts or omissions including without limitation, any failure of Customer to comply with any Laws; or (ii) any use, inability to use, removal, failure, delay, error, breakdown, absence, outage or interruption of any telephone service including emergency 911 call service over the Internet and/or PSTN or any software, hardware or Product including without limitation, any VOIP phone or Soft Phone Product.

Summary of Changes

Revision 12a, February 2010

- Initial Release

Revision 12b, May 2011

- Updated this document to include the TCPU.
- Update this document to include backup/restore DB information using a USB Flash disk.

1

Introduction

This manual describes the software administration programs used to operate and maintain Teltronics Cerato LE and ME systems.

The software administration programs operate consistently across all platforms. The only difference is in the size of the files maintained by the Alarms, Call Detail Recording, and System Traffic Statistics programs.

Depending on the options you have purchased with your system, you may or may not have access to all of the administration programs.

Teltronics Technical Manuals

Your Teltronics technical documentation is shipped on a CD-ROM. It includes the documentation that you will need to install and operate your Teltronics system. In addition to the core manuals, you will probably use application manual(s) which are also on the CD-ROM.

In addition to this manual, the core manual set consists of the following manuals:

- System Description—overview of Cerato LE and ME (P/N 955301)
- Installation and Service Manual—installation and maintenance manual specific to your system
- Database Configuration—user instructions for configuring database tables that drive call processing (P/N 955 087)
- Specifications—specifications for the Teltronics systems (P/N 955 680)

- System Features—feature description, hardware and software requirements, database configuration, and operation of each feature (P/N 955 751)

2

Logging On to the System

This chapter describes the procedures for logging on to a system administration terminal connected to a Teltronics system that has been installed, configured, and is capable of carrying call traffic.

The procedures for logging on to a system are different when you are logging on the first time after installation and power-up and are described in the *Power-up and Software Booting* chapter of the Installation Manual.

This chapter contains the following sections:

- Setting Up System Administration Terminals and Printers
- User Names and Passwords
- Logging On to a System Administration Terminal
- Logging Off a System Terminal

Setting Up System Administration Terminals and Printers

To log on to the system and use the system administration programs, you need a system terminal (video display terminal, teleprinter, or personal computer with a terminal emulator) that is installed and properly configured in the system databases. As part of installing the system, you should have already configured at least one system administration terminal. You may want to install and configure additional system terminals so that more than one person can log on to the system at a time.

System terminals are connected to Digital Line Units (DLU) through Data Communications Adapters (DCA). See the *Peripheral Installation* chapter of the Installation Manual for instructions on installing a system terminal or printer.

Although a printer is not necessary to use the system administration programs, you should install and configure a system printer if you want to capture output from a system terminal. Like system terminals, system printers are connected to DCAs.

The system also allows you to direct particular output from the Call Detail Recording (CDR), Alarms (ALM), and System Traffic Statistics (STS) administration programs to specially designated output devices. The process for installing and configuring these output devices is similar; specific instructions are in the *Alarms*, *Call Detail Recording*, and *System Traffic Statistics* chapters.

The following paragraphs briefly describe how to configure a system terminal and printer in the Configuration Editor after they have been installed.

Configuring System Terminals

- 1 Configure a Digital Line Unit in the Boards table in the Configuration Editor (EDT).
- 2 Configure an Administrative Data Control table for a terminal. The control table type is ADMIN and the equipment type is 1.
- 3 Assign ports to the DCA in the Devices table of the System Editing tables and choose the port to which you want to add the terminal. The data control table name is the name of the table configured in step 2.

You can find more detailed configuration instructions in the *Boards Configuration*, *System Editing Tables Configuration*, and *Data Configuration* sections of the Database Configuration Manual.

If you want to configure a terminal or personal computer with a terminal emulator to receive special ALM, CDR, or STS output, you must also

assign a logical device to the port configured in step 3 in the Logical Devices table of the System Editing tables. See the *Alarms*, *Call Detail Recording*, and *System Traffic Statistics* chapters of this manual for more detailed information.

Configuring System Printers

- 1 Configure a Digital Line Unit in the Boards table in the Configuration Editor (EDT).
- 2 Configure transmission parameters for the printer in the Data Control tables. The control table type is ADMIN and the equipment type is 2.
- 3 Assign ports to the DCA in the Devices table of the System Editing tables and choose the port to which you want to add the printer.
- 4 In the Logical Devices table of the System Editing tables, assign the predefined logical device of PRINTER to the port set up in step 3.

You can find more detailed configuration instructions in the *Boards Configuration*, *System Editing Tables Configuration*, and *Data Configuration* sections of the Database Configuration Manual.

If you are configuring a printer to receive special ALM, CDR, or STS output, you must assign a different logical device to the port configured in step 3. See the *Alarms*, *Call Detail Recording*, and *System Traffic Statistics* chapters of this manual for more detailed information.

User Names and Passwords

To log on to the system, you must enter a user name and password.

Your password determines the level of access you have to Configuration Editor functions and administration programs in the system. Generally the system administrator has a password that allows access to the entire system and other users have varying levels of access. Although help menus do not change according your level of access, the system displays an error message when you try to use a program to which you are denied access.

Your system comes with a predefined user name and password which you can use until you configure your own passwords. The predefined user name and password are both ADMIN and provide complete access to the system.

User names, passwords, and levels of access to the system are assigned in the Configuration Editor. For information on the Configuration Editor and passwords, see the *Configuration Editor* chapter.

Logging On to a System Administration Terminal

- 1 Hold down the CTRL key, and at the same time, press C.

The log on screen appears.

```

                                Welcome to the Teltronics
                                System Administration Monitor

                                Copyright Teltronics Inc, 2000

                                Username: ...?

```

- 2 Enter your user name at the user name prompt.

If you are not sure what your user name is, ask your system administrator. See also *User Names and Passwords* on page 2-4.

- 3 Enter your password at the password prompt.

```

                                Username: ...? TJONES

                                Password: ...?

```

When you enter the password, the characters you type will not appear on the screen so that your password remains private.

If you are not sure what your password is, ask your system administrator. See also *User Names and Passwords* on page 2-4.

If you make a mistake entering the user name or password, you will see the error message shown below. To continue, start over from step 1.

```
*** PASSWORD AUTHORIZATION FAILURE ***
```

After you correctly enter your user name and password, the system displays a status report and the System Administration program prompt.

```

Good Afternoon, TJONES, it is 14-JUN-1990 14:30:05 TUE
Welcome to Teltronics Administration System Running on Version xx.xx.xx

You are logged onto shelf 1
The system status is ACTIVE/STANDBY
... Enter "HELP" for a menu ...

ADMIN ...?

```

The status report shows the status of the common control shelves in the system and the current software version. See the explanation of the STATUS command in the *System Administration Program* chapter for an explanation of the status information in this opening screen.

Following the status report is the ADMIN ...? prompt, which is the main System Administration Program prompt. The main purpose of the System Administration program is to allow you access to the system administration programs that handle administrative tasks such as alarm reporting, call detail recording, and traffic statistics.

The System Administration Program is described in the *System Administration Program* chapter.

Logging Off a System Terminal

To log off a system administration terminal, you must be at the ADMIN ...? prompt. You can use the EXIT command to exit all of the administration programs.

To log off the system, type **EXIT** at the ADMIN ...? prompt and press the ENTER key.

EXIT quits the System Administration program and logs you off the system. To reenter the System Administration program, you must log on to the system again using the CTRL+C command.

```
ADMIN ...? EXIT
TJONES, logged off at 10-JUN-1990 18:33:42 MON
```


3

System Administration Program

When you log on to a system administration terminal, the system automatically starts the System Administration Program. The main purpose of the System Administration program is to allow access to the system administration programs that handle administrative tasks such as alarm reporting, call detail recording, and traffic statistics.

This chapter contains the following sections:

- *Starting the System Administration Program* explains how to start the System Administration program.
- *System Administration Program Commands* summarizes the commands and programs you can run from within the System Administration program.
- *Entering System Administration Commands* explains how to enter commands at a system administration terminal.
- *Using the System Administration Program Commands* describes the tasks you can perform in the System Administration program.
- *Exiting the System Administration Program* explains how to exit the System Administration program.
- *System Administration Program Error Messages* explains error messages you might see when using the System Administration program.

Starting the System Administration Program

To start the System Administration program, you must log on to a system terminal. The steps to log on to the system are briefly described below; see chapter 2, *Logging On to the System*, for more detailed information.

- 1 Hold down the CTRL key, and at the same time, press C.
- 2 Enter your user name at the user name prompt.
- 3 Enter your password at the password prompt.

After you correctly enter your user name and password, the system displays a status report and the System Administration program prompt.

```
Good Afternoon, TJONES, it is 14-JUN-1990 14:30:05 TUE
Welcome to Teltronics Administration System Running on Version xx.xx.xx

You are logged onto shelf 1
The system status is ACTIVE/STANDBY
... Enter "HELP" for a menu ...

ADMIN ...?
```

Common Control Shelf Status

The status report shows the status of the common control shelves in your system. You can also see this information using the STATUS command. The STATUS command and report are described on page 3-8.

System Administration Program Prompt

Following the status report is the ADMIN ...? prompt, from which you can enter any of the system administration commands. To see a list of the commands you can enter at this prompt, type **HEL** and press the RETURN key.

See *Exiting the System Administration Program* on page 3-15 for instructions on how to exit the System Administration program.

System Administration Program Commands

The system administration commands are divided into two categories:

- system administration commands, listed in Table 3-A
- general purpose commands, listed in Table 3-B

Table 3-A. System Administration Commands

Command	Description	Chapter
ALM	Stores and displays alarms reported by the system.	<i>6 Alarms</i>
CDR	Collects, stores, and displays call detail information.	<i>7 Call Detail Recording</i>
CSM	Displays information about preset conferences.	<i>8 Conference Status</i>
EDT	Lets you create and make changes to the call processing databases.	<i>5 Configuration Editor</i>
MHC	Collects and displays records of all keyboard entries from system administration terminals.	<i>9 Maintenance History</i>
NCF	Lets you temporarily modify system routing tables in order to manage your network.	<i>10 Network Control</i>
STS	Collects, stores, and reports traffic statistics.	<i>11 System Traffic Statistics</i>
TDD	Performs diagnostics on telephony equipment in the system	<i>12 Telephony Device Diagnostics</i>

Table 3-B. General Purpose Commands

Command	Description
ABORT	Aborts another user on the system
EXIT	Exits the System Administration program and logs off the system
INFO	Displays a listing of system-wide commands that can be used in all administration programs.
SAR	Turns on or off an automatic system reboot or displays the currently scheduled reboot.
SET	Changes the system date or time or the real time clock

Table 3-B. General Purpose Commands (continued)

Command	Description
STATUS	Reports the status of the common control shelves and the current software version.
WHO	Reports active users on the system

This chapter describes how to use the general purpose commands. Separate chapters in this manual describe how to start and use the administration programs.

Entering System Administration Commands

To enter a system administration command at a system administration terminal:

- 1 At the ADMIN ...? prompt, type the first three letters of the command.
- 2 Press the RETURN key (called ENTER on some keyboards).

Some commands require you to enter additional information after you enter the command. In this case, the system displays a prompt requesting you for the information after you enter the command. For example, after entering the SET command, the system asks you if you want to set time or date and then asks you for the new time or date, as shown in the following example.

```
ADMIN ...? SET
TIME or DATE (or RTC) ...? TIME
Enter Time ...? 14:30:00
ADMIN ...?
```

Later, when you are familiar with a command, you can enter the command with the extra information on one line, as shown below.

```
ADMIN ...? SET TIME 14:30:00
ADMIN ...?
```

If you are not sure what information to enter at a prompt, you can enter the HELP command at any prompt. A sample help display is illustrated below.

```
ADMIN ...? SET
TIME or DATE (or RTC) ...? HELP
Enter TIME to set the hours:minutes:seconds.
Enter DATE to set the day-month-year.
Enter RTC to set the Real-Time-Clock.
      (password privilege required)
TIME or DATE (or RTC) ...?
```

Error Messages

If you enter a command or enter any text that is not recognizable by the System Administration program, you will see a message like the one shown below.

```
ADMIN ...? CHECK

*** CHECK is not a valid entry ***
*** Enter 'HELP' for assistance ***

ADMIN ...?
```

See *System Administration Program Error Messages* on page 3-16 for more information about error messages.

Using the System Administration Program Commands

The following pages describe how to:

- display system information (STATUS)
- set system date and time (SET)
- display a list of users on the system (WHO)
- terminate other users in the system (ABORT)
- schedule an automatic system reboot (SAR)
- display a list of system-wide commands (INFO)

Displaying System Information (STATUS)

You can use the STATUS command to display the status of the common control shelves in the system and check what version of software you are using.

Notes

The STATUS report shows which common control shelf you're currently logged on to and the status of the control shelves. Possible statuses are:

Table 3-C. System Statuses

Status	Meaning
ACTIVE/STANDBY	The system terminal is connected to the active shelf of a redundant system.
ACTIVE/uninitialized	The system terminal is connected to a non-redundant system or a redundant system in which the standby shelf is unavailable (disconnected, powered down, or in the process of rebooting).
STANDBY/ACTIVE	The system terminal is connected to the UART on the standby shelf.

Example

```
ADMIN ...? STATUS
Welcome to Teltronics Administration System Running on Version x.xx.xx

You are logged onto shelf CC-1
The system status is ACTIVE/STANDBY

ADMIN ...?
```

Setting System Date and Time (SET)

The SET command lets you set the date and time for the system Time of Day Clock (TODC) or Real Time Clock (RTC).

Notes

The system administrator is the only user who can set the Real Time Clock. It should only be set during initial installation of the system. Setting the Real Time Clock synchronizes the Time of Day Clock with the Real Time Clock. Because the internal clock is powered by a battery during power failures, there is no other reason to set the Real Time Clock.

Other users may set the Time of Day Clock. However, this is only to correct the system's current time, such as when the time must be set back an hour at the beginning of daylight savings time.

The following table describes the formats used to enter date and time.

Table 3-D. Date and Time Formats

Date/Time Formats	Explanation		Examples
<i>mm-dd-[yy]yy</i>	<i>mm</i>	month (1-12)	04-03-94
<i>dd-mmm-[yy]yy</i>	<i>mmm</i>	month (JAN-DEC)	04-03-1994
	<i>dd</i>	day (1-31)	03-APR-94
	<i>[yy]yy</i>	final two or four digits of the year	
<i>hh[:mm][:ss]</i>	<i>hh</i>	hour (00-23)	08:24:20
	<i>mm</i>	<i>optional</i> minute (00-59)	08:24
	<i>ss</i>	<i>optional</i> second (00-59)	08

Examples

```
ADMIN ...? SET
TIME or DATE (or RTC) ...? DATE
Enter Date ...? 7-13-90
ADMIN ...?
```

```
ADMIN ...? SET
TIME or DATE (or RTC) ...? TIME
Enter Time ...? 14:30:00
ADMIN ...?
```

```
ADMIN ...? SET  
TIME or DATE (or RTC) ...? RTC  
Enter RTC date ...? 4-feb-1990  
Enter RTC time ...? 08:51:00  
ADMIN ...?
```

Displaying a List of Users in the System (WHO)

You can use the WHO command to display the active users in the system, the device numbers of their terminals, and the administration programs they are using.

Example

```
ADMIN ...? WHO
Username      Physical Device      Monitor
-----
ADMIN         D0                   NONE
TJONES        S0                   EDT
ADMIN ...?
```

The Physical Device is the device number (configured in the System Devices table) of the terminal in use and Monitor is the administration program being used. A monitor of NONE refers to the System Administration program.

Terminating Other Users in the System (ABORT)

The ABORT command lets you abort a terminal in use in the system. An example of a situation where you might use ABORT is when another user is using the STS program and you need to use the same program.

Notes

The following rules limit the use of ABORT:

- A user can abort any user except a user logged on as the system administrator.
- A user logged on as a system administrator can abort another user logged on as a system administrator.
- A user can abort any user who is polling CDR records from a host computer.
- A user cannot abort his or her own terminal.

You can use the WHO command before using ABORT to get a list of active devices in the system.

Example

```
ADMIN ...? ABORT
Physical device of terminal to abort ...? S0
... ABORTING TERMINAL ON PHYSICAL DEVICE S0 ...
ADMIN ...?
```

Scheduling An Automatic Reboot (SAR)

The SAR command lets you:

- schedule a daily automatic system reboot
- turn off a previously scheduled automatic reboot
- display the currently scheduled automatic reboot

Notes

The system executes a scheduled reboot every day at the specified time unless the redundant shelf is not ready to change to active mode or when data from the Call Detail Recording program might be lost because of the reboot.

You cannot use SAR on a non-redundant system or on a standby shelf.

Example

```
ADMIN ...? SAR ON
Enter Reboot Time : [01:00] ...? 17:00
*** Reboot Scheduled For 17:00 Daily ***
ADMIN ...?
```

In the above example, the reboot time prompt shows a default reboot time of 1:00 am in square brackets. This means that if you press ENTER without specifying a time, SAR will schedule an automatic reboot for 1:00 am.

Displaying a List of System-Wide Commands (INFO)

The INFO command displays the list of commands that are available at any prompt in all of the administration programs.

Notes

The system-wide commands are described in detail in chapter 4.

Example

```
ADMIN ...? INFO
```

```
The Teltronics system has been designed to be consistent and simple to use. The following special characters have the following meanings:
```

```
<Control-C>: used to log onto the system
<Control-S>: used to freeze output
<Control-Q>: used to resume output
<Control-Z>: used to abort output and return to command level
```

```
The following commands are legal in all programs:
```

```
PRInt  : turns on the system printer to produce a hardcopy record
NOPRInt: turns off the system printer
HELp   : gives help
TIME   : displays system time
EXIt   : exits the current command level
```

```
Most commands can be abbreviated to three characters or fewer. Remember that 'HELP' can be entered at any prompt.
```

```
ADMIN ...?
```

Exiting the System Administration Program

To exit the System Administration Program:

At the ADMIN ...? prompt, type **EXI** and press ENTER.

The EXIT command quits the System Administration program and logs you off the system terminal. To reenter the System Administration program, you must log on to the system again using the CTRL+C command.

```
ADMIN ...? EXIT  
TJONES, logged off at 10-JUN-1990 18:33:42 MON
```

System Administration Program Error Messages

This section lists possible error and warning messages you might see while using the System Administration program.

ALM (or CSM or TDD) REQUIRES ACTIVE DATABASE

You tried to use ALM, CSM or TDD without an active database. Start the Configuration Editor (EDT) first and activate a database.

CANNOT ABORT OWN TERMINAL

You specified the system terminal you are using when you entered the ABORT command. Use WHO to get a listing of other active terminals.

CANNOT ABORT TERMINAL WHOSE USER HAS HIGHER PASSWORD PRIVILEGE

You tried to abort a user logged on as a system administrator. See the description of the ABORT command for the conditions under which you can abort another terminal.

(dd) IS AN ILLEGAL DAY FOR THIS MONTH

(hh:mm:ss) IS AN INVALID NUMBER

(mm) IS NOT A VALID MONTH

(mmm) IS NOT A VALID MONTH NAME

You entered a number that is out of range for hours, minutes, seconds, day or year in the SET command, or you entered something other than the first three letters of a month name. Use the HELP command for help on how to enter time and date information.

NO DEFAULT AVAILABLE

In response to a prompt, you pressed the RETURN key without entering any information. Use the HELP command to see what information you should enter or use CTRL+Z if you want to go to the previous prompt.

NO MORE INVOCATIONS OF THIS MONITOR ARE ALLOWED

You tried to use an administration program that someone else is using. Only one user is allowed in any one program at any time. To use the administration program, you can use the WHO command to determine who is using the program and then use ABORT to exit the user from the program.

NO TERMINAL ON PHYSICAL DEVICE (xx)

When entering the ABORT command, you entered a device name for a terminal that is not active. Use the WHO command to find out what system terminals are active.

PASSWORD AUTHORIZATION FAILURE

You entered an invalid user name or password in the log on process. Start again from the CTRL+C command. If you are logging on to the system the very first time, use the user name and password provided by Teltronics. If the problem persists, check with the system administrator to see if you have the correct user name and password.

SCHEDULE TIME MUST BE ON A FIVE-MINUTE BOUNDARY

You specified an invalid time with the SAR command. You must specify minutes in multiples of five. For example, you can schedule a reboot at 3:00 or 3:05, but not at 3:02.

(program-name) SOFTWARE NOT PURCHASED

You tried to use an administration program that you have not purchased.

TASK ABORTED

You stopped the current function in an abnormal fashion. This message is displayed when you use CTRL+CC.

Note If any other error messages are displayed that indicate failure or that you cannot understand, contact your service representative for assistance.

4

Using the System Administration Programs

This chapter briefly describes the administration programs and general information about using them.

This chapter contains the following sections:

- *System Administration Programs* summarizes the system administration programs.
- *Starting System Administration Programs* describes how to start any of the system administration programs.
- *Entering Commands in the Administration Programs* explains how to enter commands and describes the method used to specify circuit locations within the system.
- *Getting Help* explains how to use the system help facility.
- *System-Wide Commands* describes commands common to all of the system administration programs and which you can enter at any prompt.

System Administration Programs

The system administration programs are listed in Table 4-A.

Table 4-A. System Administration Commands

Program/ Command	Description	For further information:
ALM	Displays alarms stored in Alarm History and Reset History files. ALM also lets you define how you want alarm information reported.	Chapter 5 Alarms
ACD	Part of the Automatic Call Distribution (ACD) application, accesses and retrieves ACD reports and displays	ACD Management Manual
ACM	Part of an application package designed for the hotel and hospitality industry.	Accommodator Management Manual
CDR	Lets you set up the collection and output of call detail information.	Chapter 6 Call Detail Recording
CSM	Displays information about preset and meet-me conferences.	Chapter 7 Conference Status
EDT	Lets you create and make changes to the database that controls the way telephone and data calls are processed by the system.	Chapter 4 Configuration Editor
MHC	Stores information about user interaction with the system, which you can use to identify input errors or track unauthorized use of the system.	Chapter 8 Maintenance History
NCF	Modifies system routing tables to temporarily prevent or limit call traffic from being routed to an overloaded or out-of-service segment of the telephone network.	Chapter 9 Network Control
STS	Retrieves, stores, and reports traffic statistics.	Chapter 10 System Traffic Statistics
TDD	Performs diagnostics on ports or telephony circuits in the system	Chapter 11 Telephony Device Diagnostics

Starting System Administration Programs

To start any of the system administration programs:

- 1 Log on to the system.
 - Enter CTRL+C
 - Enter your user name.
 - Enter your password.

For detailed information about logging on to the system, see the chapter titled *Logging On to the System*.

- 2 At the ADMIN ...? prompt, enter the three-letter command (shown in Table 4-A) for the system administration program.
- 3 Press the RETURN key (called ENTER on some keyboards).

After you start a system administration program, the system prompt changes to reflect the new program you just started, as shown below.

```
ADMIN ...? MHC

                               Welcome to the Teltronics
                               Maintenance History Control Program

The Maintenance History Control program (MHC) allows you to display the
contents of the maintenance history file. The maintenance history file
contains records of user interaction with the Teltronics administration soft-
ware.
If you need information on how to use MHC or any of its commands, you can
enter 'HELP' at any prompt.

MHC ...?
```

If your password does not allow you access to an administration program, the system displays a message that you have insufficient privileges.

Entering Commands in the Administration Programs

All of the system prompts end with three dots and a question mark. In some cases, you must enter a command at a prompt; in other cases, you must enter information requested by the prompt.

To respond to a prompt:

- 1 Type a command or information at the prompt.

For some commands, you only need to type the letters that uniquely identify the command. For example, in the System Administration Program, you must enter at least STA for the STATUS command (to distinguish it from SET, SAR, and STS).

The system help menus use capital letters to help you identify what letters you must type to enter a command.

- 2 Press the RETURN key.

Command Parameters and Options

Some commands require you to supply additional information or options. In this case, the system prompts you for the information it needs after you enter the command.

An example of system prompts for the SET command are illustrated below.

```
ADMIN ...? SET
TIME or DATE (or RTC) ...? TIME
Enter Time ...? 14:30:00
ADMIN ...?
```

Later, when you are familiar with a command and its parameters, you can enter the command on one line, as shown below.

```
ADMIN ...? SET TIME 14:30:00
ADMIN ...?
```


Command options are preceded by a slash (/) and often let you define what kind of information you want to see in a display. An example is shown below.

```

STS ...? BUSY

Specify display options [/LAST-DAY] ...? HEL

                        AVAILABLE OPTIONS
-----
| Option      | Description
-----|-----
| /AFTer     | Specifies START date and time (optional) for the command
| /BEFore    | Specifies END date and time (optional) for the command
| /LAST-day  | Specifies date and time range of 'yesterday'
| ALL        | Use the entire file for the display or busy search
-----

Specify display options [/LAST-DAY] ...? /AFT

Enter the start date ...? 04-22-94

Enter the start time [00:00:00] ...? 12:00

Enter the equipment name ...?

```

Command Defaults

Some system prompts have a default response which is displayed at the end of the prompt in square brackets ([]). When a prompt has a default response, you can press RETURN at the prompt to choose that response.

```

MHC ...? DISPLAY

Enter Display Options [ALL] ...?

```

In the above example, you will choose the ALL option if you press RETURN. You can use the system help facility to tell you what options are available.

Repeating Prompts

In some cases, the system displays a prompt repeatedly until you enter the END command. In the following example from the STS program, the repeating prompt allows you to continue to define a mask and check your work.

```

STS ...? SET MASK
Equipment Type [ALL] ...? TRU
Include TRUNK GROUP collection periods in the output [Y] ...?
Include TRUNK GROUP busy periods in the output [Y] ...?
Trunk Group(s) [END] ...? HEL
-----
| Valid trunk group commands are:
|=====
| Command          Description
|-----
| END              -- end modifying the trunk group set
| REMOVE <range>  -- remove the range of trunk groups from the
|                  set
| REVIEW          -- list the trunk groups in the current
|                  trunk group set
| <range>         -- add the range of trunk groups to the
|                  current trunk group set
| A <range> is one of the following:
|   n             -- trunk group n only
|   n-m          -- trunk groups n through m
|   ALL          -- all trunk groups (1 - trunk groups purchased)
|=====
Trunk Group(s) [END] ...? REVIEW
    Trunk Groups ..... 1-30
Trunk Group(s) [END] ...? REM 2-3
Trunk Group(s) [END] ...? REVIEW
    Trunk Groups ..... 1,4-30
Trunk Group(s) [END] ...? END

```

Specifying Circuit Locations

All of the administration programs identify telephony circuits by a three-number sequence that specifies the shelf, slot, and circuit location of the circuit.

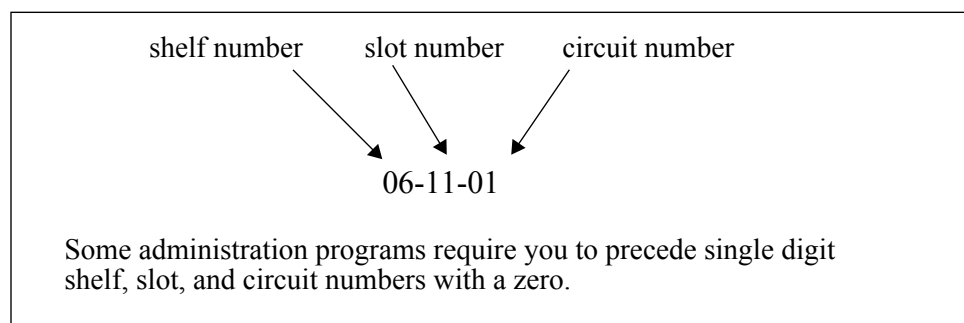


Figure 4-1. Shelf-Slot-Circuit Locations

Circuit Numbers

Circuit numbers are as you configure them in the system. However, on some line and trunk units, you can identify actual circuits by busy LEDs, as shown in Figure 4-2.

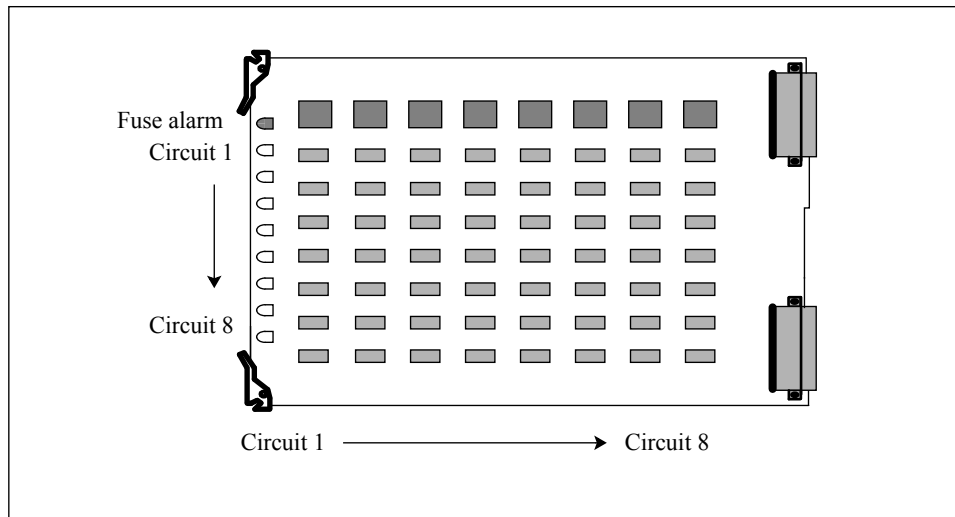


Figure 4-2. Circuit Numbering on Units with Multiple LEDs

Getting Help

If you are not sure what to enter at a system prompt, enter the HELP command at the prompt. For example, if you enter the HELP command from the ADMIN ... ? prompt, the system displays the menu of commands you can enter at that prompt.

Teltronics SYSTEM ADMINISTRATION MENU	
COMMAND	DESCRIPTION
	SYSTEM ADMINISTRATION COMMANDS:
ACD	Automatic Call Distribution
ACM	Accommodator Monitor
ALM	Alarms Control
CDR	Call Detail Recording
CSM	Conference Status Monitor
EDT	Configuration Editor
MHC	Maintenance History Control
NCF	Network Control Facilities
STS	System Traffic Statistics
TDD	Telephony Device Diagnostics
	GENERAL-PURPOSE COMMANDS:
ABOrt	Abort Terminal
INfo	Displays general system information
SAR	Schedule Automatic Reboot
SET DATE	Sets the system date (in dd-mmm-yy or mm-dd-yy format)
SET TIME	Sets the system time (in hh:mm:ss format)
STatus	Displays system status
WHO	Displays active users
EXIt	Exit system administration program and log off the system.

For additional information about any command, enter 'HELP <command>', where <command> may be any of the commands listed above.

ADMIN ...?

You can also use the HELP command in conjunction with a command to get more detail on what the command does and how to use it.

NCF ...? HELP TURNDOWN
TURNDOWN TRUNK COMMAND: 'TURNDOWN <circuit location> [/SEIZED]'
PURPOSE: This command is used to fully inhibit call traffic on an individual trunk member of a trunk group. Both outgoing and incoming calls will be prevented. Also, the '/SEIZED' option may be specified, in order to permanently seize the trunk so that it cannot be accessed.
FORMAT: The TURndown command is entered followed by the circuit location of the trunk member of the trunk group that is to be turned down. For example, 'TUR 08-23-05' will turn down the trunk member at circuit location, 08-23-05.
NCF ...?

Below is an example of the display you see after entering the HELP command in response to a prompt that requests information.

```

ADMIN ...? SET

TIME or DATE (or RTC) ...? HELP

Enter TIME to set the hours:minutes:seconds.
Enter DATE to set the day-month-year.
Enter RTC to set the Real_Time Clock.
    (password privilege required)

TIME or DATE (or RTC) ...? TIME

Enter Time ...? HELP
-----
| Time Information
|   Time Information is entered in the following twenty-four hour
|   format:
|
|           'HH[:MM][:SS]'
|   where:
|           HH = Hour of the Day (0 to 23)
|           MM = Minute of the Hour (0 to 59)
|           SS = Second (0 to 59)
|
|           [ ] signifies optional input
|
|   example:  8 or 8:00 or 08:00
|
|-----
Enter Time ...? 11
ADMIN ...?

```

Conventions Used in Help Displays

Help displays use the following conventions to convey information.

- In lists of commands or options, capital letters indicate the letters you must type. For example, the following display tells you that you must enter at least /AFT to use the /AFTER option.

```

Specify display options [/LAST-DAY] ...? HEL

                AVAILABLE OPTIONS
-----
| Option      | Description
|-----|-----
| /AFTer     | Specifies START date and time (optional) for the command
| /BEFore    | Specifies END date and time (optional) for the command
| /LAST-day  | Specifies date and time range of 'yesterday'
| ALL        | Use the entire file for the display or busy search
|-----|-----

Specify display options [/LAST-DAY] ...? /AFT

```

- Optional information appears in square brackets. In the following example, you can enter the final two or all four digits of the year when specifying date.

```

-----
Date Information
Date Information is entered in the following three number
sequences:

      'MM-DD-[YY]YY' or
      'DD-MMM-[YY]YY'
where:
      MM      = Month of Year (1 to 12)
      MMM     = Month of Year ( JAN to DEC )
      DD      = Day of Month (1 to 31)
      [YY]YY = Year [19]84 to [20]83

      [ ] signifies optional input

example:  5-23-88   or   05-23-1988
          23-MAY-88 or   23-MAY-1988
-----

```

- Variable information appears in angle brackets (<>)

```

-----
Valid trunk group commands are:
=====
Command          Description
-----
END              -- end modifying the trunk group set
REMOVE <range>  -- remove the range of trunk groups from the
                set
REVIEW          -- list the trunk groups in the current
                trunk group set
<range>         -- add the range of trunk groups to the
                current trunk group set
A <range> is one of the following:
    n           -- trunk group n only
    n-m        -- trunk groups n through m
    ALL        -- all trunk groups (1 - trunk groups purchased)
-----

```

Error Messages

If you enter a command or text that is not recognizable by a system administration program, you will see a message like the one shown below.

```
ADMIN ...? CHECK

*** CHECK is not a valid entry ***
*** Enter 'HELP' for assistance ***

ADMIN ...?
```

You can always use the HELP command to find out what information to enter at a prompt.

System-Wide Commands

The system administration programs share a set of commands that can be entered at any prompt in any program. These commands are listed in Table 4-B.

Table 4-B. System-Wide Commands

Use this command:	To accomplish this task:
HELp	Get help
PON	(Pause on) Turn on automatic pause for all displays larger than the screen
POFF	(Pause off) Turn off the PON command
PRInt	Send all succeeding screen displays to a printer
NOPrint	Turn off the PRINT command
TIME	Find out the current date and time and system status
CTRL+S	Pause scrolling of a display
CTRL+Q	Resume scrolling of a display
CTRL+Z	Cancel current operation and return to previous prompt without saving

The following pages describe these commands in more detail.

PON and POFF Commands

Some help displays and output from other administration program commands take more space than is available on your screen. PON causes the system to pause output after a screenful is displayed with a prompt to press ENTER to continue the display.

Each time you log on to the system, PON is automatically in effect, and remains so until you enter POFF.

The following displays illustrate how PON effects a screen display.

```

ADMIN ...? PON
ADMIN ...? HEL

                                Teltronics SYSTEM ADMINISTRATION MENU
-----
|  COMMAND  |  DESCRIPTION  |
|-----|-----|
|  ACD      |  SYSTEM ADMINISTRATION COMMANDS:
|          |  Automatic Call Distribution
|  ACM      |  Accommodator Monitor
|  ALM      |  Alarms Control
|  CDR      |  Call Detail Recording
|  CSM      |  Conference Status Monitor
|  EDT      |  Configuration Editor
|  MHC      |  Maintenance History Control
|  NCF      |  Network Control Facilities
|  STS      |  System Traffic Statistics
|  TDD      |  Telephony Device Diagnostics
|          |
|          |  GENERAL-PURPOSE COMMANDS:
|  ABOrt    |  Abort Terminal
|  INfo     |  Displays general system information
|  SAR      |  Schedule Automatic Reboot
|          |
...PRESS RETURN TO CONTINUE...

```

```

| SET DATE | Sets the system date (in dd-mmm-yy or mm-dd-yy format)
| SET TIME | Sets the system time (in hh:mm:ss format)
| SStatus  | Displays system status
| WHO      | Displays active users
| EXIt     | Exit system administration program and log off the system.
|-----|-----|

For additional information about any command, enter 'HELP <command>',
where <command> may be any of the commands listed above.

ADMIN ...? POFF

```

Displays sent to the printer do not show the prompt to press RETURN or the break in display.

PRINT and NOPRINT Commands

PRINT lets you send all text being displayed on the terminal to a system printer. You must enter PRINT before you enter a command for which you want to capture screen output.

NOPRINT turns off the PRINT command.

TIME Command

TIME displays the current date and time of day of the Time of Day Clock, the customer name and site, the common equipment shelf you are logged on to, and the status of the system shelves.

```
ADMIN ...? TIME
ABC Corp, San Francisco
You are logged onto shelf 2
The system status is ACTIVE/STANDBY
Time: 17-MAR-1990 10:32:03 FRI
ADMIN ...?
```

CTRL+C

CTRL+C displays the initial prompts for logging on to the system. The only time you will need CTRL+C is when you want to use the System Administration program.

CTRL+S and CTRL+Q

CTRL+S pauses scrolling of text on the screen. It is useful when the display from a command fills an area larger than the screen and you want to stop the display at a particular point.

CTRL+Q resumes the scrolling of text on the screen.

Some video terminals and teleprinters have a NO SCROLL key that you may be able to use instead of CTRL+S and CTRL+Q. You will know if the NO SCROLL key works if pressing the key once pauses text scrolling and pressing the key again resumes text scrolling.

See also the PON and POFF commands.

CTRL+Z

CTRL+Z halts current program activity and returns you to the previous prompt without saving changes. For example, if you enter a command and want to cancel it, you can use CTRL+Z. An example is shown below.

```
TDD ...? CONNECT
Enter the two circuit numbers to be connected
Circuit Location ...? 03-13-02
Circuit Location ...? (CTRL+Z)
TDD ...?
```

You cannot use CTRL+Z instead of the EXIT command to exit any of the system administration programs.

CTRL+CC

CTRL+CC aborts all program activity and should only be used in extreme circumstances. After using CTRL+CC, you will need to log onto the system terminal to start working again. If you used CTRL+CC while working with a database, you will have to recover your work before proceeding further.

5

Configuration Editor (EDT)

This chapter describes the Configuration Editor (EDT) program. It explains how to start EDT; general instructions for working with EDT; how to select a database for editing; and the EDT utility commands. It does not explain the database tables in EDT or provide detailed instructions for how to edit a database. You can find this information in the Database Configuration Manual.

This chapter contains the following sections:

- *Overview of EDT* contains an overview of EDT.
- *Starting EDT* explains how to start EDT.
- *Checking System Options* explains how to install a new Options Control Record (OCR).
- *Creating Passwords* describes the EDT commands used to create, modify, and delete passwords.
- *Working in a Database* describes the EDT commands used to open, save, upgrade, and close a database edit session.
- *Checking the Status of Databases* describes how to get a status report on system databases and the meaning of the statuses reported by the system.
- *Managing Databases* describes the UTILITY commands used to manage tasks such as back up, restore, and duplication of databases and installing new software releases.
- *Exiting EDT* explains how to exit the Configuration Editor.
- *Creating a Database* describes the general steps required to create a database.

Overview of EDT

The Configuration Editor program (EDT) is used to enter and maintain one or more databases for your Teltronics Information Exchange Platform. A database contains all the data used by the system for call processing and routing.

EDT has a variety of editing commands that let you add, delete, modify, and list data. It also has a set of utility commands that let you activate, deactivate, backup, delete, or update databases.

EDT can maintain up to two configuration databases at a time on the hard disk which is located in the Common Equipment shelf. Either of the configuration databases can be used to direct call processing. When you request database activation, the database is loaded from the hard disk into Common Equipment memory. The version of the database in memory directs call processing. As call processing requirements change, you may modify the active configuration database or activate an alternative database. When a database becomes obsolete, you may delete the database and create an entirely new database to replace it.

On redundant systems, there are two Common Equipment shelves, and the configuration databases are maintained on the hard disks in both Common Equipment shelves. The second shelf is an exact duplicate of the first shelf and acts as a backup for the first shelf in the event of a failure.

Structure of the Configuration Editor

EDT has five main commands, as shown in Figure 5-1.

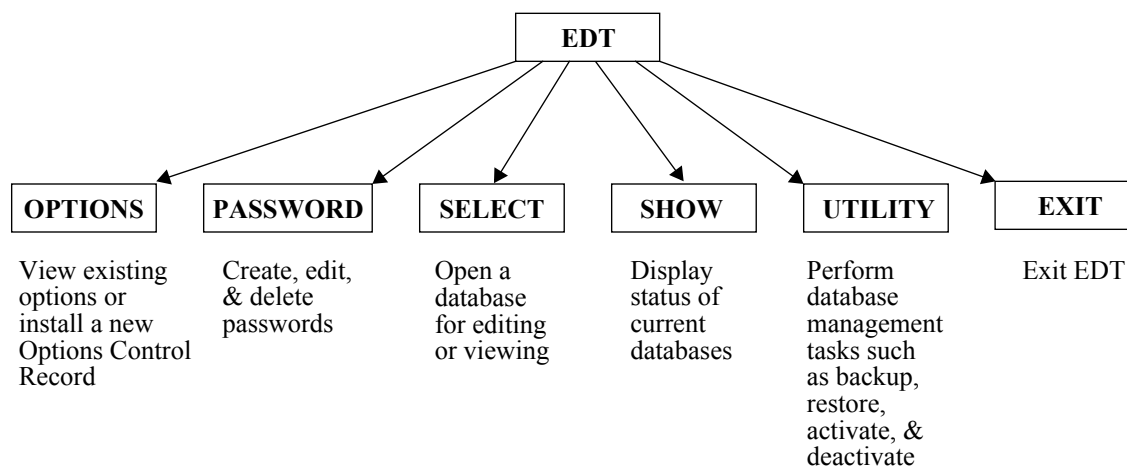


Figure 5-1. Configuration Editor Commands

- See *Checking System Options (OPTIONS)* on page 5-5 for an explanation of the OPTIONS commands.
- See *Creating Passwords (PASSWORD)* on page 5-7 for an explanation of the PASSWORD commands.
- See *Working in a Database* on page 5-13 for an explanation of the SELECT command.
- See *Checking the Status of Databases (SHOW)* on page 5-27 for an explanation of the SHOW command.
- See *Managing Databases (UTILITY)* on page 5-31 for an explanation of the UTILITY commands.

Passwords and Configuration Editor Access

Your password determines the level of access you have to the Configuration Editor. If your password does not allow you access to EDT, the system displays a message that you have insufficient privileges. If your password does not allow access to some part or function of the editor, the system will display a similar message when you try to access that part or function. The system administrator's password is preconfigured and allows full access to the Configuration Editor. See *Creating Passwords (PASSWORD)* on page 5-7 for more information.

Common Control Shelf Labeling

When you use EDT commands that require the use of floppy diskettes or a USB drive (INSTALL, BACKUP, RESTORE, and RELEASE), system prompts include shelf names.

Starting EDT

- 1 Start the System Administration program.

Enter CTRL+C.

Enter your user name.

Enter your password.

- 2 At the ADMIN ...? prompt, type **EDT** and press RETURN.

EDT displays a database status report and the EDT ...? prompt, from which you can enter any of the EDT commands.

A sample report for the Cerato is shown in Figure 5-2. For information on the status report, see *Checking the Status of Databases (SHOW)* on page 5-27.

```

ADMIN ...? EDT

                Welcome to the Teltronics Configuration Editor

The Teltronics Configuration Editor allows you to enter, modify, delete and list
call processing parameters in the system database. To choose an editor
command or option, type in the entire command or the first three letters of
the command. Enter 'HELP' at any prompt for assistance. Below is the current
status of the databases on the system.

The editor is currently running on common control shelf CC-2.

Shelf          Database A                                Database B
-----
*CC-1 | *NORMAL                                | DATABASE DOES NOT EXIST |
-----
CC-2 | *NORMAL                                | DATABASE DOES NOT EXIST |
-----

+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save edit session

EDT ...?

```

Figure 5-2. Cerato Database Status Report

Checking System Options (OPTIONS)

This section explains how to:

- list the options available on your system (LIST)
- install a new Options Control Record (INSTALL)

Listing System Options (LIST)

The LIST command displays the options purchased for your system.

Notes

You can also use the OPTIONS LIST command after you have opened a database to view system options (see page 5-23).

Example

The following example shows a partial listing from the LIST command.

```
EDT ...? OPTIONS
OPT ...? LIST
OCR version ..... 1
Original database update version ..... 0
Original CAP tables version ..... 0
Sales number ..... 98
Customer name ..... ABC Corporation
Customer site ..... San Francisco
Customer site area code ..... 415
Date configured ..... 04/02/86
Configured by ..... HDTS
Switch type ..... ME
Shelf map ..... CCJ-JJJ-XXX-XXX
Physical ports ..... 896
S-Packets ..... 582
R-Packets ..... 250
Virtual ports ..... 1244
Virtual Operating System ..... Y
Adjustable Loss Plan ..... Y
RAM disk ..... N
International feature set ..... U.S.
Serial interface unit (SIU) boards ..... 3
Call detail records (CDR) ..... 25000
Call detail record (CDR) polling ..... Y
PBX feature ..... Y
Voice message system ..... Y
Message waiting ..... Y
Classes of service ..... 64
Dial control classes ..... 32
Feature classes ..... 32
Routing classes ..... 32
Connection classes ..... 32
Combined C&R and A&R tables ..... 24
Trunk groups ..... 50
System traffic statistics (STS) monitor .. Y
```

For an explanation of features in the OCR listing, see the Database Configuration Manual or the *Features Description* in the General System Description Manual.

Installing a New Options Control Record (INSTALL)

The INSTALL command installs a new Options Control Record (OCR).

Notes

The Options Control Record (OCR) controls the features that are allowed on your system. You must install a new OCR is when you add features to your system, such as additional administration programs, increased quantities of existing features, or new features. Occasionally, you must also install a new OCR when you install a new release, whether or not you are adding new features.

After you install a new OCR, you must also upgrade your databases using the UPGRADE command (see page 5-23).

If you increase the size of your CDR file, you must reinitialize your hard disk by reloading your system software and restoring your databases from backup floppies. For information on how to reload system software, see the *Software Reloading* chapter of the Installation Manual.

Examples

- 1 The following example shows the message displayed for upgrading an administration program on a Cerato ME system.

```

OPT ...? INS

Insert the new OCR diskette in disk drive of shelf 1 and press return ...?

... INSTALLING OCR VERSION X ON THE SYSTEM ...

*****
***                                     ***
***  OCR UPGRADES MUST ALSO BE PERFORMED ON  EACH DATABASE          ***
***  INDIVIDUALLY. TO UPGRADE A DATABASE, FIRST SELECT THE DATABASE, ***
***  THEN SELECT THE OPTIONS MODULE AND EXECUTE THE UPGRADE COMMAND. ***
***                                     ***
*****

... UPGRADING SYSTEM TRAFFIC STATISTICS (STS) MONITOR ...

OPT ...? EXI

EDT...?

```

Creating Passwords (PASSWORD)

Any user who wishes to use a system terminal must enter a user name and password before logging on to the terminal.

The PASSWORD command lets you create, change, delete, and list user names for your system.

The system has two preconfigured user names. You may configure up to 12 additional user names for your system. Once a user name has been configured in EDT, it is available for use.

The user name used in logging on to the system determines the level of access a user has to the system administration programs and various commands in the Configuration Editor. If a system user attempts to access any program or Configuration Editor command that is disallowed for the user name, the system displays an error message stating that access is denied.

This section explains how to:

- create user names (ADD)
- modify existing user names (MODIFY)
- delete existing user names (DELETE)
- display a list of currently configured user names (LIST)

Creating New User Names (ADD)

The ADD command lets anyone who has proper privileges create new passwords. The password entered when logging on to the system determines access privileges.

Notes

Your system has two preconfigured user names and passwords which are listed in Table 5-A. You may configure up to 12 more user names.

Table 5-A. Preconfigured Passwords

User Name	Password	Privileges
ADMIN	ADMIN	Complete access to all EDT commands and all other administration programs
HOST	COMPUTER	Access to CDR polling only

Because the ADMIN user name is the only user name that has access to the PASSWORD command, its use should be highly restricted to maintain system security. You may change the ADMIN and HOST user names and their associated passwords, but you may not change their preconfigured access privileges.

If you want to prohibit access to just a few commands when adding a new password, you can allow access to all commands and then specify which ones you want to disallow.

Example

The example on the next page illustrates how to configure a user name.

EDT ...? **PAS**

Enter your password before proceeding ...?

PAS ...? **ADD**

Username ...? **SMITH**

Password ...?

Verify password ...?

Command to allow access to [ALL] ...? **HELP**

Enter the name of the command to allow the access. If most of the commands are to be allowed, you should enter 'ALL' (default) to allow access to all commands then disallow particular commands by entering the command names when prompted. Enter 'END' to discontinue setting.

*** These are the commands that you have access to ***

COMMAND NAME	DESCRIPTION
-----	-----
EDT	Configuration Editor program
SYS	System Facilities program
NCF	Network Control Facilities program
TDD	Telephony Device Diagnostics program
ALM	Alarms Control program
MHC	Maintenance History Control program
STS	System Traffic Statistics program
CDR	Call Detail Recording program
POL	Polling for Call Detail Recording
FIL	Files manipulation program
PAS	Password module
RUN	Database Update program
DIA	Dial Control Class database table
FAC	Facilities database table
FEA	Feature Class database table
SYSEDT	System Parameters database tables
HDT	Teltronics System Parameters editing
EXT	Extensions database table
SPE	System Speed Dial database table
COL	Collect & Route
COD	Authorization Code
BOA	Circuit Boards
PAT	Route Patterns
ROU	Routing Class
ANA	Analyze & Route
GRO	Extension Groups
TRU	Trunk Groups

.
 . (partial listing only)
 .

*** NOTE : Only the commands that you have access to are displayed ***

Command to allow access to [ALL] ...? **ALL**

Command to be disallowed [END] ...? **CSM**

Command to be disallowed [END] ...?

... ADDING USERNAME 'SMITH' ...

PAS ...?

Modifying User Names (MODIFY)

The MODIFY command lets you modify existing user names, passwords, and their associated privileges.

Notes

You may change the preconfigured ADMIN and HOST user names (see Table 5-A) and their associated passwords, but you may not change their preconfigured access privileges.

Example

The following example illustrates how to modify a user name and password. Note that because EDT does not display what you type at the password prompts, those entries are shown in parentheses.

```

EDT ...? PAS
Enter your password before proceeding ...?
PAS ...? MOD
Username to modify ...? ROBERTS
New username [ROBERTS] ...? EDWARDS
New password [No Modify] ...? (CARROT)
Verify password ...? (CARROT)
Command to be modified [END] ...? TDD
Command name TDD [N] ...? Y
Command to be modified [END] ...? ALM
Command name ALM [N] ...? Y
Command to be modified [END] ...?
... MODIFYING USERNAME 'ROBERTS' ...
PAS ...?

```

Deleting User Names (DELETE)

The DELETE command lets you delete user names.

Notes

You may not delete the two user names provided by Teltronics (see Table 5-A).

Example

```
EDT ...? PAS
Enter your password before proceeding ...?
PAS ...? DEL
Username ...? ROBERTS
Please confirm the deletion of username 'ROBERTS' (Y/N) ...? Y
... DELETING USERNAME 'ROBERTS' ...
PAS ...?
```

Displaying a List of Currently Configured User Names (LIST)

The LIST command displays a list of currently configured user names.

Notes

Several options control what LIST displays:

- **ALL** displays all configured user names and associated privileges
- **/LONG** displays all configured user names and associated privileges
- **/SHO** displays configured user names
- **/FREE** displays the number of available (unconfigured) user names

Working in a Database

In order to edit a database, you must use the SELECT command to open it first. After you select a database, A or B, the system displays a prompt in accordance with the database you selected:

A ...?

B ...?

At the A ...? or B ...? prompt, you can open and edit all the system database tables. The commands used to edit database tables are described in the Database Configuration Manual.

At the A ...? or B ...? prompt, you can also perform other operations, such as saving editing changes or upgrading a database, which are described in this section of this chapter.

This section explains how to:

- select a database (SELECT)
- save a database edit session (SAVE)
- cancel a database edit session (KILL)
- display the contents of a database (LIST)
- upgrade a database (OPTIONS)
- converting internal data structures (CONVERT)
- update internal system counters (COUNT)
- close a database (EXIT)

Selecting a Database (*SELECT*)

The *SELECT* command opens a database for editing.

Notes

During the process of installing a new software release, you must enter the *SELECT* command to perform updates on your database. In this case, the system displays a series of messages while it updates the database to the new release. Some update messages require automatic saves of the database or require you to perform other commands. You should read and follow these messages carefully (see example 4 and example 5).

The system displays error messages if you try to select a database that does not exist or is incomplete due to a previous reset (see example 2 and example 3).

Effect on Call Processing

Selecting (and editing) the currently active database does not affect call processing because call processing is directed by a copy of the active database loaded into memory and editing is done on disk. However, if you end an edit session with *SAVE*, call processing is affected. See *Saving a Database Edit Session (SAVE)* on page 5-16 for further information.

Example

- 1 This example illustrates a normal *SELECT* of a database.

```
EDT ...? SEL
Database name ...? B
... SELECTING DATABASE 'B' ...
B ...?
```

- 2 This example shows the message displayed if you select a database that has not been created.

```
EDT ...? SEL B
*** DATABASE 'B' CANNOT BE SELECTED ***
*** DATABASE DOES NOT EXIST ***
EDT ...?
```

- 3 If the system resets during an edit session and you try to select the database after the reset, the system will not let you use the database until you run RECOVER, as shown in the next example.

```
EDT ...? SEL B

*** DATABASE 'B' CANNOT BE SELECTED ***

*** LAST EDIT SESSION DID NOT END NORMALLY. ***
*** USE THE UTILITY RECOVER TO RESUME ***
*** OR KILL THE EDIT SESSION. ***

EDT ...?
```

- 4 This example illustrates update messages that require an automatic save. The messages recommend against continuing the update unless you have a backup of the database.

```
EDT ...? sel b

.... SELECTING DATABASE 'B' ...

*****
*** WARNING! Updates requiring an automatic save are about to run. ***
*** These critical updates are irreversible, so if you do not already ***
*** have a backup of this database you should go back and do so now. ***
*** If this database is active a reboot will be required to complete ***
*** the save of the database. ***
*****

Do you want to continue (Y/N) ...? y

*** PLEASE DO NOT INTERRUPT THE DATABASE UPDATES. WAIT UNTIL ***
*** THEY HAVE BEEN COMPLETED. ***

.... PERFORMING SPEED DIAL/CODE VALIDATION UPDATE AT 09:48:58 ...

.... PERFORMING INCREASE OF CAP TABLES UPDATE AT 09:49:02 ...

.... DATABASE 'B' HAS BEEN MODIFIED ...

.... SAVING EDIT SESSION OF DATABASE 'B' ...

EDT ...?
```

- 5 This example illustrates another message you might receive after you restore a database or install a new software release.

```
EDT ...? sel b

.... SELECTING DATABASE 'B' ...

*** This database needs to be converted - you should do so now. ***
*** Use the CONVERT command from this prompt. If you choose to ***
*** not convert now, database corruption may occur. ***

EDT ...?
```

Saving a Database Edit Session (SAVE)

The SAVE command saves editing changes to the currently selected database.

Notes

If you save changes to the inactive database on a redundant system, the system automatically performs a redundant update in order to update the databases on both Common Equipment shelves, but does not reboot.

If you save changes to the active database on a redundant system, the system automatically performs a redundant update in order to update the databases on both Common Equipment shelves. Saving the active database may or may not cause a system reboot, and therefore, an interruption to call processing, as discussed in the following paragraphs. Saving always causes a reboot of the standby shelf.

Changes Causing a Live Update

Some changes to the active database can be saved on the active shelf without requiring a system reboot. On redundant systems, the system performs an automatic redundant update, which causes the standby shelf to reboot. Although call processing is not interrupted, the shelf cannot provide automatic backup until rebooting is complete (up to 15 minutes, depending on your system).

If you save changes to a DCA's type, you must power down the DCA after the live update so the system can download the new code to the DCA.

Some changes to the ACD database require an additional step before a live update takes effect as explained in Table 5-B.

Table 5-B. ACD Changes Requiring Additional Steps After Live Update

Change	Restricted Status?*	Additional Step(s) Required Before Change Takes Effect
Agent ID	Y	Agent must log back on to the system
Group Supervisor ID	Y	Supervisor must log back on to the system
Team Supervisor ID	Y	Team Supervisor and team agents must log back onto the system
agent name	N	Agent must log off, then log on to the system
supervisor name	N	Supervisor must log off, then log on to the system
ACD Pattern name	N	Pattern must have no calls in queue

* Restricted status means the agent, Group Supervisor, or Team Supervisor is logged off the ACD system. The system allows calls in progress to complete before logging an agent or supervisor off the system. It also allows incoming non-ACD calls to the agent or supervisor to ring and be answered before logging the agent or supervisor off the system. When a Team Supervisor ID is changed, the supervisor and the agents in the team have restricted status.

Changes Requiring a Reboot

Sometimes changes to an active database cannot be saved by live update and the system must be rebooted (reset) to complete the request to SAVE. Table 5-C summarizes what changes to database tables require a reboot to save.

Table 5-C. Commands that Require a Reboot to Save

Table	Commands				
	ADD	DELETE	MODIFY	RESET	BUFFER
Circuit Boards (SIU only)	YES	YES	YES		
Analyze & Route	YES	YES	Conditional*		
Collect & Route	YES	YES	Conditional*		
Extension Groups	YES	YES	Conditional*		
Trunk Groups	YES	YES	Conditional*		
System Devices (SIU only)	YES	YES	YES		
Extensions (Attendant Workstation/EAWS only)	YES	YES			
MTP (Message Transfer Part) Level 2 and Level 3	YES	YES	YES		
System Timers (DP Ratio and DTMF Timer only)			YES	YES	

Table 5-C. Commands that Require a Reboot to Save (continued)

Table	Commands				
	ADD	DELETE	MODIFY	RESET	BUFFER
System Parameters			Conditional*	Conditional*	
CDR Filter					YES†

* The necessity of the reboot depends upon your answers to the prompts in the MODIFY or RESET sequence. EDT warns you if a reboot is necessary and gives you an opportunity to cancel the requested modification.

† A change to the buffer size of the CDR Filter table requires a simultaneous reboot of both shelves, which stops all call processing until one shelf completes rebooting.

The system warns you when you open a table that will require a system reboot in order to be saved. An example of the warning is shown below:

```
A ...? ANA
*****WARNING*****
Within this module, all ADDs, all DEletes, and some MODifys cannot be SAVed
unless the switch is rebooted. You will be alerted when a MODify which
requires a reboot to SAVE is encountered and you will have the option to
cancel it.
*****
ANA ...?
```

You can also EXIT and use the SHOW command after you have edited a database to check if a reboot is required to save your changes. The R in the next example shows that a reboot is required to save the edit session.

```
A ...? EXIT
... SUSPENDING EDIT SESSION OF DATABASE 'A' ...
EDT ...? SHOW
The editor is currently running on Shelf CC-2.
Shelf      Database A          Database B
-----
CC-1 | *NORMAL                | NORMAL                |
-----
*CC-2 | R*SUSPENDED EDIT SESSION | NORMAL                |
-----
+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session
EDT ...? SELECT
Database to select ...? A
... RESUMING SUSPENDED EDIT SESSION OF DATABASE 'A' ...
A ...?
```

When a reboot is necessary to save, SAVE asks you to confirm the request to save.

```
A ...? SAVE
```

```
This edit session may not be SAVed without rebooting the switch. Answer 'Y'
or 'YES' at this prompt to start the reboot sequence to save the edit
session. If 'Y' or 'YES' is entered, the other shelf will be rebooted after
the redundant update, finishing the SAVE on the other shelf. The database on
this shelf will have a status of 'SAVE UPON REBOOT' but this shelf will not
be automatically rebooted. After the other shelf has finished rebooting,
reboot this shelf using the UTILITY REBOOT. The save will be performed at
that time. The changes to this database will not take effect until all of
these steps have been taken. Answer 'N' or 'NO' to suspend the edit session.
You may then SElect and SAVe the edit session at a later time.
```

```
Reboot to perform save (YES/NO) ...?
```

If you enter NO, the edit session is suspended and you return to the EDT ...? prompt. If you enter YES, the method of rebooting depends upon whether the system is redundant or non-redundant, as explained in the following paragraphs. Because rebooting can have serious consequences, you may wish to postpone saving your edit session.

Rebooting non-redundant systems: After saving, the EDT ...? prompt appears and you must use REBOOT to start the system reboot (see *Performing a Software Reboot (REBOOT)* on page 5-47). Rebooting may take up to 15 minutes, depending on your system and the size of the database being saved. At the time the system is rebooted, all calls in progress are dropped and you are logged off the system automatically. When the rebooting is complete, call processing resumes with the edited version of the database. To log on to the system, use the log-on procedure.

Rebooting redundant systems: The system copies the database to the standby shelf, automatically reboots the standby shelf, and returns you to the EDT ...? prompt. Call processing continues on the active shelf with the unedited version of the database. The standby shelf is not available as a backup for the system during the time it is being rebooted.

If you enter the SHOW command while the shelf is rebooting, the standby shelf is reported as (shelf unavailable) and the active shelf is reported as SAVE UPON REBOOT as shown below:

```
EDT ...? SHOW
```

```
The editor is currently running on Shelf CC-2.
```

Shelf	Database A	Database B
CC-1	(shelf unavailable)	(shelf unavailable)
*CC-2	*SAVE UPON REBOOT	NORMAL

```
+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session
```

When the system finishes rebooting the standby shelf, enter the UTI REBOOT command to reboot the active shelf. (The standby shelf is finished rebooting when it has a NORMAL status.)

When rebooting of the active shelf begins, control of the system switches over to the standby shelf, and call processing continues with the edited version of the database (which has already been loaded into memory on that shelf). You are automatically logged off the system, but may log back on to the system, if you wish, within 5-10 seconds.

When control of the system switches over, calls in set-up are dropped. Calls already in conversation, however, are not dropped. The switchover from the first to the second shelf takes about one second. The system is without a backup shelf during the time it takes to reboot the second shelf.

If you have postponed rebooting the active shelf, and for some reason, the active shelf is rebooted automatically before you run REBOOT, the edited version of the database is saved on disk (and loaded into memory) at that time.

Changes Requiring a Reboot of Both Shelves

Some changes require both shelves (if redundant) to simultaneously reboot after the SAVE command. When this is the case, the system displays a warning similar to the one shown below:

```

OPT ...? EXIT

B ...? SAVE

*****WARNING*****
***
*** This save requires a reboot to complete. Because of the nature of      ***
*** the edit session, BOTH SHELVES MUST BE RESET SIMULTANEOUSLY. This    ***
*** means that the switch will not be processing calls until one shelf    ***
*** fully boots. Answer "Y" or "YES" to save the edit session and        ***
*** REBOOT BOTH SHELVES. If "Y" or "YES" is entered BOTH SHELVES WILL   ***
*** BE RESET AUTOMATICALLY. Answer "N" or "NO" to suspend the edit      ***
*** session. You may then SELEct and SAVe the edit session at a later time ***
***
*****
Reboot to save this OCR upgrade (YES/NO) ...? Y

```

Rebooting both shelves causes all call processing to stop until one shelf has completed rebooting. You have the option to delay the reboot and save the edit session at a later time.

Examples of changes that required a double reboot are:

- an upgrade of the number of ports
- a change of the configuration of virtual ports for hunt groups or Attendant Workstations/EAWS
- a change of the CDR Buffer Size

Cancelling a Database Edit Session (KILL)

The KILL command deletes any changes made to the database since the SAVE command was last executed.

Notes

KILL deletes all information entered since the last time you saved a database, not just information entered since you selected the database. You can use the SHOW command to check the status of a database before killing editing changes. You can also use the Maintenance History program to get a record of keyboard entries in EDT if you're not sure what changes were made in an unsaved edit session.

After you use KILL, the unedited version of the database remains on disk and you return to the EDT ...? prompt. Call processing is not affected.

Displaying the Contents of a Database (LIST)

LIST displays the contents of the currently open (selected) database.

Notes

You can use the PRINT command before using LIST to get a printed copy of your database at the system printer. Make sure there is enough paper in the printer.

To get a listing of an individual database table, open the table and enter the LIST command from within the table.

Upgrading a Database (OPTIONS)

The OPTIONS command lets you display a summary of the features in the present OCR and upgrade database tables to a new OCR.

Notes

The OPTIONS LIST command compares the number of purchased features with the number of features currently configured in the database tables. For details on the listed features, refer to the *Features Description* chapter in the General System Description Manual.

After using UPGRADE, you must enter the SAVE command (see page 5-16).

Some changes caused by UPGRADE require both shelves (if redundant) to reboot simultaneously after you use the SAVE command. When both shelves reboot, the system is not able to process calls until one shelf has completed rebooting. You do have the option to delay the reboot and save the edit session at a later time.

Example

```
EDT ...? SELECT
Database name ...? B
... SELECTING DATABASE 'B' ...
*****
***                                     ***
*** THE SELECTED DATABASE REQUIRES AN OCR UPGRADE.                               ***
*** TO PERFORM AN OCR UPGRADE ON THE SELECTED DATABASE,                           ***
*** CHOOSE THE OPTIONS MODULE FROM THE DATABASE MENU                             ***
*** AND EXECUTE THE UPGRADE COMMAND.                                             ***
***                                     ***
*****
B ...? OPT
OPT ...? UPGRADE
... UPGRADING XXX ...
OPT ...? EXIT
B ...? SAVE
... SAVING EDIT SESSION OF DATABASE 'B' ...
EDT ...?
```

Converting Internal Data Structures (CONVERT)

The CONVERT command merges new Call Action Processor (CAP) tables into the existing tables.

Notes

You do not need to use CONVERT unless instructed to do so by a Teltronics representative or by system prompts (see example 5 on page 5-15). Point releases often include instructions for running CONVERT. After you run CONVERT, you must save and reboot your system.

Your database must have a NORMAL status. If not, the system will tell you to save and reselect the database. It is a good idea to back up your database before running CONVERT.

Updating Internal System Counters (COUNT)

The COUNT command checks and corrects the accuracy of system counters.

Notes

Options counters count how many OCR options you have used. COUNT reports if the counters are correct and, if not, changes them to the appropriate value and displays a message similar to the one shown below.

```
... CHECKING OPTIONS USED COUNTERS ...
```

```
... CHANGING TELESET VIRTUAL PORTS USED COUNT FROM 12 TO  
10 ...
```

Reference counters count how many different processes use a particular option in the OCR. For example, if a Class of Service is used by three different extensions, the reference count on that Class of Service should be three.

When you use COUNT, you must save and reboot your system.

Do not use COUNT unless you are instructed to do so by a Teltronics representative or by instructions accompanying a point release. You should notify HCPD when COUNTS reports a discrepancy, unless you are installing a new release.

Closing a Database (EXIT)

At the A ...? and B ...? prompts, EXIT closes a database without saving changes.

Notes

If you exit a database without saving, EDT displays the following message:

```
... SUSPENDING EDIT SESSION OF DATABASE 'A' ...
```

Suspending an edit session has no effect on call processing, even if you are editing the active database. The system separately stores the suspended edit session as well as the unedited version of the database on disk. The edit session remains suspended until you access the database using the SELECT command as shown below. There is no limit on how long a database may remain suspended.

```
... RESUMING EDIT SESSION OF DATABASE 'A' ...
```

On redundant systems, the suspended edit session is only recorded on the active shelf when you EXIT an edit session. If that shelf is not active when you go to resume your edit session, you will access the unedited version of the database on the other shelf. In this case, you might want to schedule a reboot before editing, so that you can resume the suspended edit session. It is wise to use the SHOW command to get a database status report before resuming an edit session.

To test changes to a database, you will use EXIT without saving beforehand. See *Testing Database Editing Changes (TEST)* on page 5-44.

Checking the Status of Databases (SHOW)

The SHOW command displays the current status of the databases on your system. On redundant systems, SHOW also displays the current status of the active and standby shelves and the status of the databases on those shelves.

Notes

Table 5-D explains the symbols that report database status. Table 5-E explains the database status messages.

Table 5-D. Symbols Used to Report Database and Shelf Status

Symbol	Meaning
*	<p>Non-Redundant Systems: Currently active database, loaded into memory from disk and being used for call processing.</p> <p>Redundant Systems: Currently active database and the currently active Common Equipment shelf. (The active database on the active shelf controls call processing for the system. The active database on the standby shelf is the backup which controls call processing only if control of the system switches over to that shelf. Only one database at a time can be active on any given shelf, and only one shelf at a time can be active for the system.)</p>
+	<p>Redundant Systems Only: The database has been changed on the indicated shelf without a redundant update to the other shelf and therefore the database does not match on the two shelves. (For a description of REDUNDANT UPDATE, see <i>Updating a Redundant Database (REDUNDANT)</i> on page 5-51.)</p>
R	<p>Redundant and Non-Redundant Systems: A system reboot is required if you save the database.</p>

Table 5-E. Database Status Messages

Message	Description
ACTIVATION UPON REBOOT	Activation of database has been requested using ACTIVATE and takes effect after next reboot.
DATABASE DOES NOT EXIST	Database currently not on disk. To exist on disk, database must be created with CREATE or copied from a floppy/flash disk with RESTORE.
DEACTIVATION UPON REBOOT	Deactivation of database has been requested using DEACTIVATE and takes effect after next reboot.
FAILED LIVE UPDATE	Live update of the database currently in memory failed. System must be rebooted to update database in memory so that it matches database currently stored on disk. Database in memory may have been damaged; therefore, use REBOOT as soon as possible. (See the SAVE command description for an explanation of a live update.)
INCOMPLETE COPY	COPY command was interrupted due to system failure or fault. Use RECOVER to abort or re-execute COPY.
INCOMPLETE CREATE	CREATE command was interrupted due to system failure or fault. Use RECOVER to abort the CREATE command or re-execute CREATE.
INCOMPLETE BACKUP	BACKUP command was interrupted due to system failure or fault. Use RECOVER to abort or re-execute BACKUP.
INCOMPLETE DELETE	DELETE command was interrupted due to system failure or fault. Use RECOVER to abort or re-execute DELETE.
INCOMPLETE EDIT SESSION	Edit session ended in an abnormal manner due to system failure or fault. Use RECOVER to re-execute edit session or KILL the edit session.
INCOMPLETE EDIT SESSION EXIT	EXIT from database was not executed correctly due to system failure or fault. Use RECOVER to re-execute EXIT.
INCOMPLETE KILL	Request to KILL edit session not completed due to system failure or fault. Use RECOVER to re-execute KILL.
INCOMPLETE REDUNDANT UPDATE	REDUNDANT UPDATE command was interrupted due to system failure or fault. Use RECOVER to abort or re-execute REDUNDANT UPDATE.
INCOMPLETE RESTORE	RESTORE command was interrupted due to system failure or fault. Use RECOVER to abort or re-execute RESTORE.
INCOMPLETE SAVE	SAVE command for the inactive database was not completed due to system failure or fault. Use RECOVER to re-execute SAVE.
NORMAL	No special conditions apply to the database.

Table 5-E. Database Status Messages (continued)

Message	Description
SAVE UPON REBOOT	SAVE command for active database was not completed due to system failure or fault, or because the inactive shelf is rebooting. On a redundant system, the active shelf will not reboot until the standby shelf is completely rebooted so that the stand-by shelf can handle call processing while the active shelf is rebooting. To complete the SAVE, use REBOOT.
(shelf unavailable)	Shelf is being rebooted or has not been booted.
SUSPENDED EDIT SESSION	Last edit session ended with the EXIT command. To resume edit session, use SELECT.
TEST IN PROGRESS	TEST command is in effect.
UNRECOVERABLE DATA-BASE	The database cannot be recovered because an update or save of the database failed to complete. Delete the database and restore your backup of the database.

Common Control Shelf Labeling

In the Cerato ME, the lower shelf is labeled is 'shelf 1', while the upper shelf is labelled 'shelf 2'.

Examples

The following example shows a status report for a redundant system ME system, with a suspended edit session on Database A, Shelf CC-2.

```

EDT ...? SHOW

      Database A                      Database B

-----
CC-1|   NORMAL                      | DATABASE DOES NOT EXIST   |
-----

-----
*CC-2| *SUSPENDED EDIT SESSION      | DATABASE DOES NOT EXIST   |
-----

* - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session

```


According to this status report:

- A is the active database.
- An edit session of database A has been suspended (with the EXIT command). The edited version of the database is recorded on disk, but the unedited version remains in memory and is used for call processing.
- The R symbol indicates that if the edited version of the database is saved while database A is active, the system must be rebooted.
- Database A has a NORMAL status.

Managing Databases (UTILITY)

This section describes the UTILITY commands used to manage tasks such as back up, restore, and duplication of databases and installing new software releases. You can use the UTILITY (or UTI) commands to:

- create the structure for a new database (CREATE)
- activate a database (ACTIVATE)
- deactivate a database (DEACTIVATE)
- duplicate a database (COPY)
- copy files to a floppy/USB flash disks (BACKUP)
- copy files from a floppy/USB flash disks (RESTORE)
- delete a database (DELETE)
- test database editing changes (TEST)
- remove a database test (UNTEST)
- perform a software reboot (REBOOT)
- recover an aborted edit session (RECOVER)
- update a redundant database (REDUNDANT)
- install a new software release (RELEASE)

Creating the Structure for a New Database (CREATE)

The UTILITY CREATE command establishes the set of database tables that will hold configuration data.

Notes

CREATE is the first step in creating a new configuration database. Database tables are empty when they are created with the exception of the following System Editing tables, which contain default configuration:

- Account Code Format
- CDR Filter
- Logical Devices
- System Parameters
- System Timers
- Trunk Timers

You can modify the above tables, if you wish, when configuring your database.

For information on the general steps required to configure a new database, see *Creating a Database* on page 5-58.

Example

```
EDT ...? UTI
UTI ...? CREATE
Name of database to create ...? B
... CREATING DATABASE 'B' ...
UTI ...?
```

Activating a Database (ACTIVATE)

The UTILITY ACTIVATE command loads the specified configuration database into memory for use by call processing.

Notes

The database you activate must have a NORMAL status. If the database has another status, the system displays a message telling you that the database cannot be activated (see example 3).

Effect on Call Processing

The system uses the database in memory on the active Common Equipment shelf to direct call processing. An activated database is active from the time it is loaded into memory until you deactivate it with the DEACTIVATE command or activate an alternative database with ACTIVATE. You do not have to deactivate a database to activate an alternative database.

When you activate a database, the system performs a reboot which causes the Common Equipment memory to be cleared and all system software to be reloaded into memory. On non-redundant systems, the one shelf reboots and call processing is interrupted until the reboot completes. On redundant systems, the standby shelf generally reboots and call processing resumes on that shelf with the new database.

In some cases, activations on a redundant system require a simultaneous reboot of both shelves (see example 2). In this case, call processing is interrupted until the reboot completes.

Rebooting the active shelf causes an interruption to call processing. When the reboot is finished, the system resumes call processing using the activated database.

Examples

- 1 The following example illustrates a normal activation on a non-redundant system.

```

EDT ...? UTI
UTI ...? ACTIVATE
Database to activate ...? B
***** W A R N I N G *****
A DATABASE ACTIVATION CAUSES THE SYSTEM TO REBOOT. This means that the
switch will not be processing calls until the system has completely re-
booted. Answer 'Y' or 'YES' if this is acceptable; answer 'N' or 'NO'
to cancel the activate request.
*****
Confirm activation of database 'B' (YES/NO) ...? Y
... ACTIVATING DATABASE 'B' ...
... REBOOTING THIS SHELF ...
UTI ...?

```

- 2 This example illustrates an activation on a redundant system which requires a simultaneous double reboot.

Generally, activating a database requires the system to reboot the standby shelf only and activate the requested database on that shelf. The system displays a notice (rather than a warning) in this case.

```

EDT ...? UTI
UTI ...? ACTIVATE
Database to activate ...? B
***** W A R N I N G *****
A DATABASE ACTIVATION CAUSES BOTH SHELVES TO REBOOT SIMULTANEOUSLY. This
means that the switch will not be processing calls until one shelf fully
boots. Answer 'Y' or 'YES' if this is acceptable; answer 'N' or 'NO' to
cancel the activate request.
*****
Confirm activation of database 'B' (YES/NO) ...? Y
... ACTIVATING DATABASE 'B' ...
... REBOOTING THE OTHER SHELF ...
... REBOOTING THIS SHELF ...
UTI ...?

```

- 3 The following example illustrates the system's response when you try to activate a database that does not have a normal status.

```
UTI ...? ACTIVATE
Database to activate ...? B
***** W A R N I N G *****
A DATABASE ACTIVATION CAUSES BOTH SHELVES TO REBOOT SIMULTANEOUSLY. This
means that the switch will not be processing calls until one shelf fully
boots. Answer 'Y' or 'YES' if this is acceptable; answer 'N' or 'NO' to
cancel the activate request.
*****
Confirm activation of database 'B' (YES-NO) ...? Y
*** CANNOT ACTIVATE DATABASE B ON SHELF CC-1 ***
*** LAST EDIT SESSION DID NOT END NORMALLY. ***
*** USE THE UTILITY RECOVER TO RESUME ***
*** OR KILL THE EDIT SESSION. ***
*** BOTH DATABASES MUST BE IN THE NORMAL STATE FOR ACTIVATION ***
*** ACTIVATION REQUEST CANCELLED ***
UTI ...?
```

Deactivating a Database (DEACTIVATE)

The UTILITY DEACTIVATE command unloads from memory the currently activated database.

Notes

The database you deactivate must have a NORMAL or SUSPENDED EDIT SESSION status. If the database has another status, you will receive a message telling you that the database cannot be deactivated.

Effect on Call Processing

When you deactivate a database, the system performs a reboot which causes the Common Equipment memory to be cleared and all system software to be reloaded into memory. In non-redundant systems, the one shelf reboots. In redundant systems, both shelves simultaneously reboot.



Caution

*After the reboot, there is no active configuration database and call processing cannot take place. To reestablish call processing, activate a configuration database with **ACTIVATE**.*

Example

```
EDT ...? UTI
UTI ...? DEACTIVATE
Database to deactivate ...? B
***** W A R N I N G *****
A DATABASE DEACTIVATION CAUSES BOTH SHELVES TO REBOOT SIMULTANEOUSLY. Answer
'Y' or 'YES' if this is acceptable; answer 'N' or 'NO' to cancel the deactivate
request.
*****
Confirm deactivation of database 'B' (YES/NO) ...? Y
... DEACTIVATING DATABASE 'A' ...
... REBOOTING THE OTHER SHELF ...
... REBOOTING THIS SHELF ...
UTI ...?
```

Duplicating a Database (COPY)

The UTILITY COPY command creates a copy of an existing configuration database on the hard disk of the active Common Equipment shelf.

Notes

When you COPY a database, the system automatically assigns a new name to the duplicate database. For example, if you copy database A, the copy will be B.

The system maintains only two configuration databases on disk at a time. If you have two databases on a disk and want to use COPY, you must delete one of the databases first (see *Deleting a Database (DELETE)* on page 5-43).

When you use COPY on a redundant system, the system performs a redundant update automatically to update the standby shelf. Depending on your system and the size of the database, copying may take up to 10 minutes.

Example

```
EDT ...? UTI
UTI ...? COPY
Source database name ...? A
... COPYING DATABASE 'A' TO DATABASE 'B' ...
UTI ...?
```


Copying Files to Floppy or USB Flash Disks (BACKUP)

The UTILITY BACKUP command copies a configuration database; individual speed dial numbers, manual call forwards, and active call redirection groups; or ACD statistics from the hard disk on the active Common Equipment shelf to floppy diskettes.

Notes

The database or miscellaneous files you back up must have a NORMAL status.

Floppy Disks

Depending on the configuration of your system, you must use double-sided, quad-density, 96 TPI 5 1/4" or double-sided, high density or double density 3 1/2" floppy disks. If a backup requires more than one disk, you should assign each disk a volume number corresponding to the order it is used during the backup procedure. The RESTORE command requires that you insert disks in the correct order.

USB Flash Disks

A USB Flash Disk may be used for backups when using a TCPUP.

Database Backup

You should keep backup copies of all configuration databases for your system. If you regularly make changes to your configuration databases, you may want to back up the databases once a week. You should also make a backup whenever you enter a new configuration database, and whenever you have used the SAVE command to incorporate major changes into an existing database.

Backing up the database that is currently activated for the system has no effect on call processing.

Miscellaneous Files

Because the information in miscellaneous files can be changed by system users, the back up process should be performed during idle periods (if possible). To avoid losing individual speed dial numbers and call forwards, you should back up miscellaneous files more frequently than the database.

ACD Statistics

On a redundant system, the system backs up ACD statistics from the active shelf only. When both Common Equipment shelves are operational, the collected intervals are stored on both shelves. However, when only one shelf is operational, the intervals are stored on that shelf only. For this reason, the two shelves may not always contain identical sets of data and you might not get all the statistics when you back up.

The possibility of not having all intervals on the active shelf is much smaller for 24 hour intervals than for half-hour intervals. Also, since the 24 hour intervals are stored for 35 days and the half-hour intervals are stored for only two days, backing up the 24 hour intervals is much more useful.

Examples

Note These instructions are for all systems except LH & MAP systems running on TCPUs:

Database backup to floppy disk instructions:

```

UTI ...? BACK
BACKUP TO USB OR FLOPPY DISK [USB] ...? floppy
BACKUP TYPE [DB] ...?<Enter>
***BACKUP OF DATABASE FILES***
DATABASE TO BACKUP ...? A
***# of floppies needed depends on db size ***
CONTINUE WITH BACKUP (Y/N) ...? Y
***Follow the prompts.***

```

Miscellaneous file backup to floppy disk instructions:

```

UTI ...? BACK
BACKUP TO USB OR FLOPPY DISK [USB] ...? floppy
BACKUP TYPE [DB] ...? MIS
*** BACKUP OF MISCELLANEOUS FILES ***
Backup misc files from database A or B ...? A
***# of floppies needed depends on size of MIS ***
Continue with backup (Y/N) ...? Y
***Follow the prompts.***

```

Note These instructions are only for LH & MAP systems running on TCPUs:

Database backup to USB flash disk instructions:

UTI ...? **BACK**

BACKUP TO USB OR FLOPPY DISK [USB] ...? <ENTER>

BACKUP TYPE [DB] ...? <ENTER>

*** BACKUP OF DATABASE FILES ***

Database to backup ...? **A**

INDEX NUMBER(1-99) ...? **1**

COMMENT ...? [SN 400099 DBA, 03-17-09]

Continue with backup(Y/N) ...? **Y**

Misc files backup to USB flash disk instructions:

UTI ...? **BACK**

BACKUP TO USB OR FLOPPY DISK [USB] ...? <ENTER>

BACKUP TYPE [DB] ...? **MIS**

*** BACKUP OF MISCELLANEOUS FILES ***

Backup misc files from database A or B ...? **A**

INDEX NUMBER(1-99) ...? **2**

COMMENT ...? [SN 400099, MIS for DBA, 03-17-09]

Continue with backup (Y/N) ...? **y**

Copying Files From Floppy or USB Flash Disks (RESTORE)

The UTILITY RESTORE command copies a configuration database, miscellaneous files, or ACD statistics from backup floppy disks or flash disks (TCPU) to the hard disk in the active Common Equipment shelf.

Notes

Backup floppy disks are created with the BACKUP command.

When you restore a database, you must restore it to a database (A or B) that does not exist on the hard disk. If both database A and B exist on the hard disk, you must delete one before using RESTORE.

When restoring ACD statistics, the system erases all old statistics from the hard disk and copies the backup data from disks. Therefore, when RESTORE is completed, the hard disk contains only the type of intervals contained in the backup version.

To restore *all* miscellaneous files and ACD statistics, you must deactivate both databases. All call processing stops until the restore process is complete and you activate a database. You can restore miscellaneous files when one of the databases is active if you want to restore individual speed dial numbers only.

A restore of a database or individual speed dial numbers causes a redundant update on redundant systems.

For systems using the TCPU processor, a flash disk can optionally be used to backup and restore the system

Examples

The following examples show how to restore the database or Miscellaneous files, using the RESTORE command both with floppy disks and with a USB disk, depending on the backup method used.

```
EDT ...? UTI

UTI ...? RES

...Restore from USB or floppy disk [USB]...? <Enter 'floppy' or 'usb'>
...Restore Type (DB) ...? <Enter>

...DATABASE TO Restore ...? A (or B)

Follow the prompts.
For floppy disks only: Insert the "last" database backup disk first. When
this operation is complete, remove the final disk from the drive.

Note: Restore the database disks only.

For USB Flash Disks only:
... INDEX NUMBER (1-99)...? 1 (the # of the file you backed up to USB)
... Restore the Database (Y/N)...? Y
Follow the prompts.

UTI ...? RES

...Restore Type (DB)...? MIS

...Restore ISD files to database A or B ...? A (or B)

Follow the prompts. Insert the "last" MIS files backup disk first. When
thei operation is complete, remove the final disk from the floppy drive.

UTI ...?
```

The following example shows how to restore the MIS files backed up earlier.

```
EDT ...? UTI

UTI ...? RES

...Restore from USB or floppy disk [USB]...? <Enter 'floppy' or 'usb'>
...Restore Type (DB) ...? MIS
...Restore ISD files to database A or B ...? A (or B)

For USB Flash disks only:
... INDEX NUMBER (1-99) ...? 2 (the # of the file you backed up to USB)
Follow the prompts.

Insert the "last" MIS files backup disk first. When this operation is com-
plete, remove the final disk from the drive.

UTI ...?
```

Deleting a Database (DELETE)

The UTILITY DELETE command removes an inactive configuration database from the system hard disk.

Notes

Deleting a database takes up to 10 minutes, depending on your system and the size of the database. On redundant systems, the system deletes the database from the active shelf and then performs a redundant update to delete the database from the standby shelf.



Caution

The only way to recover a deleted database is to reenter it or restore it from a backup floppy or USB flash disk.

Example

```
EDT ...? UTI
UTI ...? DEL
Database to delete ...? B
Confirm deletion of Database 'B' (YES/NO) ...? YES
... DELETING DATABASE 'B' ...
... PERFORMING REDUNDANT UPDATE OF DATABASE 'B'
... FROM SHELF 1 TO SHELF 2 ...
... REDUNDANT UPDATE OF DATABASE 'B' COMPLETE ...
UTI ...?
```

Testing Database Editing Changes (TEST)

The UTILITY TEST command lets you test the edited version of an active database before you save it on disk (and load it into memory) with the SAVE command.

Notes

Testing a database gives you an opportunity to determine whether the changes entered during an edit session introduce any call processing errors or problems. You can test the changes made in an edit session, as long as none of the changes within the session require a system reboot to save.

When you are done testing your database changes:

- 1 Use the UTILITY UNTEST command to remove the editing changes from memory.
- 2 SELECT the database.
- 3 Use SAVE to save your changes, or KILL to undo the previous editing changes.

Effect on Call Processing

When you enter the TEST command, the system temporarily loads into memory any changes you have made to the database during your edit session. The updated database in memory directs call processing until you remove the changes from memory with the UNTEST command. When the changes are removed, the system uses the version of the database that was originally loaded in memory to process calls. Therefore, TEST and UNTEST do change some call processing functions, but they do not interrupt call processing.

There is always some chance that configuration errors in a database you are testing could bring about a system failure, forcing an automatic reboot. If this occurs, the database will be reloaded into memory in its unedited form, without the changes entered during the suspended edit session. The database status reverts to SUSPENDED EDIT SESSION, the testing ends automatically, and you do not need to end the test with the UNTEST command.

The following example illustrates the status report for a database in test.

```
EDT ...? SHOW
The editor is currently running on Shelf 1.
Shelf      Database A                               Database B
-----
*1 |      NORMAL                               | *TEST IN PROGRESS          |
-----
2 |      NORMAL                               | *NORMAL                    |
-----

+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session
EDT ...?
```

Example

```
EDT ...? UTI
UTI ...? TEST
Confirm test of database 'A' (YES/NO) ...? Y
... STARTING LIVE UPDATE ...
... TESTING DATABASE 'A' ...
UTI ...?
```


Removing a Database Test (UNTEST)

The UTILITY UNTEST command deletes from memory the changes loaded via TEST.

Notes

You must use UNTEST before you can save or delete the changes in the database being tested. However, if a system reboot occurs while testing is in progress, you do not need to use UNTEST.

Effect on Call Processing

After using UNTEST, call processing continues with the version of the database originally loaded into memory.

Example

```
EDT ...? UTI
UTI ...? UNT
Confirm untest of Database 'A' (YES/NO) ...? Y
... REMOVING TEST FROM DATABASE 'A'
... STARTING LIVE UPDATE ...
UTI ...?
```

Performing a Software Reboot (REBOOT)

The UTILITY REBOOT command causes the system to clear all Common Equipment memory and to reload all system software from the hard disk into memory. You can also reboot the system with the hardware reset button.

Notes

Effect on Call Processing

On a non-redundant system, since there is only one Common Equipment shelf, call processing stops until the system finishes rebooting. When rebooting starts, all calls in progress are dropped and you are logged off the system automatically. When rebooting finishes, call processing resumes. Rebooting takes up to 15 minutes, depending on your system.

On a redundant system, only the active Common Equipment shelf reboots and control of the system shifts to the standby shelf (which now becomes the active shelf). You are automatically logged off the system when rebooting begins. At the time of the switchover from the active shelf to the standby shelf, calls being set up are dropped, but calls in conversation are not dropped. The shelf that is rebooted cannot function as a standby shelf until rebooting has finished.

When the shelf finishes rebooting, it gains standby status. If you wish to reboot the other shelf (now active) as well, follow the procedure for rebooting a second time. Control of the switch will be restored to the original shelf.

Examples

- 1 The following example illustrates a reboot on a non-redundant system.

```

EDT ...? UTI
UTI ...? REB

                * * * W A R N I N G * * *

If you answer 'Y' to this prompt, call processing will stop until the shelf has
fully booted. Be certain that this is tolerable. If not, enter 'N' at this
prompt.

                * * * W A R N I N G * * *

Confirm system reboot (YES/NO) ...? Y

```

- 2 The following example illustrates the system warnings when you try to reboot a redundant system in which the standby shelf is unavailable.

```
EDT ...? UTI
UTI ...? REB

      * * * W A R N I N G * * *

Rebooting this shelf will cause a switchover. Stable calls will not be affected
but calls not in conversation will be dropped. Be absolutely certain that this
is tolerable.

      * * * W A R N I N G * * *

Confirm system reboot (YES/NO) ...? Y

      * * * W A R N I N G * * *

The other shelf is not processing calls at this time. If you answer 'Y' to this
prompt both shelves will be down and call processing will stop until one of the
shelves has fully booted. Be certain that this is tolerable. If not, enter 'N'
at this prompt and use the SHOW command at the 'EDT ...?' prompt to determine
when the other shelf has finished booting. To do this, enter SHOW every five
minutes or so until the database status on the other shelf is something other
than:

      `(shelf unavailable)`

At that point the other shelf will have fully booted and will be processing
calls. Then this shelf may be rebooted and a switchover will occur, dropping
only calls in setup.

      * * * W A R N I N G * * *

Confirm system reboot (YES/NO) ...? Y
```

Recovering an Aborted Edit Session (RECOVER)

The UTILITY RECOVER command lets you re-execute, finish, or abort any utility command or edit session that did not complete normally due to a system reset.

Notes

You must use RECOVER if the system resets while you are editing a database or when you are using any of the utility commands. After a system reset, you can use the SHOW command to see if any problems occurred because of the reset.

Table 5-F describes what RECOVER does when an editing session or utility command has been interrupted by a system reset:

Table 5-F. Results of RECOVER

Interrupted Task	What RECOVER Does
BACKUP	Gives you a choice of aborting or re-executing the operation
COPY	Aborts the operation if it wasn't complete before the reset
CREATE	Gives you a choice of aborting or re-executing the operation
DELETE	Re-executes the operation
edit session	Gives you a choice of aborting or re-executing the operation
EXIT in an edit session	Re-executes the operation
KILL in an edit session	Re-executes the operation
REDUNDANT UPDATE	Re-executes the operation
RESTORE	Gives you a choice of aborting or re-executing the operation
SAVE in an edit session	Re-executes the operation

On redundant systems, a redundant update is performed automatically after a recovery, if necessary.

The time it takes to recover an edit session depends on how much information was entered during the edit session. Once the recovery is complete, you can resume your edit session.

Examples

- 1 The following example illustrates a recovery of a backup.

```
EDT ...? UTI
UTI ...? REC
Database to recover ...? A
The backup did not complete due to an unexpected termination. At this time, you
may re-execute the backup or cancel it. Re-executing the backup will start it
from the beginning. Canceling the backup will return to the UTI prompt.
Re-execute backup (YES/NO) ...? Y
```

- 2 The following example illustrates the recovery of an edit session.

```
EDT ...? UTI
UTI ...? REC
Database to recover ...? A
The last edit session of this database ended in an abnormal manner. The changes
made in the last edit session of this database have been recorded. Answering 'Y'
or 'YES' to this prompt will cause the edit session to resume where it left off.
Answering 'N' or 'NO' will kill these changes. If a control-z is entered during
recovery the editor will abort allowing you to recover again later. Enter
control-z now to postpone edit session recovery.
Resume the edit session (YES/NO) ...? Y
*** THIS IS THE LAST LINE ENTERED BEFORE THE EDIT ***
*** SESSION ENDED ABNORMALLY. IT WILL NOT BE EXECUTED. ***
--> ROU LIS ALL
Press RETURN to start the recovery ...?
... RESUMING EDIT SESSION OF DATABASE 'A' ...
```

Updating a Redundant Database (REDUNDANT)

The UTILITY REDUNDANT UPDATE command updates a database on one shelf to match the database on the other shelf. In most cases the system handles updates automatically.

Notes

The system automatically performs redundant updates when you end an edit session with the SAVE command and when you use the ACTIVATE, COPY, CREATE, DEACTIVATE, DELETE, RECOVER, or RESTORE commands.

The situations in which you will need to use REDUNDANT UPDATE are:

- when you edit and SAVE a database on the standby shelf and need to update the active shelf
- when the system is unable to perform an automatic redundant update, for example, when the redundant shelf is in the process of rebooting
- after installing a new software release (occasionally)

The status report that appears when you start EDT and in the SHOW command uses the + symbol to indicate that the databases on the two shelves do not match. In the example below, even though the status of Database A is NORMAL on both shelves, the database is not identical on both shelves.

```
EDT ...? SHOW
The editor is currently running on Shelf 1.
Shelf      Database A                                Database B
-----
*1 |   NORMAL                                | *NORMAL                                |
-----
2 |  +NORMAL                                | *NORMAL                                |
-----
+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session
EDT ...?
```

In the above example, you can use REDUNDANT UPDATE to update shelf 2 to shelf 1 or update shelf 1 to shelf 2, although it is likely that shelf 2 has the most recent changes as indicated by the + symbol. After a redundant update, the + symbol will disappear from the status report, indicating that the database is currently the same on both shelves.

In the next example, the + symbol appears on both shelves for the same database. This report occurs when the database is changed on one shelf

without a redundant update and then the database is changed on the other shelf without a redundant update.

```

EDT ...? SHOW
The editor is currently running on Shelf 1.
Shelf   Database A                               Database B
-----
*1 | +NORMAL                                     | *NORMAL |
-----
2 | +NORMAL                                     | *NORMAL |
-----

+ - Database has not been redundantly updated to the other shelf
* - Database/shelf is active
R - System must be reset to save the edit session

EDT ...?

```

In this situation, you can also update shelf 2 to shelf 1 or update shelf 1 to shelf 2. The decision should be based on which version of the database you want to keep.

Effect on Call Processing

A redundant update from the standby shelf to the active shelf does not cause any interruption to call processing if you do not update the active database. If you update the active database, the active shelf automatically reboots. Rebooting the active shelf causes call processing to switch over to the standby shelf, and you are logged off the system. Calls in set-up are dropped at the time control of the system switches to the standby shelf. Calls already in conversation or on hold are not dropped. Once the switchover has occurred, the shelf (which is no longer active) is updated. Redundant shelf backup for the system is lost until rebooting is completed.

A redundant update from the active shelf to the standby shelf does not cause any interruption in call processing. However, if you update the active database, the standby shelf automatically reboots. Rebooting the standby shelf causes the shelf to lose its standby function for the time it takes to reboot.

Example

```
EDT ...? UTI
UTI ...? RED
Name of database to update ...? B
You are currently on shelf 1.
Direction of redundant update (1-2 or 2-1) ...? 1-2
During this redundant update, shelf 2 will be rebooted.
Confirm redundant update (YES/NO) ...? Y
... PERFORMING REDUNDANT UPDATE OF DATABASE 'B' ...
... FROM SHELF 1 TO SHELF 2 ...
... REDUNDANT UPDATE OF DATABASE 'B' COMPLETE ...
... REBOOTING DESTINATION SHELF ...
UTI ...?
```


Installing a New Software Release (RELEASE)

The UTILITY RELEASE command copies a new release (version) of software from floppy disk or USB flash disk to the system hard disk.

Using RELEASE

The instructions in this section describe UTI RELEASE in general. For specific instructions on loading a new software release, see the instructions in your release kit.

Important Note Some point releases require that you execute special commands such as CONVERT or COUNTS during the installation process. The following procedure includes these commands, although you may not need to run them.

Non-Redundant Systems

- 1 Log off the system.
- 2 Log on to the system.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 3 Enter the **EDT** command.
- 4 In EDT, enter the **UTI** command.
- 5 In UTI, enter the **RELEASE** command.
- 6 Insert the first floppy and press RETURN.
- 7 Follow the prompts for each disk in the disk set.
- 8 Enter **EXIT** to exit UTI.
- 9 Enter **SELECT** to open a database.

If the system reports update messages, enter the **SAVE** command to save the update.

- 10 If CONVERT is required by the release you are loading, **SELECT** the same database again, enter the **CONVERT** command, and then enter the **SAVE** command.

Note If you did not have to save an update in Step 9, you do not have to select the database before running CONVERT.

- 11 If COUNT is required by the release you are loading, **SELECT** the same database, enter the **COUNT** command, enter **OPT** to check options counters, and then enter the **SAVE** command.

To complete running COUNT, **SELECT** the same database, enter the **COUNT** command, enter **REF** to check reference counters, and then enter the **SAVE** command.

- 12 Enter **EXIT** to exit EDT.
- 13 Enter **EXIT** to log off the system.
- 14 Log back on to the system.
- 15 Enter the **EDT** command.
- 16 In EDT, enter the **UTI** command.
- 17 In UTI, enter the **REBOOT** command.

Redundant Systems

- 1 Log off the active shelf.
- 2 Log on to the system.
 - Enter **CTRL+C**.
 - Enter your user name.
 - Enter your password.
- 3 Enter the **EDT** command.
- 4 In EDT, enter the **UTI** command.
- 5 In UTI, enter the **RELEASE** command.
- 6 Insert the first floppy and press RETURN.
- 7 Follow the prompts for each disk in the disk set.
- 8 Enter **EXIT** to quit UTI.
- 9 Enter **EXIT** to quit EDT.
- 10 Enter **EXIT** to log off the system.
- 11 Connect the system administration terminal to the UART on the standby shelf.
- 12 Log on to the standby shelf.
- 13 On the standby shelf, repeat Step 3 through Step 10.
- 14 Disconnect the cable from the UART and reconnect the system administration terminal to the appropriate connection on the active shelf.

- 15 Log on to the active shelf.
- 16 Enter the **EDT** command.
- 17 Enter **SELECT** to open the active database.

If the system reports update messages, enter the **SAVE** command to save the update. If the system displays a warning that the save requires a simultaneous double reset, enter **Y** to confirm the double reset.

- 18 If **CONVERT** is required by the release you are loading, **SELECT** the same database again, enter the **CONVERT** command, and then enter the **SAVE** command.

Note If you did not have to save an update in Step 9, you do not have to select the database before running **CONVERT**.

- 19 If **COUNT** is required by the release you are loading, **SELECT** the same database, enter the **COUNT** command, enter **OPT** to check options counters, and then enter the **SAVE** command.

To complete running **COUNT**, **SELECT** the same database, enter the **COUNT** command, enter **REF** to check reference counters, and then enter the **SAVE** command.

After you enter the **SAVE** command, the system saves the database to the standby shelf, reboots the standby shelf, and returns you to the EDT ...? prompt.

- 20 Enter the **UTI** command.
- 21 Enter the **REBOOT** command to reboot the active shelf.

Notes

After using **RELEASE**, you need to perform a reboot so that the system uses the newly installed file(s).

The system will tell you if a newly installed release requires you to run **CONVERT** or manually reset Attendant Workstations/EAWS.

Example

Exiting EDT

To exit EDT:

At the EDT ...? prompt, type **EXI** and press RETURN.

EXIT terminates the Configuration Editor program and returns you to the ADMIN ...? prompt.

```
EDT ...? EXIT
      Exiting the Configuration Editor (EDT) program.
ADMIN ...?
```

Creating a Database

This section explains:

- how to use the configuration data forms
- how to create a database
- the correct order for entering configuration data
- how to modify an existing database

Configuration Data Forms

Whenever you are creating a new configuration database, you should transcribe the data from a completed set of configuration data forms completed by the system administrator. Blank forms are provided in the Configuration Data Forms Manual.

Each data form contains information for one of the database tables in the database. Some database tables have one associated data form and others have a set of associated data forms. The data forms are designed to accommodate a large variety of applications and therefore you may not need to use all of the forms.

Once you open the appropriate database table and enter an appropriate editing command (such as ADD), the editor prompts you for configuration data. Most configuration data appears on a data form in approximately the same sequence it is requested by the editor prompts.

System configuration requires careful planning. Transcribing call processing information from the completed data forms ensures desired call processing functions and helps prevent configuration errors. Working from a completed set of data forms also saves you from having to backtrack or interrupt an editing session in order to obtain or verify information.

You may not need data forms if you plan to make minor modifications to an existing configuration database. You should be aware, however, that many editor tables are interdependent, and therefore a change in one database table may require adjustments in other tables.

Creating a New Configuration Database

- 1 Create an empty database with the CREATE command.
- 2 Open the newly created database with SELECT.

- 3 Enter configuration data from the data forms into the database tables. Data must be entered into the tables in a specific order as explained in the Introduction of the Database Configuration Manual.
- 4 Save the data you have entered with SAVE.

Note You can EXIT any number of times and reaccess the database using SELECT, before you use SAVE. However, when you are making many adds or changes, it is recommended that you save several times during the edit session.

- 5 Activate the database for call processing using ACTIVATE. (ACTIVATE will cause the system to reboot both shelves of a redundant system.)

Note Part of configuring your database is configuring Data, System Devices, and Logical Devices tables for the Administrative DCA to which the system administration terminal will be connected. After you activate your database, you should remove the cable connected to the UART on the CPU and connect it to the Administrative DCA configured for the system terminal.

Correct Order for Entering Configuration Data

When you are entering data into a new database, you should configure the database tables in the order in which you filled out the forms. Some tables must be configured before others because they contain information that is required in configuring other tables. For example, the Feature Class table must be configured before the Class of Service table because each class of service must be assigned a feature class.

Some tables must be configured using a two-pass method. Some of the information on the associated data form(s) is entered at one stage (the first pass), and the rest of the information is entered at a later stage (the second pass). The two-pass method is used to keep you from being caught in loops between interdependent database tables.

The order for configuring database tables is listed in the Introduction chapter of the Database Configuration Manual.

Modifying an Existing Configuration Database

You may modify any part of an existing configuration database stored on disk. Call processing is not affected during the time that you edit a database, even if the database is currently activated for the system.

The active database is loaded in memory, whereas all editing occurs on disk. When you use the SELECT command, the system creates a working copy of the selected database on disk. While you edit the working copy, the unedited version also remains stored on disk. The system replaces the

original copy on disk with the edited copy of the database only when you end your edit session with the SAVE command.

Whenever you modify an existing database, the data included in the various database tables must all be coordinated to maintain a working system. In some cases, a change in one table may require changes in other tables as well. In other cases, a change in one table may not require changes in any other tables, but it may nevertheless affect how other tables function.

For example, if you change the configuration of a Feature Class, the Classes of Service that have that Feature Class assigned to them will also be affected. In addition, the changes to those Classes of Service can affect anything that uses Class of Service such as extensions, trunk groups, authorization codes, authorization code parameters, facilities, speed dial lists, or the equal access table.

To modify a database:

- 1 SELECT the database you want to modify.
- 2 Access the tables in which you want to add, modify, or delete data.

If you are adding data, you should follow the order for entering data in a new database.

- 3 End the edit session using EXIT, KILL or SAVE.

In some cases the system will load changes you have made to the active database into memory when you enter the SAVE command. In other cases, however, saving changes to the active database requires the system to reboot. You will be warned during your edit session if the system must reboot in order to save your changes. For details on the SAVE command, see *Saving a Database Edit Session (SAVE)* on page 5-16. You might want to EXIT and use SAVE at a more convenient time.

You can also test your changes by exiting and using the TEST command. See *Testing Database Editing Changes (TEST)* on page 5-44 for information about TEST.

6

Alarms (ALM)

This chapter explains how to use the Alarms (ALM) administration program to set up alarm reporting and view Alarm History files. It contains the following sections:

- *ALM Program Overview* on page 6-2 gives a general overview of the Alarms Control (ALM) program.
- *Setting Up a Dedicated Alarm Reporting Device* on page 6-7 explains how to set up a terminal or printer to capture alarm output.
- *Starting ALM* on page 6-8 explains how to start ALM.
- *Using ALM Commands* on page 6-9 describes the ALM commands.
- *Exiting ALM* on page 6-26 explains how to exit ALM.
- *Alarm Reports* on page 6-27 explains the format of alarm text.

If you want information on how to use ALM to locate and fix faults, see the *Alarm Fault Locating* chapter of the Service Manual.

ALM Program Overview

The Alarms (ALM) program monitors all internal software communication and hardware operating parameters. If it detects a malfunction, it records information about the failure in an Alarm History file and sends an alarm to an output device such as a terminal or printer. ALM also has commands that let you retrieve, report, and modify the output data.

Figure 6-1 illustrates ALM processing.

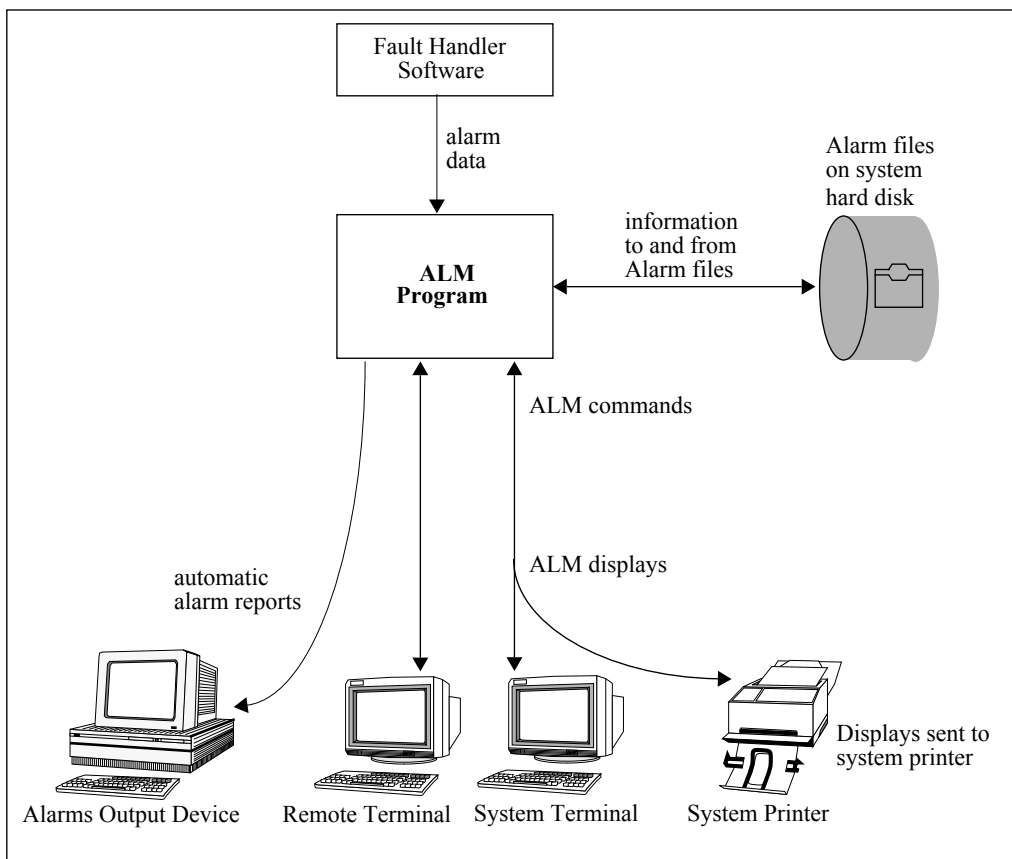


Figure 6-1. ALM Processing

Alarm Files

ALM maintains two files on the system hard disk: an Alarm History file and Reset History file. The Alarm History file contains a history of all alarms and holds a maximum of 800 records. The Reset History file contains a history of resets and holds a maximum of 225 records. ALM stores alarm records in the order they occur and when the maximum number of records is reached, it starts overwriting the oldest records in the files.

On redundant systems, ALM maintains Alarm and Reset History files on both standby and active shelves.

ALM Output

ALM offers various ways of reporting alarm activity.

Automatic Reports

The ALARMS logical device in the Logical Devices table of the System Editing tables allows you to set up automatic reporting of alarm activity at any designated output device. When ALM stores an alarm record in the Alarm History file, it sends a copy of the record to the alarms output device. ALM also sends a copy of the alarm summary report to the same output device, if you have scheduled the report in the SCHEDULE command.

An example of an automatic report is shown below.

```
## MINOR  ACTIV 1  PORT      ALARM 001  count = 00001  15-MAY-1991 11:40:55 WED
PORT 04-02-01 Seizure Failure

## MINOR  ACTIV 1  PORT      ALARM 001  count = 00002  15-MAY-1991 11:41:13 WED
PORT 04-02-03 Seizure Failure

INFO  ACTIV 1  PORT      ALARM 002  count = 00002  15-MAY-1991 11:43:53 WED
PORT 03-19-08 Board type does not match configured device type

## MINOR  ACTIV 1  PORT      ALARM 004  count = 00003  15-MAY-1991 11:47:56 WED
PORT 03-03-07 Telephony board returned to service

## MINOR  ACTIV 1  PORT      ALARM 004  count = 00004  15-MAY-1991 11:47:58 WED
PORT 03-19-07 Telephony board returned to service
```

See *Viewing the Last Alarm Summary Report (SUMMARY)* on page 6-17 for an example of the summary report.

See *Alarm Reports* on page 6-27 for an explanation of the format used for alarms.

See *Setting Up a Dedicated Alarm Reporting Device* on page 6-7 for information on setting up an alarms output device.

On Demand Reports

The ALM DISPLAY, SUMMARY, and STATUS commands let you view alarm activity at a system terminal.

- DISPLAY lets you view the contents of the Alarm and Reset History files.
- SUMMARY displays a copy of the latest summary report.

- STATUS displays the status of alarms.

You can use the PRINT command to send to the system printer any displays that appear on the system terminal. If your system is configured to report alarms at the system printer, alarms will not print at the system printer while the PRINT command is active. ALM will hold alarms in a buffer and print them at the printer when you enter NOPRINT.

Modifying Alarm Output

ALM allows you to control alarm reports by suppressing the types of alarms that are reported and by modifying actual alarms.

It is important to note that some of the changes you make to alarm output are reset to the system defaults when you install a new release that has a new alarm database.

Suppressing Alarms

Two commands affect the reporting of alarms:

- The DISABLE command suppresses reporting of particular alarms in the Alarm History file and in ALM reports.
- The SET command suppresses printing of alarm types in ALM reports. ALM will still report the alarm types in the Alarm History file.

Figure 6-2 (page 6-6) shows how the various ALM commands affect alarm reporting.

Modifying Alarms

The MODIFY command lets you:

- modify alarm text
- change how often an alarm is reported
- change the severity level (type) of an alarm

Alarms You Might Want to Modify

- There are some alarms you might want to modify.



WARNING

Never change an alarm to the severity of NMI.

Alarm Type or Severity

The Alarm History file contains NMI, Major, Minor, and Info alarms and diagnostic messages.

- NMI (Non-Maskable Interrupt) alarms are alarms that cause a shelf reset. An example of an event that causes an NMI alarm is a hard disk failure.
- Major alarms normally appear for either power or common equipment related problems, failures that represent a potential catastrophe such as loss of power to a common equipment shelf. The loss of large groups of ports may also cause major alarms. Do not ignore major alarms. Ignoring a major alarm could result in damage to the equipment or seriously affect the function of the switch. Teltronics recommends that you allow the reporting of most major alarms.
- Minor alarms typically depict problems in an isolated area of the switch such as the loss of an interface (telephony) board. Ignoring a minor alarm could lead to more serious problems or affect the function of the switch in a minor way, but generally can safely be ignored. Teltronics recommends that you allow the reporting of most minor alarms.
- Information (Info) alarms pertain to a very small or isolated portion of the switch as in one circuit or port. In most cases these events do not affect the functional state of system software. As a result, you can turn off reporting of information alarms (using SET) during normal use.
- Diagnostic messages report unusual diagnostic results that need to be interpreted by engineers and are not necessarily a problem. Reporting of diagnostic messages should be disabled (using the ALM DXENABLE command in the ALM program) during normal use.

When a switch is powered up after installation, the system might generate an unusual amount of alarms. Most of these alarms will indicate missing boards, database errors, and other problems associated with start-up. After solving these problems, alarm output should stabilize, and you may want to change alarm reporting so that ALM reports NMI, major, or minor alarms only.

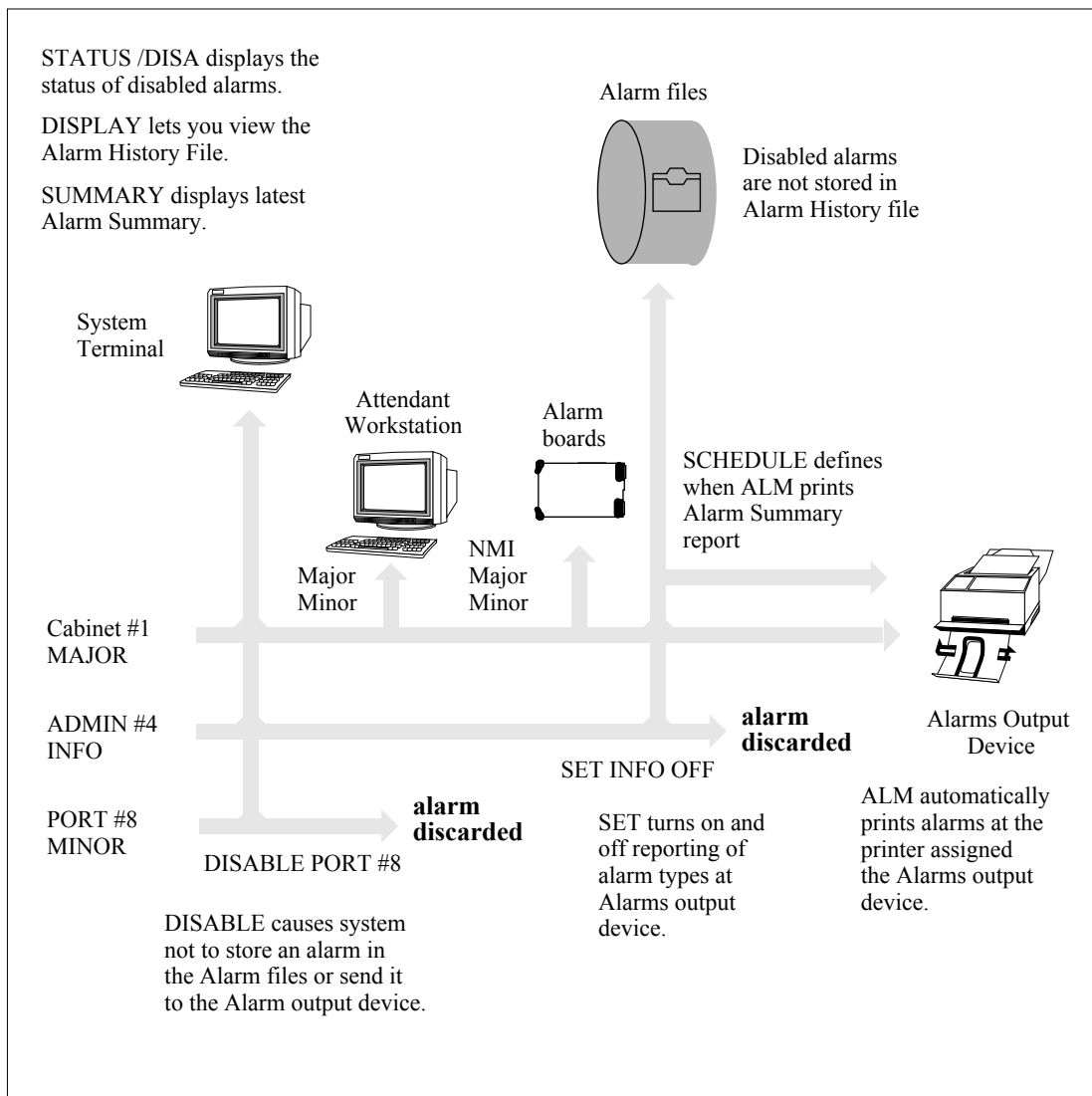


Figure 6-2. Alarm Reporting and ALM Commands

Setting Up a Dedicated Alarm Reporting Device

To send alarms to an output device dedicated to reporting alarms, you must install and configure the device. The output device may be a terminal, printer, or personal computer with terminal emulation.

Follow instructions in the Installation Manual for installing an Administrative DCA and the connected device. Brief instructions for configuring the DCA are listed below; for more detailed configuration instructions, see the Data and System Editing Tables sections of the Database Configuration Manual.

To configure a traffic reporting device connected to an Admin. DCA in the Configuration Editor:

- 1 Configure a Digital Line Unit in the Boards table.
- 2 Configure a Data Control table for the Admin. DCA. The equipment type is 1 for a terminal/terminal emulator and 2 for a printer.
- 3 In the System Devices table of the System Editing tables, assign a device number to the DCA.
- 4 In the Logical Devices table of the System Editing tables, assign the ALARMS logical device to the device number configured in step 3.

ALARMS Logical Device

ALM sends automatic alarms reports to the physical device defined as the ALARMS logical device in the Logical Devices table. It also sends a copy of the alarm summary report to the same output device, if you have scheduled the report in the SCHEDULE command.

You can assign the ALARMS logical device to an output device operating as a system terminal or printer. In this case, alarms appear when you are not logged on to the terminal or when the PRINT command is not in effect at the system printer.

Starting ALM

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **ALM** and press RETURN.

ALM displays the following message and the ALM ...? prompt, from which you can enter any of the ALM commands. (If your password does not allow access to ALM, the system displays a message telling you that you have insufficient privileges.)

```
Welcome to the Teltronics Alarms Control Program
```

```
The Alarms Control (ALM) program allows you to display, enable, or disable any alarm, or group of alarms, in the system. You can also use this program to browse through the Alarm History file. If you need information on how to use ALM or any of its commands, you can enter 'HELP' at any prompt.
```

```
ALM ...?
```

Using ALM Commands

This section explains how to:

- get a list of alarm categories (CATEGORIES)
- display the Alarm text file (LIST)
- display the contents of Alarm files (DISPLAY)
- display the status of alarms in the system (STATUS)
- view the last alarm summary report (SUMMARY)
- schedule an alarm summary report (SCHEDULE)
- turn on and off reporting of alarm types (SET)
- turn off reporting of alarms (DISABLE)
- restore disabled alarms (ENABLE)
- turn on and off reporting of diagnostic messages (DXENABLE)
- modify the text, severity, and threshold of alarms (MODIFY)
- check system reporting parameters (SHOW)

Before You Start

To use many of the ALM commands, you must have a listing of alarm categories and alarm numbers. Therefore, the first things you should do in ALM are:

- Use the CATEGORIES command to get a listing of alarm categories in your system.
- Use the LIST command to get a listing of alarm numbers in your system.

Listings are not provided in this chapter because the alarm categories and alarms vary between systems and software releases.

Getting a List of Alarm Categories (CATEGORIES)

The CATEGORIES command displays a list of alarm categories and the number of alarms in each category.

Notes

Some of the ALM commands prompt you for an alarm category. You should print a copy of the output from this command for help with these prompts. You can use the PRINT command to send the list to the system printer.

Example

```
ALM ...? CAT
-----
Num   Name           # Defined Alarms
-----
  1   CABINET       [80 alarm(s)]
  2   PORT          [10 alarm(s)]
  3   GROUP         [14 alarm(s)]
  4                   [0 alarm(s)]
  5   ADMIN         [5 alarm(s)]
  6   FLT           [13 alarm(s)]
  7   MAP           [10 alarm(s)]
  8   TCTMAIL      [17 alarm(s)]
ALM ...?
```

Displaying the Alarm Text File (LIST)

The LIST command displays the alarm text for the specified alarm.

Notes

Some of the ALM commands prompt you for an alarm number. You should print a copy of the output from this command for help with these prompts. You can use the PRINT command to send the list to the system printer.

Example

The following example displays alarm 17 in the Cabinet category.

```
ALM ...? LIS
Alarm Category [ALL] ...? CABINET
Alarm Number [ALL] ...? 17
Num  Text                                     Static Info
-----
  17 Ringing Generator, Cabinet 1             MAJOR:NONE
ALM ...?
```

In the example, Num is the number assigned to an alarm within a category, Text is the description of the alarm, and Static Info is the severity and frequency of the alarm.

Displaying the Contents of the Alarm Files (DISPLAY)

The DISPLAY command displays the contents of the Alarm History file and the Reset History file.

Notes

DISPLAY always reports the dates and times of the first and last records in the Alarm History file, regardless of what DISPLAY options you specify.

You can use the CTRL+Z command to stop a display.

Display Options

Table 6-A. Display Options

Option	What it Does
<code>/AFTER dd-mm-yy [hh:mm:ss]</code>	Displays information collected after a date and optional time (see <i>Date and Time Formats</i> , below)
<code>/BEFORE dd-mm-yy [hh:mm:ss]</code>	Displays information collected before a date and optional time (see <i>Date and Time Formats</i> , below)
<code>/ACTIVE</code>	Displays information from the Alarm History file on the active shelf
<code>/STANDBY</code>	Displays information from the Alarm History file on the standby shelf
<code>/PORT shelf-slot-circuit</code>	Displays a summary of activity associated with the specified circuit
<code>/RESET</code>	Displays contents of Reset History file. You can use other options with this option to see reset history for a particular time or particular shelf.

Date and Time Formats

The following rules apply for entering date and time with /AFT and /BEF options:

- The formats for entering date and time are listed in Table 6-B. Optional information is shown in square brackets ([]).
- Entering time is optional. When you don't enter a time, ALM assumes a time of 00:00:00 (12:00 am).
- If you enter /AFT or /BEF as a single option, you do not have to specify date and time because the system will prompt for date and time.

- You can use /AFT or /BEF together to specify a beginning and ending period for a display.

Table 6-B. Date and Time Formats

Date/Time Formats	Explanation		Examples
<i>mm-dd-[yy]yy</i> <i>dd-mmm-[yy]yy</i>	<i>mm</i> <i>mmm</i> <i>dd</i> <i>[yy]yy</i>	month (1-12) month (JAN-DEC) day (1-31) final 2 or 4 digits of the year	04-03-94 04-03-1994 03-APR-94
<i>hh[:mm][:ss]</i>	<i>hh</i> <i>mm</i> <i>ss</i>	hour (00-23) <i>optional</i> minute (00-59) <i>optional</i> second (00-59)	08:24:20 08:24 08

Displays From Active and Standby Shelves

On a redundant system, the system maintains a separate Alarm History file on each system hard disk. When shelf 1/CC-1 is active, ALM writes alarm records in the Alarm History file on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes records in the Alarm History file on shelf 2/CC-2. When you use DISPLAY, ALM reads all records from the Alarm History files on shelves 1/CC-1 and 2/CC-2 and displays them in chronological order in the output.

If you use one shelf more often than the other and ALM overwrites records in the Alarm History file on that shelf, you might find a time gap in some of your output displays. For example, if shelf 1/CC-1 was used May 1–5 and shelf 2/CC-2 was used May 6–20 and ALM started overwriting records on shelf 2/CC-2 on May 10, output from DISPLAY ALL would contain information for May 1–5 and May 10–20. The display would not contain records for May 6–9.

Examples

- The following example uses the /AFT option to display alarms that occur after April 22, 6:00am.

```
ALM ...? DISP
Enter Display Options [ALL] ...? /AFTER 4-22-91 6:00
--- Active Alarm History (Shelf 1)
--- Earliest: 20-APR-1991 16:43:15 SAT   Latest: 25-APR-1991  8:00:53 THU
## MINOR  ACTIV 2  PORT      ALARM 001  count = 00001  22-APR-1991  7:40:55 MON
   PORT 04-02-01 Seizure Failure
## MINOR  ACTIV 2  PORT      ALARM 001  count = 00002  22-APR-1991  7:41:13 MON
   PORT 04-02-01 Seizure Failure
INFO  ACTIV 2  PORT      ALARM 002  count = 00002  22-APR-1991  7:43:53 MON
   PORT 03-19-08 Board type does not match configured device type
--- Done. 3 records displayed out of 1000 on file.
ALM ...?
```

- The following example displays alarms recorded in the Alarm History file for circuit location 3-1-8 during the period April 22 to April 24.

```
ALM ...? DISP /PORT 03-01-08 /AFTER 4-22-91 /BEFORE 4-24-91
--- Active Alarm History (Shelf 2)
--- Earliest: 20-APR-1991 16:43:15 SAT   Latest: 25-APR-1991  8:00:53 THU
## MINOR  ACTIV 2  ARCTL    ALARM 011  count = 00001  23-APR-1991 11:57:23 TUE
   Port failed device audit, xfer to Device-Failure  FROM TIS_____
   17 0087 03-01-08 0000 0000 0000 0087 0000 0537
--- Done. 1 record displayed out of 1000 on file.
ALM ...?
```

- The following example illustrates the contents of the Reset History file.

```
ALM ...? DISP /RESET /AFT 04-16-91 /BEF 04-17-91
--- Reset Alarm History
--- Earliest: 13-APR-1991 16:43:15   Latest: 25-APR-1991  8:00:53

Alarm   Alarm
Date    Time    ACT SBY          Event
-----
16-APR-1991 18:05:04  -  -  Active shelf reset due to editor requested reboot
16-APR-1991 18:41:12 CC-1 -  -  ----- NVRAM DATA -----
   Active shelf reset due to editor requested reboot
   INT=237 CODE=0 SLOT=6
   TIME= 4-16-91 18:36:22
   ADDR=0000:0000:0000
16-APR-1991 18:41:12 CC-1 -  -  Shelf CC-1 is now active
--- Done. 3 records displayed out of 225 on file.
ALM ...?
```

Displaying the Status of Alarms in the System (STATUS)

The STATUS command reports the current status of alarms.

Notes

Unlike other ALM commands, STATUS does not prompt you for additional parameters or options. Therefore, you must enter information with the STATUS command to specify what you want to see, using the format shown below.

STATUS *alarm-category alarm-number option*

The *option* is an optional option listed in Table 6-C. If you enter STATUS by itself, ALM assumes an option of /ON. If you enter STATUS with a number and/or category, but no option, ALM assumes an option of /REPORTED.

Table 6-C. STATUS Options

Option	Description
/DISABLED	Displays the status of alarms disabled in DISABLE
/FULL	Displays the status of every alarm in every category
/LOST	Displays the status of lost alarms. Occasionally, many alarms occur at once and the system cannot record all of the alarms in the Alarm History file. In this case, ALM collects alarms in a buffer, writes as many as possible to the Alarm History file, and drops those with the least severity. Alarms that have been dropped in this way are referred to as lost alarms.
/ON	Displays only those alarms that report error conditions in progress and that are currently ON. Some error conditions, such as a cabinet power failure, cause the system to report an alarm that stays “on” until the condition is eliminated, at which time the alarm is turned “off”. See example 2.
/REPORTED	Displays the status of alarms that have been reported in the Alarm History file

To get a list of alarm categories, use the CATEGORIES command; to get a list of alarm numbers, use the LIST command.

You can use the CTRL+Z command to stop a status display.

Viewing the Last Alarm Summary Report (SUMMARY)

The SUMMARY command displays the last generated alarm summary report at the system terminal.

Notes

ALM sends an alarm summary report to the Alarms output device at the time specified in the SCHEDULE command. You can view the contents of the summary report at a system administration terminal after it has been sent to the Alarms output device.

Example

The following example illustrates an alarm summary report. The report shows Cabinet alarms which are currently ON, indicating error conditions in progress. Some error conditions, such as a cabinet power failure, cause the system to report an alarm that stays "on" until the condition is eliminated, at which time the alarm is turned "off".

```

ALM ...? SUM

                ALARM SUMMARY - 25-APR-1991 13:00:01 THU
-----
## MAJOR CABINET Alarm # 013 Count = 00001, currently ON
## MAJOR CABINET Alarm # 014 Count = 00001, currently ON
## MINOR PORT Alarm # 010 Count = 00001
## MINOR ADMIN Alarm # 001 Count = 00001, currently OFF
    DIAG DCACTL Alarm # 004 Count = 00005
    DIAG LINECTL Alarm # 002 Count = 00003
    DIAG COLUNCON Alarm # 013 Count = 00003
    DIAG RATRAFFIC Alarm # 009 Count = 00022
    DIAG FSMAIN Alarm # 017 Count = 00001
## MAJOR REX Alarm # 001 Count = 00001
    INFO DOWNCTL Alarm # 042 Count = 00027
## MAJOR RESET Alarm # 001 Count = 00001
## MAJOR RESET Alarm # 002 Count = 00001
    DIAG COLMAIN Alarm # 028 Count = 00006
    DIAG COLMAIN Alarm # 029 Count = 00005
    INFO RTUCTL Alarm # 004 Count = 00001
    INFO RTUCTL Alarm # 007 Count = 00001
    DIAG CONFCTL Alarm # 007 Count = 00001

ALM ...?

```

Scheduling an Alarm Summary Report (SCHEDULE)

The SCHEDULE command lets you schedule the time you want ALM to generate a summary report.

Notes

ALM sends the summary report to the Alarms output device at the time you specify until you enter SCHEDULE OFF.

The summary report contains a history of alarm messages since the previous report time (or 24 hour period). For example, if you schedule a summary for 13:00 and then reschedule a summary at 16:00, the summary report at 16:01 will contain all alarm messages between 1:00 pm and 4:00 pm.

After generating a summary report, ALM resets the alarm counts on the active shelf to 0.

To see a copy of the last generated summary report at the system terminal, use the SUMMARY command.

Example

The following example schedules a summary report for 1:00 pm.

```
ALM ...? SCH
Summary Report Time [HH:MM] or 'OFF' ...? 13:00
Summary Report Time scheduled
ALM ...?
```

See *Viewing the Last Alarm Summary Report (SUMMARY)* on page 6-17 to see an example of an alarm summary report.

Turning On and Off Reporting of Alarm Types (SET)

The SET command turns on and off reporting of Info, Major, Minor, and NMI alarm types at the Alarms output device. Alarm types that have been SET OFF are still stored in the Alarm History file.

Notes

The SHOW command displays what alarms types are currently turned on or off by the SET command.

Example

The following example turns off reporting of Info alarms.

```
ALM ...? SET
Alarm Type to Set ...? INFO
ON or OFF [ON] ...? OFF
INFO alarms will now NOT be printed
ALM ...?
```

Turning Off Reporting of Alarms (DISABLE)

The DISABLE command turns off reporting of specific NMI, Major, Minor, or Info alarms at the Alarm output device *and* in the Alarm History file. DISABLE also prevents activation of corresponding alarm relays.

Notes

To get a list of alarm categories, use the CATEGORIES command; to get a list of alarm numbers, use the LIST command.

If you still want alarms to be stored in the Alarm History file, but don't want them printed at the ALARMS output device, use the SET command instead.

To see activity associated with disabled alarms, use the STATUS command with the DISABLED option.

If you decide to disable alarms, Teltronics recommends that you monitor alarm output for a few days first. The report from SUMMARY is useful in tracking the history of alarm activity.

Example

```
ALM ...? DISA
Alarm Category ...? CABINET
Alarm Number [ALL] ...? 1
Alarm disabled
ALM ...?
```

Restoring Disabled Alarms (ENABLE)

The ENABLE command restores reporting of alarms turned off with DISABLE.

Notes

To get a list of alarm categories, use the CATEGORIES command; to get a list of alarm numbers, use the LIST command.

Example

```
ALM ...? ENA
Alarm Category ...? CABINET
Alarm Number [ALL] ...? 1
Alarm enabled
ALM ...?
```


Turning On and Off Reporting of Diagnostic Messages (DXENABLE)

The DXENABLE command turns on and off the reporting of diagnostic messages at the Alarm output device.

Notes

Diagnostic messages are useful for diagnosing software problems and should normally be turned off. When turned off, they are still stored in the Alarm History file and appear in the Alarm Summary report.

Example

```
ALM ...? DXE
On or Off [OFF] ...? ON
ALM ...?
```

Modifying Alarm Text, Severity, and Threshold (MODIFY)

The MODIFY command lets you change the text, severity, and threshold of alarms.

Note If you upgrade your software, all modifications will return to default.

Notes

To get a list of alarm categories, use the CATEGORIES command; to get a list of alarm numbers, use the LIST command.

See *Modifying Alarm Output* on page 6-4 for examples of alarms that you might want to modify. Remember that NMI alarms cause a system reboot and, on redundant systems, a switchover. Therefore, you should never change an alarm to NMI severity.



WARNING

Never change an alarm to the severity of NMI.

Permanent Alarm Text

MODIFY lets you specify whether alarm text should be permanent or not. Enter Y to load the alarm text into memory so that it can be quickly accessed; enter N to require the system to retrieve the alarm text from the system disk.

Threshold

The threshold types are explained below.

Table 6-D. Threshold Types

Threshold Type	Explanation
NONE	Reports all occurrences of an alarm.
DISABLE	Stops reporting the alarm after the number of occurrences specified at the Count prompt. For example, a count of 10 means the system reports the first 10 occurrences of the alarm.
REPORT	Reports the alarm at the interval specified at the Count prompt. For example, a count of 5 means the system reports occurrence 5, 10, 15, 20, etc.

Table 6-D. Threshold Types (continued)

Threshold Type	Explanation
THROTTLE	Report all occurrences of the alarm up to and including the value specified at the Count prompt and then, at that interval. For example, a count of 5 means the system reports occurrence 1, 2, 3, 4, 5, 10, 15, 20, etc.

Example

The following example modifies alarm 1 of the Cabinet alarms to shorten the description text, change the severity from Major to Minor, and to report every 5th occurrence only of the alarm (at occurrences 5, 10, 15, 20, and so on).

```

ALM ...? MOD
Alarm Category ...? CABINET
Alarm Number ...? 1
Existing Text: Power Failure, Cabinet 1, Shelf 1
Modify Alarm description text [N] ...? Y
New alarm text ...? POWER FAIL, CAB 1, SH 1
Permanent alarm text [N] ...? N
Alarm Severity [Major] ...? MINOR
Threshold [NONE] ...? REPORT
Count [0] ...? 5
Alarm Modified
ALM ...?

```

Checking System Reporting Parameters (*SHOW*)

The SHOW command reports:

- the time ALM is scheduled to generate a summary report as defined in the SCHEDULE command
- the reporting status of Info, Minor, Major, and NMI alarms as defined in SET
- the reporting status of diagnostic messages as defined in DXENABLE

Example

The following example illustrates the SHOW report. The report time (shown in 24-hour format) is 1:30 pm and the display of Info alarms and Diagnostic messages is turned off.

```
ALM ...? SHO
Summary Report Time: 13:30
Print INFO   alarms: OFF
Print MINOR  alarms: ON
Print MAJOR  alarms: ON
Print NMI    alarms: ON
Print DIAGs          : OFF
ALM ...?
```

Exiting ALM

To exit the ALM program:

At the ALM ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the ALM program and returns you to the System Administration program.

```
ALM ...? EXIT
... Exiting the Alarms Control program ...
ADMIN ...?
```

Alarm Reports

Figure 6-3 and Figure 6-4 illustrates and explains the format of alarms.

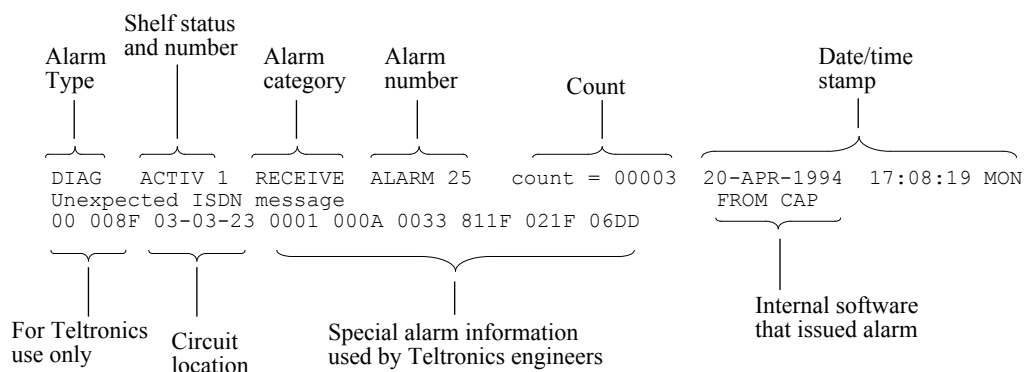


Figure 6-3. Alarm Format—Cerato ME

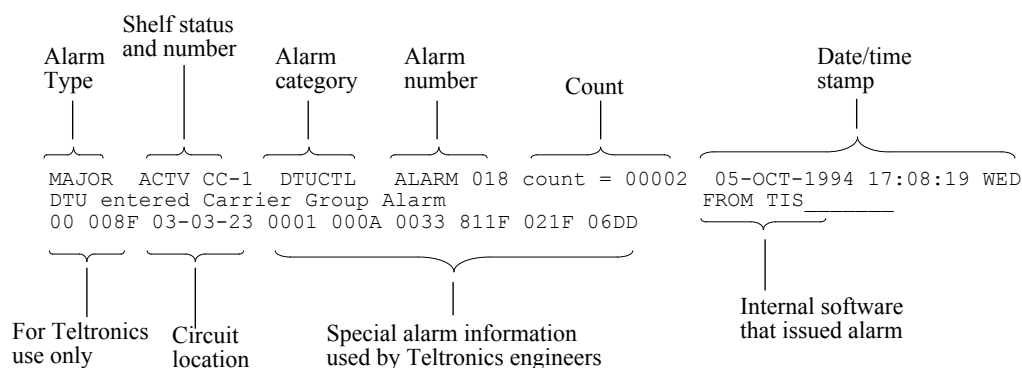


Figure 6-4. Alarm Format—Cerato LE

Table 6-E explains the fields in alarm text as called out in Figure 6-3 and Figure 6-4.

Table 6-E. Explanation of Fields in Alarm Text

Text	Explanation
Alarm type	One of the following alarm types: NMI, MAJOR, MINOR, INFO, or DIAG.
Shelf status/number	The number of the shelf the alarm is associated with and the active/standby status of that shelf.

Table 6-E. Explanation of Fields in Alarm Text (continued)

Text	Explanation
Alarm category	One of the alarm categories. Use the CATEGORIES command to get a listing of alarm categories.
Alarm number	The number of the alarm within its category
Count	The number of occurrences of the alarm since the last alarm summary report. The count is the actual count, although the number of times the alarm is reported depends on the alarm threshold type (see Table 6-D).
Circuit location	When reported, may clarify information, such as a seize failure, reported on the second line. The circuit location is also used by Teltronics engineers for troubleshooting. **_**_** indicates a circuit, such as a secondary extension, that does not map to a physical device defined in your system database.

The information in the third line of an alarm is mainly for use by Teltronics engineers for troubleshooting. For information on how to use ALM to locate and fix faults, see the *Alarm Fault Locating* chapter of the Service Manual.



Call Detail Recording (CDR)

This chapter explains how to use the Call Detail Recording (CDR) program. CDR has features that let you:

- control how the system collects and stores call detail
- direct call detail information to a choice of call detail output devices
- view call detail history stored in the CDR file on the system hard disk

This chapter contains the following sections:

- *CDR Program Overview* on page 7-3 gives a general overview of the Call Detail Recording (CDR) program.
- *Setting Up CDR Output Devices* on page 7-9 describes how to set up an output device, such as a terminal or printer, for call detail reports.
- *Defining What Information Appears in CDR Output* on page 7-10 explains how you can use filters, masks, and format (Short or Extended) to restrict what call information CDR reports at various output devices.

Note If you wish an Extended format, it is very important to set the format after loading a new software release. The format defaults to “Short”.

- *Starting CDR* on page 7-11 explains how to start CDR.
- *Setting Up Call Detail Collection and Reporting* on page 7-12 describes how to use the CDR commands.
- *Exiting CDR* on page 7-31 explains how to exit CDR.
- *Understanding Call Detail Records* on page 7-32 describes call record format.

- *CDR Polling* on page 7-43 describes the optional polling feature that lets you collect call records from the system using a host computer.

Before You Start

Configuration of other aspects of the system influence how CDR operates. These aspects are briefly described below with references to other explanations in this chapter.

- You can direct call detail output to specially designated CDR output devices other than a system terminal. See *Setting Up CDR Output Devices* on page 7-9 for more information.
- The CDR record filter in the system database should be set up to collect data for the calls types and statuses you desire. See *CDR Record Filter* on page 7-4 for more information.
- The CDR format in the system database should be set to a Short or Extended format. The format defaults to “Short”. See *Defining Formats* on page 7-19.
- The Class of Service assigned to the ports for which you want to collect call detail must have associated Feature Classes that include the CDR on answer, Called CDR output, and Caller CDR output features.
- Collect & Route tables have special options that cause the system to store call information in call detail records. For example, the /ACC, /ACCT, /AUTH, /EXT, and /LOC options control whether access code, account code, authorization code, ANI station number, or caller switch ID information are included in call detail records. See *Understanding Call Detail Records* on page 7-32 for information on what information CDR can collect and store in call detail records and what Collect & Route options are involved. See the Database Configuration Manual for details on Collect & Route tables.

CDR Program Overview

The Call Detail Recording (CDR) program lets you control the collection and output of call detail records in the system. A call detail record is a collection of information about a call processed by the system.

Using CDR, you can:

- select the call information you want CDR to collect
- send call information to various output devices
- retrieve data on demand or automatically
- collect CDR records from a remote host computer

Figure 7-1 illustrates how calls are processed by the system.

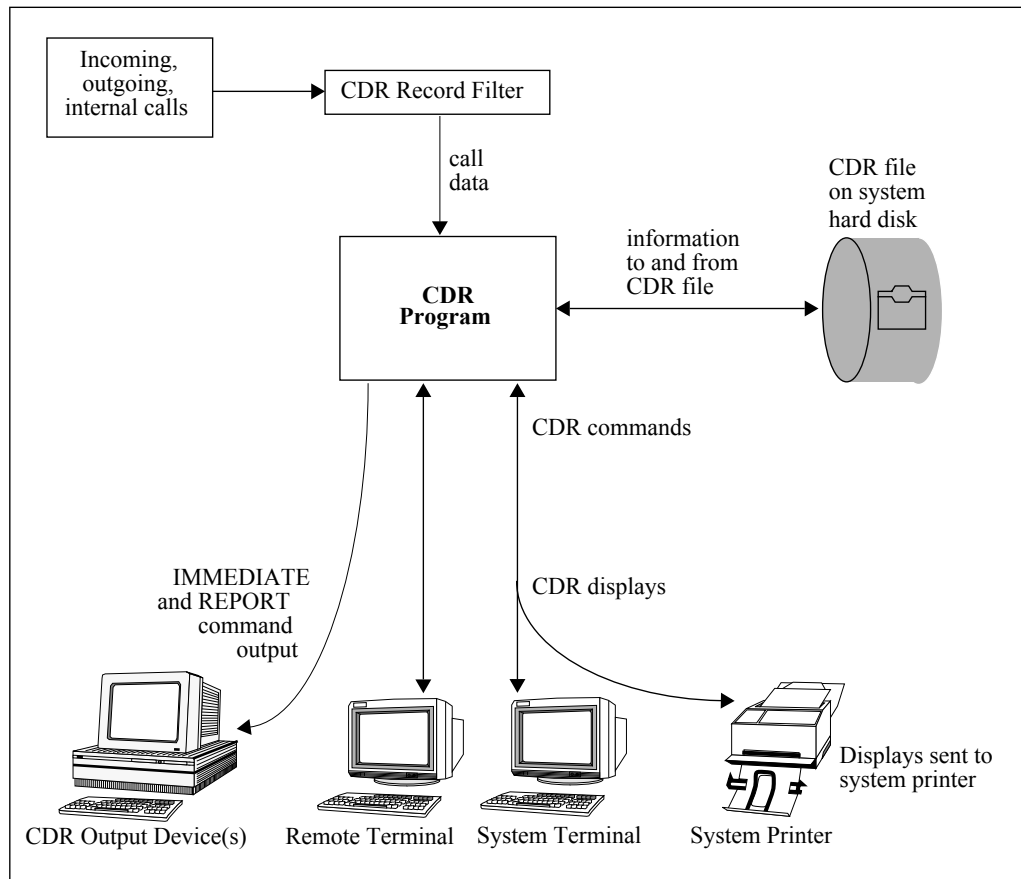


Figure 7-1. Call Detail Collection and Reporting

When a call (internal, incoming, or outgoing) takes place, the system performs the following steps to determine whether to collect information for the call.

- 1 First, the system checks the Feature Class in the Class of Service associated with the caller or called port to see if CDR output is turned on. For outbound trunks, it checks the outbound facility's Class of Service. If CDR output is turned off, the system does not collect call information.
- 2 Next, the system filters out call records that do not have the call types, statuses, and minimum duration time listed in the system CDR Record Filter.

After this initial filtering of call information, CDR performs the following functions:

- It formats call data into call records.
- It stores call records in a CDR file on the system hard disk.
- It sends call records as they are saved on the system hard disk to specially designated call detail output devices. This output is called immediate output and can be used with external Call Accounting systems.
- It lets you view the contents of the CDR file.

CDR Record Filter

The CDR Record Filter defines the call types and statuses the system collects. An example of the CDR Record Filter is shown in Figure 7-2. You can get a listing of your current CDR Record Filter by entering the LIST command in the CDR Filter table of the System Editing tables of the Configuration Editor. See *System Editing Tables Configuration* in the Database Configuration Manual for information on the CDR Filter table.

CDR FILTER		TL	LT	LL	TT	TC	LC	CT	CL	TO	LO	CO	
Call statuses	S1	Request barge feature	X	X	-	X	-	-	-	-	X	-	-
	S2	Call interrupted by barge	X	X	-	X	-	-	-	-	X	-	-
	S3	Hang-up in busy	X	X	-	X	-	-	-	-	X	-	-
	S4	Request conference feature	X	X	-	X	-	-	-	-	X	-	-
	S5	Call pulled into conference	X	X	-	X	-	-	-	-	X	-	-
	S6	Hang-up in conversation	X	X	-	X	-	-	-	-	X	-	-
	S7	Hang-up in dialing	X	X	-	X	-	-	-	-	X	-	-
	S8	Hang-up in feature request	X	X	X	X	-	-	-	-	X	X	-
	S9	Request hold feature	X	X	-	X	-	-	-	-	X	-	-
	S10	Receive intercept treatment	X	X	-	X	-	-	-	-	X	-	-
	S11	Conference from intercept	X	X	-	X	-	-	-	-	X	-	-
	S12	Transferred from intercept	X	X	-	X	-	-	-	-	X	-	-
	S13	Hang-up while on hold	X	X	-	X	-	-	-	-	X	-	-
	S14	Hang-up while parked	X	X	-	X	-	-	-	-	X	-	-
	S15	Request pickup	X	X	X	X	-	-	-	-	X	X	-
	S16	Hang-up while in queue	X	X	-	X	-	-	-	-	X	-	-
	S17	Activate recall feature	X	X	-	X	-	-	-	-	X	-	-
	S18	Request reconnect feature	X	X	-	X	-	-	-	-	X	-	-
	S19	Reconnect to held party	X	X	-	X	-	-	-	-	X	-	-
	S20	Hang-up while ringing	X	X	-	X	-	-	-	-	X	-	-
	S21	Hang-up while routing	X	X	-	X	-	-	-	-	X	-	-
	S22	Hang-up while other tones	X	X	-	X	-	-	-	-	X	-	-
	S23	Request transfer feature	X	X	-	X	-	-	-	-	X	-	-
	S24	Transferred	X	X	-	X	-	-	-	-	X	-	-
	S25	Indeterminate call status	X	X	-	X	-	-	-	-	X	-	-
	S26	Conference breakdown	X	X	-	X	-	-	-	-	X	-	-
	S27	Conversation before hold	-	X	-	X	-	-	-	-	-	-	-
	S28	Timeout conversation	-	X	-	X	-	-	-	-	-	-	-
	S29	Call prog detect answer	-	X	-	X	-	-	-	-	-	-	-
	S30	Call prog detect dial tone	-	X	-	X	-	-	-	-	-	-	-
	S31	Timeout routing	-	X	-	X	-	-	-	-	-	-	-
	S32	Service observing	-	-	-	-	-	X	-	-	-	-	-
	S33	Preanswer rerouting	-	-	-	-	-	-	-	-	-	-	-
	S34	Post-termination rerouting	-	-	-	-	-	-	-	-	-	-	-
	S35	Answer	-	-	-	-	-	-	-	-	-	-	-
	S36	PRR timeout	-	-	-	-	-	-	-	-	-	-	-
	S37	Call Monitor detect busy	-	-	-	-	-	-	-	-	-	-	-
	S38	Hang-up while RLT outpulsing	-	-	-	-	-	-	-	-	-	-	-
	S39	Null Status	-	-	-	-	-	-	-	-	-	-	-
	S40	Hang-up while pulse-metering	-	-	-	-	-	-	-	-	X	-	-
	S41	External call forwarding	-	-	-	-	-	-	-	-	-	-	-
	S42	Maintenance Dialing	-	-	-	-	-	-	-	-	-	-	-
	S43	Port Connect Request	-	-	-	-	-	-	-	-	-	-	-
	S44	Call Interrupted	-	-	-	-	-	-	-	-	-	-	-
	S45	Held Routed by Holder	-	-	-	-	-	-	-	-	-	-	-
	S46	Holder Invoke Held Route	-	-	-	-	-	-	-	-	-	-	-
	S47	Sequenced Connection Tone	-	-	-	-	-	-	-	-	-	-	-
	S48	Port Dialing	-	-	-	-	-	-	-	-	-	-	-
Call types	TL	= Trunk to Line	LT	= Line to Trunk	LL	= Line to Line							
	TT	= Trunk to Trunk	TC	= Trunk to Conference	LC	= Line to Conference							
	CT	= Conference to trunk	CL	= Conference to Line	TO	= Trunk only							
	LO	= Line only											

Figure 7-2. Sample CDR Record Filter

CDR File

After CDR receives information for a call, it formats it into a call record and stores it in the CDR file on the system hard disk. The CDR file holds up to 150,000 records on the Cerato ME, and up to 500,000 records on the Cerato LE, depending on the number of records specified in your OCR. CDR

stores call records in the order they occur and when the maximum number of records is reached, CDR starts overwriting the oldest records in the file.

On redundant systems, the system maintains a separate CDR file on each system hard disk. When shelf 1/CC-1 is active, CDR writes call records in the CDR file on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes call records in the CDR file on shelf 2/CC-2. When you use DISPLAY or REPORT, CDR reads call records from the files on shelves 1/CC-1 and 2/CC-2 and displays them in chronological order in the output.

CDR File Marker

CDR maintains a file marker to keep track of what records have been backed up with the BACKUP command or retrieved with the REPORT command. You can choose whether you want CDR to move the file marker forward as records are copied to the tape drive or sent to the REPORT output device.

Note The tape drive is no longer implemented in the Teltronics switches so do not select BACKUP.

CDR Output

CDR allows you to store and retrieve call data using several different output devices.

- You can view the contents of the CDR file at the system administration terminal.
- You can set up dedicated output devices to report/collect call detail records.
- You can log on to the system from a remote host computer and collect call detail records.

Viewing the Contents of the CDR Files

The CDR DISPLAY command lets you view call detail records in the CDR file at the system administration terminal. DISPLAY has options that let you choose the exact information you want to see.

Similar to all of the system administration programs, you can direct any output to the system administration terminal to a system printer as well.

An example of DISPLAY output is shown below.

```

-----
| RECORD NUMBER:      1      TIME STAMP: 7 -NOV-1990 12:10
-----
| Start Date   11/07/90 | Answer Date   11/07/90 | End Date   11/07/90
| Start Time   12:02:55 | Answer Time   12:03:01 | End Time   12:06:24
-----
| Caller Trunk Group   009 | Selected Trunk Group   001
| Caller Circuit       02-11-02 | Selected Circuit       02-01-06
| Caller COS           4 | Selected COS           11
| Caller Routing COS   1 | Selected Routing Class 1
| Caller Switch ID     | Selected Route Pattern 11
| Caller ANI           | Selected Facility      23
| Record Audit         | Call Type              TRUNK TO TRUNK
| Conference Audit     | Call Status             |
| Access Code          30 | Queue Status           NULL QUEUE
| Code Validation      ---- | Queue Time              |
-----
| Dialed Number      8831212 | Meter Pulse Count      0
| Authorization Code | R2 Status               |
| Account Code       |
-----
Use CTRL/Z to CANCEL; CTRL/S to PAUSE and CTRL/Q to CONTINUE

```

Sending Call Records to a Dedicated Call Detail Output Device

CDR has commands, IMM1, IMM2, IMM3, IMM4, and REPORT, that direct call detail records to an output device other than the system terminal. You can also choose the types of calls and call information handled by these commands by defining filters and/or masks in the SET command.

The IMM1, IMM2, IMM3, and IMM4 (or IMMEDIATE) commands send call detail records as they are saved on the system hard disk to specially designated immediate output devices. Once you initiate these commands they operate until you turn them off. When using Teltronics DCAs, the output device can be a terminal, printer, or personal computer with terminal emulation. However, the IMMEDIATE commands may also be used in conjunction with Teltronics OpenLAN to accelerate the transfer of CDR output.

An example of IMMEDIATE output is shown below. The example makes use of mask options available in CDR so that desired data only is displayed and fits on one line.

```

=====
TYP ST  STRT          CR  CR  CR ACC SEL  SEL  SEL SEL  SEL DIALED
      DATE / TIME  STA# CKT# COS COD FAC STA# TG# CKT# PAT# NUMBER
=====
002 06 900702 095512 5166 030806 012 9--- 0010 ---- 036 062002 0018 7072554491-----
002 06 900702 095512 1153 030807 012 8--- 0010 ---- 036 062003 0018 7077954205-----
003 06 900702 130001 5164 030701 012 ---- 0000 5122 000 060702 0000 5122-----
=====

```

The REPORT command sends call detail records that have been stored on the system hard disk to a specially designated report device. REPORT output looks like output from the IMMEDIATE commands.

See *Setting Up CDR Output Devices* on page 7-9 for further instructions on how to set up output devices for the IMMEDIATE and REPORT commands.

Collecting Call Detail Records from Remote Devices

You can access CDR data through a host computer or a remote terminal. CDR has an optional polling feature that lets a host computer log on to the system and collect call records. This polling process is not interactive and is accomplished through an automated program written by the user. CDR Polling in this chapter on page 7-43 describes the Polling feature.

Upgrading Your System



Caution

Before upgrading, make sure you have a backup of your database.

Setting Up CDR Output Devices

This section explains how to set up Teltronics DCAs for CDR output. For information on setting up OpenLAN for CDR output, contact Teltronics Applications Engineering.

You should choose serial or LAN immediate devices based on your application and the amount of CDR generated. Although it is possible to set up four serial immediate devices, you should only do so in low throughput applications as serial immediate devices operate at a lower bandwidth than LAN immediate devices. CDR output varies based on call throughput, the CDR filter defined in the System Editing tables, and on the filters, masks, and formats defined with the SET command. If you have questions about setting up immediate devices for an application, contact Teltronics applications engineering for assistance.

To send call detail records to an output device dedicated to call detail collection, you must install and configure the device. The output device may be a terminal, printer, or personal computer with terminal emulation.

Follow instructions in the Installation Manual for installing an Administrative DCA and the connected device. Brief instructions for configuring the DCA are listed below; for more detailed configuration instructions, see the Data and System Editing Tables sections of the Database Configuration Manual.

To configure a call detail collection device connected to an Admin. DCA in the Configuration Editor:

- 1 Configure a Digital Line Unit in the Boards table.
- 2 Configure a Data Control table for the Admin. DCA. The equipment type is 1 for a terminal/terminal emulator and 2 for a printer.
- 3 In the System Devices table of the System Editing tables, assign a device number to the DCA.
- 4 In the Logical Devices table of the System Editing tables, assign the IMMED1_CDR, IMMED2_CDR, IMMED3_CDR, IMMED4_CDR, or REPORT_CDR logical device to the device number configured in step 3. (See *CDR Logical Devices*, below, for more information.)

CDR Logical Devices

The CDR logical devices allow you to direct call detail to specially designated output devices. The information sent to each device is controlled by a CDR command:

- The IMM1 command sends output to the IMMED1_CDR logical device.

- The IMM2 command sends output to the IMMED2_CDR logical device.
- The IMM3 command sends output to the IMMED3_CDR logical device.
- The IMM4 command sends output to the IMMED4_CDR logical device.
- The REPORT command sends output to the REPORT_CDR logical device.

The SET command lets you define what call detail information the IMMEDIATE and REPORT commands send to output devices. The REPORT command also lets you define what call information it sends to the REPORT_CDR device.

Defining What Information Appears in CDR Output

CDR lets you choose what information you want to send to various output devices by defining filters, masks, and formats.

- Initially, you can choose the call types and statuses the system collects information for in the system CDR Record Filter. (See *CDR Record Filter* on page 7-4.)
- Using the SET command, you can define specific filters for the BACKUP, DISPLAY, IMM1, IMM2, IMM3, IMM4, and REPORT commands. These filters may further limit what information these commands send to output devices based on the fields contained in a call detail record. For example, you can define a filter that collects information for only those calls that involve a particular authorization code or class of service.

The BACKUP, DISPLAY, and REPORT commands also let you filter information based on fields contained in a call detail record.

- Using the SET command, you can define specific masks for the IMM1, IMM2, IMM3, IMM4, and REPORT commands. Masks remove an entire field from a call detail record.
- Using the SET command, you can set up the CDR format to be Short or Extended. The format defaults to “Short”.

See *Defining Filters, Masks and Formats for Other CDR Commands (SET)* on page 7-13 for an explanation of filters, masks, and formats.

Starting CDR

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **CDR** and press RETURN.

CDR displays the following message and the CDR ...? prompt, from which you can enter any of the CDR commands. (If your password does not allow access to CDR, the system displays a message telling you that you have insufficient privileges.)

```
                Welcome to the Teltronics
                Call Detail Recording (CDR) Control Program

The CDR control program allows you to control various aspects of Call Detail
Recording (CDR) data collection in the system. The CDR program will also
allow you to display all or selected CDR information already collected. If
you need information on how to use the CDR program or any of its commands,
you can enter 'HELP' at any prompt.

CDR ...?
```

Setting Up Call Detail Collection and Reporting

This section explains how to:

- Define filters, masks and format that control the call detail information collected for other CDR commands (SET)
- View the contents of the CDR file (DISPLAY)
- Send call detail records to the report output device (REPORT)
- Send call detail records to immediate output devices (IMM1, IMM2, IMM3, and IMM4)
- Display the current filter and mask settings defined in SET (SHOW)
- Check the status of the CDR file and CDR output devices (STATUS)

Defining Filters, Masks and Formats for Other CDR Commands (SET)

The SET command lets you define how call detail records are treated in the BACKUP, DISPLAY, IMM1, IMM2, IMM3, IMM4, and REPORT commands.

Notes

Filters, masks, and formats let you control the call information reported by the CDR BACKUP, DISPLAY, IMM1, IMM2, IMM3, IMM4, and REPORT commands.

- Filters let you define the kinds of calls reported by a particular CDR command.
- Masks let you exclude particular fields in the CDR output for particular CDR commands. Masks are useful in making CDR reports more readable.
- Formats let you set up CDR formats (Short or Extended).

Figure 7-3 illustrates the difference between filters and mask. In the example, the filter tells CDR to collect all trunk to trunk calls and mask tells CDR to display a selected set of fields in the REPORT output.

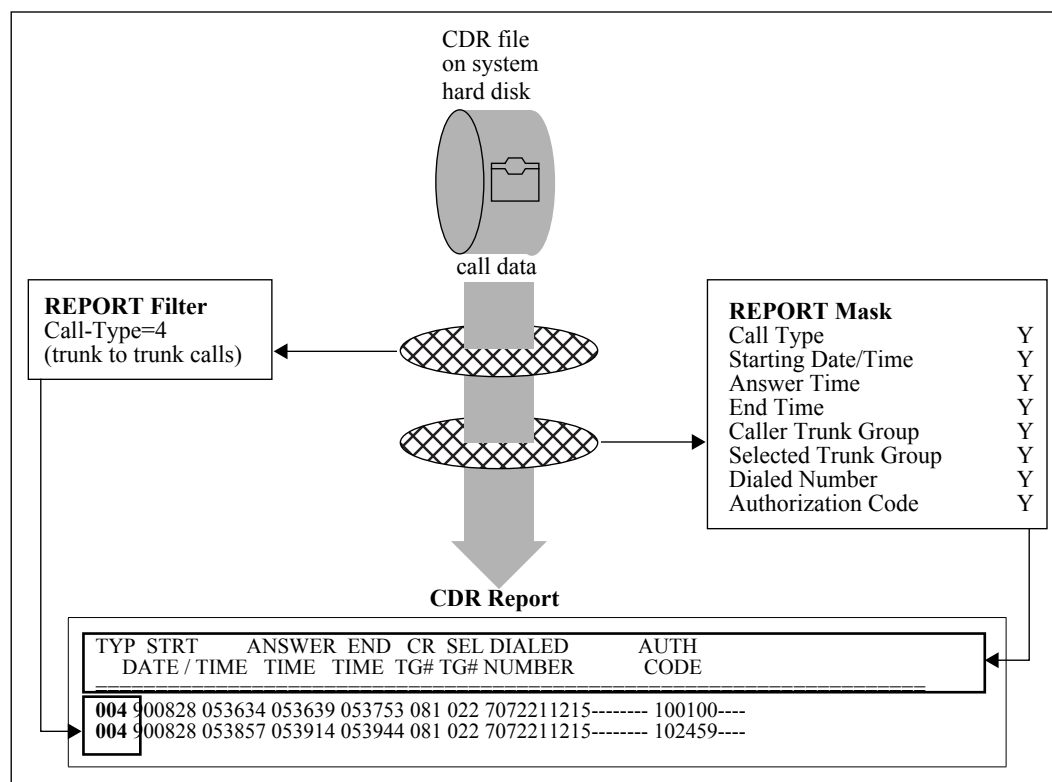


Figure 7-3. Filters and Masks

Defining Masks

After you choose the MASK option for a particular CDR command, the system displays a series of prompts for each CDR data field (as shown in example 2) to let you choose what fields to include. Table 7-N on page 7-41 lists the number of characters allocated for each field in IMMEDIATE and REPORT output. It is helpful in defining masks.

Defining Filters

After you choose the FILTER option for a particular CDR command, the system prompts you to enter a filter name and value, as shown in example 1. Table 7-A lists the possible filter names and values. It is easiest to enter a filter name only and let the system prompt you for value.

The system repeats the filter name prompt until you enter **END**. You can also use END at the first appearance of the prompt to clear a previously defined filter.

Make sure to enter all the filter names you want before entering END and remember to enter the slash before each filter name. If you don't, you will have to reenter the entire filter definition again.

Table 7-A. Filter Names

Filter Names	Value
/access-code	access code
/account-code	account code
/answer-time	date/time range (<i>dd-mm-yy hh:mm:ss dd-mm--yy hh:mm:ss</i>) within which answer time may occur
/authorization-code	authorization code
/caller-ANI	originating number
/caller-circuit	shelf-slot-circuit (xx-xx-xx) number
/caller-COS	class of service number
/caller-routing-class	routing class number
/caller-station	caller extension number, 1-9999
/caller-switch-ID	switch ID of originating switch
/caller-trunk-group	trunk group number
/call-status	a call status number listed in Table 7-B on page 7-16
/call-type	a call type number listed in Table 7-C on page 7-17

Table 7-A. Filter Names (continued)

Filter Names	Value
/code-validation	One of the following letters: N null code A authorization code attempt S security code attempt F failed authorization/security code attempt I invalid call record due to time change E error in authorization/security code attempt
/conference-audit	conference audit number
/dialed number	dialed number
/end-time	date/time range (<i>dd-mm-yy hh:mm:ss dd-mm--yy hh:mm:ss</i>) within which end time may occur
/meter-pulse-count (if purchased)	number of pulses
/queue-status	One of the following numbers: 0 null type 3 camp on 1 standby 4 paging 2 call back
/queue-time	time range (<i>hh:mm:ss hh:mm:ss</i>) within which queue time may occur
/record-audit	an audit number, 0-9999
/r2-status (if purchased)	MFC group B signal of called party
/selected-circuit	shelf-slot-circuit (xx-xx-xx) number
/selected-COS	class of service number
/selected-facility	facility number
/selected-route-pattern	route pattern number
/selected-routing-class	routing class number
/selected-station	called party extension number, 1-9999
/selected-trunk-group	trunk group number
/start-time	date/time range (<i>dd-mm-yy hh:mm:ss dd-mm--yy hh:mm:ss</i>) within which start time may occur

Table 7-B. Call Statuses

Value	Meaning	Value	Meaning
0	Null Status	1	Barge request
2	Barge	3	Busy
4	Conference setup	5	In conference
6	In conversation	7	Dialing
8	Feature Request	9	Hold Request
10	Intercepted	11	Intercept/Conferenced
12	Intercept/Transferred	13	On Hold
14	Parked	15	Pick Up Request
16	Queued	17	Recall Request
18	Reconnect Request	19	Reconnected
20	Ringing	21	Routing
22	Tone	23	Transfer Request
24	Transferred	25	Unknown
26	Conference Breakdown	27	Conversation Before Hold
28	Timeout Conversation	29	Call Progress Detect Answer
30	Call Progress Detect Dial Tone	31	Timeout Routing
32	ACD Service Observe	33	Preanswer Reroute
34	Post Termination Reroute	35	Answer
36	PRR Timeout	37	CSM busy
38	While RLT Outpulsing	39	Null Status
40	While Pulse Metering	41	External Call Forward
42	Maintenance Dialing	43	Port Connect Request
44	Call Interrupted	45	Held Routed by Holder
46	Holder Invoke Held Route	47	Sequenced Connection Tone
48	Port Dialing	49	Facility Hold
50	Null Status	51	Advice of Charge
52	Silent Monitor	53	End of Audit Trail

Table 7-C. Call Types

Value	Meaning	Value	Meaning
0	Time change	1	Trunk to line
2	Line to trunk	3	Line to line
4	Trunk to trunk	5	Trunk to conference
6	Line to conference	7	Conference to trunk
8	Conference to line	9	One trunk
10	One line	11	One conference

Examples

- 1 The following example illustrates how the system prompts you for the proper values for filter-names. The /Start-Time filter-name lets you define a range within which calls must start. The time range in the example specifies 8:00 am on April 27, 1994 through midnight April 29, 1994.

```

CDR ...? SET
Set parameter ...? FILTER
Enter the device to set up for ...? REPORT
Enter the filter name and value [END] ...? <START-TIME
Start Date ...? 08-27-90
Start Time [00:00:00] ...? 08:00:00
Enter the filter name and value [END] ...? <END-TIME
Ending Date ...? 08-29-90
Ending Time [23:59:59] ...?
Enter the filter name and value [END] ... ?
CDR ...?

```

- 2 The following example illustrates how the system prompts you for each field to include in a mask. The mask defined is the one used in Figure 7-3 (start date and time, answer time, end time, caller trunk group, selected trunk group, dialed number, and authorization code).

You must respond to the entire series of prompts to complete defining the mask.


```
CDR ...? SET MASK
Enter the device to set up for ...? REP
Record Audit [YES] ... ?
Call Type [YES] ... ?
Call Status [YES] ... ? N
Queue Status [YES] ... ? N
Conference Audit [YES] ... ? N
Starting Date/Time [YES] ... ?
Answer Time [YES] ... ?
End Time [YES] ... ?
Queue Time [YES] ... ? N
Caller Switch ID [YES] ... ? N
Caller ANI Number [YES] ... ? N
Caller Station [YES] ... ? N
Caller Trunk Group [YES] ... ?
Caller Circuit [YES] ... ? N
Caller COS [YES] ... ? N
Caller Routing Class [YES] ... ? N
Selected COS [YES] ... ? N
Selected Routing Class [YES] ... ? N
Access Code [YES] ... ? N
Selected Facility [YES] ... ? N
Selected Station [YES] ... ? N
Selected Trunk Group [YES] ... ?
Selected Circuit [YES] ... ? N
Selected Route Pattern [YES] ... ? N
Dialed Number [YES] ... ?
Code Validation [YES] ... ? N
Authorization Code [YES] ... ?
Account Code [YES] ... ? N
CDR ...?
```

Defining Formats

After you choose the FORMAT option for a particular CDR command, the system prompts you for which type of format you want to set up for IMM/REPORT devices enabled. If you enter Y, you will have the Extended format. If you enter N (default), you will have the Short format. The difference between the Short format and Extended format is in the header and field size for the fields shown in Table 7-D.

Table 7-D. CDR Format

Format	Number of Digits in Field		
	Dialed Digit	Authorization Code	Account Code
Short Format	18	14 (10 if Pulse Metering purchased)	16 (14 if R2 Signaling purchased)
Extended Format	20	20	20

Viewing the Contents of the CDR File (DISPLAY)

The DISPLAY command lets you view the contents of the CDR file.

Notes

If you want to display particular data, define a filter in the SET command or decide which filter-name you want to specify with the DISPLAY command.

You can use the CTRL+Z command to stop a display.

Display Options

You can enter multiple options (except ALL) by separating them with a space.

Table 7-E. Display Options

Option	What it Does
ALL	Displays all call detail records in the CDR file(s)
/AFTER <i>dd-mm-yy</i> [<i>hh:mm:ss</i>]	Displays call detail records collected after a date and optional time (see <i>Date and Time Formats</i> , below)
/BEFORE <i>dd-mm-yy</i> [<i>hh:mm:ss</i>]	Displays call detail records collected before a date and optional time (see <i>Date and Time Formats</i> , below)
/ACTIVE	Displays call detail records from the Alarm History file on the active shelf
/STANDBY	Displays call detail records from the Alarm History file on the standby shelf
/FILTER	Displays call detail records that meet the criteria specified by the filter defined in SET or in this command. If you specify this option, SET displays another prompt to let you choose what filter you want (as shown in example 2).
/VT100	On VT100-compatible terminals, draws the DISPLAY screen and then displays records by updating only those fields that change (available only when ACD has been purchased)

Date and Time Formats

The following rules apply for entering date and time with /AFT and /BEF options:

- The formats for entering date and time are listed in Table 7-F. Optional information is shown in square brackets ([]).
- Entering time is optional. When you don't enter a time, MHC assumes a time of 00:00:00 (12:00 am).
- If you enter /AFT or /BEF as a single option, you do not have to specify date and time because the system will prompt for date and time.
- You can use /AFT or /BEF together to specify a beginning and ending period for a display.

Table 7-F. Date and Time Formats

Date/Time Format	Explanation		Examples
<i>mm-dd-[yy]yy</i> <i>dd-mmm-[yy]yy</i>	<i>mm</i> <i>mmm</i> <i>dd</i> <i>[yy]yy</i>	month (1-12) month (JAN-DEC) day (1-31) final 2 or 4 digits of the year	04-03-94 04-03-1994 03-APR-94
<i>hh[:mm][:ss]</i>	<i>hh</i> <i>mm</i> <i>ss</i>	hour (00-23) <i>optional</i> minute (00-59) <i>optional</i> second (00-59)	08:24:20 08:24 08

Displays From Active and Standby Shelves

On a redundant system, the system maintains a separate CDR file on each system hard disk. When shelf 1/CC-1 is active, CDR writes call records in the CDR file on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes call records in the CDR file on shelf 2/CC-2. When you use DISPLAY or REPORT, CDR reads call records from the files on shelves 1/CC-1 and 2/CC-2 and displays them in chronological order in the output.

If you use one shelf more often than the other and CDR overwrites records in the CDR file on that shelf, you might find a time gap in some of your output displays. For example, if shelf 1/CC-1 was used May 1–5 and shelf 2/CC-2 was used May 6–20 and CDR started overwriting call records on shelf 2/CC-2 on May 10, output from DISPLAY ALL would contain call information for May 1–5 and May 10–20. The display would not contain records for May 6–9.

Examples

- 1 The following example uses the /AFT and /BEF options to display all records within a five minute time span, 12:00 to 12:05 PM on June 10,

1990.

```

CDR ...? DISP
Enter Display Options [ALL] ...? /AFT 6-10-1990 12:00:00 /BEF 6-10-1990 12:05:00
--- CDR DATA ---
-----
| RECORD NUMBER: 1      TIME STAMP: 10-JUN-1990 12:06      |
|-----|
| Start Date 06/10/90 | Answer Date 06/10/90 | End Date 06/10/90 |
| Start Time 12:02:55 | Answer Time 12:03:01 | End Time 12:06:24 |
|-----|
| Caller Trunk Group 009 | Selected Trunk Group 001 |
| Caller Circuit 02-11-02 | Selected Circuit 02-01-06 |
| Caller COS 4 | Selected COS 11 |
| Caller Routing COS 1 | Selected Routing Class 1 |
| Caller Switch ID | Selected Route Pattern 11 |
| Caller ANI | Selected Facility 23 |
| Record Audit | Call Type TRUNK TO TRUNK |
| Conference Audit | Call Status IN CONVERSATION |
| Access Code 30 | Queue Status NULL QUEUE |
| Code Validation ---- | Queue Time |
|-----|
| Dialed Number 8831212 |
| Authorization Code |
| Account Code |
|-----|
Use CTRL/Z to CANCEL; CTRL/S to PAUSE and CTRL/Q to CONTINUE

```

- 2 The following example uses the /BEF option and the /FIL option with the Caller-Station filter-name to display records for a specific station number taking place before 12:55 PM, June 10, 1990.

Note that after entering the /FIL option, the system prompts you for a filter name and value. You can enter END immediately to use the filter specified in SET, or enter individual filter names and values as shown in the example. See Table 7-A on page 7-14 for a list of filter names.

```

CDR ...? DISP
Enter Display Options [ALL] .../BEF 6-10-90 12:55:00 /FIL
Enter filter name and value [END] ...? Caller-Station=5001
Enter filter name and value [END] ...?

--- CDR DATA ---
-----
| RECORD NUMBER:      1      TIME STAMP: 10-JUN-1990  12:06
|-----
| Start Date         6/10/90 | Answer Date      06/10/90 | End Date         6/10/90
| Start Time        12:02:55 | Answer Time      12:03:01 | End Time         12:06:24
|-----
| Caller Station Number 5001 | Selected Trunk Group 003
| Caller Circuit       02-12-01 | Selected Circuit     03-01-06
| Caller COS           2      | Selected COS         11
| Caller Routing COS   1      | Selected Routing Class 1
| Caller Switch ID     | Selected Route Pattern 11
| Caller ANI           | Selected Facility    23
| Record Audit        | Call Type           LINE TO TRUNK
| Conference Audit    | Call Status         ROUTING
| Access Code         30     | Queue Status        NULL QUEUE
| Code Validation     ----   | Queue Time
|-----
| Dialed Number       8831212
| Authorization Code
| Account Code
|-----
Use CTRL/Z to CANCEL;  CTRL/S to PAUSE and CTRL/Q to CONTINUE

```

- 3 The following example illustrates how to enter DISPLAY commands on one line. It uses the /AFT and the Call-Type filter-name to display line to trunk calls taking place after 6:00 AM, June 5, 1990.

```

CDR ...? DISP /AFT 6-05-90 06:00:00 /CALL-TYPE=2
--- CDR DATA ---
-----
| RECORD NUMBER:      1      TIME STAMP: 5 -JUN-1990  06:17
|-----
| Start Date         6/05/90 | Answer Date      | End Date         6/05/90
| Start Time        06:07:10 | Answer Time      06:07:21 | End Time         06:17:22
|-----
| Caller Station Number 5011 | Selected Trunk Group 001
| Caller Circuit       02-13-03 | Selected Circuit     02-01-02
| Caller COS           4      | Selected COS         13
| Caller Routing COS   1      | Selected Routing Class 2
| Caller Switch ID     | Selected Route Pattern 11
| Caller ANI           | Selected Facility    23
| Record Audit        | Call Type           LINE TO TRUNK
| Conference Audit    | Call Status         IN CONVERSATION
| Access Code         20     | Queue Status        NULL QUEUE
| Code Validation     ----   | Queue Time
|-----
| Dialed Number       7671246
| Authorization Code
| Account Code
|-----
Use CTRL/Z to CANCEL;  CTRL/S to PAUSE and CTRL/Q to CONTINUE

```

If you enter /FIL instead of a filter-name in a single-line command, DISPLAY uses the filter defined in SET.

Sending Call Detail Records to the Report Output Device (REPORT)

The REPORT command sends call detail records to the REPORT_CDR output device.

Notes

REPORT lets you create an on-demand report (like DISPLAY), but reports one line of information per call record. Before using REPORT, configure an output device with the proper logical device name. See *Setting Up CDR Output Devices* on page 7-9. If you want to control information in a report, define a filter or mask in SET first.

REPORT continues until you enter REPORT OFF or CDR reports all records in the CDR file.

Report Options

You can enter multiple options (except ALL) by separating them with a space.

Table 7-G. Report Options

Option	What it Does
ALL	Sends all records in the CDR file to the report output device
/AFTER <i>dd-mm-yy</i> <i>[hh:mm:ss]</i>	Reports records collected after a date and optional time (see <i>Date and Time Formats</i> , below)
/BEFORE <i>dd-mm-yy</i> <i>[hh:mm:ss]</i>	Reports records collected before a date and optional time (see <i>Date and Time Formats</i> , below)
/ACTIVE	Reports records in the CDR file associated with the active shelf
/STANDBY	Reports records in the CDR file associated with the standby shelf
/POLL	Reports all unpolled ¹ records, updates the file marker, and ignores the /FILTER option
/UNPOLL	Reports unpolled ¹ records without moving the file marker
/NORMAL	Reports polled ¹ and unpolled records without moving the file marker
/FILTER	Reports records in the CDR file(s) that meet the criteria specified by the filter defined in SET

Table 7-G. Report Options (continued)

Option	What it Does
/filter-name[=value]	Reports records in the CDR file(s) that meet the criteria defined with this option. You can enter a filter-name (see list in Table 7-A on page 7-14) and let the system prompt you for values.

- 1 Polled records precede the file marker and unpolled records follow the file marker.

Files on Active and Standby Shelves

On a redundant system, the system maintains a separate CDR file on each system hard disk. When shelf 1/CC-1 is active, CDR writes call records in the CDR file on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes call records in the CDR file on shelf 2/CC-2. When you use DISPLAY or REPORT, CDR reads call records from the files on shelves 1/CC-1 and 2/CC-2 and displays them in chronological order in the output.

If you use one shelf more often than the other and CDR overwrites records in the CDR file on that shelf, you might find a time gap in some of your output displays. For example, if shelf 1/CC-1 was used May 1–5 and shelf 2/CC-2 was used May 6–20 and CDR started overwriting call records on shelf 2/CC-2 on May 10, output from REPORT ALL would contain call information for May 1–5 and May 10–20. The display would not contain records for May 6–9.

Example

This example uses the /NORMAL to send all call records, polled and unpolled, to the CDR report output device.

```
CDR ...? REP /NORMAL
REPORT IS NOW ON
CDR ...?
```

REPORT output looks similar to IMMEDIATE output. You can use the MASK parameter in the SET command to choose what information you want to report about each call. MASK also helps to reduce the width of the report so that each call record fits on one line of the terminal screen or paper, as shown in the following example.

```
TYP START          ANSWER  END      CR  SEL DIALED          AUTHORIZATION
  DATE / TIME      TIME    TIME   TG# TG# NUMBER          CODE
=====
004 900828 053634 053639 053753 081 022 7072211215----- 100100-----
004 900828 053857 053914 053944 081 022 7072211215----- 102459-----
```


Sending Call Detail Records to Immediate Output Devices (IMM1 IMM2, IMM3, and IMM4)

Each IMM (IMM1, IMM2, IMM3, IMM4) command sends call detail records to its respective CDR output device (IMMED1_CDR, IMMED2_CDR, IMMED3_CDR and IMMED4_CDR).

Notes

Before you use an IMM command you must configure an output device with the proper logical device name. See *Setting Up CDR Output Devices* on page 7-9 for details. To send selected information to immediate CDR output devices, define a filter or mask in SET first.

You should choose serial or LAN immediate devices based on your application and the amount of CDR generated. Although it is possible to set up four serial immediate devices, you should only do so in low throughput applications as serial immediate devices operate at a lower bandwidth than LAN immediate devices. CDR output varies based on call throughput, the CDR filter defined in the System Editing tables, and on the filters and masks defined with the SET command. If you have questions about setting up immediate devices for an application, contact Teltronics applications engineering for assistance.

The CDR buffer size (specified in the CDR Filter table of the System Editing tables) determines how many records CDR stores in memory before it sends them to the IMMEDIATE output devices.

In immediate output, the data fields of each call record are listed horizontally, one record per line, and each field of a record is aligned in a column under an abbreviated header that describes the column/field. See *Understanding Call Detail Records* on page 7-32 for an explanation of immediate output.

Examples

- 1 This example illustrates immediate output that has not been masked.

AUDT	TYP	ST	Q	CF	STRT	ANSWER	END	QUEUE	CR	ANI	CR	CR	CR	CR	SEL		
SEL	ACC	SEL	SEL	SEL	SEL	SEL	DIALED		CODE	AUTH	MP	ACCOUNT			R2		
RC	COD	FAC	STA#	TG#	CKT#	PAT#	NUMBER	TIME	SW#	STA#	STA#	TG#	CKT#	COS	RC	COS	ST
0000	002	06	02	00	860702	095512	095548	095823	000216	000	----	5166	---	030806	012	004	006
001	9---	0010	----	036	062002	0018	7072554491	-----	-----	-----	-----	00000	-----	-----	-----	-----	00
0000	002	06	02	00	860702	095512	095522	095850	000200	897	----	1153	---	030807	012	004	002
001	8---	0010	----	036	062003	0018	7077954205	-----	-----	523212	----	00000	-----	-----	-----	-----	00
0000	003	06	00	00	860702	130001	130022	132020	000000	000	----	5164	---	030701	012	004	006
001	----	0000	5122	000	060702	0000	5122	-----	-----	-----	-----	00000	-----	-----	-----	-----	00

- 2 This example illustrates immediate output that has been masked using the MASK parameter in the SET command. Masks let you choose what data fields in each call record appear in immediate output.

TYP	ST	STRT	CR	CR	CR	CR	ACC	SEL	SEL	SEL	SEL	SEL	DIALED
		DATE / TIME	STA#	TG#	CKT#	COS	COD	FAC	STA#	TG#	CKT#	PAT#	NUMBER ¹
002	06	860702 095512	5166	---	030806	012	9---	0010	----	036	062002	0018	7072554491-----
002	06	860702 095512	1153	---	030807	012	8---	0010	----	036	062003	0018	7077954205-----
003	06	860702 130001	5164	---	030701	012	----	0000	5122	000	060702	0000	5122-----

- 1 The Extended format will have 2 more dashes for the dialed number, allowing 20 instead of 18 digits.

Displaying Current Filter, Mask, and Format Settings (SHOW)

The SHOW command displays the filters, masks, and formats defined in SET.

Example

This example displays the current mask settings for the IMM1 command.

```

CDR ...? SHO
Show Parameter [ALL] ...? MASK
Enter the device to show [ALL] ...? IMM1
-----
| Mask: IMM1
|-----|
| Record Audit                Call Type                Y
| Call Status                  Y                Queue Status
| Conference Audit             Y                Starting Date/Time  Y
| Answer Time                  Y                End Time
| Queue Time                    Y                Caller Switch ID
| Caller ANI Number            Y                Caller Station      Y
| Caller Trunk Group           Y                Caller Circuit       Y
| Caller COS                    Y                Caller Routing Class
| Selected COS                  Y                Selected Routing Class
| Access Code                   Y                Selected Facility    Y
| Selected Station              Y                Selected Trunk Group Y
| Selected Circuit              Y                Selected Route Pattern Y
| Dialed Number                 Y                Code Validation
| Authorization Code            Y                Meter Pulse Count
| Account Code                  Y                R2 Status
|-----|
CDR ...?

```

Checking the Status of the CDR file and CDR Output Devices (STATUS)

STATUS reports information about the CDR file and output devices.

Notes

Table 7-H explains the information contained in the STATUS report.

Table 7-H. Explanation of STATUS Report

Field	Explanation
File Size	Maximum number of call records that can be stored in the CDR file.
Records Written	Number of records stored in the CDR file. When the maximum number of records is reached, this number remains constant.
Unpolled Records	Number of unpolled records in the CDR file.
File Usage	Percentage of the CDR file that contains unpolled records.
First Record	Ending date and time of the earliest call record in the CDR file. The record may be the first record stored after the file was created or the earliest record since original records started being overwritten.
Last Record	Ending date and time of the last call record stored in the CDR file before the STATUS command was entered.
Device/Status	List of all devices and their status. A device shown as ON is receiving CDR output.

Example

```

CDR ...? STATUS
-----
|           CDR STATUS INFORMATION FOR 27-NOV-1990  7:46:33           |
|-----|-----|-----|
| Side/Shelf | ACTIVE-Shelf 1 | STANDBY-Shelf 2 |
|-----|-----|-----|
| File Size  | 150000 Records | 150000 Records  |
| Records Written | 150000 Records | 150000 Records  |
| Unpolled Records | 150000 Records | 150000 Records  |
| File Usage  | 100.0 Percent  | 100.0 Percent   |
|-----|-----|-----|
| First Record | 17-OCT-90 13:55:33 | 12-OCT-90 12:48:02 |
| Last Record  | 27-NOV-90  7:44:58 | 19-NOV-90 11:40:19 |
|-----|-----|-----|
| Device      | Status          | Records Written   |
|-----|-----|-----|
| IMMEDIATE 1 | OFF             | 20                |
| IMMEDIATE 2 | OFF             | 0                 |
| IMMEDIATE 3 | OFF             | 0                 |
| IMMEDIATE 4 | OFF             | 0                 |
| REPORT      | OFF             | 8373              |
| BACKUP      | OFF             | 0                 |
| TAPE DRIVE  | DISMOUNTED     | 0                 |
|-----|-----|-----|

```

Exiting CDR

To exit the CDR program:

At the CDR ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the CDR program and returns you to the System Administration program.

```
CDR ...? EXIT
      Exiting the Call Detail Recording (CDR) program.
ADMIN ...?
```

Understanding Call Detail Records

This section describes the information in a call record and how it is formatted in the DISPLAY, IMMEDIATE, and REPORT commands.

Field Descriptions

This section describes all of the fields in a call detail record. See the following sections for information on how the system presents these fields in the various types of output.

Access Code

This field contains digits that have been taken from the dialed number by the Collect & Route /ACC option. The access code is generally the code dialed to access a trunk or Least Cost Routing, the speed dial code used to initiate the call, or any other access code configured in the system Collect & Route or Analyze & Route tables. For speed dial, this field contains the speed dial code, which consists of the speed dial access code and the speed dial index.

If the Collect & Route table contains the /DNIS option, this field may contain the DNIS number.

Account Code

This field contains account code digits that have been taken from the dialed number by the Collect & Route /ACCT option.

ANI Station Number

If the incoming trunk supplies caller ANI from another tandem switch and the Collect & Route table includes the /EXT option, this field contains the station number of the station within the distant switch that originated the call.

Answer Date and Time

The answer date and time are the date and time the called party (trunk or a line) answered the call. The field is blank if the call completed before answer was determined. For trunks, answer is determined by receiving an answer signal or by timing from the transmission of the final digit, as specified in the outpulse commands in the Facilities tables.

Both answer date and time appear in DISPLAY command output. Answer time alone appears in IMMEDIATE and REPORT command output.

Audit Trail

In cases where one call record cannot accurately represent a call, the system generates multiple call records for the call. Examples of calls that have multiple call records include calls involved in call hold, transfer, conference, or barge. The system assigns a single audit number to the set of call records so you can identify the records as belonging to one call. In very complex cases involving conference and barge, the complete set of call records for that call may contain several audit numbers.

Audit numbers are assigned 0001–9999 and then reused. They may not appear in consecutive order because calls have differing time stamps. Calls that do not span multiple call records may be assigned audit numbers of 0000 or their own unique audit numbers depending on the setting (Yes or No) of the Assign Audit Trail Numbers to All Calls parameter in the System Parameters table.

Each call record in a set of multiple call records represents a particular event and therefore you need to look at all of the records in the set to determine information such as start time or end time. Examples of calls spanning several call records and sharing the same audit trail number are illustrated below.

AUDT	TYP	ST	STRT DATE / TIME	ANSWER TIME	END TIME	CR STA#	CR CKT#	CR COS	SEL STA#	DIALED NUMBER
8832	004	35	960201 024054	024054	024054	----	042415	018	----	-----
8832	009	25	960201 024054	024052	024055	----	022023	000	----	-----
8832	004	06	960201 024054	024054	024106	----	042415	018	----	-----
8834	004	21	960201 024231	000000	024239	----	050108	018	----	33615310-----
8835	001	35	960201 024347	024350	024350	----	042414	040	5428	5428-----
8835	001	06	960201 024347	024350	024440	----	042414	040	5428	5428-----
8838	002	35	960201 024531	024533	024533	5340	011509	017	----	17074346037-----
8838	002	06	960201 024531	024537	024537	5340	011509	017	----	17074346037-----
8840	004	35	960201 024551	024553	024553	----	022023	018	----	5147-----
8839	004	35	960201 024534	024553	024553	----	042417	022	----	5147-----
8839	009	06	960201 024534	024553	024555	----	042417	000	----	5147-----
8839	004	06	960201 024551	024553	024555	----	022023	018	----	5147-----
8839	004	35	960201 024555	024555	024555	----	042417	018	----	-----
8839	009	25	960201 024555	024553	024555	----	022023	000	----	-----
8839	004	06	960201 024555	024555	024606	----	042417	018	----	-----
8841	001	35	960201 024640	024650	024650	----	042422	004	5340	5340-----
8843	004	35	960201 024852	024854	024854	----	022023	018	----	5147-----
8842	004	35	960201 024836	024855	024855	----	060707	022	----	5147-----
8842	009	06	960201 024836	024855	024856	----	060707	000	----	5147-----
8842	004	06	960201 024852	024854	024856	----	022023	018	----	5147-----
8842	004	35	960201 024856	024856	024856	----	060707	018	----	-----
8842	009	25	960201 024856	024854	024857	----	022023	000	----	-----
8842	004	06	960201 024856	024856	024908	----	060707	018	----	-----
8844	001	35	960201 024928	024930	024930	----	042418	040	5847	5847-----
8844	001	06	960201 024928	024930	025014	----	042418	040	5847	5847-----
8845	004	35	960201 025043	025101	025101	----	042421	018	----	5083-----
8845	004	06	960201 025043	025101	025148	----	042421	018	----	5083-----
8848	009	07	960201 025158	000000	025205	----	050108	000	----	-----

ATNs also appear in end of ATN records; see *End of Audit Trail Number Records* on page 7-40 for more information.

Authorization Code

This field contains forced authorization or security code digits that were dialed when the call was initiated or authorization or security code digits that have been taken from the dialed number by the Collect & Route / AUTH option. It also contains the ANI offered by FGB and FGD trunks.

Call Status

Table 7-I shows lists the call statuses and how they are reported in DISPLAY, IMMEDIATE, and REPORT output.

Table 7-I. Call Statuses in DISPLAY, Immediate, REPORT Output

Call Status	IMM/ REPORT Output	DISPLAY Output
No status	0	NULL STATUS
Barge feature request	1	BARGE REQUEST
Call interrupted by barge	2	BARGE
Hang-up in busy	3	BUSY
Conference feature request	4	CONFERENCE SETUP
Call pulled into conference	5	IN CONFERENCE
Hang-up or abandon conversation	6	IN CONVERSATION
Hang-up or abandon dialing	7	DIALING
Abandon feature request	8	FEATURE REQUEST
Hold feature request	9	HOLD REQUEST
Receive intercept treatment	10	INTERCEPTED
Conference after intercept	11	INTERCEPT CONFERENCED
Transferred after intercept	12	INTERCEPT TRANSFERRED
Hang-up while on hold	13	ON HOLD
Hang-up or abandon park feature	14	PARKED
Pick-up feature request	15	PICKUP REQUEST
Hang-up or abandon while in queue	16	QUEUED
Recall feature request	17	RECALL REQUEST
Reconnect feature request	18	RECONNECT REQUEST
Reconnect to held party	19	RECONNECTED
Hang-up or abandon while ringing	20	RINGING
Hang-up or abandon while routing	21	ROUTING

Table 7-I. Call Statuses in DISPLAY, Immediate, REPORT Output (continued)

Call Status	IMM/ REPORT Output	DISPLAY Output
Hang-up while other tones	22	TONE
Transfer feature request	23	TRANSFER REQUEST
Transferred	24	TRANSFERRED
Indeterminate call status	25	UNKNOWN STATUS
Conference breakdown	26	CONFERENCE BREAKDOWN
Conversation before hold	27	CONVERSATION BEFORE HOLD
Timeout conversation	28	TIMEOUT CONVERSATION
Call progress detect answer	29	CALL PROG DET ANSWER
Call progress detect dial tone	30	CALL PROG DET DIAL TONE
Route Timeout	31	TIMEOUT ROUTING
Service observing	32	ACD SERVICE OBSERVE
Preanswer rerouting	33	PREANSWER REROUTING
Post-termination rerouting	34	POST TERMINATION REROUTING
Answer	35	ANSWER
PRR Timeout	36	PRR TIMEOUT
Call Status Monitor detect busy	37	CALL STATUS MONITOR BUSY
Hang-up while RLT outpulsing	38	RLT OUTPULSING
Null status	39	NULL STATUS
Hang-up while pulse metering	40	PULSE METERING
External call forwarding	41	EXTERNAL CALL FORWARDING
Maintenance dialing	42	MAINTENANCE DIALING
Port connect request	43	PORT CONNECT REQUEST
Call interrupted	44	CALL INTERRUPTED
Held routed by holder	45	HELD ROUTED BY HOLDER
Holder invoke held route	46	HOLDER PERFORMED HELD RT
Sequenced connection tone	47	SEQUENCED CONN. TONE
Port dialing	48	PORT DIALING
Facility hold	49	FACILITY HOLD
Null status	50	NULL STATUS
Advice of charge	51	ADVICE OF CHARGE

Table 7-I. Call Statuses in DISPLAY, Immediate, REPORT Output (continued)

Call Status	IMM/ REPORT Output	DISPLAY Output
Silent monitor	52	SILENT MONITOR
End of audit trail	53	END OF AUDIT TRAIL

Call Type

Table 7-J shows how call types appear in DISPLAY, Immediate, and REPORT output.

Table 7-J. Call Types in DISPLAY, Immediate, and REPORT Output

Call Type	IMM/ REPORT Output	DISPLAY Output
Time change	0	TIME CHANGE (see page 7-40)
Incoming trunk to line	1	TRUNK TO LINE
Line to outgoing trunk	2	LINE TO TRUNK
Line to line	3	LINE TO LINE
Incoming trunk to outgoing trunk	4	TRUNK TO TRUNK
Incoming trunk to conference	5	TRUNK TO CONFERENCE
Line to conference	6	LINE TO CONFERENCE
Conference to outgoing trunk	7	CONFERENCE TO TRUNK
Conference to line	8	CONFERENCE TO LINE
Trunk only	9	ONE TRUNK
Line only	10	ONE LINE
Conference circuit only	11	ONE CONFERENCE

Caller Circuit Number

The caller circuit number is the shelf-slot-circuit number of the calling port.

Caller Class of Service

The caller Class of Service is the Class of Service of the calling port.

Caller Routing Class

The caller routing class is the routing class used to route the call.

Caller Station Number

The caller station number is the extension number of the calling station. In DISPLAY output, this field is replaced by the Caller Trunk Group Number if the calling port is a trunk.

Caller Switch ID

If the incoming trunk supplies ANI and the Collect & Route table includes the /LOC option, this field contains the switch identification number (defined in the System Parameters table) of the switch from which the call originated. If the call originated from a local line, this field contains the PNANI switch identification number of the local switch.

If the call originated on a Feature Group D trunk, this field may contain the two-digit information digits that report the ANI status. *Equal Access Configuration* in the Database Configuration Manual describes the information digits.

Caller Trunk Group Number

The caller trunk group is the number of the trunk group that placed the call. In DISPLAY output, this field is replaced by the Caller Station Number if the calling port is a line.

Code Validation

Table 7-K shows the code validation characters and their meanings. See *Time Change Records* on page 7-40 for more information about invalid call records.

Table 7-K. Validation Codes

Code	Meaning
A	Authorization code attempt
S	Security code attempt
F	Failure of authorization/security code attempt
E	Error in authorization/security code attempt
I	Call record is invalid due to a time change
----	Nothing to report

Conference Number

The conference number is an audit number assigned by the system and helps you identify the call records related to a given conference.

Dialed Number

The dialed number is the number dialed to initiate the call (plus or minus digits added or removed by Collect & Route options like /ACC or /INS). If a speed dial number was dialed, this field contains the index number associated with the speed dial number.

End Date and Time

The end date and time are the date and time the call terminated. Both end date and time appear in the DISPLAY output. End time alone appears in the output from the IMMEDIATE and REPORT commands.

You can use this field to determine the duration of a call. The call duration is calculated from the start time in the case of unanswered calls and from the answer time in the case of answered calls.

Meter Pulse Count

This field contains the number of pulses detected during the call (Loop Start trunks only). This field appears only if you have purchased Pulse Metering.

Queue Status

The queue status is the latest queue in which the call was involved.

Table 7-L. Queue Status in DISPLAY, Immediate, and REPORT Output

Queue Status	IMM/ REPORT Output	DISPLAY Output
Null	0	NULL QUEUE
Standby Queue	1	STANDBY
Callback Queue	2	CALLBACK
Camp On	3	CAMP ON
Paging	4	PAGING

Queue Time

The queue time is the total amount of time the call spent in all queues.

In the output from the IMMEDIATE and REPORT commands, time is in the format *hhmmss*.

R2 Status

The R2 status is the MFC Group B signal, 00-10, which represents the status of the called party. Group B signals are configured in the R2 Signalling Protocols table of the System Editing tables. This field appears only if you have purchased R2 Signalling Protocol.

Selected Circuit Number

The selected circuit number is the shelf-slot-circuit number of the called port.

Selected Class of Service

The selected Class of Service is the Class of Service of the called port.

Selected Facility

The selected facility is the number of the facility used to route the call.

Selected Route Pattern

The selected route pattern is the number of the initial Route Pattern requested by a call. You can see the system-assigned numbers for your Route Patterns by getting a listing of Route Patterns in EDT.

Selected Routing Class

The selected routing class is the routing class of the called port.

Selected Station Number

The selected station number is the station number to which the call was routed. In DISPLAY output, this field is replaced by the Selected Trunk Group Number if the called port is a trunk.

Selected Trunk Group Number

The selected trunk group number is the number of the trunk group selected to route the outgoing call. In DISPLAY output, this field is replaced by the Selected Station Number if the called port is a line.

Start Date and Time

The start date and time are the date and time the call started. In the output from IMMEDIATE and REPORT, date is in the format *yymmdd* and time is in the format *hhmmss*.

When a call spans multiple call records, the start time is calculated differently in the initial call record as indicated Table 7-M. In subsequent call records, the start time is the time when that call record was activated.

Table 7-M. Start Date/Time for Calls with Multiple Call Records

Type of Call	Start Time
Trunk to line	When incoming trunk is seized
Line to trunk	When call is originated
Trunk to trunk	When incoming trunk is seized
Line to line	When calling party first goes off-hook

Time Change Records

When the system time changes, the system adds a time change record to the CDR record file. Time change records are similar to other call records but have a call type of TIME CHANGE or zero. The old time is added to the Start Time field and the new time is added to the Answer Time field. The remaining fields are meaningless.

All calls that are active during the time change are marked invalid in the Code Validation field.

End of Audit Trail Number Records

A call record with status 53 reports that CDR has deallocated an Audit Trail Number (ATN). To generate these records, the Assign Audit Trail Number to All Calls parameter must be set to Yes in the System Parameters table, the system CDR filter must be set to collect calls with status 53, and Caller CDR Output must be turned on in appropriate Feature Classes.

Generating end of ATN records dramatically increases the number of call records generated by the system. Note that it is possible to see no other records for a call other than the end of ATN record, if an ATN was allocated for a call and no subsequent activity caused the system to generate call records for the ATN.

Generating end of ATN records does guarantee the end of a call. You should disregard call data in the end of ATN record; all call detail for a call can be obtained from other records with the same ATN with one exception. If a call lasts more than 24 hours, the start date in the end of ATN record will provide the end date for the call.

IMMEDIATE and REPORT Output

Fields in IMMEDIATE and REPORT output are in ASCII format and are separated by a single space. Table 7-N lists all fields that may appear if they have not been masked.

Table 7-N. Immediate & Report Call Detail Record Format

IMMEDIATE & REPORT Output Header	Field	Character Width
AUDT	Audit Trail	4
TYP	Call Type	3
ST	Call Status	2
QST	Queue Status	2
CF #	Conference Number	2
STRT DATE / TIME	Start Date and Time	13
ANSWER TIME	Answer Date and Time	6
END TIME	End Date and Time	6
QUEUE TIME	Queue Time	6
CR SW#	Caller Switch ID	3
ANI STA#	ANI Station Number	4
CR STA#	Caller Station Number	4
CR TG#	Caller Trunk Group Number	3
CR CKT#	Caller Circuit Number	6
CR COS	Caller Class of Service	3
CR RC	Caller Routing Class	3
SEL COS	Selected Class of Service	3
SEL RC	Selected Routing Class	3
ACC COD	Access Code	4
SEL FAC	Selected Facility	4
SEL STA#	Selected Station Number	4
SEL TG#	Selected Trunk Group Number	3
SEL CKT#	Selected Circuit Number	6
SEL PAT#	Selected Route Pattern	4
DIALED NUMBER	Dialed Number	20 ¹
CODE VAL	Code Validation	4

Table 7-N. Immediate & Report Call Detail Record Format (continued)

IMMEDIATE & REPORT Output Header	Field	Character Width
AUTHORIZATION CODE	Authorization Code	20 ¹
MP CNT ²	Meter Pulse Count	5
ACCOUNT CODE	Account Code	20 ¹
R2 ST ³	R2 Status	2

- 1 Extended format must be selected under the SET command.
- 2 Meter Pulse Count appears only if Pulse Metering/AOC is purchased.
- 3 R2 Status appears only if R2 Signaling Protocol is purchased.

Note The AUTH and ACCOUNT CODE fields have the shorter lengths noted by asterisks when the MP CNT and R2 ST fields are included in output.

CDR Polling

CDR polling allows a host computer to log on to the system, either locally or via modem, and collect call records for processing by software on the host system. Polling from the host computer is accomplished by an automated program residing on the host computer. This program must log on to the system, handle collection of call data, and exit from CDR when all records have been polled.

Communication Protocol

Communication between the system and host computer takes place through a message-based protocol. Link control messages allow the system and host to communicate and begin with an ENQ byte. Data messages transmit data and begin with an SOH byte. Both message types contain Longitudinal Redundancy Check (LRC) bytes which are the exclusive OR (XOR) of all preceding bytes.

The system checks the validity of messages received from the host. A message is invalid if the LRC is incorrect or if any of the fixed fields of the record are incorrect. If the system receives an invalid message during the log-on procedure, it ignores the message. If it receives an invalid message during the polling sequence, it transmits a NAK message.

The system also times messages received from the host. If it detects a lapse of more than 3 seconds between bytes in a message, it discards the message received up to that point as a partial message. If it detects a lapse of more than 6 seconds at any time, a time out occurs and the system sends a REP message to the host. The system will send three REP messages and finally abort the polling session if the host does not respond. (Note: The host can choose to abort a polling session at any point by not responding, however, it should save the data collected.)

The system aborts a polling session after sending three consecutive NAK or REP messages. It also aborts the session if the total number of NAK or REP messages exceeds 15.

Character Format

The host can send and receive data in binary or ASCII format. In ASCII mode, the system uses ASCII characters 0 through 9 and A through F to represent hexadecimal numbers. To transmit, each binary byte must be converted to two ASCII characters; to receive, each pair of ASCII characters must be converted to a binary byte.

The log-on protocol begins in ASCII mode, however, the host can change modes at any time by encoding "BINARY" OR "ASCII" in a DATA message. The system responds with an ACK message when you request a change to binary or ASCII mode.

You can use binary mode to double the transmission rate, but it is less reliable than the ASCII mode because all characters are legal and may generate other complications in the communications link.

Polled and Unpolled Records

At the beginning of a polling sequence, the host can send "POLLALL" in a DATA message to poll all records from the system, or send "POLLNEW" in a DATA message to poll records after the poll marker (unpolled records). If the host sends neither message, the system sends unpolled records.

File Marker

The system updates the file marker after the successful transmission of a call record when it receives an ACK message with a value of C1 in the third byte. It does not update the marker if the third byte contains C0. To protect yourself in the event of an aborted polling session, you might want to transmit a C1 at the very end of a polling session.

Call Record Format

Call records polled from the hard disk have a special format. See *Format of Polled Records* on page 7-49 for details.

Polling Throughput

Table 7-O lists typical throughput for error-free CDR records in a one-hour period using the polling feature at the indicated baud rates. Note that 9600 baud is the maximum transfer rate.

Table 7-O. Polling Rates

Baud Rate	Binary Mode	ASCII Mode
300	1160	580
1200	4640	2320
9600	37120	18560

Because the Public Switched Network was originally designed around the transmission of voice signals, it is not an optimum environment for trans-

mitting data. For example, some end to end connections may present different amplitude attenuation and delay times than others. As a result, amplitude and phase distortion may cause data transmission failures at the same baud rate with different network connections. Some transmission rates may never yield error free data over the Public Switched Network. Therefore, before you use remote polling for billing data, you should try the different baud rates to determine the ideal transmission rate.

Host Log-on and Polling Sequences

Log-on Procedure

The log-on protocol begins in ASCII mode, however, the host can change modes at any time by encoding "BINARY" OR "ASCII" in a DATA message.

Host Procedure	Switch Response
1 Ring polling port.	Answer and establish modem lockup.
2 Send "CTRL+C"	Send "Username:"
3 Send "HOST"	Send "Password:"
4 Send "COMPUTER"	Send STRT message.
5 Send STRT message.	Send STACK message.
6 Send ACK message.	

After step 6, the communications message protocol is initialized and further data communication is performed by this protocol.

Polling Sequence

The system automatically sends unpolled records to the host. To collect all records, the host can send "POLLALL" in a DATA message before beginning with step 1, below.

Host Procedure	Switch Response
1 Send "CDR" in DATA message.	Send ACK message. Send call record in DATA message.
2 Send ACK message.	Send call record in DATA message.
(Repeat step 2 until CDR sends "00 00" in DATA message which indicates you have received the most current call record in the CDR file.)	
3 Send "EXIT" in DATA message.	Send ACK message, carriage return, and line feed.

Link Control Messages

Link control messages do not transmit data, but allow communication with the host.

ACK Message

ACK messages report correct reception of DATA and STACK messages.

| ENQ | ACK | C0 | resp | 00 | 01 | LRC |

ENQ a byte with the value 05

ACK a byte with the value 01

C0 the response to the STACK message. For responses to DATA messages, this byte can also contain C1. C0 tells the system not to update the file marker; C1 tells the system to update the marker

resp a byte with the message sequence number, modulo 256, of the last correctly received message

LRC a byte containing the XOR of all preceding bytes

A sample ACK message from the log-on sequence is shown below:

0501C0000001C5

NAK Message

NAK messages report incorrect reception of DATA messages.

| ENQ | NAK | rsn | resp | 00 | 01 | LRC |

ENQ a byte with the value 05

NAK a byte with the value 02

rsn a byte with one of the following values:

C1H – header longitudinal redundancy check error

C2H – data longitudinal redundancy check error

C3H – bad REP message

D6H – message too long

D7H – message header format error

resp a byte with the message sequence number, modulo 256, of the last correctly received message

LRC a byte containing the XOR of all preceding bytes

REP Message

REP messages request received message status after the system sends CDR data and a timeout or error occurs before it receives an ACK or NAK message from the host.

| ENQ | REP | C0 | 00 | num | 01 | LRC |

ENQ a byte with the value 05

REP a byte with the value 03

num a byte with the message sequence number, modulo 256, of the last message transmitted by this station (does not include retransmissions)

LRC a byte containing the XOR of all preceding bytes

STACK Message

STACK messages acknowledge receipt of a STRT message. If the host does not reply with an ACK message, the system makes three attempts, at 15 second intervals, to establish contact before aborting the call.

| ENQ | STACK | C0 | 00 | 00 | 01 | LRC |

ENQ a byte with the value 05

STACK a byte with the value 07

LRC a byte containing the XOR of all preceding bytes

A sample STACK message is shown below:

0507C0000001C3

STRT Message

STRT messages establish initial contact and synchronization. The system sends a STRT message after power up or log-on. If the host does not reply with its STRT message, the system makes three attempts, at 15 second intervals, to establish contact before aborting the call.

| ENQ | STRT | C0 | 00 | 00 | 01 | LRC |

ENQ a byte with the value 05

STRT a byte with the value 06

LRC a byte containing the XOR of all preceding bytes

A sample STRT message is shown below:

0506C0000001C2

DATA Messages

DATA messages send data over the link. The system uses DATA messages to transmit call records to the host. The host uses DATA messages to transmit the CDR, EXIT, ASCII, BINARY, POLLALL, and POLLNEW commands.

| SOH | byte count | resp | num | 01 | HLRC | data | DLRC |

SOH a byte with the value 1

byte count two bytes that give the number of bytes of data in the "data" field. The low byte is sent first and the highest two bits of the upper byte are both always set to 1

resp a byte with the message sequence number, modulo 256, of the last correctly received message

num a byte with the sequence number, modulo 256, of this message transmitted by this station

HLRC a byte containing the XOR of all previous bytes in the record

data from the system, bytes containing data; from the host computer, one of the following commands:

CDR – sent at the beginning of the polling sequence
 EXI – sent after receiving "00 00" data in a DATA message
 ASCII – sent any time during polling to receive ASCII data
 BINARY – sent any time during polling to receive binary data
 POLLALL – sent before CDR command to poll all records
 POLLNEW – sent before CDR command to poll records from the poll marker

DLRC a byte containing the XOR of the data

Figure 7-4 illustrates a DATA message used by the host computer to transmit the CDR command (in ASCII mode).

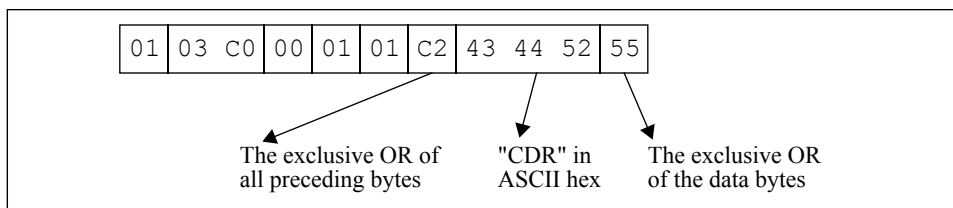


Figure 7-4. Sample DATA Message

Format of Polled Records

Polled call records are contained in the data portion of DATA messages. Table 7-P describes the format of a polled record.

DATA Messages for Rel 3.0 to 3.5 have a 'byte count' of 102 bytes.

DATA Messages for Rel 3.6 and above have a 'byte count' of 103 bytes.

Table 7-P. Polled Call Detail Record Format

Field #	Field Name	Size	Byte(s)	Format
1	Call Type	1 byte	1	Binary
2	Call Status	1 byte	2	Binary
3	End Time	5 bytes	3 - 7	Time Stamp
4	Caller Station Number	1 word	8, 9	Binary
5	Selected Station Number	1 word	10, 11	Binary
6	Caller Trunk Group Number	1 byte	12	Binary
7	Selected Trunk Group Number	1 byte	13	Binary
8	Audit Trail	1 word	14, 15	Binary
9	Answer Time	5 bytes	16, 20	Time Stamp
10	Code Validation	1 byte	21	Bit Encoded
11	Queue Status	1 byte	22	Binary
12	Queue Time	5 bytes	23, 27	Time Stamp
13	Start Time	5 bytes	28, 32	Time Stamp
14	Caller Switch ID	2 bytes	33, 34	BCD
15	ANI Station Number	2 bytes	35, 36	BCD
16	Access Code	2 bytes	37, 38	BCD
17	Dialed Digits	16 bytes	39, 54	BCD
18	Authorization Code	10 bytes	55, 64	BCD
19	Account Code	10 bytes	65, 73	BCD
20	Meter Pulse Count	1 word	74, 75	Binary
21	R2 Status	1 byte	76	Binary
22	Gap Code	5 bytes	77, 81	BCD
23	Jip Code	3 bytes	82, 84	BCD
24	Carrier Code	2 bytes	85, 86	BCD
25	LNP Bits	1 bytes	87	Bit Encoded

Table 7-P. Polled Call Detail Record Format (continued)

Field #	Field Name	Size	Byte(s)	Format
26	Caller Circuit Number	1 word	88, 89	Binary
27	Caller Class of Service	1 byte	90	Binary
28	Caller Routing Class	1 byte	91	Binary
29	Selected Circuit Number	1 word	92, 93	Binary
30	Selected Class of Service	1 byte	94	Binary
31	Called Routing Class	1 byte	95	Binary
32	Conference Number	1 byte	96	Binary
33	Selected Route Pattern	1 word	97, 98	Binary
34	Selected Facility	1 word	99, 100	Binary
35	Filler Bytes ¹	1 or 2 bytes	101	Binary

¹ Rel 3.0 to 3.5 have 1 Filler Byte. Rel 3.6 and above have 2 Filler Bytes.

Format of Time Stamp

Fields in time stamp format are organized as shown in Table 7-Q:

Table 7-Q. Time Stamp Field

Bytes	Contents	Example	Decimal Equivalent
1, 2	Days accumulated after system base time	00000001 11010111	471
3, 4	Seconds accumulated after system base time (up to 66535 seconds)	00100001 00000000	8448
5	Accumulated units of 65535 seconds	00000001	1

To calculate Start Date/Time, Answer Time, or End Time (using the examples shown in Table 7-Q):

- 1 Determine the system base time stamp.
January 1, 1984, 00:00:00 hours (midnight)
- 2 Add the accumulated days to the base date.
January 1, 1984 + 471 days = April 15, 1985
- 3 Add the accumulated seconds to the number of incremented seconds.
8448 + 65535 = 73,983 seconds

- 4 Add the totals seconds in step 3 to the base time.

$$00:00:00 + 73983 \text{ seconds} = 20:33:03 \text{ (8:33:03 PM)}$$

To calculate Queue Time, add the accumulated seconds in bytes 3-5.

Format of Binary Coded Decimal

Digit fields are stored in Modified Packed Binary Coded Decimal (BCD) format. In Binary Coded Decimal format, each digit of a number is represented by four bits and every bit must be filled with a "1" or "0", as illustrated in Figure 7-5. The format is modified because the digit 0 is stored as A (HEX) and a value of "0000" means no digit.

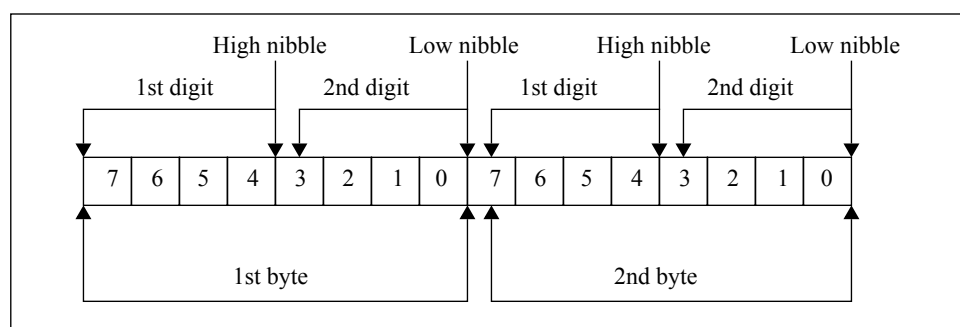


Figure 7-5. Binary Coded Decimal Format

Examples of fields stored in BCD format are shown below:

Table 7-R. Examples of Binary Coded Decimal Format

Field	Bytes	Example	Digits
Caller Switch ID	2	00011010 01110000	107
Access Code	2	10010000 00000000	9
Dialed Digits	10	10001000 00110001 00100001 00100000 00000000 00000000 00000000 00000000 00000000 00000000	8831212

Format of Extension Numbers

Extension numbers appear with the bytes reversed. To convert them, you must reverse the order of the bytes and then convert them to decimal numbers. For example, an extension of 8A13 converts to 5002 as shown below.

CDR Output: 8A13

Reversed bytes: 138A

Decimal conversion: 5002

Format of Circuit Numbers

In polled data, CDR reports circuit numbers as port numbers. Port numbering information is shown next.

Table 7-S. Format of Circuit Numbers

System	Manual (for Further Port Group Information)
Cerato ME and LE	Cerato LE/ME Installation and Maintenance Manual

Cerato ME

Port numbers begin with decimal 512 because circuits 0-511 are reserved for conferences and tones. Each shelf contains 256 ports.

Table 7-T illustrates the port numbers.

Table 7-T. Cerato ME Port Numbering

Rack/Cab	Shelf	# of Ports	Port Numbers
1	1	256	512-768
	2	256	769-1024
	3	256	1025-1280
	4	256	1281-1536
2	5	256	1537-1792
	6	256	1793-2048
	7	256	2049-2304
	8	256	2305-2560

Cerato LE

Port numbers begin with 400H (decimal 1024) because circuits 0-1023 are reserved for conferences and tones. Each shelf contains 256 ports.

Table 7-U illustrates the port numbers.

Table 7-U. Cerato LE Port Numbering

Rack/Cab	Shelf	# of Ports	Port Numbers
1	1	256	1024-1280
	2	256	1281-1536
	3	256	1537-1792
	4	256	1793-2048

Table 7-U. Cerato LE Port Numbering (continued)

Rack/Cab	Shelf	# of Ports	Port Numbers
2	5	256	2049-2304
	6	256	2305-2560
	7	256	2561-2816
	8	256	2817-3072
3	9	256	3073-3328
	10	256	3329-3584
	11	256	3585-3840
	12	256	3841-4096
4	13	256	4097-4352
	14	256	4353-4608
	15	256	4609-4864
	16	256	4865-5120
5	17	256	5121-5376
	18	256	5377-5632
	19	256	5633-5888
	20	256	5889-6144
6	21	256	6145-6400
	22	256	6401-6656
	23	256	6657-6912
	24	256	6913-7168
7	25	256	7169-7424
	26	256	7425-7680
	27	256	7681-7936
	28	256	7937-8192
8	29	256	8193-8448
	30	256	8449-8704
	31	256	8705-8960
	32	256	8961-9216
9	33	256	9217-9472
	34	256	9473-9728
	35	256	9729-9984
	36	256	9985-10240

Sample Polled Record

Following is an example of a polled record.

1	3	23	b6	e	a2	98	0	df	7	e0	7	0	0	45	1e
b6	e	a2	98	0	0	0	0	0	0	0	0	b6	e	9f	98
0	aa	10	0	0	0	0	2a	16	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5e	1	d	1	5f	1	d	1	0	0	0	0	0	0	0	0

The CDR display for this record is shown below.

RECORD NUMBER: 1		TIME STAMP: 23-APR-1994 10:51	
Start Date	4/23/94	Answer Date	4/23/94
Start Time	10:51:11	Answer Time	10:51:14
End Date	4/23/94	End Time	10:51:14
Caller Station	2015	Selected Station	2016
Caller Circuit	01-22-15	Selected Circuit	01-22-16
Caller COS	13	Selected COS	13
Caller Routing Class	1	Selected Routing Class	1
Caller Switch ID	001	Selected Route Pattern	
Caller ANI		Selected Facility	
Record Audit	7749	Call Type	LINE TO LINE
Conference Audit		Call Status	ANSWER
Access Code		Queue Status	NULL QUEUE
Code Validation		Queue Time	
Dialed Number	2016		
Authorization Code			
Account Code			

Table 7-V explains how to convert the information in the polled record.

Table 7-V. Conversion of Polled Data

Data	Field	Conversion
1	Records transmitted	1
3	Call type	3H=3D, Line to line
23	Call status	23H=35D, Answer
b6 e a2 98 0	End time	0eb6H=3766D, 3766 days 98a2H=39074D, 39074 seconds Jan. 1, 1984 + 3766 days=April 23, 1994 39074/3600=10.8539 hour .8539 X 60=51.2340 minute .2340 X 60=14.0400 second End date/time: 4/23/94 10:51:14
df 7	Caller station	07dfH=2015D, Extension 2015
e0 7	Selected station	07e0H=2016D, Extension 2016
0	Caller trunk group	
0	Selected trunk group	
45 1e	Audit trail	1e45H=7749D, Audit # 7749
b6 e a2 98 0	Answer time	same as end time
0	Code validation	
0	Queue Status	
0 0 0 0 0	Queue time	

Table 7-V. Conversion of Polled Data (continued)

Data	Field	Conversion
b6 e 9f 98 0	Start time	0eb6H=3766D, 3766 days 98 9fH=39071D, 39071 seconds Start date/time: 4/23/94 10:51:11
aa 10	Caller switch ID	aa10 BCD = 001, Switch ID 001
0 0	ANI station number	
0 0	Access code	
2a 16 0 0 0 0 0 0 0 0	Dialed number	2a16 BCD = 2016, Extension 2016
0 0 0 0 0 0 0	Authorization code	
0 0 0 0 0 0 0 0	Account code	
d	Caller COS	dH=13D, COS 13
1	Caller routing class	Route class 1
d	Selected COS	dH=13D, COS 13
1	Called routing class	Route class 1
0	Conference number	
0 0	Selected route pattern	
0 0	Selected facility	

8

Maintenance History (MHC)

This chapter explains how to use the Maintenance History (MHC) administration program. MHC lets you view a history of keyboard entries that have occurred at system administration terminals. Viewing this history can be useful for troubleshooting database configuration problems or unexpected system operation.

This chapter contains the following sections:

- MHC Program Overview (page 8-2)
- Starting MHC (page 8-4)
- Using MHC Commands (page 8-5)
- Exiting MHC (page 8-9)

MHC Program Overview

The Maintenance History (MHC) program collects information about user interaction with the system administration programs and stores this information in a Maintenance History file.

On redundant systems, the system maintains a separate Maintenance History file for each Common Equipment shelf and records user interaction in the file associated with the currently active shelf. For example, if shelf 1/CC-1 is the active shelf when a user logs on to the system, information about the log on is stored in the Maintenance History file for shelf 1/CC-1.

The information in the Maintenance History file includes:

- user name entered at log on (the password is not recorded)
- SIU, DCA, or UART port used for log-on
- date and time of activity
- system prompts and user entries

A sample partial display of information from the Maintenance History file is illustrated below.

```

-----
SHELF 1 4-17-1994 8:20
D0 : Username ...? ADMIN
D0 : ADMIN ...? EDT
D0 : EDT ...? SEL B
D0 : B ...? COD
D0 : COD ...? L
D0 : Authorization code [ALL] ...?

-----
SHELF 1 4-17-1994 8:21
D0 : COD ...? COS
D0 : COS ...? L 12
D0 : COS ...? FEA
D0 : FEA ...? MOD
D0 : Feature class (0-63) ...? 12
D0 : Feature class type [CUSTOM] ...?
D0 : Feature [END] ...? REV
D0 : Feature [END] ...? F73
D0 : Serial DISA [N] ...? Y
D0 : Feature [END] ...?
D0 : Comment [SYSTEM ADMINISTRATOR] ...?
D0 : FEA ...? EXI
D0 : B ...? SAV
D0 : EDT ...? EXI
D0 : ADMIN ...? EXI

-----
SHELF 1 4-17-1994 10:32
D0 : Username ...? Teltronics
D0 : ADMIN ...? STS

```

Information in the file is ordered chronologically in one minute time periods. If no user interaction occurred for a shelf during a one minute period of the day, no information appears in the file for that shelf and period.

Each line showing user interaction associated with an SIU, DCA, or UART port constitutes one record in a Maintenance History file. For example, the sample display shows six records for 8:20 am and 15 records for 8:21 am. SIU port addresses are preceded with an S, DCA ports are preceded with a D, and UART ports are preceded with a U.

Note The record of UART activity is stored in the Maintenance History file for the shelf to which the UART connection is made, which may or may not be the currently active shelf for the system. Accessing the system via a UART is not an accepted practice except in very special circumstances.

The Maintenance History file holds a maximum of 2000 records. MHC stores records in the file in the order they occur and when the maximum number of records is reached, starts overwriting the oldest records in the file.

If you want a permanent copy of Maintenance History file records, you might want to print them out periodically. How often you make a printout depends on software usage. During the initial configuration of your system, you are likely to generate a lot of records in short periods of time. To be safe, you might try printing out your records every 6-8 hours. After the initial configuration, you should monitor software usage and adjust the length of time between printouts accordingly.

The following diagram illustrates MHC program operation.

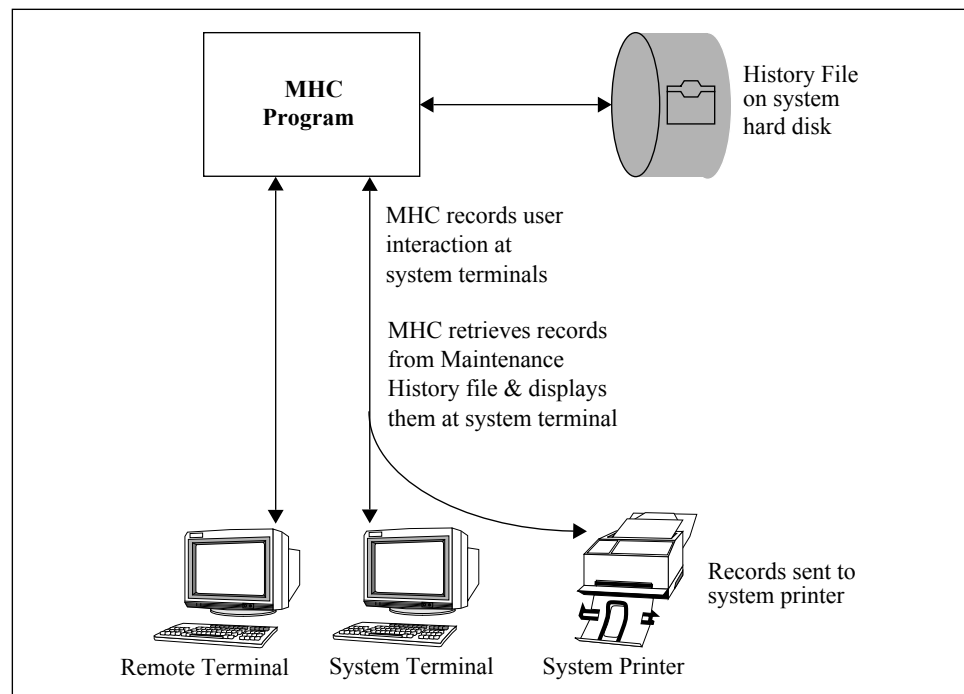


Figure 8-1. Maintenance History Program

Starting MHC

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **MHC** and press RETURN.

MHC displays the following message and the MHC ...? prompt, from which you can enter any of the MHC commands. (If your password does not allow access to MHC, the system displays a message telling you that you have insufficient privileges.)

```
                Welcome to the Teltronics
                Maintenance History Control Program

The Maintenance History Control program (MHC) allows you to display the
contents of the maintenance history file.  The maintenance history file
contains records of user interaction with the Teltronics administration soft-
ware.
If you need information on how to use MHC or any of its commands, you can
enter 'HELP' at any prompt.

MHC ...?
```

Using MHC Commands

This following pages describe how to:

- display records in the Maintenance History file (DISPLAY)
- check the status of the Maintenance History file (STATUS)

Displaying the Contents of the Maintenance History File (DISPLAY)

The DISPLAY command lets you view the contents of the Maintenance History files.

Notes

The following rules apply for entering date and time with /AFT and /BEF options:

- The formats for entering date and time are listed in Table 8-A. Optional information is shown in square brackets ([]).
- Entering time is optional. When you don't enter a time, MHC assumes a time of 00:00:00 (12:00 am).
- If you enter /AFT or /BEF as a single option, you do not have to specify date and time because the system will prompt for date and time (as illustrated in example 2).

Table 8-A. Date and Time Formats

Date/Time Formats	Explanation		Examples
<i>mm-dd-[yy]yy</i>	<i>mm</i>	month (1-12)	04-03-94
<i>dd-mmm-[yy]yy</i>	<i>mmm</i>	month (JAN-DEC)	04-03-1994
	<i>dd</i>	day (1-31)	03-APR-94
	<i>[yy]yy</i>	final 2 or 4 digits of the year	
<i>hh[:mm][:ss]</i>	<i>hh</i>	hour (00-23)	08:24:20
	<i>mm</i>	<i>optional</i> minute (00-59)	08:24
	<i>ss</i>	<i>optional</i> second (00-59)	08

On redundant systems, the system maintains a separate Maintenance History file on each system hard disk. When shelf 1/CC-1 is active, MHC writes records in the Maintenance History file on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes records in the Maintenance History file on shelf 2/CC-2. When you use DISPLAY ALL, MHC displays (in chronological order) all records from the active shelf Maintenance History file and then all records from the standby shelf Maintenance History file.

If you use one shelf more often than the other and MHC overwrites records in the Maintenance History file on that shelf, you might find a time gap in some of your output displays. For example, if shelf 1/CC-1 was used May 1–5 and shelf 2/CC-2 was used May 6–20 and MHC started overwriting records on shelf 2/CC-2 on May 10, output from DISPLAY ALL would contain information for May 1–5 and May 10–20. The display would not contain records for May 6–9.

To view records for particular shelf on a redundant system, use the /ACTIVE or /STANDBY option.

Examples

- 1 This example illustrates how to enter the DISPLAY command with the /AFTER, /BEFORE and /ACTIVE options to look at a particular portion of the Maintenance History file on the active shelf.

```
MHC ...? DISPLAY /AFT 4-15-94 /BEF 4-17-94 /ACT
```

- 2 This example illustrates how the system prompts for beginning date and time if you enter the /AFT option by itself.

```
MHC ...? DISPLAY
Enter Display Options [ALL] ...? /AFT
Beginning Date ...? 4-17-94
Beginning Time [00:00:00] ...? 18:00
```

You can also enter the HELP command at the date and time prompts to find out the format for specifying date and time.

- 3 This example illustrates a partial report from the DISPLAY ALL command. You can stop output from DISPLAY at any time by using the CTRL+Z command.

```
MHC ...? DISPLAY
Enter Display Options [ALL] ...?

-----
SHELF 1 4-12-1994 16:33
U0 : Username ...? Teltronics

-----
SHELF 1 4-12-1994 16:34
U0 : Username ...? Teltronics
U0 : ADMIN ...? edt
U0 : EDT ...? uti
U0 : UTI ...? res
U0 : RESTORE [DB] ...?

-----
SHELF 1 4-12-1994 16:35
U0 : Database to restore ...? b
U0 : Place disk 1 on shelf 1 and hit return ...?

-----
SHELF 1 4-12-1994 16:41
U0 : Place disk 2 on shelf 1 and hit return ...?

-----
SHELF 1 4-12-1994 17:06
U0 : Place disk 3 on shelf 1 and hit return ...?

-----
SHELF 1 4-12-1994 17:11
```

Checking the Status of the Maintenance History File (STATUS)

The STATUS command displays a report that describes the current state of the Maintenance History file.

Notes

STATUS reports the file size, file usage, and the dates and times of the first and last entries in the Maintenance History file.

The Maintenance History file is a circular file. Once the file has reached the maximum size (125 Kb, 100% usage), MHC overwrites the oldest entries in the file. When the file reaches the maximum size, STATUS continues to report file usage as 100%. The dates and times of the first and last records of the file change over time, as MHC overwrites old records with new records.

Examples

MHC STATUS INFORMATION FOR 26-OCT-2009 15:47:38					
Side		File Size	File Usage	First Record	Last Record

ACTIVE	CC-1	125 Kb	38%	16-oct- 9 14:37:00	26-OCT- 9 15:47:00
STBY	CC-2	125 Kb	58%	6-oct- 9 14:37:00	26-OCT- 9 15:47:00

Exiting MHC

To exit the MHC program:

At the MHC ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the MHC program and returns you to the System Administration program.

```
MHC ...? EXIT
... Exiting the Maintenance History Control program ...
ADMIN ...?
```

9

Network Control (NCF)

This chapter explains how to use the Network Control Facilities (NCF) program to make temporary changes in the operation of your network. Examples of the tasks you can perform in NCF are:

- prohibiting outgoing traffic while allowing incoming calls to individual trunk circuits
- prohibiting both incoming and outgoing traffic on individual trunk circuits
- redirecting calls that would normally use a particular trunk facility to another facility
- forcing calls to bypass certain facilities
- prohibiting calls to particular area codes, exchanges, or dialed numbers
- controlling the number of calls that may be sent to a specified location during a given time period

This chapter contains the following sections:

- Starting NCF (page 9-2)
- Using NCF Commands (page 9-3)
- Exiting NCF (page 9-14)

Starting NCF

To start the NCF program, follow these steps:

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **NCF** and press RETURN.

NCF displays the following message and the NCF ...? prompt, from which you can enter any of the NCF commands. (If your password does not allow you access to NCF, the system displays a message telling you that access has been denied.)

```

                                Welcome to the Teltronics
                                Network Control Facilities (NCF) Program

The Network Control Facilities (NCF) program allows you to limit calls being
routed to an overloaded or out-of-service segment of the telephone network.
It also allows you to turn network meet-me conferences online and offline. If
you need information on how to use NCF or any of its commands, you can
enter "HELP" at any prompt.

NCF ...?
```

Using NCF Commands

This section explains how to:

- block destination numbers (BLOCK)
- control the number of calls to destination numbers (GAP)
- allow incoming traffic only on trunks (DIRECT)
- prohibit incoming and outgoing traffic on a trunks (TURNDOWN)
- reroute calls to another trunk facility (REROUTE)
- bypass a trunk facility (SKIP)
- turn off a route pattern (SUPPRESS)
- activate network meet-me conferences (ONLINE)
- display a list of currently active network controls (LIST)
- disable one or more currently active network controls (DISABLE)

Blocking Destination Numbers (BLOCK)

The BLOCK command lets you prohibit calls to specified:

- area codes
- exchanges
- telephone numbers

Notes

To limit the number of calls to a particular destination in a given time period, see *Controlling the Number of Calls to Destination Numbers (GAP)* on page 9-5. To restore a blocked number, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

You may block or limit calls to 20 numbers at a given time.

Callers who dial blocked numbers are directed to the Control intercept defined in the Dial Control Class in effect for the call. The default for the Control intercept is error tone.

Examples

- 1 The following example illustrates how to block a dialed number.

```
NCF ...? BLO
Enter number to be BLOCKed ...? 6195551212
... Block    Enabled ...
```

- 2 The following example illustrates how to block calls to area code 415 and exchange 883, regardless of subscriber number.

```
NCF ...? BLO
Enter number to be BLOCKed ...? 415883
... Block    Enabled ...
```

Controlling the Number of Calls to Destination Numbers (GAP)

The GAP command lets you control the number of calls to specified:

- area codes
- exchanges
- telephone numbers

Notes

To prohibit all calls to a particular destination, see *Blocking Destination Numbers (BLOCK)* on page 9-4. To restore full access to a number, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

You may block or limit calls to 20 numbers at a given time.

Callers who dial "gapped" numbers are directed to the Control intercept defined in the Dial Control Class in effect for the call. The default for the Control intercept is error tone.

Examples

- 1 This example restricts a telephone number to one call per minute.

```
NCF ...? GAP
Enter number to be GAPped ...? 7075551212
Enter the GAP time (1 - 600 ) ...? 60
... Gap      Enabled ...
```

- 2 This example restricts area code and exchange to one call every three minutes.

```
NCF ...? GAP
Enter number to be GAPped ...? 415883
Enter the GAP time (1 - 600 ) ...? 180
... Gap      Enabled ...
```

- 3 This example restricts an area code to one call per minute. It also shows how to enter a command on one line.

```
NCF ...? GAP 415 60
... Gap      Enabled ...
```

Allowing Incoming Traffic Only on Trunks (DIRECT)

The DIRECT command blocks outgoing traffic on a specified trunk circuit.

Notes

The shelf-slot-circuit number represents the physical location of a circuit in the system. For example, the shelf-slot-circuit number for the first circuit on the board located in shelf 3, slot 1 is 3-1-1. For details on shelf-slot circuit numbering, see chapter 3.

If you enter a shelf-slot-circuit number for telephony equipment other than a trunk circuit, the system displays the following error message.

```
*** NCF: Designated circuit location is not defined. ***
```

To restore outgoing service to a trunk circuit, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

Example

```
NCF ...? DIR
Enter circuit location ...? 3-19-1
... Direct Enabled ...
```

Prohibiting Incoming and Outgoing Traffic on Trunks (TURNDOWN)

The TURNDOWN command blocks all incoming and outgoing traffic on an individual trunk circuit.

Notes

This command requests the shelf-slot-circuit number which represents the physical location of a circuit in the system. For example, the shelf-slot-circuit number for the first circuit on the board located in shelf 3, slot 1 is 3-1-1. For details on shelf-slot circuit numbering, see chapter 3.

You can optionally enter **/SEIZED** after the circuit number to permanently seize the trunk circuit. For example: **3-3-6 /SEIZED**

If you enter a shelf-slot-circuit number for telephony equipment other than a trunk circuit, the system displays the following error message.

*** NCF: Designated circuit location is not defined. ***

To restore service to a trunk circuit, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

Example

```
NCF ...? TUR
Enter circuit location ...? 3-19-2
... Turndown Enabled ...
```

Rerouting Calls to Another Trunk Facility (REROUTE)

The REROUTE command lets you force calls that would normally access a particular facility to be redirected to another facility.

Notes

A facility defines the trunk group used for an outgoing call plus critical out-pulsing information. The facility number is the number configured for the facility in the Configuration Editor.

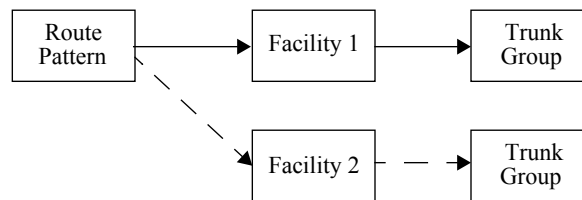


Figure 9-1. Rerouting Calls from One Facility to Another

To restore a rerouted facility, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

Example

The following example tells the system to use facility 2 instead of facility 1. Whenever the system arrives at a route point in a route pattern that uses facility 1, it will use facility 2 instead.

```

NCF ...? RER
Enter facility to be REROUTED ...? 1
Enter new facility number ...? 2
... Reroute Enabled ...
  
```

Bypassing a Trunk Facility (SKIP)

The SKIP command lets you bypass a particular trunk facility.

Notes

A facility defines the trunk group used for an outgoing call plus critical out-pulsing information. The facility number is the number configured for the facility in the Configuration Editor.



Caution

SKIP prohibits the use of the specified facility in all route patterns. When the system accesses a route pattern and arrives at a route point in which the facility has been bypassed with the SKIP command, it advances to the next route point in the route pattern. When using SKIP, you must also consider how callers' routing classes will affect access to other route points in all affected route patterns.

To restore a facility that has been bypassed, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

Example

```
NCF ...? SKI
Enter facility to be SKIPPed ...? 2
... Skip      Enabled ...
```

Prohibiting Alternate Routing (SUPPRESS)

The SUPPRESS command prevents overflow traffic from advancing past the initial route point in a specified route pattern.

Notes

The following figure illustrates the effect of SUPPRESS.

Route pattern name	RP-SPRINT	RP-SPRINT is suppressed. Calls advance through the route points as usual, unless all trunk circuits associated with facility 4 are unavailable. Then, calls routed into the route pattern will not proceed to route point 2 and will be directed to the ATB Intercept instead.
Route pattern type	STANDARD	
Selected pattern number	4	
1. Point type	ROUTE	
Routing classes	1-3	
Forward Routing classes	NONE	
Facility	4	
Days allowed	SAT-FRI	
Hours allowed	0-23	
Include route for queuing	Y	
2. Point type	QUEUE	
Routing classes	1-3	
Forward Routing classes	NONE	
Queuing method	CALLBACK (onhook)	
Queue time	30 sec.	
3. Point type	ROUTE	
Routing classes	1-3	
Forward Routing classes	NONE	
Facility	3	
Days allowed	SAT-FRI	
Hours allowed	0-23	
Include route for queuing	Y	
Continuation pattern	RP-TOLL	
Comment	Calls using Sprint as carrier	

Figure 9-2. Effect of SUPPRESS

To return a suppressed route pattern to normal operation, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

Example

The following example suppresses route pattern RP-SPRINT.

```
NCF ...? SUP
Route pattern name to be SUPPRESSed ...? RP-SPRINT
... Suppress Enabled ...
```


Activating Network Meet-me Conferences (ONLINE)

The ONLINE command places the specified network meet-me conference online.

Notes

Network meet-me conferences are part of the Mission Conferencing System application. They allow meet-me conferences on separate systems to act as a single meet-me conference. When a meet-me conference is online, internal software makes interconference calls to establish and maintain the connection with meet-me conferences on other systems.

Teltronics recommends that you configure all meet-me conferences that will be part of a network meet-me before using ONLINE. You must execute ONLINE on each system in a network and for each meet-me conference participating in a network meet-me conference.

To deactivate the interconference connection between systems, see *Disabling Active Network Controls (DISABLE)* on page 9-13.

You can use the LIST command in the Conferences table of the Configuration Editor to find the number of network meet-me conferences.

Example

```
NCF ...? ONL
Enter meet-me conference number ...? 1
... Online   Enabled ...
```

Displaying a List of Active Network Controls (LIST)

The LIST command displays active network controls.

Example

- 1 This example illustrates the LIST report for a single NCF control.

```
NCF ...? LIS
Network Control to LIST [ALL] ...? BLO
                CURRENTLY ACTIVE NETWORK CONTROLS
                -----
CODE BLOCK:    415883                ACTIVE:  4/22/94 14:23
```

- 2 This example illustrates information from the LIST ALL command.

```
NCF ...? LIST
Network Control to LIST [ALL] ...?
                CURRENTLY ACTIVE NETWORK CONTROLS
                -----
SUPPRESS ROUTE: LOOP-TRUNK                ACTIVE:  4/10/94 14:24
SKIP ROUTE:    FAC # 34                    ACTIVE:  4/10/94 14:24
REROUTE:       FAC # 33      TO FAC # 32    ACTIVE:  4/10/94 14:22
CODE BLOCK:    4357405                      ACTIVE:  4/10/94 14:17
CALL GAPPING:  4158923333  GAP TIME:  100   ACTIVE:  4/10/94 14:18
CKT TURN DOWN: 03-03-02                    ACTIVE:  4/10/94 14:25
DIRECTIONALIZE: 03-03-01      INC ONLY      ACTIVE:  4/10/94 14:20
ONLINE MEET-ME: 43                        ACTIVE:  4/10/94 14:16
NCF ...?
```

À
 Á
 Â
 Ã
 Ä
 Å
 Æ
 Ç

À The route pattern called LOOP-TRUNK is suppressed.

Á Facility 34 is bypassed.

Â Calls normally directed to facility 33 are directed to facility 32.

Ã Calls dialed to 4357405 are blocked.

Ä Calls may be dialed to 415 892 3333 once every 100 seconds.

Å Circuit 03-03-02 is prevented from dialing or receiving calls.

Æ Circuit 03-03-01 may receive incoming calls only.

Ç Interconference calls for network meet-me conference 43 are activated.

Disabling Active Network Controls (DISABLE)

The DISABLE command turns off individual or all active network controls.

Example

The following example illustrates how to turn off an individual network control.

```
NCF ...? DIS
Enter Control to DISABLE [ALL] ...? BLO
Enter dialed number [ALL] ...? 415883
... Block    Disabled ...
```

In this example, you could press RETURN at the dialed number prompt to turn off all controls established with BLOCK.

Exiting NCF

To exit the NCF program:

At the NCF ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the NCF program and returns you to the System Administration program.

```
NCF ...? EXIT
...Exiting the Network Control Facilities (NCF) program...
ADMIN ...?
```

10

System Traffic Statistics (STS)

This chapter explains how to use the System Traffic Statistics program. It contains the following sections:

- *STS Program Overview* on page 10-2 gives a general overview of the System Traffic Statistics (STS) program and explains the ways you can view traffic statistics.
- *Setting Up a Dedicated Traffic Reporting Device* on page 10-6 describes how to set up an output device, such as a terminal, printer, or personal computer, for particular traffic reports.
- *Starting STS* on page 10-7 explains how to start STS.
- *Organizing Traffic Statistics Collection and Reporting* on page 10-8 describes how to use STS commands to organize how statistics are collected and reported.
- *Viewing Traffic Statistics* on page 10-20 explains how to use STS commands to view traffic reports.
- *Exiting STS* on page 10-25 explains how to exit STS.
- *Understanding Traffic Statistics Reports* on page 10-25 describes traffic reports and explains statistics.
- *STS Error Messages* on page 10-36 describes STS error messages.

STS Program Overview

The System Traffic Statistics (STS) program stores, retrieves, and reports traffic statistics. You can use traffic statistics to determine how well your system is performing, if it is configured to meet current demands, and for troubleshooting.

Figure 10-1 illustrates how STS processes traffic data. As calls take place, STS collects traffic measurements and stores them in Traffic files for various equipment types. You can specify how often STS collects traffic statistics in periods ranging from every 5 minutes to once every six hours.

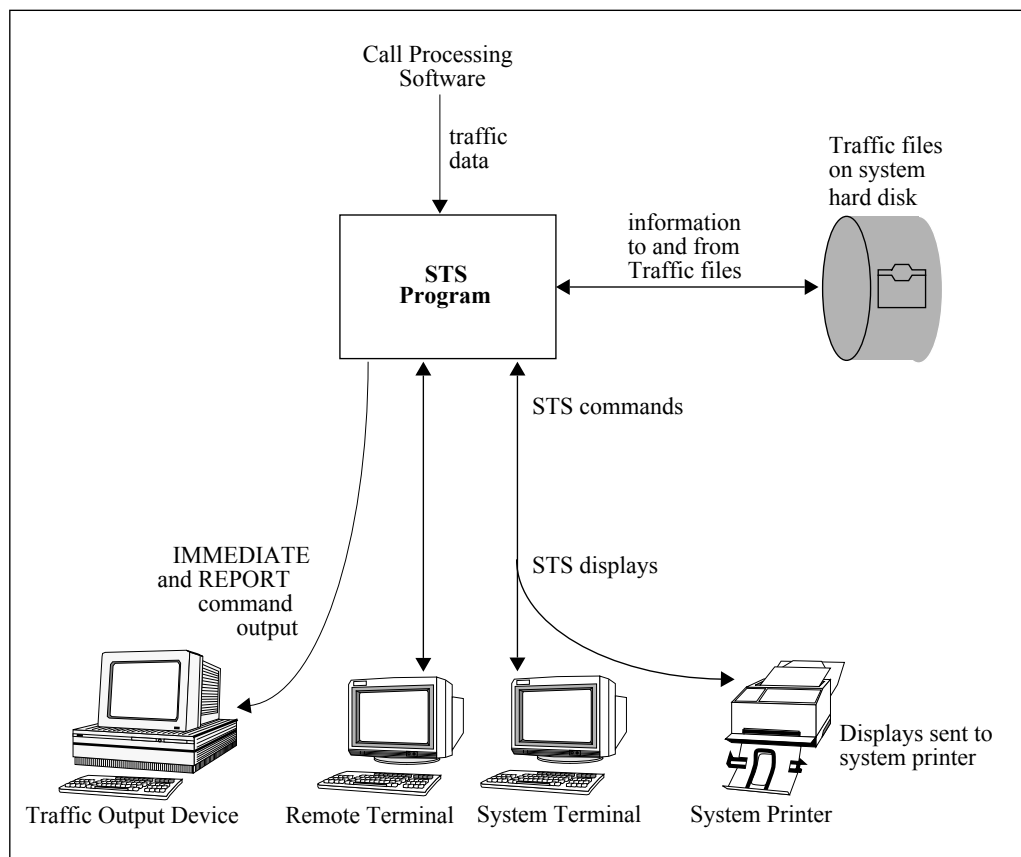


Figure 10-1. Traffic Statistics Collection and Reporting

STS Equipment Types

STS maintains separate Traffic files for the following equipment types:

- Trunk group (trunk group number)
- Device (specific device at circuit location)

- DTMF group
- ASG (Analog Signal Generator group)
- MF group
- DTD (Dial Tone Detector group)
- Broadband Dial Tone Detector group (BDTD and 500ANI units)
- CPD (Call Progress Detector group)
- DTU (Digital Trunk Unit and device location)
- MFR2F group
- MFR2B group
- SS7tone group

Types of Traffic Statistics

STS traffic measurements include peg and usage counts for all of the equipment types.

- Circuit peg count is the total number of circuit seizures on the circuit group during the collection period.
- Circuit usage count measures the total time a circuit group is busy with call traffic.

STS also collects statistics specific to each equipment type. For a detailed explanation of traffic measurements collected by STS, see *Understanding Traffic Statistics Reports* on page 10-25.

STS also reports busy hour traffic measurements for all of the equipment types except DTU control channels. Busy hour information includes the hour of greatest traffic activity of a calendar day, plus the traffic measurements for the associated equipment group.

STS Output

STS offer several ways of reporting traffic statistics using different output devices.

- You can view the contents of Traffic files at a system administration terminal.
- You can view real-time statistics at a system administration terminal.

- You can set up a dedicated output device to report/collect traffic statistics.

Viewing the Contents of Traffic History Files

The STS DISPLAY and BUSY commands let you view traffic statistics and busy hour information, respectively, at a system administration terminal. Both commands retrieve records already stored in Traffic files. BUSY and DISPLAY have options that help you locate the information you want. For example, you can specify the equipment type and time period.

Similar to all of the system administration programs, you can direct any output to the system administration terminal to a system printer as well.

An example of the general format for BUSY and DISPLAY reports is shown below.

```

Displaying Current Traffic Data ...
-----
| Equipment: TRUNK GRP = 8      23-JAN-1996  10:00:48      Col. Rate: 60  MIN |
|-----|-----|-----|
| Configured Trunks 6      | Max Trunks in Use 2      | Trunks Maint Busy 0 |
| Average Circuits 6      | Min Trunks in Use 0      | Trunks in Lockout 0 |
|-----|-----|-----|
|                               | Trunks in Use 2          | Trunks Outgoing 1   |
|-----|-----|-----|
| Incoming Peg Count      1      | Outgoing Peg Count      1 |
| Incoming Abandoned Peg Cnt 0    | Outgoing Abandoned Peg Cnt 0 |
| Incoming Successful Peg Cnt 1    | Outgoing Successful Peg Cnt 1 |
| Incoming Answered Peg Count 1    | Outgoing Answered Peg Count 1 |
| Incoming Usage          2      | Outgoing Usage          2 |
| Incoming Successful Usage 2      | Outgoing Successful Usage 2 |
| Incoming Answered Usage 2      | Outgoing Answered Usage 2 |
|-----|-----|-----|
| Total Usage          4      | ATB Peg Count          0    | Seize Failure Cnt    0 |
| Total Peg Cnt        2      | ATB Usage              0    | Overflow Peg Cnt     0 |
|-----|-----|-----|
| Permanent Trunks
| Unused Trunks          03-01-05  03-01-06  03-01-07  03-01-08
| Killer Trunks
|-----|-----|-----|

```

Viewing Real-Time Statistics

The STS VIEW command lets you see traffic statistics as they are being collected at a system administration terminal. VIEW automatically updates statistics if you specify the /AUTO option.

Sending Statistics to a Dedicated Traffic Reporting Device

STS has two commands, IMMEDIATE and REPORT, that direct traffic statistics to an output device other than the system terminal. The output device can be a terminal, printer, or personal computer with terminal emulation.

- IMMEDIATE continuously sends data to the traffic output device as it is being written to the Traffic files.

- REPORT sends data to the traffic output device on a one-time or daily basis, depending on how you schedule the report.

Examples of the output from the IMMEDIATE and REPORT commands are shown below. You can define the equipment types reported on, as well as the particular statistics collected for those equipment types.

```
DTD TRAFFIC REPORT          OUTPUT DATE/TIME: 04-DEC-1990 10:16:53 TUE
USAGE MEASUREMENTS ARE IN 1/100 CCS
```

```
-----
REPORT FOR 04-DEC-90
COLL  TOTAL  GROUP  ALL BUSY ALL BUSY OVERFLOW MAX  MIN  MANT NOW
TIME  ISVC  USAGE  PC      USAGE  PC      PC      USED USED BUSY USED
=====
10:15 0006 00000005 00000021 00000000 00000000 00000000 0001 0000 0000 0000
```

```
DTMF RECEIVER TRAFFIC REPORT OUTPUT DATE/TIME: 04-DEC-1990 10:16:53 TUE
USAGE MEASUREMENTS ARE IN 1/100 CCS
```

```
-----
REPORT FOR 04-DEC-90
COLL  TOTAL  GROUP  ALL BUSY ALL BUSY OVERFLOW MAX  MIN  MANT NOW
TIME  ISVC  USAGE  PC      USAGE  PC      PC      USED USED BUSY USED
=====
10:15 0010 00000213 00000060 00000000 00000000 00000000 0003 0000 0000 0000
```

```
DTD TRAFFIC REPORT          OUTPUT DATE/TIME: 04-DEC-1990 10:16:53 TUE
USAGE MEASUREMENTS ARE IN 1/100 CCS
```

```
-----
REPORT FOR 04-DEC-90
COLL  TOTAL  GROUP  ALL BUSY ALL BUSY OVERFLOW MAX  MIN  MANT NOW
TIME  ISVC  USAGE  PC      USAGE  PC      PC      USED USED BUSY USED
=====
10:15 0006 00000005 00000021 00000000 00000000 00000000 0001 0000 0000 0000
```

See *Setting Up a Dedicated Traffic Reporting Device* on page 10-6 for further instructions on how to set up an output device for the IMMEDIATE and REPORT commands.

Setting Up a Dedicated Traffic Reporting Device

To send traffic statistics to an output device dedicated to traffic statistics collection, you must install and configure the device. The output device may be a terminal, printer, or personal computer with terminal emulation.

Follow instructions in the Installation Manual for installing an Administrative DCA and the connected device. Brief instructions for configuring the DCA are listed below; for more detailed configuration instructions, see the Data and System Editing Tables sections of the Database Configuration Manual.

To configure a traffic reporting device connected to an Admin. DCA in the Configuration Editor:

- 1 Configure a Digital Line Unit in the Boards table.
- 2 Configure a Data Control table for the Admin. DCA. The equipment type is 1 for a terminal/terminal emulator and 2 for a printer.
- 3 In the System Devices table of the System Editing tables, assign a device number to the DCA.
- 4 In the Logical Devices table of the System Editing tables, assign the TRAFFIC logical device to the device number configured in step 3.

Starting STS

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **STS** and press RETURN.

STS displays the following message and the STS ...? prompt, from which you can enter any of the STS commands. (If your password does not allow access to STS, the system displays a message telling you that you have insufficient privileges.)

```
                Welcome to the Teltronics
                System Traffic Statistics (STS) Control Program

The System Traffic Statistics (STS) program allows you to display traffic
measurements on the various equipment groups (trunk groups, receiver group,
etc.) in the system, as well as control the traffic collection process.  If
you need information on how to use STS or any of its commands, you can enter
'HELP' at any prompt.

STS ...?
```

If you are running STS for the first time, the system displays messages that STS is creating files. You might also see similar messages when you upgrade to new software or if the hard disk has been re-initialized.

Organizing Traffic Statistics Collection and Reporting

This section describes how to use STS commands to set up and organize traffic statistics collection on your system. It explains how to:

- Define collection rates, specify the information included in immediate and report output, or schedule a traffic report (SET)
- Specify individual trunk circuits for which to collect traffic statistics (MONITOR)
- Turn on/off immediate output (IMMEDIATE)
- Turn on/off a scheduled report (REPORT)
- Reset traffic counters to zero (RESET)
- Check the setup of traffic collection parameters (SHOW)
- Check the status of traffic collection (STATUS)

For information on how to view collected statistics, see *Viewing Traffic Statistics* on page 10-20.

Defining Collection Parameters and Reporting (SET)

Although the system automatically collects traffic statistics in traffic files, there are important parameters you can change that affect traffic collection and reporting.

The STS SET command lets you define:

- the rate at which the system collects and stores statistics in traffic files
- the rate at which VIEW displays accumulating traffic measurements
- the equipment types and the statistics reported in IMMEDIATE and REPORT command output
- the time the system generates output from the REPORT command

Before using SET, you might want to use the SHOW command to find out how your system is currently set up for traffic collection.

Notes

Collection Rate

The collection rate you specify affects the time period covered by each Traffic file and the frequency of your traffic report schedule. A larger collection rate uses up available records more slowly and the requirement for scheduling a traffic report for that file occurs less frequently.

The rate also determines how often the IMMEDIATE command displays traffic records. For diagnostic purposes, you might want to change the collection rate and use IMMEDIATE to see records as they are written to the system hard disk. However, because changing the collection rate also affects the time period covered by the Traffic files, it is important to change the collection rate back to its original value after using the IMMEDIATE command.

STS adjusts busy calculations for varying collection rates. For example, if 75 calls occur during a 15-minute collection period, STS calculates this usage to be equivalent to 300 calls per hour.

Table 10-A. Collection Rates

Rate (minutes)	Collection Times (minutes)	Notes
0		Stops collection of records
5	On the hour, 5 after, 10 after, etc.	Recommended for diagnostic purposes only

Table 10-A. Collection Rates (continued)

Rate (minutes)	Collection Times (minutes)	Notes
6	On the hour, 6 after, 12 after, etc.	Recommended for diagnostic purposes only
15	On the hour, 15 after, 30 after, and 45 after	Recommended for diagnostic purposes only
30	On the hour and half hour	Recommended for diagnostic purposes only
60	On the hour	Recommended for daily use. The number of records produced before STS starts overwriting original records depends upon the circuit group.
360	Midnight, 6:00, 12:00, and 18:00	Represents minimal collection. Then number of records produced before STS starts overwriting original records depends upon the circuit group.

View Rate

The VIEW rate defines how often STS updates statistics in the VIEW command with the /AUTO option. Teltronics recommends not using rates below 20 seconds for extended periods of time.

Defining the Contents of IMMEDIATE and REPORT Output

You can use SET to screen out equipment types or specific statistics for those equipment types in IMMEDIATE and REPORT output. Initially, STS is automatically set up to collect all statistics for all equipment types. Therefore, you should use SET MASK only if you want to screen out particular statistics or equipment types in that output. See example 5 and example 6.

Examples

- 1 The following example illustrates how to schedule a report.

```
STS ...? SET  
Enter parameter to modify ...? SCHED AUTO  
Enter start date ...? 1-3-94  
Enter start time [00:00:00] ...?  
STS ...?
```

- 2 The following example illustrates how to reset the collection rate. The collection period is in minutes.

```
STS ...? SET  
Enter parameter to modify ...? COL  
Enter the new collect period ...? 60  
STS ...?
```

- 3 The following example illustrates how to reset the view rate. The collection period is in seconds.

```
STS ...? SET  
Enter parameter to modify ...? VIE  
Enter the new view period [20] ...? 60  
STS ...?
```

- 4 The following example illustrates how to alter the trunk groups included in IMMEDIATE and REPORT output.

```

STS ...? SET MASK TRU
Include TRUNK GROUP collection periods in the output [Y] ...?
Include TRUNK GROUP busy periods in the output [Y] ...?
Trunk Group(s) [END] ...? HEL

-----
| Valid trunk group commands are:
|=====
| Command          Description
|-----
| END              -- end modifying the trunk group set
| REMOVE <range>  -- remove the range of trunk groups from the
|                  set
| REVIEW          -- list the trunk groups in the current
|                  trunk group set
| <range>         -- add the range of trunk groups to the
|                  current trunk group set
| A <range> is one of the following:
|   n             -- trunk group n only
|   n-m          -- trunk groups n through m
|   ALL          -- all trunk groups (1 - trunk groups purchased)
|=====
Trunk Group(s) [END] ...? REVIEW
    Trunk Groups ..... 1-30
Trunk Group(s) [END] ...? REM 2-3
Trunk Group(s) [END] ...? REVIEW
    Trunk Groups ..... 1,4-30
Trunk Group(s) [END] ...? END
Configured Trunks [Y] ...?
Trunks Maint Busy [Y] ...?
etc.

```

- 5 The following example illustrates how to eliminate a particular equipment type (in this case, Broadband Dial Tone Detectors) from the IMMEDIATE and REPORT output.

```

STS ...? SET MASK
Equipment Type [ALL] ...? BDTD
Include BDTD collection periods in the output [Y] ...? N
Include BDTD busy periods in the output [Y] ...? N
STS ...?

```


- 6 The following example illustrates the series of prompts that let you define what statistics are reported for an equipment type. In this example the statistics affected are those collected for DTMF receivers.

```
STS ...? SET MASK
Equipment Type [ALL] ...? DTMF
Include DTMF collection periods in the output [Y] ...?
Include DTMF busy periods in the output [Y] ...?
Receivers in Service [Y] ...?
Receiver Group Usage [Y] ...?
Receiver Group Peg Count [Y] ...?
All Busy Usage [Y] ...?
All Busy Peg Count [Y] ...?
Overflow Peg Count [Y] ...?
Maximum Receivers in Use [Y] ...?
Minimum Receivers in Use [Y] ...?
Receivers Maint Busy [Y] ...? N
Receivers in Use [Y] ...?
STS ...?
```

Collecting Statistics for Individual Trunk Circuits (MONITOR)

The MONITOR command lets you specify individual trunk circuit locations for which the system collects traffic data.

Notes

You can define up to 50 trunk circuit locations. You can use the STATUS command to see what circuits are currently defined for individual statistics collection.

The shelf-slot-circuit number represents the physical location of a circuit in the system. For example, the shelf-slot-circuit number for the first circuit on the board located in shelf 3, slot 1 is 3-1-1. For details on shelf-slot circuit numbering, see chapter 3 of this manual.

To view traffic statistics for circuit locations you have defined with MONITOR, use the DEVICE equipment type with the BUSY, DISPLAY, REPORT, and VIEW commands.

Example

The following command turns on traffic collection for trunk circuit 3-10-1 with a short-hold time of 10 seconds.

```
STS ...? MON ON
Enter the circuit location ...? 3-10-1
Enter the hold time ...? 10
```

Turning on Immediate Output (IMMEDIATE)

The IMMEDIATE command sends traffic records to the traffic output device after they are written to the traffic files.

Notes

Make sure you have installed and configured a traffic output device. See *Setting Up a Dedicated Traffic Reporting Device* on page 10-6 for details.

IMMEDIATE output always begins at the time the first traffic collection period is started. Updated output occurs only after the collection interval (defined in SET) passes. IMMEDIATE continues to produce traffic records in this manner until you turn off immediate output.

If REPORT is scheduled to give a report while IMMEDIATE is turned on, REPORT takes precedence. Any traffic collected during the REPORT display does not appear in the IMMEDIATE output. When REPORT is finished, IMMEDIATE resumes with the next traffic collection.

You can use the MASK option in the SET command to exclude particular equipment types and/or reduce the number of statistics reported for particular equipment types in the IMMEDIATE output. Masking fields improves the readability of the trunk group and circuit reports which span more than 80 characters per line.

Example

An example of IMMEDIATE output for trunk groups is shown on the next page. The report has been masked for readability.

```

TRUNK GROUP TRAFFIC REPORT   OUTPUT DATE/TIME: 04-DEC-1990 10:16:53 TUE
USAGE MEASUREMENTS ARE IN 1/10 CCS
-----
REPORT FOR 04-DEC-90
TRK  TOTAL  TOTAL  OUT   IN    OUT   IN    MAX  MIN  NOW
GRP CFG  USAGE  PC    USAGE  USAGE  PC    PC    USED USED USED
===  ===  =====  =====  =====  =====  =====  =====  =====  =====
002 0004 00000016 00000001 00000000 00000016 00000000 00000001 0001 0000 0001
   Unused Trunks - 061515 061516 061519
010 0008 00000040 00000017 00000037 00000003 00000012 00000005 0005 0000 0003
   Unused Trunks - 061207
017 0001 00000001 00000001 00000000 00000001 00000000 00000000 0001 0000 0000
   Unused Trunks -
018 0001 00000000 00000000 00000000 00000000 00000000 00000000 0000 0000 0000
   Unused Trunks - 031802
020 0002 00000000 00000000 00000000 00000000 00000000 00000000 0000 0000 0000
   Unused Trunks - 061513 061514
025 0010 00000059 00000007 00000059 00000000 00000007 00000000 0005 0000 0005
   Unused Trunks - 030607 030608

```

Turning on Scheduled Reports (REPORT)

The REPORT command sends traffic records to the traffic output device at the time scheduled in the SET command.

Notes

Make sure you have installed and configured a traffic output device. See *Setting Up a Dedicated Traffic Reporting Device* on page 10-6 for details. You must also schedule a time to print reports in the SET command.

REPORT displays all traffic records that have not been previously reported. To find out the last time a report was created, use the STATUS command.

You can use the MASK option in the SET command to exclude particular equipment types and/or reduce the number of statistics reported for particular equipment types in the REPORT output. Masking fields improves the readability of the trunk group and circuit reports which span more than 80 characters per line.

The traffic report from REPORT is similar to the format of the report from IMMEDIATE.

Resetting Traffic Counters to Zero (RESET)

The RESET command resets peg count and usage statistics to zero for all or specified equipment groups. For trunks, receivers, detectors, and signal generators, it also resets the minimum and maximum in use counters to the number in use.

Notes

RESET only affects peg counters, usage counters, and the minimum and maximum trunks in use counters. It does not reset other current information such as the configured circuits or circuits in use.

When you reset counters, you do lose historical data, so you should use RESET with care.

Examples

- 1 The following example illustrates how to reset traffic counters for the Digital Trunk Unit at circuit location 10-3.

```
STS ...? RES
Enter the equipment name [ALL] ...? DTU
Enter DTU location [ALL] ...? 10-1
STS ...?
```

- 2 The following example illustrates how to reset traffic counters for trunk groups 1-5.

```
STS ...? RES
Enter the equipment name [ALL] ...? TRUNK
Enter trunk group number [ALL] ...? 1 THRU 5
STS ...?
```

Checking the Setup of Traffic Collection Parameters (SHOW)

The SHOW command displays the current status of COLLECT, MASK, SCHEDULE, and VIEW parameters defined in SET.

Examples

- 1 This example illustrates the SHOW report for the VIEW parameter.

```

STS ...? SHO

Enter parameter to show [ALL] ...? VIEW

VIEW PERIOD: 20 SECONDS

STS ...?

```

- 2 The following example illustrates the SHOW report for the MASK parameter.

```

STS ...? SHO MASK

Equipment Type [ALL] ...? DTU

-----
|                                     *** MASK FIELDS ***                                     |
|                                     DIGITAL TRUNKS                                       |
| Collection Periods ..... Y |
|-----|-----|
| Line Error Count ..... Y | CRC Count ..... Y |
| Xmt-slip Count ..... Y | Rcv-slip Count ..... Y |
| Red Pre-alarm Count ..... Y | Remote Pre-alarm Count ..... Y |
| OOS Pre-alarm Count ..... Y | Carrier Group Alarms ..... Y |
| Line Error Overflows ..... Y | CRC Overflows ..... Y |
| Xmt-slip Overflows ..... Y | Rcv-slip Overflows ..... Y |
| Red Pre-alarm Overflows ..... Y | Remote Pre-alarm Overflows .. Y |
| OOS Pre-alarm Overflows ..... Y |
|-----|-----|

```

Checking the Status of Traffic Collection (STATUS)

STATUS reports:

- the current collection period (determined by the collection rate defined in SET)
- the date and time of the last traffic collection
- the status, on or off, of immediate reporting at the traffic reporting device
- the date and time of the last report sent to the traffic reporting device
- the individual trunk circuits and short-hold-times (defined in the MONITOR command)

Example

The following example shows a STATUS report. The report does not show a list of single circuit monitors if none have been defined in MONITOR.

```

STS ...? STATUS
STS STATUS FOR: 22-Sep-1989 13:48:06
-----
| Collect Period 60 min | Immediate Mode : OFF |
| Last Coll Date 22-SEP-1989 13:00:01 | Last Report: 22-SEP-1989 1:00:17 |
| Number of Single Circuit Monitors 1 |
-----
|                               SINGLE CIRCUIT MONITORS:                               |
| Circuit Hld  Circuit Hld  Circuit Hld  Circuit Hld  Circuit Hld |
|-----|-----|-----|-----|-----|
| 03-30-01  5 |
-----
STS ...?

```

Viewing Traffic Statistics

This section explains how to use STS commands to view traffic statistics. It describes how to:

- View the contents of traffic history files (DISPLAY)
- Display busy hour information (BUSY)
- View real-time statistics (VIEW)

Viewing Traffic Statistics Files (DISPLAY)

The DISPLAY command lets you view the contents of Traffic files.

Notes

You can use the CTRL+Z command to stop a display.

If you want to view statistics for specific trunk circuits, you must have defined the circuits in the MONITOR command first.

Display Options

Table 10-B. Display Options

Option	What it Does
/AFTER <i>dd-mm-yy</i> <i>[hh:mm:ss]</i>	Displays statistics collected after a date and optional time (see <i>Date and Time Formats</i> below)
/BEFORE <i>dd-mm-yy</i> <i>[hh:mm:ss]</i>	Displays statistics collected before a date and optional time (see <i>Date and Time Formats</i> below)
/LAST-DAY	Displays statistics from yesterday
ALL	Displays statistics for the time period covered by the traffic files

Date and Time Formats

The following rules apply to the /AFT and /BEF options:

- The formats for entering date and time are listed in Table 10-C. Optional information is shown in square brackets ([]).
- Entering time is optional. When you don't enter a time, STS assumes a time of 00:00:00 (12:00 am).

- If you enter /AFT or /BEF as a single option, you do not have to specify date and time because the system will prompt for date and time.
- You can use /AFT or /BEF together to specify a beginning and ending period for a display.

Table 10-C. Date and Time Formats

Date/Time Format	Explanation		Examples
<i>mm-dd-[yy]yy</i> <i>dd-mmm-[yy]yy</i>	<i>mm</i> <i>mmm</i> <i>dd</i> <i>[yy]yy</i>	month (1-12) month (JAN-DEC) day (1-31) final 2 or 4 digits of the year	04-03-94 04-03-1994 03-APR-94
<i>hh[:mm][:ss]</i>	<i>hh</i> <i>mm</i> <i>ss</i>	hour (00-23) <i>optional</i> minute (00-59) <i>optional</i> second (00-59)	08:24:20 08:24 08

Examples

- 1 This example illustrates how to display the previous day's records for DTMF receivers.

```

STS ...? DISPLAY /LAS DTMF
RECORD NUMBER 1
-----
| Equipment: DTMF RECEIVERS      29-APR-1994  18:00:36      Col. Rate: 60  MIN |
|-----|-----|
| Receivers in Service           8              | Receivers in use           0 |
| Receivers Maint Busy           0              | Max Receivers in use      5 |
|                               | Min Receivers in use      0 |
| Receiver Group Peg Count       502           | Receiver Group Usage      4938 |
| All Busy Peg Count              0              | All Busy Usage            0 |
| Overflow Peg Count              0              |                               |
|-----|-----|
Use CTRL-Z to CANCEL, CTRL-S to PAUSE and CTRL-Q to CONTINUE

RECORD NUMBER 2
-----
| Equipment: DTMF RECEIVERS      29-APR-1994  19:00:33      Col. Rate: 60  MIN |
|-----|-----|
| Receivers in Service           8              | Receivers in use           0 |
| Receivers in Maint Busy         0              | Max Receivers in use      3 |
|                               | Min Receivers in use      0 |
| Receiver Group Peg Count        21           | Receiver Group Usage      170 |
| All Busy Peg Count              0              | All Busy Usage            0 |
| Overflow Peg Count              0              |                               |
|-----|-----|
Use CTRL-Z to CANCEL, CTRL-S to PAUSE and CTRL-Q to CONTINUE

```

- 2 This example illustrates how to request a display of traffic records for Trunk Groups 5 through 25.

```

STS ...? DIS
Specify display options [LAST-DAY] ...?
Enter the equipment name [ALL] ...? TRU
Enter trunk group number [ALL] ...? 5 THRU 25
RECORD NUMBER 1

```

- 3 This example illustrates how to use the /BEF and /AFT options to request a display of traffic records for Trunk Group 5 during April 21 through 28. Because time is not specified with /BEF or /AFT, STS assumes a time of 00:00:00.

```

STS ...? DIS
Specify display options [LAST-DAY] ...? /AFT 4-21-94 /BEF 4-28-94
Enter the end time [00:00:00] ...?
Enter the equipment name [ALL] ...? TRU
Enter trunk group number [ALL] ...? 5
RECORD NUMBER 1

```

Viewing Busy Hour Information (BUSY)

The BUSY command displays a report containing the collection period of greatest activity for equipment groups or specific trunk or line circuit locations.

Notes

If you want to view busy information for specific trunk circuits, you must have defined the circuits in the MONITOR command.

For help on using the display options, see *Display Options* on page 10-20.

STS calculates busy period information by determining the call period that has the greatest usage per hour. It also adjusts busy calculations for varying collection rates (specified in the SET command). For example, if 75 calls occur during a 15-minute collection period, STS calculates this usage to be equivalent to 300 calls per hour.

STS will also include busy period data in the output from the IMMEDIATE and REPORT commands, depending on how you have defined the mask for those commands in SET.

Examples

- 1 This example illustrates how to use the /BEF and /AFT options to request a busy hour report for DTMF receivers during April 21 through 28. Because a time is not specified with /BEF or /AFT, STS assumes a time of 00:00:00.

```

STS ...? BUS

Specify display options [/LAST-DAY] ...? /AFT 4-21-94 /BEF 4-21-28

Enter the end time [00:00:00] ...?

Enter the equipment name ...? DTMF

Searching busy period record....
Press Ctl-Z to cancel

```

- 2 This example requests the previous day's busy hour report for Trunk Group 8.

```

STS ...? BUSY

Specify display options [/LAST-DAY] ...?

Enter the equipment name ...? TRU

Enter trunk group number [ALL] ...? 8

... Searching busy period record ...
... for Trunk group number 8 ...

          ... BUSY PERIOD DISPLAY ...
          ... FOR TRUNK GROUP 8 ...

-----
| Equipment: TRUNK GRP = 8      23-JAN-1996   9:22:41      Col. Rate: 60  MIN |
-----
| Configured Trunks 30      | Max Trunks in Use 4      | Trunks Maint Busy 0 |
| Average Circuits      | Min Trunks in Use 0      | Trunks in Lockout 0 |
|                       | Trunks in Use 0         | Trunks Outgoing 0  |
-----
| Incoming Peg Count      4      | Outgoing Peg Count      20 |
| Incoming Abandoned Peg Cnt 0    | Outgoing Abandoned Peg Cnt 18 |
| Incoming Successful Peg Cnt 3    | Outgoing Successful Peg Cnt 20 |
| Incoming Answered Peg Count 3    | Outgoing Answered Peg Count 2 |
| Incoming Usage          107    | Outgoing Usage          572 |
| Incoming Successful Usage 74    | Outgoing Successful Usage 567 |
| Incoming Answered Usage 73    | Outgoing Answered Usage 560 |
-----
| Total Usage 679      | ATB Peg Count 0      | Overflow Peg Cnt 0 |
| Total Peg Cnt 24    | ATB Usage 0         | Overflow Peg Cnt 0 |
-----
| Permanent Trunks      |
| Unused Trunks 05-24-01 05-24-02 05-24-03 05-24-04 05-24-05 |
| Killer Trunks      |
-----

```

- This examples illustrates how to request busy information for a range of trunk groups.

```

STS ...? BUS

Specify display options [/LAST-DAY] ...? /AFT

Enter the start date ...? 23-APR-94

Enter the start time [00:00:00] ...?

Enter the equipment name ...? TRU

Enter trunk group number [ALL] ...? 1 THRU 5

... Searching busy period record ...
... for Trunk group number 5 ...

```

Viewing Real-Time Statistics (VIEW)

The VIEW command displays traffic measurements currently in progress.

Notes

If you want to see traffic statistics updated at repeated intervals, you must define a VIEW rate in the SET command first. To see statistics updated, enter /AUT after the equipment type (see example 2).

VIEW displays real-time traffic measurements. BUSY, DISPLAY, IMMEDIATE, and REPORT display information after it has been written to the system hard disk. VIEW can be particularly useful for performing system tests and diagnostics.

Whenever a traffic collection occurs, the usage and peg count information are automatically reset to zero and the minimum and maximum in use values are set to the current in use values. If a collection period occurs while you are using the /AUT option, the next display may show significantly smaller numbers.

Examples

- This example illustrates how to view one set of real-time traffic measurements for Trunk Group 10.

```

STS ...? VIE

Enter the equipment name ...? TRU

Enter trunk group number ...? 10

Displaying Current Traffic Data ...
-----
| Equipment: TRUNK GRP = 10      27-APR-1994  11:09:13      View Rate: 20  SEC  |

```

- 2 This example illustrates how to view traffic measurements for trunk circuit 3-10-1 and which are updated at the rate specified in the SET command. For example, if the rate is 15, STS displays traffic measurements every 15 seconds.

```

STS ...? VIE

Enter the equipment name ...? DEV 3-10-1 /AUT

Displaying Current Traffic Data ...
-----
| Equipment: DEVICE = TRK 17      27-APR-1994  11:09:13      View Rate: 20  SEC |

```

Exiting STS

To exit the STS program:

At the STS ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the STS program and returns you to the System Administration program.

```

STS ...? EXIT

  Exiting the System Traffic Statistics (STS) program.

ADMIN ...?

```

Understanding Traffic Statistics Reports

This section provides information on traffic files and the measurements for various equipment types.

Output Formats

STS reports traffic statistics in two formats. The traffic reports from **BUSY**, **DISPLAY**, and **VIEW** are sent to the system terminal. The traffic reports from **IMMEDIATE** and **REPORT** are sent to a specially designated traffic output device. Examples of both types of output are illustrated in *STS Output* on page 10-3.

Traffic Files

The Traffic file for each equipment type except individual trunk circuits, trunk groups, and DTUs holds 200 records. Files for individual trunk circuits hold 1200 records, files for trunk groups hold 3500 records, and files for DTUs hold 1200 records. When STS has used the available records for an equipment group, it starts overwriting the oldest records in the file.

The total time period that a file covers before records are overwritten also depends on the number of the particular equipment type you have configured in your system. For example, if you are collecting statistics for four receivers and 30 single circuits, the Traffic file for receivers will contain information for a greater period of time. A smaller collection rate also reduces the amount of time covered by the Traffic files.

Traffic Files on Redundant Systems

On a redundant system, the system maintains separate Traffic files on each system hard disk. When shelf 1/CC-1 is active, STS writes traffic information in the Traffic files on shelf 1/CC-1, and when shelf 2/CC-2 is active, it writes traffic information in the Traffic files on shelf 2/CC-2. When you use DISPLAY or REPORT, STS reads statistics from the Traffic files on shelves 1/CC-1 and 2/CC-2 and displays them in chronological order in the output.

If you use one shelf more often than the other and STS overwrites records in the Traffic files on that shelf, you might find a time gap in some of your output displays. For example, if shelf 1/CC-1 was used May 1–5 and shelf 2/CC-2 was used May 6–20 and STS started overwriting traffic information on shelf 2/CC-2 on May 10, output from DISPLAY ALL would contain traffic statistics for May 1–5 and May 10–20. The display would not contain information for May 6–9.

Common Traffic Measurements

The peg counts maintained by STS are listed in Table 10-D. They count the number of times an event occurs during a collection period.

The usage counts maintained by STS are listed in Table 10-E. Usage counters measure the amount of time a circuit satisfies a certain traffic condition. For circuits and trunk groups, time is expressed in 1/10 CCS (hundred call seconds) or 10-second increments. For receiver and detector groups, time is expressed in 1/100 CCS or one-second increments.

All peg counters and usage counters are capable of handling up to 99,999,999 counts.

Table 10-D. Peg Counters

Peg Counter	What it Counts	Equipment Types
ATB	Number of times an incoming or outgoing call seized the last available circuit in the trunk group	Trunk groups
Incoming	All incoming calls	Trunk groups/circuits
Incoming abandoned	All unanswered incoming calls	Trunk groups/circuits
Incoming answered	All answered incoming calls	Trunk groups/circuits
Incoming successful	All calls successfully routed to an idle line	Trunk groups
Total	All incoming and outgoing calls	Trunk groups/circuits, receivers, detectors
Outgoing	All outgoing calls	Trunk groups/circuits
Outgoing abandoned	All unanswered outgoing calls	Trunk groups/circuits
Outgoing answered	All answered outgoing calls	Trunk groups/circuits
Outgoing successful	All calls that receive a successful backward call setup signal or, when signaling protocol does not include a backward signal, do not receive a call abandon, release, or failure signal during outpulsing	Trunk groups
Overflow	For trunks, the number of times outgoing calls tried to locate an idle trunk in an ATB trunk group. For receivers and detectors, the number of attempts to access a receiver/detector when none were available.	Trunk groups, receivers, detectors, signal generators
Detector Group	Number of times a detector was accessed	Detectors
Receiver Group	Number of times a DTMF, MF, or MFR2 was accessed	Receivers
Circuit Group	Number of times an ASG was accessed	Signal generators
Seize Failure	All outgoing calls that failed seizure	Trunk groups/circuits
Short-hold	All incoming unanswered calls whose call duration was less than the specified short-hold time	Trunk circuits
All Busy	Number of times a group was in an all busy condition	Receivers, detectors, signal generators

Table 10-E. Usage Counters

Usage	What it Counts	Equipment Types
All busy	Total amount of time all configured circuits are in an all busy condition	Trunk groups, receivers, detectors, signal generators
Incoming	Total amount of time expended by incoming calls	Trunk groups/circuits
Incoming successful	Total amount of time expended by incoming calls that are successfully routed to an idle line	Trunk groups
Incoming answered	Accumulated call duration beginning from the time calls are answered to the time incoming trunks are released	Trunk groups
Outgoing	Total amount of time expended by outgoing calls	Trunk groups/circuits
Outgoing successful	Total amount of time expended by outgoing calls that receive a successful backward call setup signal or, when signaling protocol does not include a backward signal, do not receive a call abandon, release, or failure signal during outpulsing	Trunk groups
Outgoing answered	Accumulated call duration beginning from the time calls are answered to the time outgoing trunks are released. A call is answered when answer signal is received or a Facility answer outpulse command has expires. Hardware answer received after software answer does not affect duration of a call. After a trunk is answered, subsequent actions of the calling party, such as call hold or transfer do not affect this statistic.	Trunk groups
Total	Total amount of time expended by incoming and outgoing calls	All except DTU

Equipment Type Related Measurements

This section describes the special statistics collected for the following equipment:

- individual trunk circuits
- trunk group
- receiver and detector group
- signal generator groups
- Digital Trunk Unit control channel

Individual Circuit Measurements

The following example shows the measurements for individual trunk circuits. STS collects most of the same statistics for individual trunk circuits as for trunk groups; the exceptions are incoming successful peg count, outgoing successful peg count, incoming successful usage counter, incoming answered usage counter, outgoing successful usage counter, and outgoing answered usage counter.

```

Displaying Current Traffic Data ...
-----
| Equipment: DEVICE = TRK 17    14-JAN-1991  17:00:26    Col. Rate: 60  MIN |
|-----|-----|-----|-----|
| Port Number 264   Circuit 03-18-01 | Minimum Hold Time           5 | | |
|---|---|---|---|
| Incoming Peg Count      0 | Outgoing Peg Count         11 |
| Incoming Answered Peg Count 0 | Outgoing Answered Peg Count 11 |
| Incoming Abandoned Peg Cnt 0 | Outgoing Abandoned Peg Cnt 0 |
| Seize Failure Peg Count  0 | Short Hold Peg Count       0 |
|-----|-----|-----|-----|
| Total Peg Count      11 | Incoming Usage             0 |
| Total Usage         12 | Outgoing Usage            12 |
|-----|-----|-----|-----|

```

Table 10-F describes the special information collected for individual trunk circuits.

Table 10-F. Measurements for Individual Trunk Circuits

Field	Description
Port Number	Shelf-slot-circuit location of the circuit
Minimum Hold Time	Short-hold-time specified when the circuit was defined in MONITOR

See *Collecting Statistics for Individual Trunk Circuits (MONITOR)* on page 10-14 to find out how to collect data for individual trunk circuits.

Trunk Group Measurements

The following example illustrates a traffic report for trunk groups.

```

Displaying Current Traffic Data ...
-----
| Equipment: TRUNK GRP = 8          23-JAN-1996  10:00:48          Col. Rate: 60 MIN |
|-----|-----|-----|
| Configured Trunks 6 | Max Trunks in Use 2 | Trunks Maint Busy 0 |
| Average Circuits  6 | Min Trunks in Use 0 | Trunks in Lockout 0 |
|                   | Trunks in Use      2 | Trunks Outgoing   1 |
|-----|-----|-----|
| Incoming Peg Count      1 | Outgoing Peg Count      1 |
| Incoming Abandoned Peg Cnt 0 | Outgoing Abandoned Peg Cnt 0 |
| Incoming Successful Peg Cnt 1 | Outgoing Successful Peg Cnt 1 |
| Incoming Answered Peg Count 1 | Outgoing Answered Peg Count 1 |
| Incoming Usage          2 | Outgoing Usage          2 |
| Incoming Successful Usage 2 | Outgoing Successful Usage 2 |
| Incoming Answered Usage 2 | Outgoing Answered Usage 2 |
|-----|-----|-----|
| Total Usage          4 | ATB Peg Count          0 | Seize Failure Cnt    0 |
| Total Peg Cnt        2 | ATB Usage              0 | Overflow Peg Cnt     0 |
|-----|-----|-----|
| Permanent Trunks
| Unused Trunks      03-01-05  03-01-06  03-01-07  03-01-08
| Killer Trunks
|-----|-----|-----|

```

Table 10-G describes the special information collected for trunk groups.

Table 10-G. Measurements for Trunk Groups

Field	Description
Configured Trunks	Number of trunks configured in the group at collection time
Average circuits	Average number of available circuits in the group during a collection interval. To arrive at this number, STS checks the number of available circuits (number of configured circuits minus trunks in lockout and maintenance busy) every 10 seconds. At the end of the collection period, it calculates an average based on the number of samples taken in the collection period.
Trunks In Use	Number of seized circuits in the group at collection time
Max Trunks in Use	Maximum number of circuits in the group in use at any time since the last collection period or RESET command
Trunks Outgoing	Number of circuits seized outgoing at collection time
Trunks Maint Busy	Number of circuits in the group in maintenance busy at collection time
Min Trunks in Use	Minimum number of circuits in the group in use at any time since the last collection or RESET command
Trunks In Lockout	Number of circuits in the group in lockout at collection time
Permanent Trunks	List of first six circuits in the group (in the order configured) that show no peg count activity but remain busy during the collection period. This list does not include maintenance busy trunks.

Table 10-G. Measurements for Trunk Groups (continued)

Field	Description
Unused Trunks	List of first six circuits in the group (in the order configured) that show no peg count activity during the collection period. This list also includes trunks that have been maintenance busy for the entire collection period.
Killer Trunks	List of first six circuits in the group (in the order configured) that were removed from service since the last collection. Trunks become killer based on killer trunk and seize fail parameters defined in the System Parameters table. In subsequent collection periods, these trunks will have maintenance busy status until restored to service.

Occasionally trunk statistics in a given collection period appear inconsistent because of the timing of the collection period. However, statistics are consistent when read over time. For example, suppose a trunk is seized incoming during one collection period and that during the next collection period the trunk is in conversation and then hangs up. The reports for both collection periods appear inconsistent by themselves but are consistent when read together as shown below.

```

Displaying Current Traffic Data ...
-----
| Equipment: TRUNK GRP = 2          30-NOV-1990  14:00:18          Col. Rate: 60 MIN |
|-----|-----|-----|-----|
| Configured Trunks 6 | Max Trunks in Use 1 | Trunks Maint Busy 0 |
| Average Circuits 6 | Min Trunks in Use 0 | Trunks in Lockout 0 | |
|---|---|---|---|
|                               | Trunks in Use 1 | Trunks Outgoing 1 |
|-----|-----|-----|-----|
| Incoming Peg Count      1 | Outgoing Peg Count      0 |
| Incoming Abandoned Peg Cnt 0 | Outgoing Abandoned Peg Cnt 0 |
| Incoming Successful Peg Cnt 0 | Outgoing Successful Peg Cnt 0 |
| Incoming Answered Peg Count 0 | Outgoing Answered Peg Count 0 |
| Incoming Usage          1 | Outgoing Usage          0 |
| Incoming Successful Usage 0 | Outgoing Successful Usage 0 |
| Incoming Answered Usage 0 | Outgoing Answered Usage 0 |
|-----|-----|-----|-----|
| Total Usage      1 | ATB Peg Count      0 | Seize Failure Cnt 0 |
| Total Peg Cnt   1 | ATB Usage          0 | Overflow Peg Cnt 0 |
|-----|-----|-----|-----|
| Permanent Trunks |
| Unused Trunks   03-01-05  03-01-06  03-01-07  03-01-08 |
| Killer Trunks |
|-----|-----|-----|-----|

```

```

Displaying Current Traffic Data ...
-----
| Equipment: TRUNK GRP = 2          30-NOV-1990  15:00:24          Col. Rate: 60  MIN |
|-----|-----|-----|
| Configured Trunks 6          | Max Trunks in Use 1          | Trunks Maint Busy 0          |
| Average Circuits 6          | Min Trunks in Use 0          | Trunks in Lockout 0          |
|                               | Trunks in Use 0              | Trunks Outgoing 0           |
|-----|-----|-----|
| Incoming Peg Count          0          | Outgoing Peg Count          0          |
| Incoming Abandoned Peg Cnt 0          | Outgoing Abandoned Peg Cnt 0          |
| Incoming Successful Peg Cnt 1          | Outgoing Successful Peg Cnt 0          |
| Incoming Answered Peg Count 1          | Outgoing Answered Peg Count 0          |
| Incoming Usage              1          | Outgoing Usage              0          |
| Incoming Successful Usage    1          | Outgoing Successful Usage    0          |
| Incoming Answered Usage      1          | Outgoing Answered Usage      0          |
|-----|-----|-----|
| Total Usage                1          | ATB Peg Count              0          | Seize Failure Cnt          0          |
| Total Peg Cnt              1          | ATB Usage                  0          | Overflow Peg Cnt          0          |
|-----|-----|-----|
| Permanent Trunks
| Unused Trunks              03-01-05    03-01-06    03-01-07    03-01-08
| Killer Trunks
|-----|-----|-----|

```

Receiver and Detector Group Measurements

STS collects separate statistics for DTMF, MF, MFR2 Forward, MFR2 Backward, and SS7 tone receivers, and for Dial Tone, Broadband Dial Tone, and Call Progress detectors.

The following example illustrates a traffic report for receivers.

```

RECORD NUMBER 3
-----
| Equipment: DTMF RECEIVERS          21-APR-1994  20:36:45          View Rate: 20  SEC |
|-----|-----|-----|
| Receivers in Service          4          | Receivers in use           1          |
| Receivers in Maint Busy       0          | Max Receivers in use       13          |
|                               | Min Receivers in use       0          |
| Receiver Group Peg Count      55          | Receiver Group Usage       200          |
| All Busy Peg Count            0          | All Busy Usage             0          |
| Overflow Peg Count            0          |
|-----|-----|-----|

```

The following example illustrates a traffic report for detectors.

```

RECORD NUMBER 1
-----
| Equipment: DIAL TONE DETECT.       21-APR-1994  20:36:45          Col. Rate: 60  MIN |
|-----|-----|-----|
| Detectors in Service          8          | Detectors in use           0          |
| Detectors Maint Busy          0          | Max Detectors in use       1          |
|                               | Min Detectors in use       0          |
| Detector Group Peg Count      87          | Detector Group Usage       17          |
| All Busy Peg Count            0          | All Busy Usage             0          |
| Overflow Peg Count            0          |
|-----|-----|-----|

```

Table 10-H describes the special information collected for receiver and detector groups.

Table 10-H. Measurements for Receivers and Detectors

Field	Description
In Use	Number of circuits in the group seized at collection time
Maintenance Busy	Number of circuits in the group in maintenance busy at collection time
Maximum in Use	Maximum number of circuits in the group in use at any time during the collection period
Minimum in Use	Minimum number of circuits in the group in use at any time during the collection period

Signal Generator Circuit Measurements

STS collects separate statistics for Analog Signal Generator (ASG).

The following example illustrates a traffic report for ASG circuits.

RECORD NUMBER 23			
Equipment: ASG CIRCUITS		4-MAY-1998 1:00:03	Col. Rate: 60 MIN
Circuits in Service	0	Circuits in use	0
Circuits Maint Busy	16	Max circuits in use	0
		Min circuits in use	0
Circuits Group Peg Count	0	Circuit Group Usage	0
All Busy Peg Count	0	All Busy Usage	3600
Overflow Peg Count	0		

Table 10-H describes the special information collected for ASG circuits.

Table 10-I. Measurements for ASGs

Field	Description
In Service	Number of circuits in the group seized at collection time
Maintenance Busy	Number of circuits in the group maintenance busy at collection time
Maximum in Use	Maximum number of circuits in the group in use at any time during the collection period
Minimum in Use	Minimum number of circuits in the group in use at any time during the collection period

Digital Trunk Unit Control Channel Measurements

The following example illustrates a traffic report for DTU control channels.

RECORD NUMBER 1			
Equipment: DTU = 06-15		21-APR-1994 18:00:45	Col. Rate: 60 MIN
DTU Type: T1		Circuit: 06-15-25	
Line Error Count	0	Line Error Overflows	0
CRC Count (T1, ESF only)	0	CRC Overflows	0
Xmt-Slip Count (T1 only)	0	Xmt-Slip Overflows	0
Rcv-Slip Count	0	Rcv-Slip Overflows	1
Red Pre-Alarm Count	3	Red Pre-alarm Overflows	0
Remote Pre-alarm Count	0	Remote Pre-alarm Overflows	0
OOS Pre-alarm Count	2	OOS Pre-alarm Overflows	0
Carrier Group Alarms	0		

Table 10-J describes the special information collected for DTU Control Channels. See *Board Configuration* in the Database Configuration Manual for more detailed explanation of the alarms and their causes.

Table 10-J. Measurements for DTU Control Channels

Field	Description
Line Error Count	Number of bit errors for the receive direction
Line Error Overflows	Number of times the line error count exceeded the acceptable bit error rate (configured in the Boards table)
CRC Count (T1* ESF only)	Bit error rate for the receive direction
CRC Overflows	Number of times the acceptable bit error rate (configured in the Boards table) was exceeded
Transmit Slip Count	Number of controlled frame slips that have occurred in the transmit direction
Transmit Slip Overflows	Number of times the transmit frame slip counter limit (configured in the Boards table) was exceeded
Receive Slip Count	Number of controlled frame slips that have occurred in the receive direction
Receive Slip Overflows	Number of times the receive frame slip counter limit (configured in the Boards table) was exceeded
Prompt Maintenance Prealarm Count (E1†)	Number of prompt maintenance prealarms that have occurred
Prompt Maintenance Prealarm Overflows (E1†)	Number of times the prompt maintenance prealarm counter limit (configured in the Boards table) was exceeded
Red Prealarm Count (T1* only)	Number of red prealarms that have occurred. Red alarms indicate that the system is no longer receiving signals from the far end. When the system generates a red alarm, it automatically sends a yellow alarm to the far end.
Red Prealarm Overflows (T1* only)	Number of times the red prealarm counter limit configured in the Boards table was exceeded
Remote Prealarm Count (T1* / E1†)	Number of yellow prealarms that have occurred. Yellow alarms indicate that the far end is not receiving signals from the system.
Remote Prealarm Overflows (T1*/E1†)	Number of times the yellow prealarm counter limit configured in the Boards table was exceeded
Out-of-Service Prealarm Count	Number of times the out-of-service bit pattern was received
Out-of-Service Prealarm Overflows	Number of times the out-of-service prealarm counter limit (configured in the Boards table) was exceeded
Carrier Group Alarms	Number of times a red prealarm, remote prealarm, or out-of-service overflow occurred

* T1 refers to the 1.544 Mbps, 24-channel protocol typically used in North American standard applications

† E1 refers to the 2.048 Mbps, 32-channel protocol typically used in CCITT standard applications

STS Error Messages

This section lists some of the error and warning messages you might see while using STS.

If STS displays any other error messages that indicate failure or that you cannot understand, contact your service representative for assistance.

BUSY (or DISPLAY, IMMEDIATE, MONITOR, REPORT, RESET, SET)
COMMAND MAY NOT BE REQUESTED FROM THE STANDBY SIDE

Make sure you are logged onto the active side of the switch and that you are using a system terminal connected via a DCA or SIU.

CIRCUIT MONITOR NOT DEFINED FOR REQUESTED DEVICES

You used the DEVICE equipment type with a circuit location that has not been turned on in MONITOR. Use STATUS to get a list of single-circuit monitors currently turned on or define the circuit in MONITOR.

No traffic records in the specified range have any usage.

You may have specified a date range that is incorrect.

UNABLE TO RECEIVE ACTIVE SHELF TRAFFIC BUSY RECORD
UNABLE TO RECEIVE NEXT TRAFFIC DATA

This message indicates a possible file system error on the active shelf. Try entering the command again and, if the problem persists, contact your service representative.

UNABLE TO RECEIVE STANDBY SHELF TRAFFIC BUSY RECORD
UNABLE TO RECEIVE TRAFFIC INFORMATION FROM STANDBY SIDE

The standby shelf may have reset during processing of the report or display. Try entering the command again when the standby shelf is up. Similar messages may appear in the REPORT output under the same conditions.

11

Telephony Device Diagnostics (TDD)

This chapter explains how to use the Telephony Device Diagnostics program. It contains the following sections:

- *TDD Program Overview* on page 11-2 gives a general overview of the Telephony Device Diagnostics (TDD) program.
- *Configuring the TDD Diagnostic Port* on page 11-3 explains how to configure a diagnostic port which is required by the TEST command.
- *Specifying Circuit Locations* on page 11-4 explains how to specify ports in the system for TDD commands.
- *Starting TDD* on page 11-6 explains how to start TDD.
- *Using TDD Commands* on page 11-7 describes how to use TDD commands.
- *Exiting TDD* on page 11-28 explains how to exit TDD.

TDD Program Overview

The Telephony Device Diagnostics (TDD) program performs diagnostics on telephony circuits in the system. TDD lets you:

- display the status of circuits
- remove circuits from service
- restore circuits to normal service
- connect ports to test tones
- test lines and trunks for proper signaling and VF connections
- check status of, remove, and store Host Interface Links
- check status of, remove, restore, and test Signaling System 7 (SS7) links and ISUP (ISDN User Part) trunk circuits

After a switch is put into service, TDD is useful for analyzing suspected problems. Initially, you might want to use TDD to make sure all devices are functioning properly. Figure 11-1 illustrates TDD diagnostic processing.

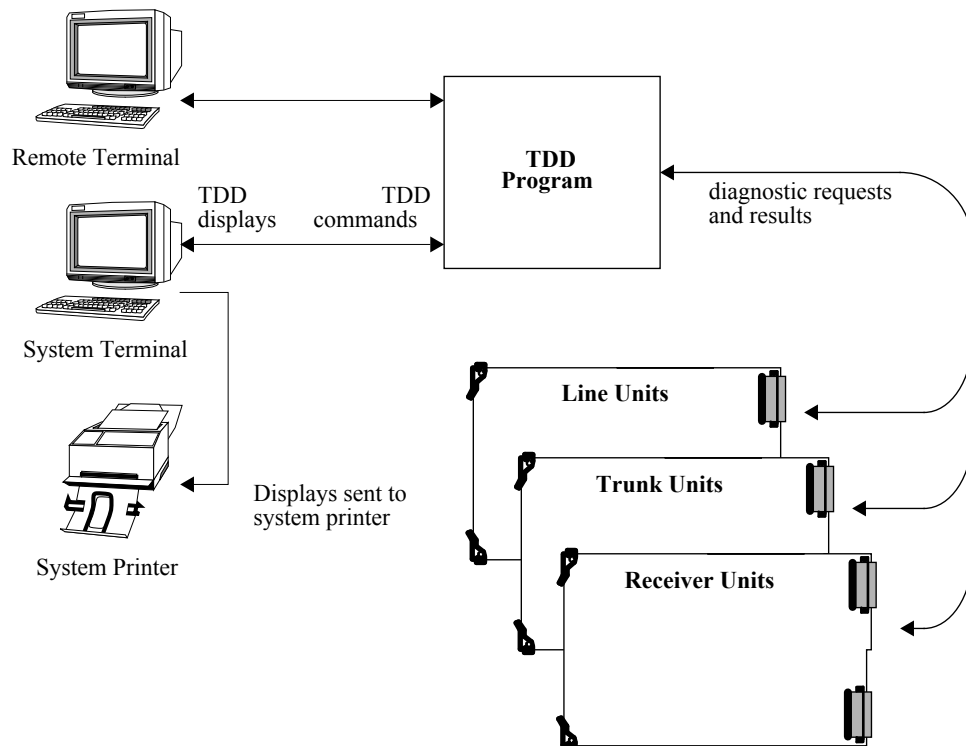


Figure 11-1. Overview of TDD Processing

Configuring the TDD Diagnostic Port

The TDD TEST command requires that you configure an analog line or trunk circuit as a TDD diagnostic port. If ****_**_**** is shown for your diagnostic port when you start TDD, you should configure a diagnostic port in the database using the Configuration Editor program.

To configure a diagnostic port:

- 1 Reserve an analog line or trunk circuit for use as a diagnostic port. Once configured you cannot use the circuit for anything else.
- 2 Enter the shelf-slot-circuit number of the circuit in the System Parameters table of the System Editing tables.

The *System Parameters* section of *System Editing Tables Configuration* in the Database Configuration Manual contains additional instructions on how to configure a diagnostic port.

from service if you specify the circuit location of the control channel.

- To specify an entire DTU, specify the shelf-slot location of the DTU.

TDD will display status messages as it completes the requested task on each trunk circuit of the DTU. The circuit order in the messages follows a non-sequential order as explained in the following paragraphs.

- To specify a range of circuits on a DTU, you must either specify each circuit one at a time, or, specify starting and ending numbers from Table 11-B and Table 11-C that include the circuits you want.

T1 and E1 trunks are digital units that carry on four wires 24 and 30 channels, respectively, in a digital bit stream. Each circuit is allocated to a time slot, which for technical design reasons, follows the order shown in Table 11-B and Table 11-C. TDD uses this time slot order rather than circuit order in the TEST, STATUS, REMOVE, RESTORE, and TONE commands.

Therefore, if you check the status of circuits 05–11 on a T1, TDD reports the status of circuits 05, 17, and 11. Similarly, requesting the removal from service of circuits 17–01 on a T1 results in the removal of circuits 17, 11, 23, and 01.

You will also notice that when you execute the TEST, STATUS, REMOVE, RESTORE, or TONE command on an entire DTU, TDD will use the same order when it displays status messages for the requested task.

Table 11-B. Required Channel Order for T1 DTUs

25	02	14	08	20	05	17	11	23	01	13	07	19	04	16	10	22	03	15	09	21	06	18	12	24
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Table 11-C. Required Channel Order for E1 DTUs

01	17	09	25	05	21	13	29	03	19	11	27	07	23	15	31	02	18	10	26	06	22	14	30	04	20	12	28	08	24	16	32
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

ISUP Maintenance Commands

For all ISUP commands, TDD performs an internal translation so that when you request an operation for a number of circuits, beginning with a particular circuit, TDD executes the operation on a sequential range of circuits/channels.

Starting TDD

- 1 Start the System Administration program.
 - Enter CTRL+C.
 - Enter your user name.
 - Enter your password.
- 2 At the ADMIN ...? prompt, type **TDD** and press RETURN.

TDD displays the following message and the TDD ...? prompt, from which you can enter any of the TDD commands. (If your password does not allow access to TDD, the system displays a message telling you that you have insufficient privileges.)

```

                                Welcome to the Teltronics
                                Telephony Device Diagnostics (TDD) Program

The Telephony Device Diagnostics (TDD) program allows service personnel to
test any circuits in the switch.  If you need information on how to use TDD
or any of its commands, you can enter 'HELP' at any prompt.

Your diagnostic port is 03-13-07

STATUS:      03-13-07          Circuit is idle

TDD ...?
```

TDD also reports the diagnostic port you have configured and its status. If you have not configured a diagnostic port, TDD reports the port as ****_**_****. You cannot perform certain tests without a diagnostic port; see *Configuring the TDD Diagnostic Port* on page 11-3 for details.

Using TDD Commands

This section explains how to:

- perform diagnostic tests (TEST)
- turn on and off the display of internal messages (TRACE)
- display the status of ports (STATUS)
- report ESF statistics for DTUs (ESFSTATS)
- initiate payload loopback on DTUs (PAYLOAD)
- place ports in maintenance busy mode (REMOVE)
- connect two ports together (CONNECT)
- connect tones to ports (TONE)
- restore ports to normal service (RESTORE)
- check the location of the diagnostic port (LIST)
- check reference sources (REFERENCE)
- control and check status of SS7 signaling links (MTP)
- control and check status of ISUP trunk circuits (ISUPMNT)
- check and change the status of redundant Host Interface Links (LINK)

Performing Diagnostic Tests (TEST)

The TEST command lets you test

- trunk units for external seizure protocol
- lines and trunks for internal audio integrity
- receiver units for proper detection of all valid digits

Notes

You must have a diagnostic port in order to use TEST.

Note If you want TEST to report detailed messages, turn on tracing with the TRACE command.



Caution

If you test the shelf-slot location of a DTU or circuit location of a DTU control channel, TDD removes the entire DTU from service.

Audio Output

Besides reporting information at the system terminal, TEST also offers audio output. You can access audio output by connecting a butt set or phone to the diagnostic port (see *Configuring the TDD Diagnostic Port* on page 11-3).



Caution

If you use a phone or other transmitting monitor at the diagnostic port, voice or background noise may interfere with the receiver tests. To avoid this problem, remove the microphone from the phone or use a receive-only monitor, such as a butt set that is in “monitor” mode.

When the diagnostic port goes off-hook, you will hear a high pitched dial tone and the LED will light. The audio output varies depending upon which type of circuit you are testing, as described below.

Table 11-D. Audio Output

Circuit Under Test	Audio Output
Line Unit	None. To make an audio check, dial a known extension and listen for ringing at the extension.
Trunk	Dial tone, if the external connection provides dial tone; silence if there isn't an external connection
DTMF Receiver	The sequence of DTMF digits. TDD sequences through all of the valid digits for each receiver.
MF Receiver	The sequence of MF digits
Dial Tone Detector	Low level dial tone

What the TEST Command Does

Before running diagnostics, TEST allows circuits that are traffic busy to complete calls and then places them in maintenance busy mode. If you use the DISCONNECT option, TDD forcibly disconnects traffic busy circuits before putting them in maintenance busy mode.

- Analog Line Units

Internal audio test – TDD places the test circuit into loopback mode, transmits test tone (DTMF Tone 'C') from the diagnostic port to the test circuit, loops the test tone back at the test circuit, and then sends the tone returned from the test circuit to a DTMF receiver which performs a level test. If the tone is not detected or is detected improperly, the internal audio test fails.

TEST tests the CODEC circuitry only on the line unit; it does not check the loop, loop wiring, phone set, or ringing circuit. To test these, dial a known extension and listen for ringing at the phone set.

- Digital Line Units

Digital line units are tested for a digital response from the far end device. There is no audio test. You may only test circuits configured as Attendant Workstations/EAWS.

- Analog Trunk Units

External test – TDD seizes the trunk through individual circuit access (maintenance dialing). The external test is not performed on the Direct Inward Dial (DID) unit or on any trunk configured as incoming only.

Internal audio test – same as for Analog Line Units.

- Digital Trunk Units

External test – same as for Analog Trunk Units.

Internal audio test – same loopback test as for Analog Line Units, except that TDD places the entire DTU (25 or 32 channels) in loopback mode

Note To test a DTU, remove the board from service and TEST the entire board (by specifying the shelf-slot location of the board).



Caution

Do not attempt to abort a test on a DTU using CTRL+CC. If you abort TDD after a test has started, the system will reset the DTU.

- Receiver Units

Receiver unit tests check tone detection circuitry. TDD connects the receiver unit to the diagnostic port, places the diagnostic port in internal loopback mode, and performs a loopback test similar to the audio test for analog line units. For the DTMF and MF receiver units, TDD sequences through all of the valid digits for the specific receiver type. For the Dial Tone Detector, TDD transmits a valid dial tone (350 Hz + 440 Hz).

If a particular tone is not properly detected by the test receiver, TDD indicates the specific failure, but continues to test the remaining tones. When all the tone tests are completed, TDD responds with a success or failure response.

Receiver units are NOT tested to verify if they satisfy the limits of the tone level which can be detected by the specific types of units.

Examples

- 1 The following example illustrates the tests for a board. Note that if you do not use the DISCONNECT option, TEST waits for a traffic busy circuit to complete its call before running tests. If you want TEST to bypass the busy circuit, you can enter CTRL+Z.

```
TDD ...? TEST 02-05

Enter TEST options [NONE] ...?

... BEGINNING MANUAL TESTS ...
TEST:      02-05-01          Circuit passed diagnostics
TEST:      02-05-02          Circuit passed diagnostics
TEST:      02-05-03          Circuit passed diagnostics
TEST:      02-05-04          Circuit passed diagnostics
TEST:      02-05-05          Circuit passed diagnostics
           02-05-06          Circuit is busy
           02-05-06          Waiting for circuit to become idle
TEST:      02-05-06 TG# 7    Circuit passed diagnostics
TEST:      02-05-07          Circuit passed diagnostics
TEST:      02-05-08          Circuit passed diagnostics

TDD ...?
```

- 2 The following example illustrates the REMOVE option.

```
TDD ...? TEST 03-01-03 ^REMOVE

... BEGINNING MANUAL TESTS ...
           03-01-03          Circuit is busy
           03-01-03          Waiting for circuit to become idle
TEST:      03-01-03 STA# 1117 Circuit passed diagnostics
STATUS:    03-01-03 STA# 1117 Circuit is out of service

TDD ...?
```

- 3 The following example illustrates the LONG and DISCONNECT options. Note that you must enter slashes before multiple options.

```
TDD...? TEST

Starting circuit location ...? 02-05-01

Ending circuit location [02-05-01] ...? 02-05-02

Enter TEST option [NONE]...? LONG ^DISCONNECT

... BEGINNING MANUAL TESTS ...

-----
TEST:      02-05-01          INTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (Mu-Law Line Unit)
CONFIGURATION:      Station
-----

           02-05-02          Circuit is busy
           02-05-02          Forcing circuit to disconnect
           02-05-02          Circuit was forcibly disconnected
TEST:      02-05-02 STA# 1118 INTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (Mu-Law Line Unit)
CONFIGURATION:      Station

TDD ...?
```

- 4 The following example shows the report for a Digital Trunk Unit. TDD tests the control channel first and then tests the remaining circuits.

```
TDD ...? TEST 02-15 <LONG
... BEGINNING MANUAL TESTS ...

-----
TEST:          02-15-25          Removing DTU trunk circuits for diagnostics
TEST:          02-15-25          INTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (T1 Digital Trunk)
CONFIGURATION:   DTU Control Port
-----

RESTORE:       02-15-25          Releasing DTU trunk circuits

-----
TEST:          02-15-02          EXTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (T1 Digital Trunk)
CONFIGURATION:   EM Trunk
-----

-----
TEST:          02-15-14          EXTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (T1 Digital Trunk)
CONFIGURATION:   EM Trunk
-----

-----
TEST:          02-15-08          EXTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (T1 Digital Trunk)
CONFIGURATION:   EM Trunk
-----

(TDD continues to test remaining circuits)
```

Turning On and Off the Display of Internal Messages (TRACE)

The TRACE command turns on and off the display of detailed messages displayed during the TEST command.

Examples

- 1 The following example illustrates how TRACE alternately turns on and off tracing.

```
TDD ...? TRACE
Tracing is enabled
TDD ...? TRACE
Tracing is disabled
TDD ...?
```

- 2 The following example illustrates the effect of TRACE on the TEST command.

```
TDD ...? TRACE
Tracing is enabled
TDD ...? TEST 03-01-04
Ending circuit location [03-01-04] ...?
Enter TEST option [NONE] ...? LONG
... BEGINNING MANUAL TESTS ...
-----
Starting external tests
Diagnostic port received dial tone
Diagnostic port dialing digits
Connection made
Test complete
Diagnostic port returning idle
Port under test has completed diagnostics
Ended external tests
Starting internal tests
Port under test passed internal audio test
Ended internal tests
TEST:          03-01-04          EXTERNAL TESTS PASSED
                                INTERNAL TESTS PASSED
CIRCUIT DESCRIPTION: (Mu-Law Four Wire EM Trunk)
CONFIGURATION:      EM Trunk
-----
TDD ...?
```

Displaying the Status of Ports (STATUS)

The STATUS command reports one of the following conditions for specified circuits: idle (on-hook), traffic busy (off-hook), maintenance busy, or out of service. STATUS does not report information for unconfigured ports.

Notes

General information to keep in mind when reading STATUS reports is listed below:

- Attendant Workstations/EAWS are reported as idle only when in Absent mode. See example 3.
- ClearCom teletests with data are reported busy whether in voice or data calls.
- DTU control ports (port 25 on a T1 and ports 16 and 32 on the E1/2MB) are always reported as traffic busy as they are in communication with the system.
- In status reports with the /LONG option, called parties have no dialed number, but show the circuit they are in conversation with.
- In addition to possible idle, traffic busy, maintenance busy, and out of service conditions, PRI B-channel circuits may sometimes have a temporary status of reserved, being remotely restarted, or being locally restarted.
- A connected to circuit of **-*-* may be a keyset secondary extension, shared extension, conference port, tone port, or some other port that does not map to a physical device configured in your system database.
- SF 2600Hz trunk circuits (or E1 circuits configured with Single Frequency Protocol) that have been removed from service at a terminating exchange, have a status of “circuit detects far end blocking” (see example 5).
- LAN Gateway ports 2-32 are normally out of service. Only the first port should be in service.

Examples

- 1 This example shows a status report for a single circuit.

```
TDD ...? STATUS 03-01-01
Ending circuit location [03-01-01] ...?
Enter STATUS option [NONE] ...?
STATUS:      03-01-01      Circuit is idle
TDD ...?
```

- 2 This example shows a status report for a board.

```
TDD ...? STATUS 03-01
Enter STATUS option [NONE]...?
STATUS:      03-01-01      Circuit is idle
STATUS:      03-01-02      Circuit is busy
STATUS:      03-01-03      Circuit is idle
STATUS:      03-01-04      Circuit is busy
STATUS:      03-01-05      Circuit is idle
STATUS:      03-01-06      Circuit is busy
STATUS:      03-01-07      Circuit is idle
STATUS:      03-01-08      Circuit is idle
TDD ...?
```

- 3 This example illustrates the LONG option. TDD reports the station number or trunk group number when a circuit is traffic busy. The status for the Attendant Workstations/EAWS indicates that it is in call processing mode with no traffic.

```

TDD ...? STATUS

Starting circuit location ...? 04-03-01

Ending circuit location [04-03-01] ...? 04-03-03

Enter STATUS option [NONE] ...? LONG

-----
STATUS:      04-03-01 STA# 1117 Circuit is busy
CIRCUIT DESCRIPTION: 764-303 (Octal Digital Line Unit)
CONFIGURATION:      Optic I Teleset
CONNECTED TO:      02-12-01 DIALED NUMBER:
CONNECT DURATION:      0:05:20
-----

STATUS:      04-03-02          Circuit is idle
CIRCUIT DESCRIPTION: 764-303 (Octal Digital Line Unit)
CONFIGURATION:      Optic I Teleset
CONNECTED TO:      none      DIALED NUMBER: none
CONNECT DURATION:      none
-----

STATUS:      04-03-03          Circuit is busy
CIRCUIT DESCRIPTION: 764-303 (Octal Digital Line Unit)
CONFIGURATION:      Attendant Work Station
CONNECTED TO:      none      DIALED NUMBER: none
CONNECT DURATION:      none
-----

TDD ...?

```

- 4 This example shows a status report for a Packet Control Unit (PCU).

```

TDD ...? STATUS

Starting circuit location ...? 01-13

Enter STATUS option [NONE] ...?

STATUS:      01-13-01          Circuit is nailed up ( clear channel )
STATUS:      01-13-02          Circuit is nailed up ( clear channel )

TDD ...?

```

- 5 This example illustrates a status report for an SF 2600Hz trunk circuit that has been removed from service at a terminating exchange.

```

TDD ...? STATUS 03-05-01 03-05-02

Enter STATUS option [NONE] ...?

STATUS:      03-05-01          Circuit is idle
STATUS:      03-05-02          Circuit detects far end blocking

TDD ...?

```


- 6 This example illustrates the LONG and REPEAT options. TDD repeats the status display every 20 seconds until you enter CTRL+Z.

```

TDD ...? STATUS 04-03 /LONG /REPEAT

STATUS:      01-04-04          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-16          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-10          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-22          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-03          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-15          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-09          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

-----

STATUS:      01-04-21          Circuit is idle
CIRCUIT DESCRIPTION: (T1 Primary Interface Unit)
CONFIGURATION:  PRI B Channel
CONNECTED TO:   none          DIALED NUMBER:  none
CONNECT DURATION: none

```

Reporting Extended Super Frame (ESF) Statistics for DTUs (ESFSTATS)

The ESFSTATS command reports statistics for a DTU in the switch or from the remote end of an ESF T1 span.

Notes

Your OCR must allow access to this command, regardless of whether you are using ESF framing with a DTU.

The system maintains statistics on a DTU running in ESF mode in accordance with AT&T Technical Reference 54016 (September 1989). Unlike the technical specification, the system maintains two sets of statistics: one for the network requirements and one for local use. A system administrator can therefore view local statistics and reset them without affecting the network set.

Table 11-E explains the meaning of some of the information reported in ESFSTATS.

Table 11-E. ESF Statistics

Statistic	Meaning
Errored seconds	Number of seconds in which one or more out of frame conditions or CRC6 errors occurred
Unavailable seconds	Number of seconds the board was unavailable. Ten consecutive unavailable seconds constitute a severely errored second.
Bursty errored seconds	Number of seconds in which 2-319 CRC6 errors occurred
Severely errored seconds	Number of seconds in which one or more out of frame conditions or more than 320 CRC6 errors occurred
Controlled slip seconds	Number of seconds in which one or more controlled slips occurred. A controlled slip is a replication or deletion of a DS1 frame
Loss of frame count	Number of loss of signal or out of frame conditions. Loss of signal is +/-175 continuous bits that don't have a signal; 2 1/2 of that is loss of frame. Out of frame is any 2 of 4, 2 of 5, or 2 of 6 consecutive frame bits that are incorrect

Example

The following example illustrates the report for the local end of a DTU.

```

TDD ...? ESFSTATS

Enter shelf and slot number ...? 03-11

Enter the statistics request option number ...? 1 <LOCAL

Remote ESF statistics request type ... 1-Hour Performance Data
Time in current 15 minute interval ..... 31

                                     15 minute interval  24 hour interval
-----
Errored seconds ..... 0                                0
Unavailable seconds ..... 0                            0
Valid intervals ..... 96

15 minute interval data
-----
  Errored seconds ..... 123    123    123    123
  Unavailable seconds ..... 123  123    123    123

TDD ...?

```

Initiating Payload Loopback on DTUs (PAYLOAD)

The PAYLOAD command initiates ESF payload loopback for a DTU.

Notes

When you enter the PAYLOAD command, the DTU control channel changes to a loopback state. All trunk channels terminate call processing and change to maintenance busy state. The payload loopback LED on the board is lit to indicate that payload loopback is active. Any alarm events that might occur during loopback activate LEDs on the DTU, but do not result in alarm text.

To restore a DTU to service after using PAYLOAD, use the RESTORE command.

Example

```
TDD ...? PAYLOAD
Enter shelf and slot number ...? 03-11
Enter PAYLOAD option [NONE] ...?
... Payload loopback request through DTU at 03-11 is complete ...
TDD ...?
```

Placing Ports in Maintenance Busy Mode (REMOVE)

The REMOVE command places circuits into maintenance busy mode.

Notes

If you specify the shelf-slot location of a Digital Trunk Unit or circuit location of a DTU control channel, TDD removes the entire DTU from service.

TDD requires you to use the /DISCONNECT option when you remove a Packet Control Unit from service.

You may not remove SF 2600Hz trunk circuits (or E1 circuits configured with Single Frequency Protocol) that have been removed from service at a terminating exchange.

To restore circuits to service, use the RESTORE command.

Examples

- 1 The following example disconnects a busy circuit and places it in maintenance busy mode.

```
TDD ...? REMOVE
Starting circuit location ...? 03-01-01
Ending circuit location [03-01-01] ...?
Enter REMOVE option [NONE] ...? DISCONNECT
      03-01-01          Circuit is busy
      03-01-01          Forcing circuit to disconnect
      03-01-01          Circuit was forcibly disconnected
REMOVE: 03-01-01          Circuit is maintenance busy
TDD ...?
```

- 2 The following example removes a Packet Control Unit from service.

```
TDD ...? REMOVE
Starting circuit location ...? 01-13
Enter REMOVE option [NONE] ...? DISCONNECT
REMOVE: 01-13-01          Circuit is maintenance busy
REMOVE: 01-13-02          Circuit is maintenance busy
TDD ...?
```

Connecting Two Ports Together (CONNECT)

The CONNECT command lets you tie two line, trunk, or receiver ports to each other.

Notes

You may not connect circuits configured as Attendant Workstations/EAWS or DCAs.

One application of the CONNECT command is to connect external test equipment to the connected ports in order to allow more detailed level and noise testing.

To disconnect ports that you have connected and restore them to idle state, use the RESTORE command and specify *both* circuits.

Example

```
TDD ...? CONNECT
Enter the two circuit numbers to be connected
Circuit Location ...? 03-13-02
Circuit Location ...? 03-21-04
Enter CONNECT option [NONE] ...?
CONNECT:    03-13-02 has been connected to 03-21-04
TDD ...?
```

Connecting Tones to Ports (TONE)

The TONE command lets you connect a tone port to a line, trunk, or tone receiver.

Notes

You may not connect tones to circuits configured as Attendant Workstations/EAWS or DCAs.

To disconnect circuits from tones, use the RESTORE command.

Example

```
TDD ...? TONE
Starting circuit location ...? 02-01-01
Ending circuit location [02-01-01] ...?
Enter TONEPORT [MILLIWATT] ...? 1khz
Enter TONE option [NONE] ...?
TONE:          02-01-01          Circuit has been connected to tone
TDD ...?
```

Restoring Ports to Normal Service (RESTORE)

The RESTORE command returns a circuit to idle (on-hook) mode. It removes the effects of the CONNECT, PAYLOAD, REMOVE, TEST, and TONE commands.

Notes

You may not restore SF 2600Hz trunk circuits (or E1 circuits configured with Single Frequency Protocol) that have been removed from service at a terminating exchange. When the terminating exchange restores the circuit(s) to idle status, the local circuits will also return to idle state.

Examples

- 1 The following example restores circuit 01-13-06 to idle mode.

```
TDD ...? RESTORE
Starting circuit location ...? 01-13-06
Ending circuit location [01-13-06] ...?
Enter RESTORE option [NONE] ...?
RESTORE:    01-13-06      Circuit is being re-initialized
RESTORE:    01-13-06      Circuit is idle
TDD ...?
```

- 2 The following example illustrates the DISCONNECT option.

```
TDD ...? RESTORE
Starting circuit location ...? 03-01-01
Ending circuit location [03-01-01] ...?
Enter RESTORE option [NONE] ...? DISCONNECT
          03-01-01      Circuit is busy
          03-01-01      Forcing circuit to disconnect
          03-01-01      Circuit was forcibly disconnected
RESTORE:    03-01-01      Circuit is idle
TDD ...?
```


Checking the Location of the Diagnostic Port (LIST)

The LIST command displays the circuit location of your diagnostic port.

Notes

If you have not configured a diagnostic port, LIST reports a port of ****_**_****.

See *Configuring the TDD Diagnostic Port* on page 11-3 for instructions on how to configure a diagnostic port.

Example

```
TDD ...? LIST
Your diagnostic port is 03-02-08
TDD ...?
```

Checking Reference Sources (REFERENCE)

The REFERENCE command displays clock sources configured for the system and which source is currently in use.

Notes

Clock sources are used to synchronize the system clock to the standard network clock. Up to four sources may be configured in order of preference in the System Editing tables. You should choose preference based on the stability of the clock source. The system selects the highest ranking available source for synchronization and, if none are configured, uses the system clock.

Note If the system clock is the clock source in use, REFERENCE reports that the system is free running.

Example

The REFERENCE display below shows that one clock source is configured at circuit location 03-19-25.

```
TDD ...? REFERENCE
Current System Reference Index: 1
Configured Reference Index 1:
  Port Number: 03-19-25
  Source:      INTERNAL      Selectable
Configured Reference Index 2:
  NO REFERENCE CONFIGURED
Configured Reference Index 3:
  NO REFERENCE CONFIGURED
Configured Reference Index 4:
  NO REFERENCE CONFIGURED

TDD ...?
```

Most clock sources are listed as INTERNAL. The only clock source that is EXTERNAL is a clock connected to the External Reference Input on the Reference Timing Unit (RTU). A Selectable source is active and running; a Not Selectable source is inactive or not operating properly.

Controlling and Checking the Status of Signaling Link Circuits (MTP)

The MTP command is used with the Signaling System 7 feature. See the Signaling System 7 Application Manual for information on this command.

Controlling and Checking Status of ISUP Trunk Circuits (ISUPMNT)

The ISUPMNT command is used with the Signaling System 7 feature. See the Signaling System 7 Application Manual for information on this command.

Checking and Changing the Status of Host Interface Links (LINK)

The LINK command is used with Host Interface Links. See the Voice-Frame Programming Reference Manual for information on this command.

Exiting TDD

To exit the TDD program:

At the TDD ...? prompt, type **EXIT** and press RETURN.

EXIT terminates the TDD program and returns you to the System Administration program.

```
TDD ...? EXIT
      Exiting the Telephony Device Diagnostics program.
ADMIN ...?
```

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