

# CMS™ 400

## User's Guide

13D26A-7/E 6/98

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# About This Manual

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## Manual Description

The Communications Management Series (*CMS™ 400 User's Guide*) is designed to help you understand and operate your CMS 400 System.

Prior knowledge of your network configuration and an understanding of the concepts of an IBM® PC-based network are essential for operating the CMS 400 System.

Use this manual for specific functions for the CMS 400 kernel module.

- **Chapter 1 – Introduction** provides an overview of CMS 400 collapsed and multi-station systems. It explains how the CMS 400 communicates. This chapter also lists the hardware requirements for the CMS 400 System.
- **Chapter 2 – Getting Started** provides information to view and modify user parameters.
- **Chapter 3 – Configuration** provides specific information to add, modify, and delete devices on your CMS 400 System.
- **Chapter 4 – Monitoring** explains how to monitor various types of units and how to retrieve other information from those units.
- **Chapter 5 – Automation** provides information for scheduling activities to occur automatically at a given time.
- **Chapter 6 – Reports** provides information for generating various reports concerning your network.
- **Chapter 7 – Scripting** provides specific information to create and edit scripts.
- **Chapter 8 – Convert Database Files** provides specific information to convert database files on units, alarms, event log entries, sites (unformatted) or (formatted), and 1690 statistics.
- **Chapter 9 – Proxy Agent** provides information on the Proxy Agent and explains how to use the SNMP management system to manage and control a CMS 400 and its managed network devices.
- **Appendix A – Menu Structures and Command Line Abbreviations**
- **Appendix B – Alarm Code Diagnostics**
- **Appendix C – Unit Types**

- **Appendix D – Event Log Entries**
- **Appendix E – Telephone Number Codes**

To best utilize your CMS 400 documentation, read the *CMS 400 Installation Manual* (Doc. No. 13D26A-14) first. This manual is used to install your hardware and software. It provides a complete description of system components, power, and cabling requirements.

Read your *CMS 400 Reference Manual* (Doc No. 13D26A-10) next. This manual is used as a reference for standard function keys.

The following manuals should be referenced as needed depending on your network configuration and which CMS 400 modules you have purchased:

- *CMS 400 Leased Access Manager User's Guide* (Doc. No. 13D27A-7)
- *CMS 400 Dial Access Manager User's Guide* (Doc. No. 13D30A-7)
- *CMS 400 PremNet 5000 Manager User's Guide* (Doc. No. 13D29A-7)
- *CMS 400 LAN Internetworking Manager User's Guide* (Doc. No. 13D36A-7)
- *CMS 400 Series 300 Manager User's Guide* (Doc. No. 13D37A-7)
- *CMS 400 ISDN Access Manager User's Guide* (Doc. No. 13D38A-7)
- *CMS 400 ENAR ASET-1 Manager User's Guide* (Doc. No. 13D42A-7)

## Terminology and Conventions

Text appearing on a personal computer screen or a selection that is pressed using the mouse or keyboard keys is shown in System non-bold type:

Define Site

Characters that must be input by you exactly are shown in System boldface type:

**SETUP**

A key that must be pressed on the keyboard is shown within a box:

[ENTER]

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**Caution:** In order to conform with Federal regulations, the user is required to disconnect the External Diagnostic Multiplexer, Station Distribution Multiplexer, and Distributed Diagnostic Multiplexer (which are Class A devices) before the Personal Computer is taken to and operated in a Class B residential environment.

---

# Chapter 1

## Introduction

---

### General Description of CMS 400 Operations

The Communications Management Series (CMS™) 400 was developed by Milgo Solutions to help you maintain your network. System operations allow you to configure, control, test, and restore your network from a Personal Computer. CMS 400 operations also minimize network downtime by helping you locate, diagnose, and isolate your network problems. Specific operations are used to isolate faults with minimal interruption.

In addition to CMS 400 interactive network monitoring and testing capabilities, the system provides data collection and report facilities to assist you in managing your network. Reports on network structure, equipment type, and equipment malfunction make it possible to flag, identify, and resolve recurring problems.

### Collapsed and Multi-Station Systems

CMS 400, by default, runs on a single PC as a collapsed system. If a Station Distribution Multiplexer (SDM) is defined, CMS 400 operates as a multi-station system upon reboot. Refer to Chapter 3 for more information.

A full multi-station system uses a central PC (referred to as the hub) and an SDM, allowing up to 16 workstations to be connected. While running in this expanded mode, the hub cannot be used as a workstation; it has its own operating system commands.

A multi-station system may be temporarily forced to run in collapsed mode by entering the following at the DOS prompt.

Type: **HYDRA COL**

### How the CMS 400 System Communicates

The CMS 400 system allows you to control your network through the use of a PC. Before using any of the CMS 400 operations in this document, you should understand communication between the CMS 400 program and the actual network.

There are two methods used to communicate from CMS 400 to devices: a proprietary T7 channel and a local area network connection using Simple Network Management Protocol (SNMP).

Units communicate with the CMS 400 program over a secondary channel that operates separately from the main channel. This capability is called the T7 standard. It was developed by Milgo to allow you to diagnose, isolate, and resolve network problems on a separate channel. This is used when main channel communications are severely impaired, and often without interrupting data flow.

The External Diagnostic Multiplexer (EDM) provides an interface between the PC and your network by multiplexing individual T7 channels into a single stream of data into the PC or into the Distribution Diagnostic Multiplexer (DDM).

Units communicate with the CMS 400 program using SNMP which is built on the Internet suite of protocols known as TCP/IP (Transmission Control Protocol/Internet Protocol). You need to connect the CMS 400 workstation to your Ethernet network via a network interface card (NIC). Also, on the CMS 400 hub, you need to install a TCP/IP application that supports SNMP.

The DDM provides an interface for up to 16 EDMs from a single COM port. The Station Distribution Multiplexer (SDM) provides the interface for up to 16 workstations.

---

**Note:** For a complete description of system components, power, and cabling requirements, refer to the *CMS 400 Installation Manual*.

---

## CMS 400 Kernel

The CMS 400 Kernel is the base software. It runs on non-Microsoft Windows, Microsoft® Windows<sup>TM</sup>, Windows NT and Windows® 95 workstations. The software also contains the code needed for the hub to support various product lines. To activate support of a certain product line, the proper key module must be installed on the hub. CMS 400 key modules are used to turn on support of certain family product lines.

When a module (key) is installed on a hub, unit types supported by that key may be added to the database. The number of units that may be added is limited by the key module.

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**Note:** For specific information on the various modules, refer to the *CMS 400 Installation Manual* or refer to the manual specific to your module.

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# Chapter 2

## Getting Started

---

### Introduction

Use this chapter to get your CMS 400 System in order. This chapter describes how to define user privileges, set up workstations and log on and off the system.

### Defining Users

User definitions include a name, password, and privileges that specify access to each system function. Up to 64 users can be defined for your system, with name definition being necessary only when a user password is required.

### Adding a New User

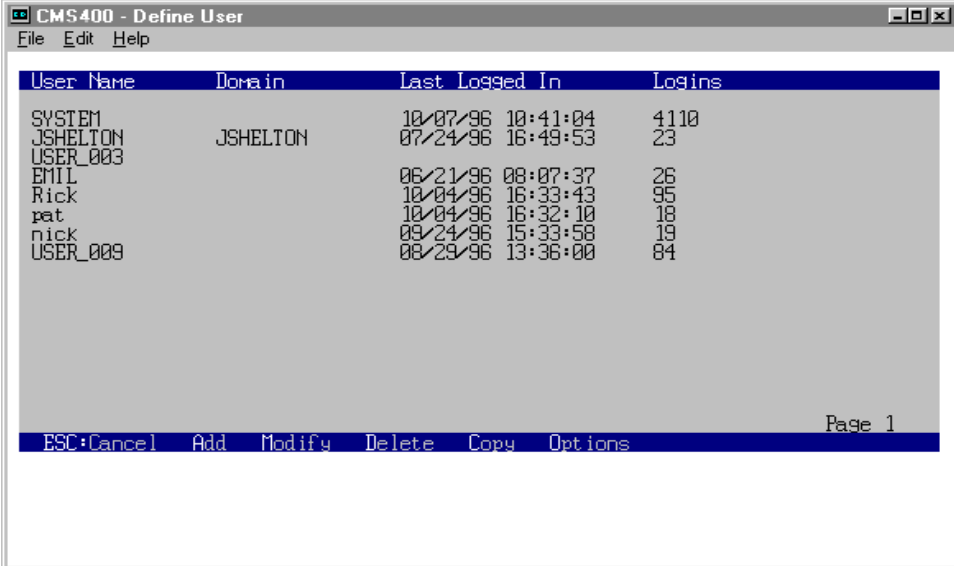
To add a new user to the CMS 400 System:

1. Select Define Users from the Administration menu. The User Definition screen is displayed (refer to Figure 2-1).

---

**Note:** Only system administrators may have access to this feature. If passwording is enabled, the user names, passwords, domains, and privileges should be assigned first.

---



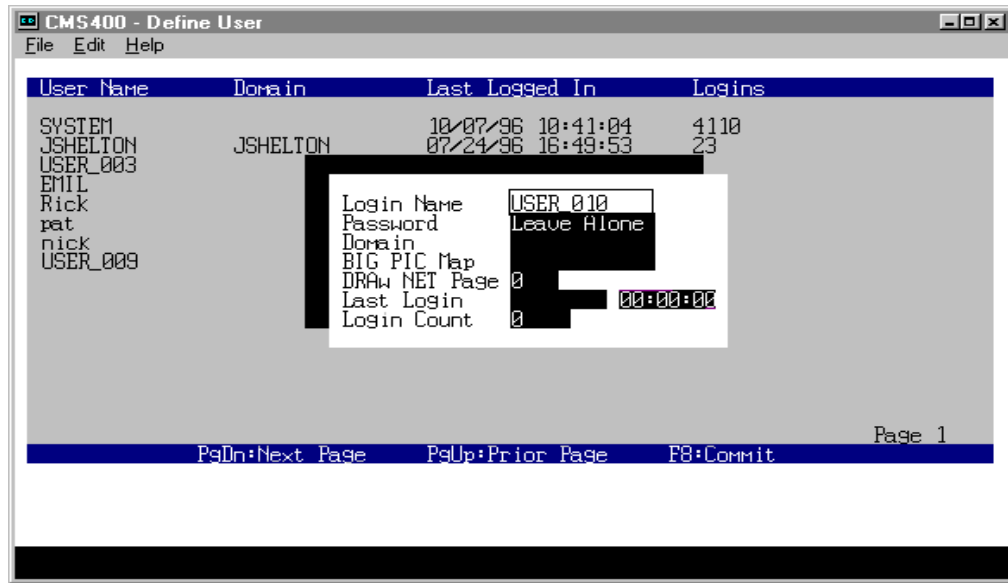
The screenshot shows a window titled "CMS400 - Define User" with a menu bar containing "File", "Edit", and "Help". The main area displays a table with the following data:

User Name	Domain	Last	Logged In	Logins
SYSTEM		10/07/96	10:41:04	4110
JSHELTON	JSHELTON	07/24/96	16:49:53	23
USER_003				
EMIL		06/21/96	08:07:37	26
Rick		10/04/96	16:33:43	95
pat		10/04/96	16:32:10	18
nick		09/24/96	15:33:58	19
USER_009		08/29/96	13:36:00	84

At the bottom of the window, there is a status bar with the text "Page 1" and a menu bar with the options "ESC:Cancel", "Add", "Modify", "Delete", "Copy", and "Options".

Figure 2-1. User Definition Screen

2. Select Add [A]. The system displays a new user definition screen (refer to Figure 2-2).



**Figure 2-2. Adding or Modifying the User Definition Screen**

3. Enter the Login Name and Password.
4. Press [PGDN] to alter the access privileges for each system function.

Define User also allows you to alter user privileges within a function (such as: CMS Component Map, you can alter each feature separately; Add, Modify, Delete or Move.

- A **Y** (Yes) displayed next to an operation name means the user has access to the operation.
- A **N** (No) means a user does not have access to that operation. For groups that implement domain processing, if no group is specified, a user has access to all units. If a valid domain name is specified, a user has access to units defined within a group.

5. Press [PGDN] when all fields are correct.

Up to five pages of fields are displayed; press [PGDN] again to complete the task.

## **Modifying User Password and other Information**

To modify user password and other information:

1. Select Define Users from the Administration menu.
2. Select a user name from User Definition screen (refer to Figure 2-1).
3. Select Modify [M].
4. Change the information as desired.
5. Press [PGDN] to alter the access privileges for each system function.
6. Press [PGDN] when all fields are correct.

A second page of fields are displayed; press [PGDN] again to complete the task.

## **Displaying a List of all Users**

To display a list of all users:

1. Select Define Users from the Administration menu.  
All currently-defined users are displayed.
2. Press [ESCAPE] to cancel the operation.

## **Copying Another User's Privileges**

To copy another user's access privileges to the user you have displayed on your screen:

1. Select Define Users from the Administration menu.
2. Select a user name.
3. Select Copy [C] and the system prompts you for a user definition to copy from.
4. Press [TAB] to select the user name associated with the information to be copied and press [PGDN].

The privileges on the displayed screen are changed to reflect the new information.

5. Press [PGDN] to accept those changes.

## Deleting a User from the Network

To delete a user from the network:

1. Select Define Users from the Administration menu.
2. Select a user name.
3. Select Delete [D].

The message: Are you certain Press Y (yes) or any other key to cancel is displayed.

The definition of the user will be deleted after a positive confirmation.

## Hiding a User Password

When logging in on the CMS 400 system it is possible for a bypasser to “look over the shoulder” of the system administrator and thus learn a coworker's password. This function allows you to set the password to be obscured, appearing blank. Thus, adding additional security to the system administrator's password.

To hide a system administrator's password:

1. Select Define Users from the Administration menu.  
  
All currently-defined users are displayed.
2. Select **Options** from the Define User screen.
3. Press [TAB] to toggle the selection of the password display. **Show It** is the password display default. Press [TAB] to select **Hide It** and the password is obscured, appearing blank.

If **Show It** is set, the system behaves as it does normally, displaying the password.

4. Press [PGDN] to accept the change.

This setting remains the same until it is altered again.

## Setting Up a Workstation

To set up a workstation (i.e., to display and configure workstation information):

1. Select Reconfigure Hub from the Options menu.
2. Select a hub from the list displayed and click on [OK]. The Configure Communications screen displays several key facts about the system and allows you to configure the following parameters. Refer to Table 2-1.
3. Press [Save] to keep your changes.

**Table 2-1: Workstation System Parameters**

Parameters	Usage
*Serial COMx: Port Number	Serial port number of the workstation connected to the SDM. Valid choices are 1 or 2.
*Serial COMx: Port Speed	Speed of the serial port connected to the SDM. Valid choices are 1200, 2400, 4800, 9600, or 19200.
LAN Hub and Station	The current hub number and workstation number. Valid choices are 1-9 for hub number and 1-16 for workstation number. When using the hub on NetBIOS LAN, the serial COMx: port number must be blank.
*String For Remote Dial	Modem command and phone number to be used to dial into the hub.
String For Dial Disconnect	Modem command used to disconnect a dialup from the station to the hub by a dial modem.
Hub Polling	If Startup Poll is checked, CMS 400 polls each hub on startup. You can set the poll timeouts up to 60 seconds. If Background Poll is checked, CMS 400 polls each hub every few minutes to make sure they are still running. You can set the poll interval up to 300 seconds.

\* These parameters are ignored in a collapsed system.

## Logging On and Off

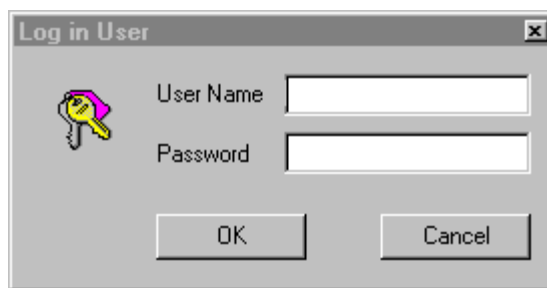
This procedure describes how to log on and off of your workstation.

User names, passwords, domains, and privileges should be assigned when first logged in (refer to "Defining Users" within this chapter). A given user may log onto multiple workstations under the same name. Some operations are accessible without logging on, such as the On-line Manual and workstation setup.

If password is enabled in the system parameters of the CMS Component Map, each operator must log on and off of the workstation. Refer to "Modifying System Parameters" within Chapter 3.

### Using the Login

When the Login dialog box is displayed, you are prompted for your user name and password. Both the user name and password can be no more than 12 characters in length (refer to Figure 2-3).



**Figure 2-3. CMS 400 Log In User Prompt**

When you are typing the password, asterisks appear instead of the actual characters being entered. Once the user name and password have been entered, click on the [OK] button to attempt the login. An error message is displayed if the login failed.

If you press [CANCEL] the starting application is terminated.

### Logging In on your CMS 400 System

When a hub is connected, you maybe required to login if the hub requires login. To login to your CMS 400 system:

1. Choose File from the CMS 400 Main menu bar.
2. Select Login from the File menu.

A log in user screen is presented prompting you to enter your user name and password. Refer to Figure 2-3.

3. Type your user name and press [TAB].
4. Now type your password and select [OK].

You maybe prompted for login on the startup of CMS4WIN when the hub is reconnected if the hub requires login. You can also manually login by entering LOGIN on the command line.

### **Logging Out of your CMS 400 System**

When a hub is connected, you maybe required to logout if the hub requires login. To logout of your CMS 400 system:

1. Choose File from the CMS 400 Main menu bar.
2. Select Logout from the File menu.

The hub is disconnected and you are logged off. You can also log out when CMS4WIN is exited. You can manually logout by entering LOGOUT on the command line.

The current user is logged off of the workstation.

By using LOGIN.CMD and LOGOUT.CMD within scripts, you may display a welcome or a good-by message. Refer to Chapter 7, “Generating Scripts” for additional information.

## **Connecting to a CMS 400 Hub**

This feature allows you to create a new hub configuration and connect a hub. It also allows you to reconnect to a hub that has been previously disconnected. Each configuration must have a unique name. The name can be from one to eight characters. The names are not case sensitive. The system does not allow you to use any of the following characters ( \* + , . / \ [ ] < = > ? | ).

To connect to a CMS 400 hub:

1. Choose File from the CMS 400 Main menu bar.
2. Select Connect Hub from the File menu.

The New Connection screen is displayed.

3. Enter a hub connection name and select [OK].

---

**Note:** The name cannot be NULL or be a name of an existing configuration. The name must be a valid DOS file name.

---

CMS 400 displays the hub name, operator name, alarms, and time of hub on the bottom of the CMS 400 Main screen.

You have a choice of saving the connection state (Reconnect at Startup) so that the hub is reconnected each time CMS4WIN is restarted. If you do not choose to Reconnect at startup, the configuration will not be restarted the next time CMS4WIN is started. The system allows you to connect one hub via the Connect Hub dialog box.

The last 20 connections are saved and are presented in a combo box, so that you can reconnect to them. Connections older than 20 are deleted from the list and the configuration files are removed.

---

**Note:** One Workstation is spawned for each connection that is selected. The Workstation is running in the background and is hidden unless a legacy application is started. The only role the Workstation plays in the CMS 400 environment is to run legacy applications and provide a transport for frames to the hub that it is attached to.

---

## Reconfiguring a Hub

To reconfigure a hub:

1. Choose Options from the CMS 400 Main menu bar.
2. Select Reconfigure Hub from the Options menu.

A list is presented to you displaying the currently connected hubs.

3. Choose which hub to reconfigure and press [OK].

The standard configuration communications screen is displayed.

The Configure Communications screen displays several key facts about the system and allows you to configure the workstation parameters described in Table 5-6.

## Disconnecting a Hub

To disconnect a CMS 400 hub:

1. Choose File from the CMS 400 Main menu bar.
2. Select Disconnect Hub from the File menu.

A list is presented to you, displaying the currently connected hubs.

3. Choose which hub to disconnect and select [OK].

If a hub is disconnected, it can later be reconnected using the Connect Hub menu selection (as long as it was one of the last 20 connections).

When a hub is disconnected it will not be automatically reconnected at startup.

## Dialing up a Hub

To dial up a CMS 400 Hub:

1. Choose File from the CMS 400 Main menu bar.
2. Select Dial Up Hub from the File menu.

A list is presented to you, displaying the currently connected hubs that have serial connections to a port.

3. Choose which hub to dial and select [OK].

If only one hub is connected, that hub will be used. If no hubs are connected via serial port, then an appropriate error message is displayed.

The hub will dial the number that is configured for that hub. This can be setup using the Options - Reconfigure Hub menu selection. See reconfiguring your hub for more information.

## Hanging Up a Hub

To hang up a CMS 400 Hub:

1. Choose File from the CMS 400 Main menu bar.
2. Select Hang Up Hub from the File menu.

A list is presented to you, displaying the currently connected hubs that have serial connections.

3. Choose which hub to hang up and select [OK].

If only one hub is connected, that hub will be hung-up. If no hubs are connected via serial port, then an appropriate error message is displayed.

## Displaying the List of Hubs

This option displays a list of Hub names that are connected to your workstation. If more than one hub is connected, the View menu will contain a list of the hubs. These menu items can be used to select a particular hub for an operation.

To display a list of Hub names:

1. Choose View from the CMS 400 Main menu bar.
2. Select a particular Hub Name from the View menu.

That hub is now selected. If a check mark is next to the hub name, then that hub is the one selected.

3. To make another hub the selected hub, click on a name that does not have a check mark.

or

Clicking on a hub that already has a check mark deselects it.

If no hubs have a check mark, then all hubs will be used for the selected operation.

Hubs may also be selected by clicking on the appropriate Operator / Alarm Bar.

On exit, your selection is saved and used the next time the application is run.

## File Operations

This section describes various file operations, including file transfer between the hub and stations, and database backup and retrieval.

---

**Note:** The File Services functions may degrade system response time while they are running.

---

## Downloading Files to a Workstation

To download files from the hub to the workstations:

1. Select File Services from the Administration menu.  
A Select An Operation screen is displayed.
2. Select Download File To Station.

The files are transferred to the station from the hub.

3. Enter the file name and press [PGDN] to accept input.

A bargraph indicates transfer progress.

## Uploading Files from a Workstation to the Hub

To upload files to the hub from a workstation:

1. Select File Services from the Administration menu.

A Select An Operation screen is displayed.

2. Select Upload File From Station.

The files are transferred to the hub from the workstation.

3. Enter the file name and press [PGDN] to accept input.

A bargraph indicates transfer progress.

## Viewing Files within the Local Directory from the Hub

To view files within the local directory from the hub:

1. Select File Services from the Administration menu.

A Select An Operation screen is displayed.

2. Select Pop Up Local Directory.

or

Select Find [F], enter the name of the file, and press [PGDN].

The screen displays the file name, length, date, and time of the file.

## Backing Up the Database

To back up the database files on the hub and workstations:

1. Select File Services from the Administration menu.

A Select An Operation screen is displayed. Insert a floppy disk into your disk drive.

2. Select Backup Database.

All database files are copied in a special format onto one or many disks on the hub.

3. Enter the disk drive letter.

or

Specify a full path. You are prompted to backup the event log file.

The system displays a list of all files being backed up, allowing you to exclude any of them.

If **Y** (yes) is selected, the event log is backed up; it will take more time and use more disk space. A progress message indicates which data files are in transit.

If **N** (no) is selected, the event log is not backed up, and will save time and disk space.

4. Press [PGDN] to accept input.

---

**Note:** The current contents of that disk is superseded.

---

## Restoring a Database

To restore a database to the hub and workstations:

1. Select File Services from the Administration menu.

A Select An Operation screen is displayed.

Insert a floppy disk into your disk drive. During restoral, disks may be inserted in any order.

2. Select Restore Database.

The database files are read from backup disks to the hub.

3. Enter the disk drive letter.

or

Specify a full path. You are prompted to restore the event log file.

The system displays a list of all files being restored, allowing you to exclude any of them.

- If **Y** (yes) is selected, the event log is restored; it will take more time and use more disk space. A progress message indicates which data files are in transit.
  - If **N** (no) is selected, the event log is not backed up, and will save time and disk space.
4. Press [ENTER] to commit input.

If the specified destination file already exists, you are prompted to confirm.

---

**Note:** When doing a file transfer to the hub, it is recommended to create the destination file in advance. This way if the upload fails, it is retained. Also if the upload succeeds, the file being superseded is renamed FIL\_SER.SAV.

---

## Copying a Local File to the Hub

To copy a local file to the hub:

1. Select **File Services** from the Administration menu.  
A **Select An Operation** screen is displayed.
2. Select **Copy File Local To Hub**.
3. Enter a source file path and a destination path.

The source file path may refer to any file on any drive on the hub. The destination path is the current directory that you want to transfer the files to.

4. Press [PGDN] to accept input.

The specified file is now copied.

The bargraph indicates transfer progress.

## Renaming a File

To rename a file on the hub:

1. Select **File Services** from the Administration menu.  
A **Select An Operation** screen is displayed.
2. Select **Rename File**.
3. Type in the old file name and press [ENTER].

4. Type in the new file name and press [PGDN].

## **TFTP File Transfer**

To transfer a TFTP file on the hub or workstation:

1. Select **File Services** from the **Administration** menu.  
A **Select An Operation** screen is displayed.
2. Select **TFTP File Transfer**.
3. Type in the host address or unit name and press [ENTER].
4. Enter the local filename and press [ENTER].
5. Enter the remote filename and press [ENTER].
6. Select the direction (read or write) and press [PGDN].

# Chapter 3

## Configuration

---

### Configuring Your Database

This chapter explains the operations associated with configuring your database in accordance with your physical network configuration.

#### Suggested Strategy

To configure your database properly, create your database first. Next, add all units and sites. If you wish to group the units, define your groups and then associate the desired units with the groups.

---

**Note:** Prior knowledge of your network configuration and an understanding of restoral operations is recommended for loading your database.

---

Use the following strategy to configure your database. Each step is explained in more detail within this chapter.

1. Create a database on a new system.
2. Add and modify COM ports, DDMs, EDMs, terminals, channels, etc.
3. Ensure that all active EDMs, DDMs, and SDMs are responding.
4. Define sites (if desired).
5. Define groups (if desired).
6. Ensure that Auto Learn is active for all defined channels using known unit ranges, if possible.
7. Structure the units to reflect your network. Use the Modify command within Network Map to configure each unit.

### Creating a Database

The CMS 400 system automatically creates default database files upon bootup.

When you boot up CMS 400 and database files do not exist, CMS 400 automatically creates a database for you.

or

Type **CRE\_DAT** from the command line. You must enter **Y** (yes) for each file to be created (or reinitialized).

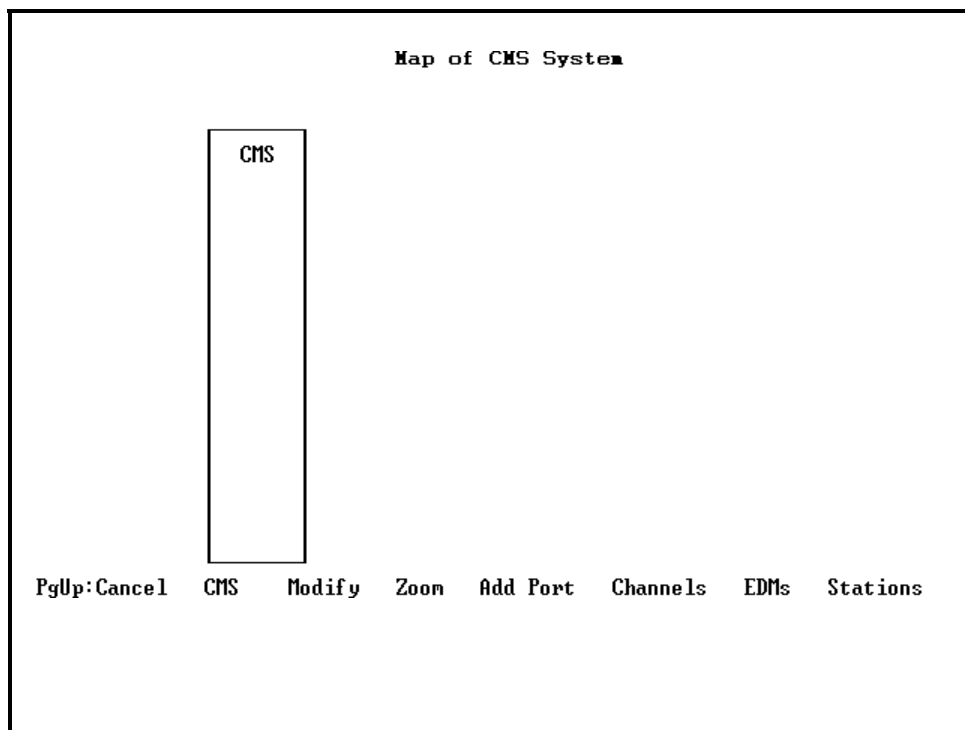
Press PGDN to scroll through the list of files.

---

**Note:** Type **N** (No) for each file that you do not want to initialize.

---

If **Y** is selected, a series of status messages indicates which files are being created or initialized. The new files are then reloaded into the system and the CMS Component Map is displayed (refer to Figure 3-1).



**Figure 3-1. CMS Component Map**

## Modifying System Parameters

To display and modify system parameters on the CMS Component Map:

1. Select CMS Component Map from the Database menu.

The CMS Component Map screen is displayed.

2. Position the cursor on CMS.

The valid options are displayed at the bottom of the screen.

3. Select Zoom [Z] to view the current system parameters.

4. Select Modify [M] from the CMS Component Map screen or from the System Parameters display.

The parameter fields listed in Table 3-1 are opened for modification.

**Table 3-1. Modifiable System Parameter Fields**

Parameter	Description/Valid Values
System Date	Enter the date in the format: mm/dd/yy.
System Time	Enter the time in the format: hh:mm:ss.
Log File Size in K, M	Valid values are 1Kb through 999Mb. The default is 1Mb. <b>Note:</b> Changing the log file size to zero deletes the current log file.
Network Hub Number	This function is used for LAN support. Valid values are 1 through 9.
Unique System Name	A 16-character password name for your RMD1690 Chassis.
Password Length	The password length controls the minimum password length allowable when defining a user (refer to "Defining a User" within the CMS 400 Reference Manual). Options include: None Required (all passwords disabled) or up to 12 characters in length.
Unknown Unit Alarms	Discard alarms from unknown units, or (if displaying by domain) show or hide them. Valid values are hide if by domain, show in any domain and discard altogether.
CMS 910 Password Mode	If <b>Y</b> (Yes), CMS 400 uses the same password mode for the RMD1690 chassis and the CMS 910 System to allow both systems to co-exist. If <b>N</b> (No), CMS 910 compatibility is required.

**Table 3-1. Modifiable System Parameter Fields (Continued)**

Parameter	Description/Valid Values
Reset All At Bootup	If <b>Y</b> (Yes), all units are reset at bootup. The system forces RMD3222 EDM channels to download. This causes alarms to be re-reported. If <b>N</b> (No), all units stay as is.
Wrap Log When Full Valid	If <b>Y</b> (Yes), the oldest event log entries are overwritten when the log is full. If <b>N</b> (No), the newest entries are discarded.
Reset On Alarm Clear	If <b>Y</b> (Yes), the unit is reset and the alarm is cancelled. If <b>N</b> (No), the unit is not reset and the alarm remains.
Poll On Garbled Alarm	If <b>Y</b> (Yes), resolve garbled alarm by background polling. If <b>N</b> (No), log garbled alarm; no polling of unit will be done.
Mask Alarms In Queue	If <b>Y</b> (Yes), any reoccurrence of an alarm already in the queue is discarded. If <b>N</b> (No), a separate entry is made for each new alarm.
Clear LCM On Received RCM	If <b>Y</b> (Yes), any LCMs for a given unit are erased from the alarm queue when an RCM is received for that unit. If <b>N</b> (No), all LCM alarms are displayed in the alarm queue.
Verify Alarm Thresholds	If <b>Y</b> (Yes), the alarming unit thresholds are verified. If <b>N</b> (No), the alarming unit thresholds are not verified.
Clear ABI On End of Call Event	<p>If <b>Y</b> (Yes), the ABI alarm is cleared from the database. If <b>N</b> (No), the ABI alarm remains in the database. For ASET-1 systems, auto delete any ABI alarms when an end of call event is received.</p> <p><b>Note:</b> This function only applies when security mode is enabled in the modems and serial number matching of CMS 400 database units is being used.</p>
Disconnect Illegal Calls	<p>For ASET-1 systems, If <b>Y</b> (Yes), the system automatically disconnects a call if a unit with a serial number that is reported in the call established trap is not found in the CMS 400 database. If <b>N</b> (No), the system ignores the unit.</p> <p><b>Note:</b> This function only applies when security mode is enabled in the modems and serial number matching of CMS 400 database units is being used.</p>
Poll for New-Mayday Parameters	If <b>Y</b> (Yes), TXL, RXL, SQL, CAL, and LIB alarms are received in the new mayday format. The system polls the unit for details before placing the alarms in queue. If <b>N</b> (No), the alarms are masked.

**Table 3-1. Modifiable System Parameter Fields (Continued)**

Parameter	Description/Valid Values
Scan Units Regularly	If <b>Y</b> (Yes), a unit is polled every few seconds, and reports LCM/RCM as appropriate. If the unit fails to respond because the EDM connected to the chassis is down, you must post an LCM against the unit. If <b>N</b> (No), background polls are disabled at the system level.
Allow LCMs Even If EDM Down	If <b>Y</b> (Yes), the LCMs are received even if the EDM is down. If <b>N</b> , (No) the LCMs are not received when the EDM is down.
Fetch Units Statistics	If <b>Y</b> (Yes), the RMD1690 chassis is polled for a summary of statistics. If <b>N</b> (No), the RMD1690 is not polled.
Log Each Alarm In Erase-All	If <b>Y</b> (Yes), an event is logged for each alarm erased using the group-erase function of display alarm. If <b>N</b> (No), one event indicating that many alarms were erased is logged.
Log Every Task Initiation	If <b>Y</b> (Yes), the system logs all tasks. If <b>N</b> (No), the system does not log any tasks.
Date Format DD-MM-YY	If <b>Y</b> (Yes), the format is DD-MM-YY. If <b>N</b> (No), the format is MM/DD/YY.
Tasks In Expanded Memory	If <b>Y</b> (Yes), tasks are run in expanded memory or DOS's EMM386. If <b>N</b> (No), additional tasks are not run in expanded memory.
Streaming Autosquelch	If <b>On</b> , an STR alarm initiates a task called Streamer that identifies the "streaming" modem and disables it. If <b>Off</b> , the Streamer task is not initiated.
Scan Stations Regularly	If <b>Y</b> (Yes), the stations are polled and the tasks are canceled if no reply is made. If <b>N</b> (No), no scanning takes place.
Lock T7 Channels	For EDRS only, lock T7 channels during initiate, terminate, switch to dedicated, and switch to dial operations to give the DSR Control application exclusive use of T7 channels.  <b>Note:</b> Other applications running on the same channels cease to run until DRS Control releases the locked channels.
Update Alarm Fields Insistently	If <b>Y</b> (Yes), the system updates the alarm fields insistentlly on the CMS 400 workstation. If <b>N</b> (No), the alarm fields are updated approximately every two seconds on the CMS 400 workstation.

**Table 3-1. Modifiable System Parameter Fields (Continued)**

Parameter	Description/Valid Values
Alarm Counts By Domain	<p>If <b>Y</b> (Yes), the alarm count displayed on the CMS 400 workstation reflects alarms for units in a specific user's domain, and those not posted against any specific unit. If <b>N</b> (No), the CMS 400 workstation does not find units in the user's domain.</p> <p><b>Note:</b> This option must have passwording enabled to be effective.</p>

**Table 3-2. Modifiable System Parameter Fields on Page 2**

Parameter	Description/Valid Values
System Description	This field is a free text area for entering the description of your CMS 400 hub. For example: CMS 400 Network Management Testing Area.
CMS 6000 Link Speed	This speed allows you to link to the CMS 6000 400AMM. Valid values are 75 through 19200. The default is 19200.
CMS 6000 LAN Links	Valid values are 0, 1 or 2. If a <b>1</b> or <b>2</b> is chosen, the CMAX interface to the CMS 6000 is sent over a LAN using UDP/IP protocol rather than over serial links. This requires PC/TCP software to be installed on the hub.
TRAPs To CMS 6000	Allows you to send traps to the CMS 6000. If <b>Y</b> (Yes), TRAPs are sent to the CMS 6000 System. If <b>N</b> (No), TRAPs are not sent to the CMS 6000 System.
WPA Alarm Link	Valid values are None, Serial, or LAN. If Serial is chosen, WPA alarms are sent to CMS 400 by a port defined for this purpose. If LAN is chosen, WPA alarms are sent to CMS 400 over the LAN using NETBIOS protocol.
NetBIOS Retry Factor	Allows you to retry the NetBIOS command up to 99 times allowing less "Adapter Busy" messages.
ASET-1 Stat Server	Allows you to enable or disable the ASET-1 Stat Server. Valid values are Enabled, and Disabled. The default is Enabled.
Report Printer Type	Valid values are None, Generic 80-col, Generic 132-col, Graphic 80-col, and Graphic 132-col. The default is None.
Serial Speed	Valid values are 75 through 19200. The default is 19200. (Serial speed is not applicable for parallel printers.)

**Table 3-2. Modifiable System Parameter Fields on Page 2 (Continued)**

Parameter	Description/Valid Values
Prefix To Event Log Lines	Allows you to define a text string to precede each event that is sent to the event printer. It allows you to route the output of multiple hubs to a print consolidator and still be able to discriminate between hubs.
Prefix to CMS/View lines	Allows you to define a text string to precede each event that is sent to the CMS/View port. It allows you to use the CMS/View port as an alternate alarm output port. <b>Note:</b> Do not use this CMS/View port if it is connected to the CMSView/II System.
CMS/View User Privileges	The system accepts a defined user name. If a user is present, and the pass wording is enabled, all CMS operations invoked via CMS View/II are validated using that user's privileges. <b>Note:</b> Pass wording between separate NetView users is not possible at the CMS 400 level. CMS 400 perceives all NetView requests as being from one source.
Scan Interval if on	Allows you to define a delay in between each outbound T7 poll when scanning is enabled. It is useful where fewer units are used and have continuous re-polling of the same units. The valid values are 1 through 25. <b>Note:</b> Scan Interval if on does not control the scan interval for devices on PPP channels on an EDM. Devices on PPP channels on an EDM are controlled by the background ping interval in SNMP Control.
Default Test Length	Valid values are 1 through 65535. The default time is 60 seconds.
Suppress Events To Printer or File	Allows specific events (or ranges of events) to be suppressed from the log printer or the log file. The allowable entry is by class and code (refer to Appendix D). You may enter a string of class and codes such as <b>1-3, 4:61-4.63</b> or <b>4:61-63, 7, 9</b> .

## Defining Station System Parameters

To define station system parameters on the CMS Component Map:

1. Select CMS Component Map from the Database menu.

The CMS Component Map screen is displayed.

2. Select Stations [S] from the options at the bottom of the CMS Component Map.

The Station System Parameters screen is displayed.

3. Enter the information as defined in Table 3-3.

**Table 3-3. Station System Parameters**

Parameter	Description/Valid Values
Station Name	Valid values are S01 through S16.
Station Type	Valid values are Undefined, Standard, or MS Windows.
Station Port	Valid values are SDM port, TCP/IP or NetBIOS.
Station Speed	Valid values are 1200 bps through 19200 bps.
Station Privileges	Valid values are System and Assigned Users. When this field has a user id name, that station is automatically restricted to that user's function access levels as configured when defining a user.

## Adding a Port

To add a port to the database via the CMS Component Map:

1. Select CMS Component Map from the Database menu.

The CMS Component Map screen is displayed.

2. Select Add Port [A].

This allows you to define COM ports to your CMS Component Map.

3. Enter the COM Ports (1 through 8).
4. I/O Address (up to 4 numeric characters) **Note:** Not user definable.
5. IRQ (2 through 15) **Note:** Not user definable.
6. Enter the Usages (up to 20 characters).

---

**Note:** Refer to the following paragraphs for more explanation on the assignment of I/O addresses, IRQs, or Usage's.

---

## Assignment of I/O Addresses and IRQs

For an EDM to communicate with CMS 400, the system must know two facts about it:

- A unique I/O address ranging from 0 to FFFF hexadecimal.
- An interrupt request (IRQ) line number from 2 through 15.

When a PC device has data for the system, it uses the IRQ to demand attention. The system then uses the unique I/O address to access the incoming data. Since each address is unique, multiple devices using the same IRQ can be distinguished from one another.

The Add Port operation on the CMS Component Map screen is used to assign these values for each device connected to a COM port. The values must correspond to the actual COM port hardware strap settings for the defined item.

Addressing is limited to the serial port hardware already installed in the PC. The following settings are standard for the PC family:

- Serial port COM1 resides at I/O address 3F8 on IRQ 4.
- Serial port COM2 resides at I/O address 2F8 on IRQ 3.
- Serial port COM3 resides at I/O address 100 on IRQ 5.
- Serial port COM4 resides at I/O address 108 on IRQ 5.
- Serial port COM5 resides at I/O address 110 on IRQ 5.
- Serial port COM6 resides at I/O address 118 on IRQ 5.

The following is an example of IBM PS/2 COM Port addresses.

Port	Address	IRQ	Usage	Channel If Any
COM:1	03F8	4	DDM1	
COM:2	02F8	3	DDM2	
COM:3	3220	3	DDM3	
COM:4	3228	3	RMD1690 Chassis	
COM:5	4220	3	RNX 6300	
COM:6	4228	3	WPA	WPA_Alarms
COM:7	5220	3	CMS 6000	
COM:8	5228	3	Mouse	
LPT1	03BC	N/A	Hub Printer	
LPT2	0378	N/A		




---

**Caution:** An incorrect Address/IRQ can halt the system. If an SDM is added, Hydra must be restarted.

---

No standard exists for Ports COM3 and higher, and even COM1 or COM2 may be strapped in a nonstandard fashion. Contact those who configured the PC originally, or inspect internal card strapping to ensure that no addressing conflicts occur.

### Assignment of Port Usages

When a new database is built, the CMS 400 fills in the address and IRQ fields. You specify usage of the ports, and make sure that the addresses, and interrupt usage of all boards are installed in the CMS 400 hub. Double check non-standard async adapter boards, mouse adapters, and serial/parallel adapters. Refer to Table 3-4 for an explanation of the usage assignments.

**Table 3-4. Explanation of Port Usages**

Usages	Port Connection
Hub Printer	You may have one Hub printer, and it may apply to either a serial or parallel port.
Mouse	May be required if a serial mouse is in use.
VT220 Terminal	Allocates that port for external system control using the VT220 Terminal Emulation function.
RMD1690 Chassis	Used to connect to the RMD1690 dial modem's single or chassis systems.
RMD3222 Chassis	Used to connect to the RMD3222 dial modem's single or chassis systems.
Omnimux 8000 T1	Used to connect to the Omnimux 8000 supervisory port.
Series 300 Node	Used to connect to the Series 300 Node port.
RNX6300 Term Port	Used to connect to the RACALAN NetExpress System's terminal port.
NetView Via CMS/View	Used to connect to the CMSView/II link to IBM® NetView.
CMS 6000	Used to connect to the CMS 6000 System.
WPA	Used to connect to the WPA System Performance Analyzer link.
ISX5540 Management	Used to connect the ISX5540 Management to a node's NCT port from a hub serial port.
RNX 6300 Diag Ports	Used to connect to the RACALAN NetExpress System's alarm port and terminal console port.

## Valid Usage of Ports

If your CMS 400 System uses one or two EDMs connected directly to the serial ports on the PC, specify those ports to be used for EDMs on no DDM. If you have DDMs, use the DDM1, DDM2, DDM3, or DDM4 usages.

If your CMS 400 runs as a single PC single operator system, do not specify an SDM. Otherwise, use the SDM usage term.

## Modifying a Serial COM Port or Parallel Port

To modify a serial COM port or parallel port:

1. Select CMS Component Map from the Database menu.

The CMS Component Map screen is displayed.

2. Select the desired serial COM port (C1 through C8) or a parallel port (L1 through L2) from the CMS hub Component Map by placing the cursor on any of the defined ports.
3. Select Zoom [Z] from the list of options.
4. Select Modify [M] from the list of options.

The Modify Ports screen is displayed. Refer to "Adding a Port" within this chapter for a description of the modifiable parameters.

## Adding a Channel

This procedure describes how to add channels to the database via the CMS Component Map.

1. Select CMS Component Map from the Database menu.

The CMS Component Map screen is displayed.

2. Select Channels [C] from the CMS Component Map.
3. Select Add [A] from the Channel list screen.

The Channel Configuration screen is displayed.

4. Enter the information defined in Table 3-5 for the specified channel.

**Table 3-5. Channel Configuration Parameters**

Parameter	Description/Valid Values
Name	The logical channel name. The channel name can be a 1- to 12- character name.
Timeout	The number of seconds most functions wait before assuming that an addressed unit is not responding. Valid values are 5 through 99 seconds.
Operational Status	<p>Valid values are: Online, No Scanning, or No Scan/Alarms. If Online, scanning is enabled at the channel level and alarm reporting is enabled.</p> <p>If No scanning, units on this channel are not polled via background polling.</p> <p>If No Scan/alarms, no background polling of units on this channel is done and alarms reported are turned off for units on this channel.</p>
Streaming Autosquelch	If <b>On</b> , an STR alarm initiates a task called Streamer that identifies the "streaming" modem and disables it. If <b>Off</b> , the Streamer task is not be initiated.
Through COM Number	The number associated with the COM port on which this channel resides. Valid values are 1 through 9.
Through EDM Number	The number associated with the EDM on which this channel resides. Valid values are 1 through 90.
Through EDM Port	The physical port of the EDM on which this channel resides. Valid values are 1 through 16.
Through VDM Port	The physical port of the VDM on which this channel resides. Valid values are 1 through 16.
Usage Of Channel	The T7 level protocol supported at the channel level for this port on the selected EDM. Valid values are: T7, RMD3222, RMD1690 (Chassis), RMD1690 + Flow, Terminal, COM port, OM8000 Alms, OM9000 Alms, ISX5540 Alms, Foreign Alms, SNMP via PPP and OM7000 Alms. Proper channel usage must be selected for communications to occur correctly for devices operating in clear channel mode.
Speed (T7 only)	The speed of the T7 level protocol. Valid values are 75 through 19200.
Masked Alarms	The alarms that you do not want reported to the alarm queue for units on this channel. You can turn the alarms on or off by entering <b>N</b> (Not Masked) or <b>Y</b> (Masked).

**Note:** Be sure to use EDM Status to download channel parameters when “Usage” is changed.

## Adding Channels to an EDM

To add channels to an EDM on the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place your cursor on an EDM in the CMS Component Map.
3. Select Channels [C].

The EDM Channel screen is displayed.

4. Select Add [A].

The Channel Configuration screen is displayed.

Refer to Table 3-5 previously described within this chapter for channel configuration parameters.

## Moving a Channel to a Different EDM

To move a channel to a different EDM in the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on EDM in the CMS Component Map.
3. Select Channels [C].
4. Position the cursor on the selected channel and select Relocate Channel [R].
5. Enter the target EDM and port number press [PGDN] or [ENTER].

A message: Relocate Channel (Channel Name) Onto EDM target (Port 1 through 16) appears.

---

**Note:** If an attempt is made to relocate a channel to a port on another EDM which has a channel already defined, the message: Port Already In Use is displayed.

---

6. Press [PGDN] to confirm input and the channel is relocated to the specified EDM.

## Copying Alarm Masks from one EDM Channel to Another

To copy alarm masks from one EDM channel to another:

1. Select CMS Component Map from the Database menu.

2. Select Channels [C].
3. Place the cursor on a Channel Name in the list.
4. Select Add [A].

The Channel Configuration screen is displayed.

5. Press [F8] and enter the channel name of the alarm mask to copy.
6. Press [PGDN].

The new EDM channel is displayed with the same information as the other channel.

---

**Note:** Use the EDM status operation to download channel parameters when the usage field is altered.

---

## Viewing Channels

To view channels within the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Channels [C] from the list of options on the CMS Component Map.  
  
The Channel Name screen displays the channel number, usage, connection, port, TMO, speed, and status.
3. Enter a valid channel name (up to 12 characters), or press [TAB] to view already-defined channels.
4. Select a channel on the connected EDM.

If the channel is connected to an EDM, the CMS Component Map is displayed at the channel level. If the Channel selected has no EDMs associated with it, the message: xxx out of xxx channels defined have no EDM path is displayed.

### Displaying All Units On a Channel

To view all units on a channel from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Channels [C] from the list of options.
3. Position the cursor on the desired channel and select Units [U].

Unit names, addresses, and site names are displayed for the specified channel.

### Modifying a Channel

To modify channels on the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Channels [C] from the list of options.
3. Highlight the channel and select Zoom [Z].

The EDM channels are displayed on the CMS Component Map.

4. Position the cursor on the desired channel and select Modify [M].

The Channel Configuration screen is displayed.

5. Modify the channel configuration information.

Refer to Table 3-5 for a detailed description of the channel parameters.

### Deleting a Channel

To delete channels from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Channels [C] from the list of options.
3. Position the cursor on the desired channel and select Delete Channel [D].

A message: Are you certain? is displayed.

4. Press **Y** (yes) to confirm; any other key to cancel.

If there is more than one unit defined on the channel, another message is displayed: Delete All Units On This Channel As Well?

If **N** is selected the units are not deleted, but are no longer associated with the selected channel.

## Adding an EDM

To add an EDM to the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Add Port [A] and scroll through the list of files until EDM appears.
3. Add the EDMs to the desired COM Ports.

## Displaying and Modifying EDMs

To display and modify parameters of a EDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select EDMs [E] from the options.

A numerical list of EDMs is displayed. The information includes whether the EDM is on-line/off-line, on what site the EDM is located, the speed of the EDM, and if the EDM is linked to a DDM or COMx:.

To modify an EDM:

1. Select an EDM from the CMS Component Map.
2. Select Modify [M] .

The Modify EDM Unit screen is displayed. Refer to the Table 3-6 for an explanation of fields.

3. Press [PGDN] to confirm input.

## Polling an EDM

To poll an EDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on an EDM within the CMS Component Map.
3. Select Poll [P].

The unit indicated by the cursor is polled. The message: Target Device Responds To Poll is displayed. If the target device does not respond is displayed, check to make sure your EDM is connected correctly. Refer to your *CMS 400 Installation Manual* for details.

### Relocating an EDM to another Port

To relocate an EDM to another port on the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.
3. Select Relocate EDM [R].
4. Enter the EDM number and target port number and press [PGDN].

A message: Relocate EDM (1 through 90) Onto Port (1 through 16) Of This DDM is displayed. Use this message to ensure that the correct parameters have been entered.

5. Press [PGDN] again to confirm that the message is correct.

---

**Note:** To add an EDM directly to a COM port, or relocate it, the COM port must first be defined as an EDM. Refer to "Adding or Modifying a Port".

---

### Turning the EDM Off/On-line

To temporarily shut off background polling and alarming subsystems:

---

**Note:** You may want to mark the unit off-line, do some monitoring to fix a problem, then return the unit to on-line.

---

1. Select CMS Component Map from the Database menu.
2. Place the cursor on an EDM in the CMS Component Map.
3. Press Off/On-line [O] to toggle back and forth between off-line and on-line.

When the EDM is on-line (white), it is communicating with the CMS 400 network. When the EDM is off-line (blue), it is not communicating with the CMS 400 network.

4. Confirm your selection by pressing [PGDN] or [ENTER].

## Deleting an EDM

To delete an EDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on an EDM in the CMS Component Map.
3. Select Delete [D].

A message: Are you certain? appears.

4. Press **Y** (yes) to confirm; any other key to cancel.

If channels are defined on the EDM, a message: There are channels still defined on this EDM. How should they be handled?

5. Select Delete Altogether

or

Select Disassociate from EDM.

6. Press [PGDN] to confirm your input.

## Adding a DDM

To add a DDM to the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Add Port [A] scroll through the list of files until DDM appears.
3. Add the DDMs to the desired COM Ports.

## Displaying and Modifying DDM Parameters

To display and modify parameters of a DDM in the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.
3. Select Zoom [Z] to display the DDM Unit screen.
4. Select Modify [M] from the DDM unit list.

The Modify System Parameters screen is displayed.

5. Enter the parameters described in Table 3-6.

**Table 3-6. Modifiable EDM/DDM Parameters**

<b>Parameter</b>	<b>Description/Valid Values</b>
At Site	Enter a previously-defined site name at which the DDM resides.
Online	Allows you to put your DDM on- or off- line. Valid values are <b>Y</b> (yes) or <b>N</b> (no).
Speed	This setting must correspond to the DDM switchbank setting. Valid values are 19200, 9600, 4800, 2400, or 1200.
Timeout	The amount of time allotted for an acknowledgment from the DDM. Valid values are 1 through 9 seconds.
EDM/DDM Scan	Allows background scanning of the EDM/DDM device. Valid values are None, Every 1 minute, Every 2 minutes, Every 3 minutes, Every 4 minutes, or Every 5 minutes.
Channel Scan	Allows you to enable or disable scanning of channels.
Phone #	Used for dialing up the DDM. Valid value is a 16-character phone number.
X.25 Link	Used for linking up X.25. Valid values are <b>Y</b> (yes) or <b>N</b> (no).
Versn (Version) 2.X	Valid values are <b>Y</b> (yes) or <b>N</b> (no). If <b>Y</b> , the device version is assumed to be earlier than 2.0. If <b>N</b> , the device version is assumed to be 2.0 or later.
DDM Port	The physical port of the DDM on which this channel resides. Valid values are 1 through 16 for DDM.
COMx: Port	The communications port of the DDM on which this channel resides. Valid values are 1 through 9.

### **toggling Between DDMs**

This option allows you to toggle between two DDM displays at the same time. The CMS Component Map would get too cluttered if all four DDMs were shown on the screen at once.

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.

If all four DDMs were displayed at the same time, the screen would become cluttered. To toggle between two DDM displays at the same time:

3. Select Other DDMs [O] to choose DDMs 1 and 2, or press [O] again to choose DDMs 3 and 4.

### **Polling a DDM**

To poll a DDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.
3. Position the cursor on the desired DDM and select Poll [P] from the DDM Unit screen.

The unit indicated by the cursor is polled. The message: Target Device Responds To Poll is displayed. If the target device does not respond is displayed, check to make sure your EDM is connected correctly. Refer to your *CMS 400 Installation Manual* for details.

### **Adding an EDM to a DDM**

To add an EDM to a DDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.
3. Select Add EDM [A].

An Add EDM On DDM Port screen is displayed.

4. Enter the parameter information as described previously in Table 3-6.

### **Deleting a DDM**

To delete a DDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a DDM in the CMS Component Map.
3. Select Delete DDM [D] from the list of options.

The message: Are you certain? appears.

4. Press **Y** (yes) to confirm; any other key to cancel.

An error message is displayed if EDMs are still defined on the DDM. Refer to "Deleting an EDM".

## Adding an SDM

To add an SDM into the database via the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Select Add Port [A] and scroll through the list of files until SDM appears.
3. Add the SDMs to the desired COM Ports.

## Displaying and Modifying an SDM

To display and modify the parameters of an SDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on a SDM in the CMS Component Map and press Zoom [Z].

The SDM screen is displayed.

3. Select Modify [M].

The SDM parameters are opened for modification.

4. Enter the SDM parameter information as described in Table 3-7.

**Table 3-7. Modifiable SDM Parameters**

Parameter	Description/Valid Values
Installed	<p>If <b>Y</b> (Yes), the system begins operating as a multi-station system upon next reboot of CMS 400. If <b>N</b> (No), the system begins operating as a collapsed single-PC system upon next reboot.</p> <p><i>Note: If a system is running in multi-station mode and it is desirable to activate it temporarily in collapsed mode, boot CMS 400 by entering <b>HYDRA COL</b> on the DOS command line.</i></p>
COMx:	Valid values are 1 through 8.

**Table 3-7. Modifiable SDM Parameters (Continued)**

Parameter	Description/Valid Values
Speed (bps)	This is the hub to SDM link speed. It is also the speed of the workstation to the SDM. Enter your workstation speed in the setup command. Valid values are 19200, 9600, 4800, 2400, or 1200.
XOff Timeout (sec)	This is the flow control for the SDM. Valid values are 0 through 13.

---

**Note:** For best performance, specify as installed only those stations that are really present. This reduces unnecessary polling and overload.

---

### Deleting an SDM

To delete an SDM from the CMS Component Map:

1. Select CMS Component Map from the Database menu.
2. Place the cursor on the SDM in the CMS Component Map.




---

**Warning:** These SDM changes bring down all stations until the hardware and/or cabling are adjusted accordingly.

---

3. Select Delete SDM [D].

The message: Are you certain? appears.

4. Press **Y** (yes) to confirm; any other key to cancel.

## Defining a VDM

A VDM (Virtual Diagnostic Module) is a TCP/IP software product that resides on a remoted PC using UDP/IP frames. A VDM conveys traffic from CMS 400 to a connected EDM, or it emulates an EDM for one channel. VDMs are useful when no dedicated serial link exists between CMS 400 and a remote site where an EDM is required.

A special case of the VDM (termed the "minimal" VDM) is actually a small hardware box that conveys T7 diagnostic traffic from CMS 400 to a single remoted T7 device, again using UDP/IP frames. Also, the VDM may connect to an external EDM. This would be defined MIN + EDM.

VDMs are defined and managed on the CMS 400 using the Define VDM application. Up to 2048 VDMs may be defined.

When invoked, the application displays a list of the VDM definitions by number (1-2048), type (full, minimal, min + EDM), IP address, site, and number of associated channels. Multiple pages may be traversed using the standard paging keys PGDN and PGUP.

## Creating a VDM Definition

To create a new VDM definition:

1. Select Define VDM from the Database menu.
2. Select Add [A].

Enter the required VDM field parameters as described in Table 3-8.

**Note:** Option modules are not necessary to add Minimal and Minimal plus an EDM VDMs.

**Table 3-8. Modifiable VDM Parameters**

Parameter	Description/Valid Values
Address	The IP address of the VDM (mandatory).
Site	Describes the location of the VDM.
Type	The VDM type; Minimal or Minimal plus an EDM. (Full is used by support only.)
Poll Timeout (sec)	How long to wait for a reply from a unit being polled in the background (not applicable to "Minimal" VDMs).
Poll Retry Count	How many times to poll a unit in the background before reporting a failure (not applicable to "Minimal" VDMs).
Poll Inactivity (min)	How long background polling will be suspended by other traffic (not applicable to "Minimal" VDMs).
Link Timeout (sec)	The Quark timeout for the associated EDM (not applicable to "Minimal" VDMs).
Link Retry Count	The number of Quark retries for the associated EDM (not applicable to "Minimal" VDMs).

## Modifying a VDM

To open a VDM definition for changes:

1. Select Define VDM from the Database menu.
2. Select Modify [M].

Modify the VDM field parameters as necessary.

## Searching for a VDM

To locate a VDM in the CMS 400 database:

1. Select Define VDM from the Database menu.
2. Select Find [F].

The system prompts you for the search criteria.

3. Enter the VDM number.
4. Enter the IP address.
5. Enter the Site Name.

The system locates the page where that VDM definition appears.

## Reinitializing a VDM Definition

To reinitialize a VDM definition:

1. Select Define VDM from the Database menu.
2. Select Boot [B].

The system reinitializes the EDM attached to the currently-highlighted VDM definition.

---

**Note:** This operation is not applicable to "Minimal" VDMs.

---

---

## Displaying the Status of a VDM

To display the status of a VDM:

1. Select Define VDM from the Database menu.
2. Select Status-EDM [S].

The system displays a dynamic status and version of the EDM attached to the currently-highlighted VDM.

---

**Note:** This operation is not applicable to "Minimal" VDMs.

---

## Using a Datascope on a VDM

To show Quark traffic between CMS 400 and a VDM:

1. Select Define VDM from the Database menu.
2. Select View [V].

The system opens a datascope-like screen which shows Quark traffic between CMS and the currently-highlighted VDM.

- To clear the datascope screen, press Clear [C].
- To freeze the display, press Freezes [F].
- To unfreeze the display, press unFreezes [F].
- To toggle between hexadecimal and ASCII modes, press Modes [M].
- To exit the Datascope screen, press [ESC].

---

**Note:** Only one view function can be operating per CMS 400 hub. If a view is open and another user opens another view even if its for a different VDM, the first user's view is frozen and will not operate.

---

## Downloading a VDM

To download a VDM:

1. Select Define VDM from the Database menu.
2. Select Load [L].

The system downloads the currently-highlighted VDM.

---

**Note:** This operation is not applicable to "Minimal" VDMs.

---

## Reinitializing a VDM

To reinitialize a VDM:

1. Select Define VDM from the Database menu.
2. Select Init-EDM [I].

The system reboots the EDM attached to the currently-highlighted VDM.

---

**Note:** This operation is not applicable to "Minimal" VDMs without an attached EDM.

---

## Pinging a VDM

To Ping a VDM:

1. Select Define VDM from the Database menu.
2. Select Ping [P].

The system pings the currently-highlighted VDM with an ICMP PING packet and indicates whether the VDM echoes the packet.

## Deleting a VDM

To delete a VDM:

1. Select Define VDM from the Database menu.
2. Select Delete [D].

The system discards the currently-highlighted VDM definition.

## Defining a Site

A site is a geographical location where equipment to be associated with units in your database resides. The Define Site function allows up to 4000 physical site names and descriptions to be defined. Network units may be associated with a site using Network Map.

The Site Review window is used to store information concerning site name, address, contacts, phone numbers, vendors, and comments. The Define Site Function keys are described in Table 3-8.

1. To activate Define Site, press [F3].

The first site displayed depends on the previous function.

**Table 3-8. Define Site Function Keys**

<b>Key</b>	<b>Description</b>
[ESCAPE]	Cancels the function.
[PGUP][PGDN]	Moves to previous site or to next site.
[FORMAT]	Toggles between the formatted site information screen and a full page free text mode.
[A] Add	Adds an additional site to a list.
[M] Modify	Changes the current site information.
[D] Delete	Deletes a current site from the list.
[S] Seek	Finds a particular site.
[U] Unit	Displays the current site's unit list. Permits unit association and disassociation.
[C] Custom	Customizes prompt fields on your display screen.
[L] List	Displays a list of all defined sites by name and number of associated units.
[R] Replicate	Prompts you for another site record to be copied to the current site record.

For example, if you are in Network Map, pressing [F3] displays the site of the unit currently indicated by the cursor. If you are in Display Alarms, pressing [F3] displays the site of the unit that sent the alarm currently highlighted.

To add a new site:

Press [A].

A site is displayed, including name, and a number of free text fields that have no system-defined interpretation. Sites may be serially paged or selected by name with the Seek option.

To open the current site for editing:

Press [M].

To list all units associated with this site:

Press [U].

To draw the prompt fields:

Press [INSERT].

To erase field names, titles and prompt fields:

Press [DELETE].

To commit your changes:

Press [PGUP].

The custom format screen is now able to be used.

To list all defined sites with the number of units at each site:

Press [L].

To allow text from another site to be copied to the current site:

Press [R].

To delete a site:

Press [D].

### **Designing a Custom Site Page**

To design a Custom Site Page:

1. Press [F3] or select **Define Site** from the database menu.
2. Press [C] to design a page to your specific requirements.

You have 960 prompt characters and 64 prompt fields to work with.

3. Position the cursor where you would like to place a field name and user input area (prompt fields).

Any characters may be used for field names or titles.

---

## Adding a Site to the Network

To define a site:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Define Site from the Database menu.
3. Select Add [A] from the list of options.

The site fields are open for input.

4. Enter the new site name.
5. Enter the information associated with the site.
6. Press [PGDN] to confirm input.

## Listing All Units Associated with a Site

To list all units associated with a site:

1. Select Define Site from the Database menu.
2. Select a site from the list.
3. Select Units [U] from the list of options.

The selected site's unit list is displayed.

## Searching for a Particular Site

To search for a particular site:

1. Select Define Site from the Database menu.
2. Select Seek [S] from the Define Site screen.
3. Enter the site name and press [PGDN].

The information associated with the site is displayed.

## Displaying Site Information

To display site information:

1. Select Define Site from the Database menu.
2. Enter a site name or use [TAB] or [PGDN] to scroll through and select from the available sites.
3. Choose Add [A] when you've selected a site.

A site is displayed, including the name, and a number of free text fields which have no system-defined interpretation.

You may serially page through the sites by using the [PGDN] and [PGUP] keys.

4. Select Format [F] to toggle between the formatted site information screen and a full page free text mode.



---

**TIP:** How a site is displayed can depend on the previous function. For example, if you are in the Network Map, you can press [F3] to display the site of the unit currently indicated by the cursor. If you are in the alarm display, you can press [F3] to display the site of the unit that sent the currently highlighted alarm.

---

## Modifying Site Information

To modify site information:

1. Select Define Site from the Database menu.
2. Select an existing site from the list.
3. Select Modify [M] from the list of options.

The selected site information is displayed with the site fields open for input.

4. Enter the new information associated with the site.
5. Press [PGDN] to confirm input.

## Customizing Site Prompt Fields

CMS 400 allows you to design a site information page to suit your specific requirements. You have 960 prompt characters and 64 prompt fields to work with.

To customize the site prompt fields:

1. Select Define Site from the Database menu.

2. Select a site from the list.
3. Select Custom [C] from the list of options.
4. Position the cursor where to place a field name and user prompt field. Any characters may be used for the field names or titles.
5. Press [INSERT] to draw the prompt fields; press [DELETE] to erase field names, titles, and prompts.
6. Press [PGUP] to confirm your changes.

The custom format screen is now ready for use.

## Deleting a Site

To delete a site from the database via the CMS Component Map:

1. Select Define Site from the Database menu.
2. Select a site from the list.
3. Select Delete [D] from the list of options.  
A confirmation prompt is displayed.
4. Enter **Y** (yes) to delete units by pressing **Y** (yes).
5. Press [PGDN] to delete the specified site.

## Adding a Unit to the Database

To add a unit to the database:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Network Map from the Database menu.  
The Network Map screen is displayed.
3. Select Insert [I] from the list of options.  
The Insert New Unit screen is displayed.
4. Enter the adding a unit parameters described in Table 3-9.

**Table 3-9. Adding a Unit**

Parameter	Description/Valid Values
Unit Name	The unique logical name of a single unit.
Unit Type	These generic unit type names may be abbreviated.
Diagnostics	The type of diagnostics applicable to the units being added. The valid values are T7 Standard, T7 Interrupt, RMD1690, SNMP or RMD3222 Auxil. Excalibur DAPs strapped for interruptive diagnostics should use T7 Interrupt.
Channels	If no channel is specified, the unit is not accessible via T7. Do not specify a channel name for RMD3222 unit types. Currently, RMD3222 diagnostic connection is through a COM port.
Address	The address of the unit being added. Permits up to three values for the support of non-T7 devices, which uses all address fields. For the standard T7 device, it uses only the first field of the address. SNMP devices uses all four addresses.
Type Of Unit	Allows you to enter the device type (i.e., RMD3222, RMD1690, ect.).
Serial Number	Allows you to manually enter a unit's serial number.
Strap Table	Allows you to associate a unit with a specified strap table type.
Rx Phone # DL1	The receiving phone number of the unit. The valid value is a 24-character phone number.
Tx Phone # DL2	The transmitting phone number of the unit. The valid value is a 24-character phone number.
Groups	The name associated with a previously-defined collection of units.
Site	The geographical location of the unit.
Backup Table	The table created by Define Straps for use with dial backup using CMS 700 and the RMD 1690 chassis.

**Table 3-9. Adding a Unit (Continued)**

Parameter	Description/Valid Values
Backup Type	Created for use with the Excalibur DAP 2-wire DBU. Valid choices are 2-wire DBU and Switch-56.
Health	Defines health tables associated with units using Network Map. Each table specifies up to four MIB variables to be thresholded. Each MIB may have an upper and lower threshold. You may include free text to the alarms generated if the thresholds are reported in or out-of-range. The interval between health polls is settable.
Upstream Port	This is the port on an upstream unit. The port is used to handles unit data for SRDM and Fractional T1.
Offline	If <b>Y</b> (Yes), the unit is not scanned in the background. Alarms are not reported from Units set Off-line. If <b>N</b> (No), the unit is scanned in the background.
Fetch Statistic	If <b>Y</b> (Yes), a periodic statistic poll is enabled for the RMD1690 chassis devices. If <b>N</b> (No), the unit is not polled.
Channel Table	If <b>Y</b> (Yes), the T1 CSU's associated channel mapping table is enabled. If <b>N</b> (No), the T1 CSU's associated channel mapping is disabled.
Unit Table	If <b>Y</b> (Yes), the T1 CSU's associated unit table is enabled. If <b>N</b> (No), the T1 CSU's associated unit is disabled.

## Defining a Unit as Central-Central

To define a unit as a central-central:

1. Select Network Map from the Database menu.
2. Press [INSERT] to mark the units to be defined as Central-Central.
3. Press [C].

The unit is now a central.

## Defining a Unit as a Remote

To remote a unit:

1. Select Network Map from the Database menu.

2. Press [INSERT] to mark the units to be removed.
3. Position the cursor on the central unit.
4. Press [R].

The unit is now a remote.

## Adding Units to a Site

To add already-defined units to a site:

1. Select Define Site from the Database menu.
2. Select the desired site name.
3. Select Units [U] from the list of options.

A list of units associated with the current site is displayed.

4. Select Associate [A].

The select Unit By Criteria screen is displayed.

5. Enter the unit to be associated with the currently-chosen site.

**To add new units that do not already exist in the database to the site:**

1. Select Network Map from the Database menu.
2. Select Insert [I] from the list of options.

The Insert New Unit screen is displayed.

3. Enter the adding a unit parameters described in Table 3-9.

## Adding a Unit Downstream of a Unit

To add a unit downstream of another unit:

1. Select Network Map from the Database menu.
2. Position the cursor on the unit to be upstream from the unit being added.
3. Select Add [A] from the list of options.
4. Enter the adding a unit parameters as described in Table 3-9.

### Selecting and Deselecting Units

To select a unit on the Network Map for some operation:

1. Select Network Map from the Database menu.
2. Position the cursor on the desired unit.
3. Press [INSERT].

To deselect a unit on the Network Map:

1. Position the cursor on the marked unit.
2. Press [DELETE] to unmark that unit.

To deselect all marked units on the map, press [SHIFT] [DELETE].

### Displaying Unit Information

To display specific unit information:

1. Select Network Map from the Database menu.
2. Position the cursor on the unit for display.
3. Select Zoom [Z] from the list of options.

The unit information is displayed. Refer to Table 3-9 for a description of the fields.

### Modifying Unit Information

To modify specific unit information:

1. Select Network Map from the Database menu.
2. Position the cursor on the unit that you wish to modify.
3. Select Modify [M] from the list of options.
4. Modify the unit parameters as described in Table 3-9.

### Polling a Unit

To poll a specified unit for information:

1. Select Network Map from the Database menu.
2. Position the cursor on the unit that you wish to poll.
3. Select Poll [P] from the list of options.

If the unit responded to the poll, a message is displayed: Device Responded to Poll.

If the unit did not respond to the poll, a message is displayed: Device not Responding to Poll. If the unit does not respond, check to make sure your unit is connected correctly. Refer to your *CMS 400 Installation Manual* for details.

## Deleting Alarms from a Specified Unit

To delete an alarm from a specified unit:

1. Select Network Map from the Database menu.
2. Position the cursor on the desired unit.
3. Press [@].

Alarms from the cursored unit are deleted from the alarm queue.

## Disassociating Units from Sites

To disassociate a unit from a site:

1. Select Define Site from the Database menu.

The Define Site screen is displayed.

2. Select a site from the list.
3. Select Units [U] from the list of options.

The selected site's unit list is displayed.

4. Select the unit to be disassociated with the chosen site from the unit list.
5. Position the cursor on the desired unit and choose Disassociate [D] from the list of options.

---

**Note:** Units can also be disassociated with sites through the Network Map.

---

## Deleting a Unit

To delete a unit from the database:

1. Select Network Map from the Database menu.
2. Position the cursor on the unit that you wish to delete.
3. Select Delete [D] from the list of options.

A confirmation prompt is displayed.

4. Enter **Y** (yes) to confirm the deletion.

## Adding a Group to the Database

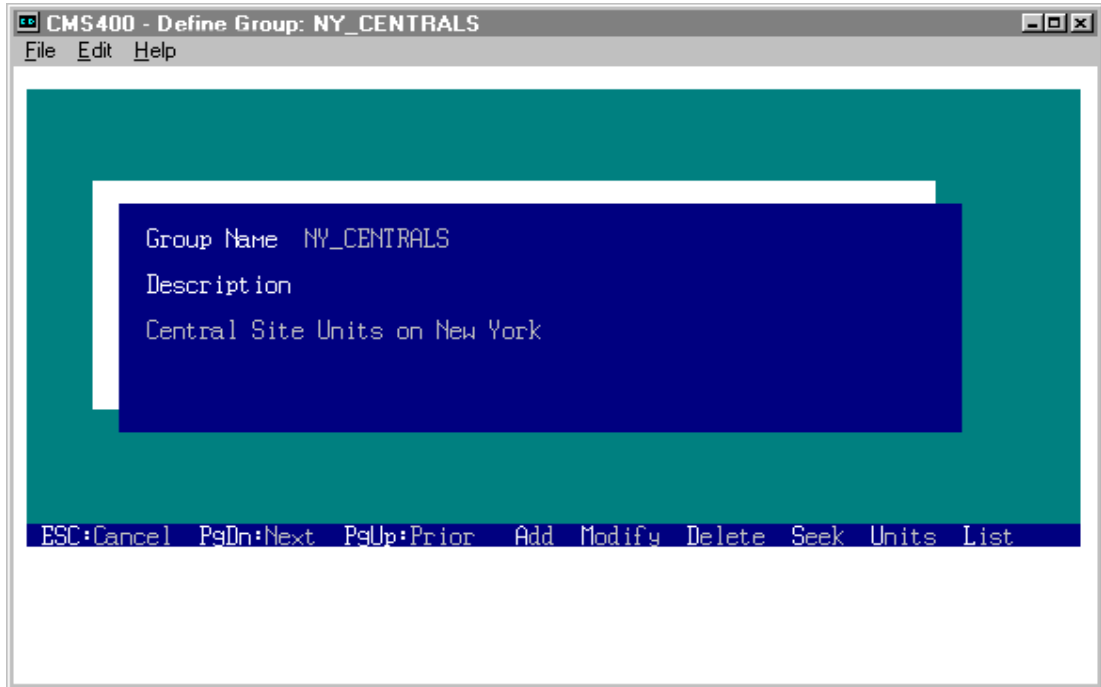
Groups permit functions to be performed on several units at once (provided multiple units are allowed). Up to 128 groups can be defined within CMS 400. Domains can be assigned so users can only access certain devices.

Each unit in the database may belong to up to eight groups. Each group contains several lines of free text describing the significance of the group.

To add a group:

1. Select Define Group from the Database menu.

The Define Group screen is displayed (refer to Figure 3-2).



**Figure 3-2. Group Definition**

2. Select Add from the list of options.

The fields are cleared for input.

3. Enter the Group Name and a brief description of the Group (refer to Table 3-10).
4. Press [PGDN] to confirm your input.

**Table 3-10. Add Group Parameters**

Parameter	Description
Group Name	A unique name of up to 12 characters. It may be modified at any time. Avoid the use of embedded spaces or wild cards.
Description	Permits several lines of free text to describe the logical scope of the group (up to 4 lines with 60 characters per line).

---

## Modifying a Group

To modify a group name and description:

1. Select Define Group from the Database menu.
2. Enter the desired group name.
3. Select Modify [M] from the list of options.

The fields for the currently-displayed group name are opened for modification.

4. Make any changes to the group name and descriptions (refer to Table 3-10).
5. Press [PGDN] to commit the changes.

## Searching for a Group

To search for a group in the CMS 400 database:

1. Select Define Group from the Database menu.
2. Select Seek [S].
3. Select a group name by pressing [TAB].
4. Press [ENTER] or [PGDN] to accept the choice.

The selected group and its description is displayed.

## Displaying Units Associated with a Group

To display units associated with a particular group:

1. Select Define Group from the Database menu.
2. Enter the desired group name.
3. Press Units [U].

A list of all units associated with the currently-displayed group is shown by unit name along with each unit's T7 channel and unit address.

Page through the units by using [PGDN] and [PGUP].

## Associating a Unit with a Group

To associate a unit with a group already defined in the CMS 400 database:

1. Display the units associated with a group (as described previously).

---

**Note:** The group must have been added to the database before a unit can be associated with it. Refer to "Adding a Group to the Database".

---

2. Select Associate [A].

The select Unit By Criteria screen is displayed.

3. Enter the unit criteria of the unit you want to associate with the group.
4. Return to the current group display by pressing [G].

To add units to a group via the Network Map:

1. Select Network Map from the Database menu.

The Network Map screen is displayed.

2. Select Insert [I] from the list of options.

The Insert New Unit screen is displayed.

3. Enter the group parameters described in Table 3-10.

## Removing a Unit from a Group

To remove a unit from a group:

1. Display the units associated with a group (as described previously).
2. Select Disassociate [D].

The select Unit By Criteria screen is displayed.

3. Enter the unit criteria of the unit to be disassociated. All units selected become disassociated with the currently-displayed group.
4. Return to the current group display by pressing [G].

---

## Deleting a Group

To delete a group from the CMS 400 database:

1. Select Define Group from the Database menu.
2. Enter the desired group name.
3. Select Delete [D].

The prompt: Are You Certain (Y-N) is displayed.

4. Enter **Y** (Yes).

The currently-displayed group is deleted. Any units that were associated with that group name are no longer associated as a group of units. These units are now individual units with no group name.

## Scanning the Network

CMS 400 allows you to scan the network for a range of unit addresses on one or many channels to identify what units are present in the network. Selectively, all located units are placed in the database. To invoke this feature:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Auto-Learn Network from the Database menu.

The Auto-Learn Network Units screen is displayed (refer to Figure 3-3).

3. Enter the information as described in Table 3-11.

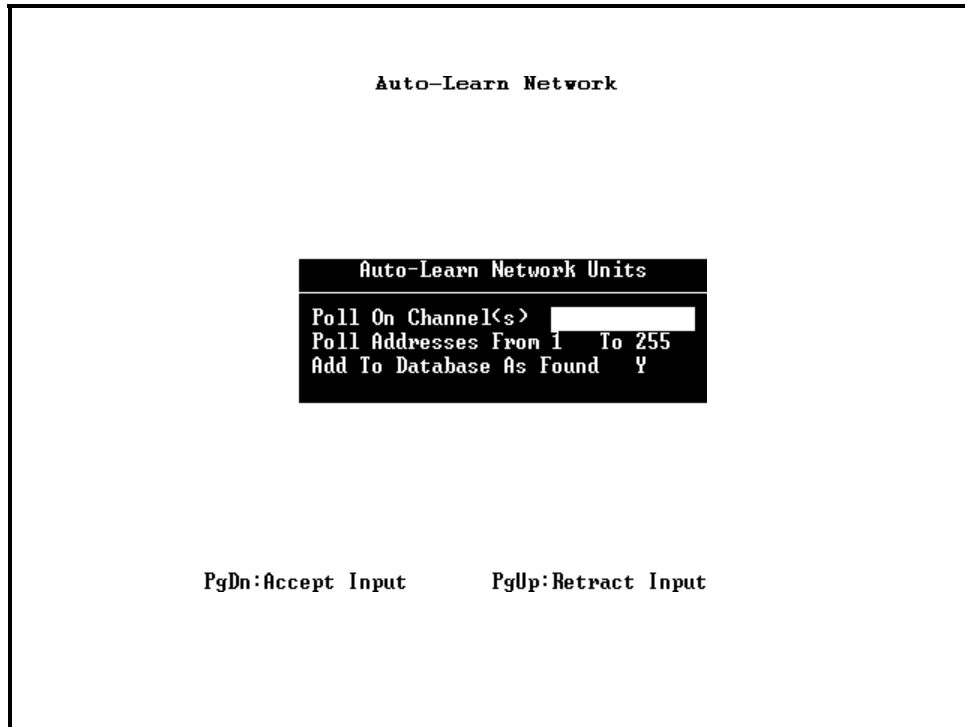
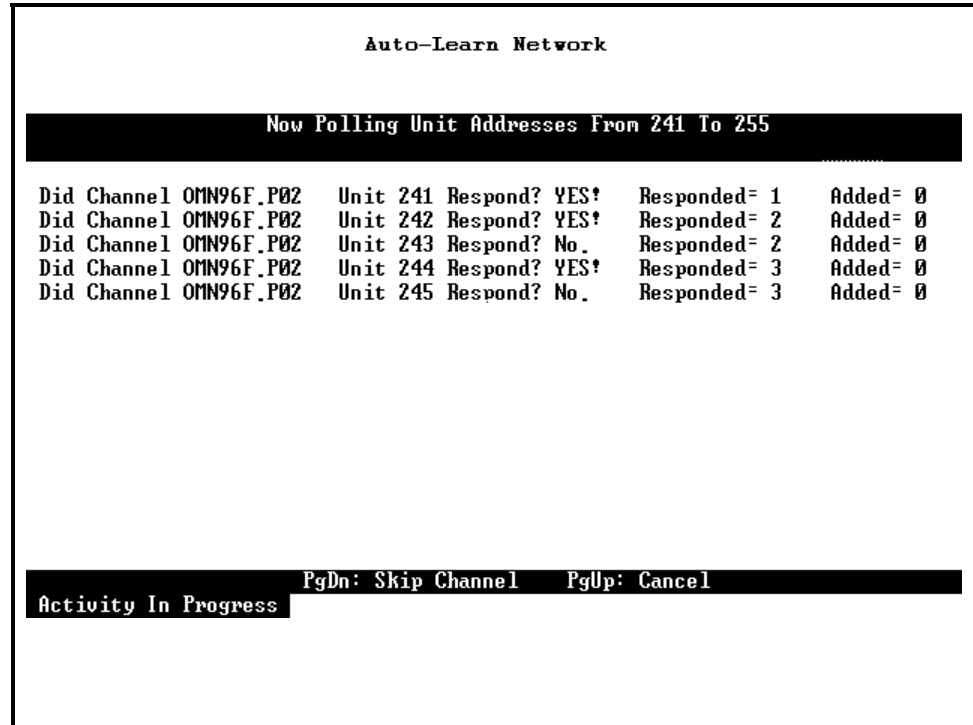


Figure 3-3. Auto-Learn Network Units Selection

Table 3-11. Auto-Learn Parameters

Parameter	Description/Valid Values
Poll On Channel(s)	Enter one or more channels on which to poll. If no channel is specified, all defined channels are selected.
Poll Addresses From	Enter a range of addresses to poll. Valid addresses are 1 through 255. Limit this range as much as possible since polling to non-existent units can take some time.
Add To Database As Found	<p>Select whether or not to add the discovered units to the database. The default is Yes and should typically be used.</p> <p><i>Note: Units are added to the database via Auto-Learn contain the channel name, unit address, unit type, and will poll for a serial number and port number, if available. You may identify and enter other data using the [M] Modify command in Network Map.</i></p>

4. Press [PGDN] to display the range of addresses being polled, the unit and channel currently being polled, the total number of units that have responded, and how many of these have been added to the database (refer to Figure 3-4).



**Figure 3-4. Auto-Learn Network Results**

**Note:** Pressing [PGDN] permits the current channel to be skipped. Pressing [PGUP] cancels the polling.

## Displaying SNMP MIB Files

You can display all SNMP MIBs supported by the system. The SNMP allows ASN.1 files to be compiled and supported as foreign MIB extensions. Supported MIBs are listed by an 8-character MIB name followed by unit types associated with that MIB. (The color differentiates between system-provided and user-added MIBs.) Use the arrow keys to select an individual MIB.

To display SNMP MIB files:

1. Select Define SNMP MIB from the Database menu.

The SNMP MIB screen is displayed.

2. Press Zoom [Z] to display the selected MIB one variable at a time, with a technical name, alias, ASN.1 identifier, syntax, access, status, and description.
3. Enter the full path to an ASN.1 textual MIB file to RFC1157 or RFC1212 standards, and a short name to tag the resulted MIB.

The file is read from the specified disk and is compiled into a CMS MIB file.

## Placing a MIB File On-line

To place a MIB file on-line:

1. Select Define SNMP MIB from the Database menu.

The SNMP MIB screen is displayed.

2. Select Add [A] to place a compiled MIB file on-line.
3. Enter the MIB Name and SNMP unit type(s) to be associated with the file. It can be associated with up to six different unit types. (If no unit type is specified, the MIB relates to all SNMP units.)

## Changing to a Dumb Terminal Mode

You may temporarily communicate directly with the stations COMx: port. This is mainly used for the purpose of configuring a dialup modem.

To change to dumb terminal mode:

1. Select Dumb Terminal from the Workstation menu

The dumb terminal mode communicates with stations COMx: port.

2. Press [HOME] to terminate the screen.

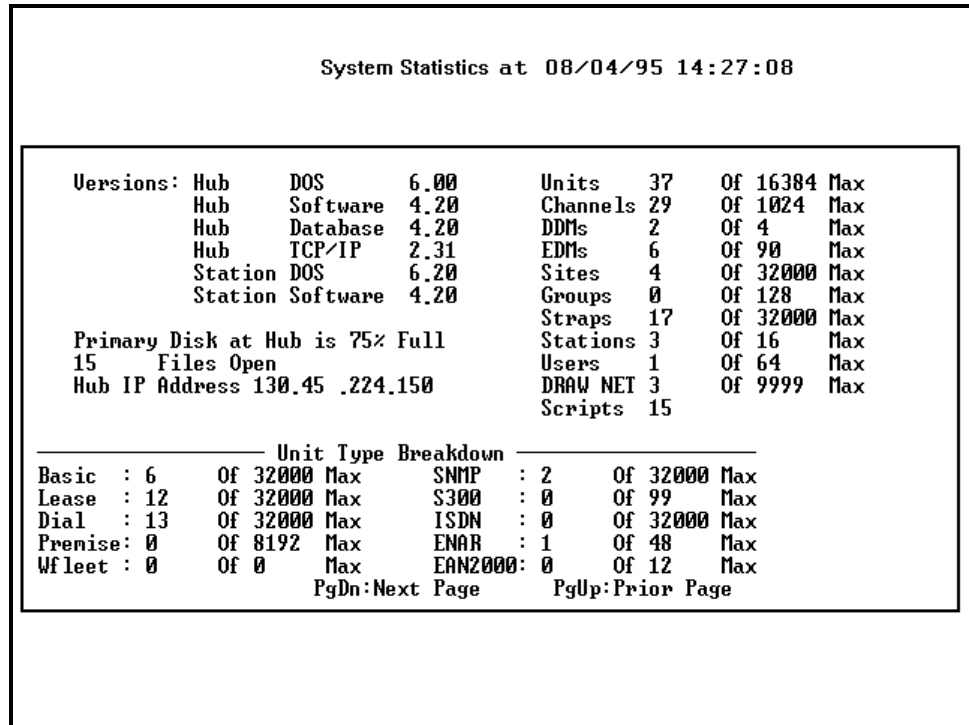
## Displaying System Statistics

System Statistics is used to display hub versions, station versions, and database counts about your system.

To display system statistics:

1. Select System Statistics from the Administration menu.

The System Statistics screen is displayed (refer to Figure 3-5).



**Figure 3-5. System Statistics Display**

The System Statistics screen displays several key facts about the system:

- Hub versions are the current versions of DOS and CMS at the hub, and the CMS version in which the database was created.
- Station versions are the current versions of DOS and CMS at the station running this function.
- Primary Disk at Hub is the percentage of disk space used. Check this statistic periodically if many script files are created.
- Database counts is the number of units, channels, DDMs, EDMs, sites, groups, straps, stations, users, draw network, scripts, and paid for module types out of the maximum allowable.

2. Press [PGDN].

The second page of the System Statistics screen displays a list of the "installed" options on the hub.

3. Press [PGDN] again.

The third page of the System Statistics screen displays a list of the early support modules and patches detected on the system.

## Using the Trivial File Transfer Protocol

The Trivial File Transfer Protocol is an internet-standard implementation of TFTP protocol for simple file transfer.

To use the TFTP protocol:

1. Choose **Administration** from the CMS 400 Main menu bar.
2. Select **Trivial File Transfer**.
3. Enter a host address or unit name to be the transfer partner.
4. Enter the desired local and remote file path name.
5. Enter the direction name to be either read or write.
6. Press [PGDN] and the transfer is initiated.

The number of blocks transferred, total blocks and time elapsed are displayed.

The transfer may be interrupted at any time by pressing [ESC].

# Chapter 4

## Monitoring

---

### About Monitoring

This chapter provides operations for monitoring various types of units and explains how to retrieve information from those units. These operations are non-interruptive, that is, they do not interfere with main channel operation.

### Dialing an EDM Unit

To dial remote EDM units, use a modem that recognizes Hayes® compatible dialing sequences:

---

**Note:** EDMs must be connected directly to a Hub COMx port. EDMs connected to DDMs are not valid error correcting modems.

---

1. Select Dial EDM Unit from the Administration menu.

You are prompted for the target EDM unit number.

2. Enter the target EDM unit number and press [PGDN].

The Select An Operation screen is displayed with the following options:

- Dial And Verify Response sends the previously-specified phone number to the locally-connected modem that continuously polls to determine if the remote EDM is responding.

---

**Note:** The phone number is specified using the CMS Component Map.

---

- Verify EDM Response continuously polls the specified EDM to determine if it is responding. This selection should be used only if the dial connection has been established.
- Disconnect Dial Line commands the locally-connected modem to drop the dial line and cancel the phone call. The specified EDM is marked off-line.
- Establish Local Dialog opens a two-way terminal screen to permit direct communication with the locally-connected modem.

3. Press [PGUP] or [ESCAPE] to terminate this operation.

## Displaying the EDM, DDM, or SDM Status

You can display the current status of each EDM, DDM, SDM in the system, and the results of bootup diagnostic tests. The status polling is continuous.

1. Select EDM Status from the Administration menu.
2. Enter the target EDM unit number and press [PGDN].

The EDM, DDM, and the SDM are polled and the results are displayed (refer to Figure 4-1). Table 4-1 describes the fields.

EDM Status																				
Device	Version	Memory Tests			Channel Tests						1 1 1 1 1 1									
		SRAM	NURAM	PROM	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
EDM02	_____	No Response From Device _____																		
EDM03	_____	No Response From Device _____																		
EDM04	_____	No Response From Device _____																		
EDM05	_____	No Response From Device _____																		
EDM06	_____	No Response From Device _____																		
EDM07	_____	No Response From Device _____																		
EDM08	1.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EDM11	1.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Press Any Key To Cancel

Activity In Progress

Figure 4-1. EDM Status Display

**Table 4-1. EDM Status Display Field Descriptions**

<b>Field</b>	<b>Description</b>
Device	Refers to the type of system unit.
Version	A firmware version number resident in the device.
Memory Tests	The following information displays a check mark ( ) to indicate that the test has passed or an F to indicate that the test has failed. <ul style="list-style-type: none"> <li>• SRAM - Indicates the status of static RAM.</li> <li>• NVRAM - Indicates the status of non-volatile RAM.</li> <li>• PROM - Indicates the status of the PROM checksum.</li> </ul>
Channel Tests	Indicates the status of the device's serial ports by displaying a check mark ( ) if the test has passed or an F if the test has failed.

- To select items from the EDM Status screen, press **Select [S]**. You can limit status/polling to your selectable devices. You may also select 1, 2, 3, or 4 DDMs.
- To select an SDM, press **Y (Yes)** at the SDM prompt and press **[PGDN]**.
- To initialize items from the EDM Status screen, select **Initialize [I]**. Initializing a device causes a download of all operating parameters to the selected device. All currently-stored device data is lost.

For EDMs, the valid values are from 1 to 90. You may also initialize 1, 2, 3, or 4 DDMs.

For an SDM, initialize also cancels all currently-active CMS functions.

- To download items from the EDM Status screen, select **Download [D]**. Downloading a device causes a download of all operating parameters to a selected device. All currently-stored device data is lost.

For EDMs, the valid values are from 1 to 90. You may download 1, 2, 3, or 4 DDMs.

You may also select an SDM by choosing **Y (yes)** at the SDM prompt.

- To reset your EDM, DDM, or SDM to the factory settings, select **Factory [F]**.

For EDMs, the valid values are from 1 to 90. You may reset 1, 2, 3, or 4 DDMs.

You may also select an SDM by choosing **Y** (yes) at the SDM prompt.

3. Press [PGDN] to reset the devices.

The selected devices are restored to their original settings.

## Monitoring User Status

You can display the status of each user on the system. This displays each user's name and each operation in use by that user.

1. Select Monitor Users from the Administration menu.

The Monitor Users screen is displayed indicating each user's name and the operations at each workstation. The color of the operator login name for each workstation will be red if unconnected, yellow if using a hydra windows workstation, and green if using a Microsoft Windows workstation.

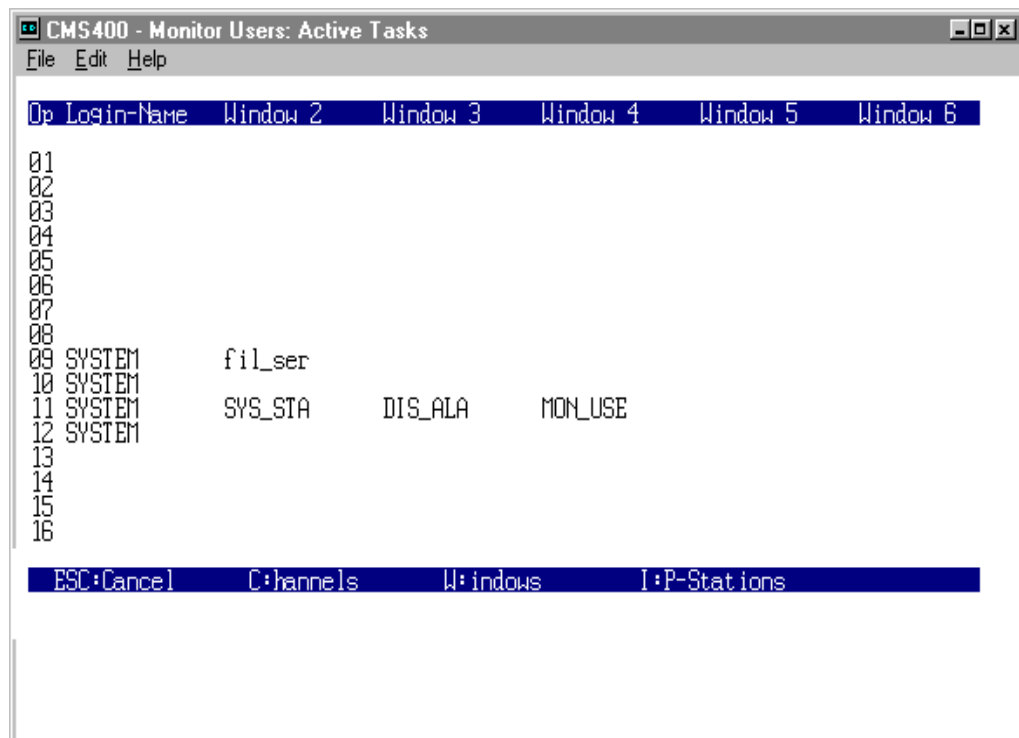


Figure 4-2. Monitor Users Screen

This list explains how to use the Monitor Users Screen:

- Press [C] to display the channels in use by each user.
- Press [T] to display the active tasks currently in use.
- Press [W] to display each of the six windows in use by a user.
- Press [T] to display the station number and active tasks currently in use.
- Press [I] to display each of the connected IP stations.
- Press any key to toggle the workstation pages, or press [ESCAPE] to cancel the display.

---

**Note:** The CMS 400 hub console indicates connected stations (in the active screen) using an asterisk.

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# Chapter 5

## Scheduling Activities

---

### Displaying the Activities List

A user-specified activity can be scheduled to run automatically at a given time or event. An activity is initialized via a command or through a CMS 400 script (refer to Chapter 7 for more detail on scripts). An activity may be run once or several times.

To display a list of activities:

1. Select Schedule Activity from the Automation menu.

The List of Activities screen is displayed (see Figure 5-1).

Activity	Instances	Status	Command Line
Create_TIC	On Event 14.04	Ready	TIC_ALA
Schedule-002	Multiple	Suspend	Run Test1
Schedule-003	Multiple	Suspend	Run Test2
Schedule-004	Multiple	Suspend	Run Test3
AutoDBU_RLF	On event 01.34	Suspend	Run autoDBU

ESC:Cancel PgDn:Next PgUp:Prior Add Mod Delete Zoom Run Kill Instances

**Figure 5-1. List of Activities Display**

From this screen, you can view all of the activities scheduled to run at given times and/or dates. If an activity is currently being executed, a check-mark ( ) appears on its line.

You may perform any of the operations listed at the bottom of the screen. To select each of these operations, enter the first letter of the word.

### **Displaying a Specific Activity**

To display specific information about an activity:

1. Highlight an activity from the List of Activities and press [Z].

The Particular Activity screen is displayed for your selection.

2. Press any key to return to the List of Activities screen.

### **Displaying All Scheduled Instances**

To display the scheduled instances of all activities:

1. Press [I] while displaying the List of Activities screen.

The scheduled instances of all activities is displayed. The display lists the activity name, the exact day, date and time, and command line of each scheduled activity.

2. Press [L] to redisplay the List of Activities screen.

### **Invoking an Activity**

To invoke an activity from the List of Activities screen:

- Highlight the activity and press [R].

## **Adding a Scheduled Activity**

To generate an activity to run on your CMS 400 System:

1. Enter [A] while displaying the List of Activities screen.

A blank activity screen is displayed (see Figure 5-2).

**Particular Activity**

Activity  Is

Command Line To Execute

For Event Triggering, Enter Event Class  Code   
 For Single Instance, Enter Explicit Date  Time   
 For Multiple Instances, Enter Criteria Below:

Times

Weekdays  Monthweeks   
 Monthdays   
 Months   
 Execute No Sooner Than Date  Time   
 Maximum Concurrently-Running Instances

**ESC:Cancel      PgDn:Accept Input      PgUp:Retract Input**

**Figure 5-2. Particular Activities Display**

---

**Note:** In the List of Activities or Particular Activity screen, press the arrow keys or mouse to highlight an entry or prompt.

---

2. Enter the activity name and indicate whether the activity is Ready to Run (default) or Suspended (on hold).
3. Enter the command line that you want executed.
4. Enter one of three trigger conditions to cause the activity to run:
  - Event class and code: Allows an incoming alarm to start a script file. (Refer to Appendix D for a list of Event Class/Codes.)
  - One specific date/time.
  - Multiple date/time criteria: Including up to 24 separate times in a given day, Weekday names (Mon-Sun), Monthweeks (1-5), Monthdays (1-31), and Months (Jan-Dec). Ranges may be specified, as in "Jan-Mar, May, Aug-Oct" or "Tue-Thu, Sun". Instances may be prohibited any earlier than a user-specified "earliest date/time."
5. Enter the maximum concurrently running instances.

You may specify no limit (the default) or a specific limit from one to 10 copies. To maintain current functionality, set this option to 1 Copy.

### **Modifying a Scheduled Activity**

To modify information pertaining to a scheduled activity:

- Highlight the existing activity from the List of Activities and press [M].

That activity's information is displayed for modification (refer to "Adding a Scheduled Activity" for specific prompt information).

### **Terminating an Activity**

To terminate an activity that is currently running:

- Highlight the particular activity from the List of Activities and press [K].

### **Deleting a Scheduled Activity from the List**

To remove an activity from the current List of Activities:

1. Highlight the particular activity from the List of Activities and press [D].

A confirmation message is displayed.

2. Enter **Y** to delete the activity.

If any other key is pressed, the activity is not deleted and the List of Activities screen is redisplayed.

# Chapter 6

## Reports

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### About Reports

This chapter describes the various reports generated by the CMS 400 system. They include:

- Equipment Report
- Topology Report
- Event Report
- Site Report
- Channel Report
- File Report
- Display Results
- Dial Statistics

Each report type can be chosen from the Reports menu on the CMS 400 menu bar. The report types are described in detail within their respective section of this chapter.

After each report is generated, it can be sent to a variety of destinations. Those destinations are described Table 6-1.

**Table 6-1. Report Destinations**

Destination	Description
None	Do not wish to retain a report.
Hub Printer	The report is queued to the hub printer.
Station Printer	The report is queued to the station printer.
Disk File	The report is copied to a disk.
Screen	The report is displayed on the screen. This view is used to preview the report before printing.  <i>Note: Since these reports are 132-columns wide, some data may not be visible on the screen.</i>

This chapter also describes how to retrieve results files generated when invoking a command with the argument OUT=FILE.

## Generating an Equipment Report

An Equipment Report contains all defined units in the database including channel and unit address, unit name, serial number, unit type, strap table, and primary group.

To generate an Equipment Report:

1. Select Equipment Report from the Report menu.

The standard Unit Criteria Selection screen is displayed.

2. Enter the unit information and press [PGDN]. (Units may span channel divisions.)

The Select A Destination menu is displayed.

3. Choose the Equipment Report destination and press [ENTER] (refer to Table 6-1).

An example of an Equipment Report is displayed in Figure 6-1.

Equipment Report							
Channel	Address	Name	Serial	Type	Strap	Table	Site
OMNI16A.P01	59	UNIT_00186		Excalibur DAP SP			
OMNI16A.P01	58	UNIT_00186		Excalibur DAP SP			
OMNI16A.P01	123	UNIT_00186		Excalibur DAP SP			
OMNI16A.P01	57	UNIT_00186		Excalibur DAP SP			
OMNI16B.P01	156	UNIT_00168		Omnimode 14.4			
OMNI16B.P01	157	UNIT_0003		Omnimode 96			
OMNI16C.P01	6	UNIT_0006		Omnimode 1614			

Enter: Step    PgDn: Page    PgUp: Cancel    Tab:Horizontal

**Activity In Progress**

**Figure 6-1. Example of an Equipment Report**

4. Press any key to redisplay the Unit Criteria Selection screen.

## Generating a Topology Report

A Topology Report displays the relationships between all defined units in the database relative to the Network Map.

To generate a Topology Report:

1. Select Topology Report from the Report menu.
2. Enter the channel to be included in the report and press [PGDN].

You can also show units by either unit name, site name, unit type, serial number, or address.

---

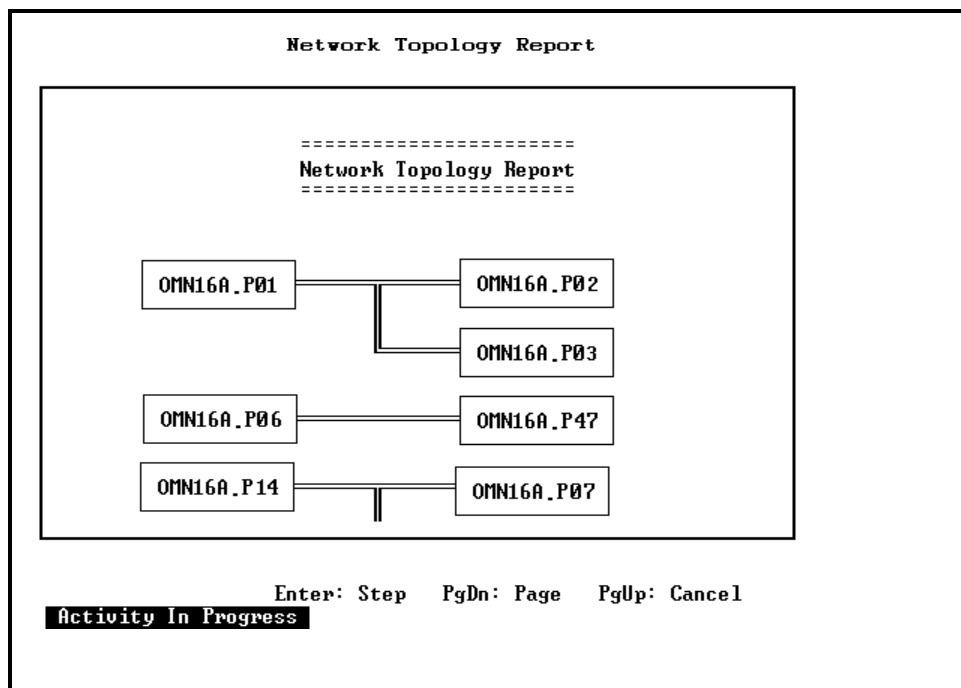
**Note:** Leave the Channel Name field blank if you want all channels to be included in the report.

---

The Select A Destination menu is displayed.

3. Choose the Topology Report destination and press [ENTER] (refer to Table 6-1).

An example of a Topology Report is displayed in Figure 6-2.



**Figure 6-2. Example of Network Topology Report**

4. Press any key to redisplay the Unit Criteria Selection screen.

## Generating an Event Report

An Event Report produces a listing of selected events stored in the EVENTS.DAT event log file. The event log file must be created via the Create Database operation, and the log file parameter must be activated via System Parameters (refer to Chapter 3 within this manual). For additional information on Event Codes, refer to Appendix D.

To generate an Event Report:

1. Select Event Report from the Reports menu.

---

**Note:** If the event log file has not been created, you receive the error message: Cannot Continue : No Event Log File Is Present! Refer to Chapter 3, Configuration for more information on the Event Log File.

---

The Event Report Criteria screen is displayed (refer to Figure 6-3).

**Event Log Reports**

**Event Report Criteria On File** EVENTS.DAT

From Date	<input type="text"/>	Time	<input type="text"/>	Channel	<input type="text"/>
To Date	<input type="text"/>	Time	<input type="text"/>	Address From	<input type="text"/>
Each Day	<input type="text"/>	From Time	<input type="text"/>	Address To	<input type="text"/>
		To Time	<input type="text"/>	Unit Name	<input type="text"/>
Event Class	<input type="text"/>			At Site	<input type="text"/>
Event Code	<input type="text"/>			In Group	<input type="text"/>
Alarm Type	<input type="text"/>			By User	<input type="text"/>
Map Marked	<input type="text" value="N"/>			Free Text	<input type="text"/>

PgDn:Accept Input
PgUp:Retract Input

**Figure 6-3. Event Report Criteria**

2. Enter the report criteria and press [PGDN] (refer to Table 6-2).

**Table 6-2: Event Report Criteria**

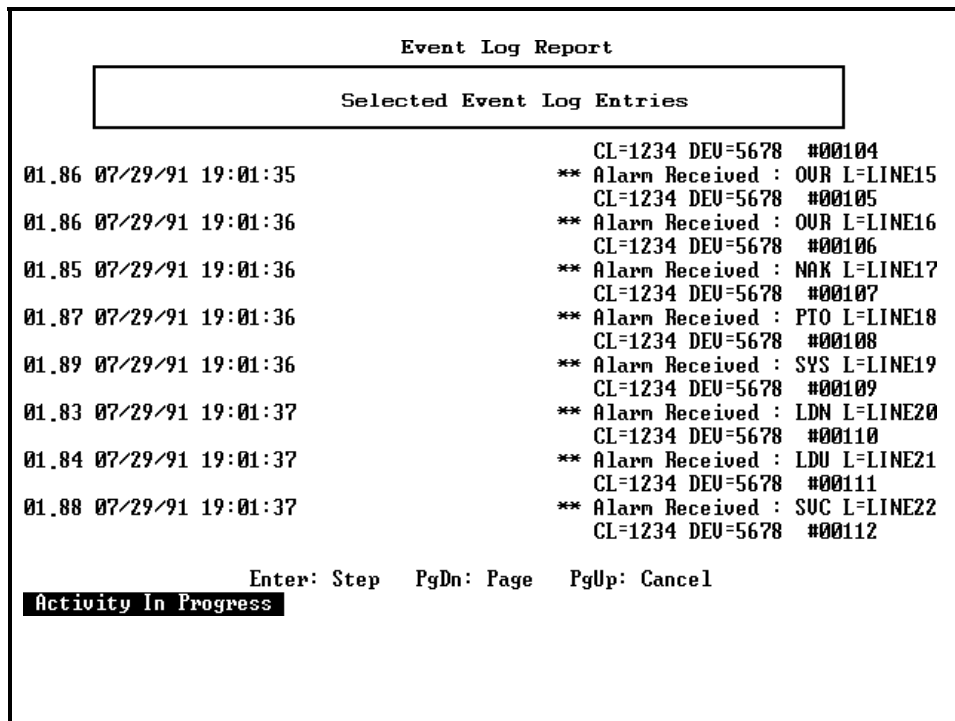
<b>Criteria</b>	<b>Usage</b>
From Date/Time	These dates/times indicate the range from which the events are selected. Set the dates/times in the format mm/dd/yy/hh:mm:ss.
To Date/Time	These dates/times indicate the range to which the events are selected. Set the dates/times in the format mm/dd/yy/hh:mm:ss.
Each Day From Time To Time	These days indicate the range between which the events are selected. Use the format hh:mm:ss.
Event Class	Enter the event class desired for the report.
Event Code	Enter an event code from 0-99.
Alarm Type	Enter the alarm type or press [TAB] to view alarm codes. Refer to Appendix B for all alarm code types.
Map Marked <b>Y</b> (Yes) or <b>N</b> (No)	If you have previously marked units in Network Map, select <b>Y</b> (Yes) to select only those units for your event report.
Channel	The channel identifier on which events have occurred. Enter the channel or press [TAB] to view existing channels.
T7 Channel	The channel identifier on which events have occurred.
From/To T7 Address	Choose a T7 address on which events have occurred.
Unit Name	Select events associated with this unit name.
At Site	Select events which have occurred at this site.
In Group	The group on which events have occurred.
By User	Selects events initiated by a given operator. Press [TAB] to select an operator.
Free Text	Scans the unformatted portion of an event entry (that is, the text portion following the double asterisk) for a match.

3. Press [ENTER] to choose the format of the Events Display.
  - Text Listing displays a list of your events in text form. The graphic chart allows the time interval between counts to be specified. The count range is auto-scaling.
  - Trend Graph enters the trend interval. Your choices are from 1 through 25 minutes, hours, days, or months.
4. To arrange your reports by unit and channel, select Sort.
  - Choose unit and channel name and press [PGDN].

The Select A Destination menu is displayed.

5. Choose the Event Report destination and press [ENTER] (refer to Table 6-1).

An example of an Event Log Report is shown in Figure 6-4.



**Figure 6-4. Event Report Log**

6. Press any key to redisplay the Event Report Criteria screen.

## Generating a Site Report

A Site Report displays information about sites stored in the SITES.DAT file. This file must be created via the Create Database function and the file parameter must be activated via the System Parameters (refer to Chapter 3 within this manual).

To generate a Site Report:

1. Select Site Report from the Reports menu.

The Site Name screen is displayed.

2. Choose a site name for your report and press [PGDN].

- Scroll through the site names using [TAB] or, if all sites are desired, leave the field blank.

The Select A Destination menu is displayed.

3. Choose the Site Report destination and press [ENTER] (refer to Table 6-1).

Figure 6-5 shows an example of a Site Report.

```

Site Report

=====
Units At This Site
=====
Device Type      Unit Name      Channel      Address      Serial Number
=====

Site Name: Racal-Datacom
Address : 1601 N. Harrison PKWY

Contact 1:
Phone :
Contact 2:
Phone :
Vendor 1 :

Enter: Step  PgDn: Page  PgUp: Cancel
Activity In Progress
    
```

**Figure 6-5. Example of a Site Report**

4. Press any key to redisplay the previous screen.

## Generating a Channel Report

A Channel Report displays information about channels stored in the CHANNEL.DAT file. This file must be created via the Create Database function and the file parameter must be activated via the System Parameters (refer to Chapter 3 within this manual).

To generate a Channel Report:

1. Select Channel Report from the Reports menu.

The Channel Name screen is displayed.

2. Choose a channel name for your report and press [PGDN].

- Scroll through the channel names using [TAB] or, if all channels are desired, leave the window blank.

The Select A Destination menu is displayed.

3. Choose the Channel Report destination and press [ENTER] (refer to Table 6-1).
4. Press any key to redisplay the previous screen.

## Generating a File Report

File Report accesses standard reports which can be directed to a report file with a .REP extension.

To use the generate a File Report:

1. Select File Report from the Reports menu.

2. Enter a file path of the report and press [PGDN]. Always use the .REP extension.

The Select A Destination menu is displayed.

3. Choose the File Report destination and press [ENTER] (refer to Table 6-1).

- If Screen is selected, the File Report is displayed on the screen.
- If you select Find [F], you are prompted to enter a string of characters to find in your report. Additionally, you can select Y (yes) to match the case of the entry you are searching for in your report.

4. Press any key to redisplay the Unit Criteria Selection screen.

## Displaying Result Files

You can access the results files created when a function is invoked using the command line with the argument `OUT=FILE`. Each function has its own result file, which has the filename extension `.OUT`.

To display results files:

1. Select Display Results from the Report menu.

Each type of results file is displayed by its function name and the number of entries it contains. Page forward through the results by pressing `[PGDN]` or page backwards by pressing `[PGUP]`.

2. Enter the result data type, an operation to perform (display or delete), and an optional date/time range by which to sort entries for display and press `[PGDN]` (refer to Figure 6-6).

Display Results			
Contents Of Result Files			
Entries	Related Function	Entries	Related Function
0	DCU Control	0	Monitor Multiplexer
0	End-to-End Test	0	Multiplexer Diagnostics
0	Loop Test	13	Request Statistics
6	Line Quality Analysis	0	RMTS Control
0	Monitor Analog	0	Self Test
0	Monitor EIA		

Result Data Type	<b>DCU Control</b>
Desired Operation	Display
Display From Date	Time
To Date	Time

PgDn:Accept Input	PgUp:Retract Input
-------------------	--------------------

**Figure 6-6. Display Results Screen**

- Display requires you to enter the Unit Criteria on which the report is based. Results file entries that match both the selection criteria and the optional data/time range are then displayed.
  - Delete clears the entire selected result data. The entry count for that file will drop to zero.
3. Press `[ESCAPE]` to return to the Main menu.



# Chapter 7

## Generating Scripts

---

### About Scripts

A script consists of a sequence of instructions stored until directed to execute. CMS 400 allows you to write scripts to carry out CMS 400 functions. These scripts are generated by the Define Script feature or by a standard text editor. Activating a script is done in one of three ways:

- Real Time -- initiated by the operator from either the Command Line (using the RUN command) or the Run Script feature (in foreground mode).
- Unattended pre-scheduled operations -- initiated using the Schedule Activity operation for a specific time (background mode). Multiple instances may be scheduled, such as bi-weekly, every month, first Monday of each week, etc..
- In response to alarm traffic -- where a script is invoked using the Schedule Activity operation to be triggered by a specific event or alarm (background mode).

This chapter discusses the Real Time method. The other two methods (Schedule Activity and In response to alarm traffic) are discussed in Chapter 5.

For these situations, CMS 400 supports a full script language, complete with variables, parameter-passing, task spawning, and conditional logic.

### Conventions

The following typefaces are used to indicate certain references, displays, and inputs used in this chapter.

- **BOLDFACE CAPITALS** are used to indicate words, usually script language commands (keywords), that must be typed in verbatim to be recognized by the software. CMS 400 software does not differentiate between capital and lowercase letters when script is input.
- **Boldface type** is used to indicate a filename

---

**Note:** When a new script is saved, the extension **.CMD** will be added to the filename by the system so that all scripts will reside in the same directory as the CMS database. This is done so that the files may easily be located by the system in case a different file editor is used to modify the script or if the scripts need to be moved or copied.

---

- **<Boldface type inside arrowheads>** indicates specific keys on an IBM (or IBM-compatible) keyboard.
- {Words in braces} are used as arguments. Note that the braces themselves must be used for the command modifiers within to be recognized as arguments.
- *Italics* are used to indicate a variable or a string that has been assigned to a variable. An unassigned variable contains the word *var* or *variable* (i.e., *variable1*).

The above typefaces may be combined. For example, if one of several keywords is applicable in a certain situation, it would appear as **KEYWORDS**.

## Creating a Script

A script may be created using any standard text editor or by using Define Script. In either case, the syntax-checking option (Verify Script) may be used to identify most common errors in the file.

---

**Note:** If your script is more than 32K in size, use EDI\_TEX. This can handle any size file, but is a line-by-line editor rather than a character-based editor.

---

## Invoking a Script

Scripts are manually invoked using the following syntax:

```
RUN filename {arg1} {arg2} ... {arg9}
```

The keyword RUN invokes the scripts processor task. Up to nine arguments may be specified to be passed into the scripts (refer to "Arguments" within this chapter for more detail).

## Terminating a Script

To terminate a script:

- Press [SHIFT] and [ESC].

The system terminates any currently running script.

## Contents of a Script

CMS 400 scripts language is composed of elements and keywords for programming certain tasks to be performed. The following pages give a list and description of the supported elements and keywords that can be used within CMS 400 scripts. Keywords are shown as all capital letters.

### Variable

A variable is defined as a quantity that may assume any single set of values. A variable has a name of up to eight characters and is one of two types: numeric (a 16-bit signed integer) or string (from 0 to 240 characters). Only numeric variables may be used with the four basic mathematical operators: addition (+), subtraction (-), multiplication (\*), and division (/). Variables are assigned values in LET clauses or PROMPT statements. Leading numbers and underscores are prohibited. Keywords cannot be used as variables.

Syntax for numeric variables:

```
variable3 = variable2 * variable1
```

Example:

```
force = mass * acceleration
```

Syntax for string variables:

```
variable = variable string
```

Example:

To assign the string THIS IS A TEST to the variable *query*, enter:

```
LET query = "THIS IS A TEST"
```

(Refer to "Receiving Results Into a Script File" within this chapter for more details on specific CMS 400 results.)

### Expression

An expression is a term or series of terms used in LET or IF statements (refer to "Operator" within this chapter).

Example:

```
value + 3 / 16
```

## Substring

Standard Hydra tasks can return a result string to the variable *result*. Such strings include a field name followed by an equals sign (=) and the value. The @ operator extracts the defined value (refer to "Operator" within this chapter).

Example using a range argument:

```
LET string = "ABCDEFGHJIJ"  
LET sub1 = string @ 2:4 ;sub1 will equal "BCDE"  
LET sub2 = string @ 6:0 ;sub2 will equal "FGHIJ"  
LET sub3 = string @ 0:3 ;sub3 will equal "HIJ"
```

Example using a field name argument:

```
LET string = "RTS=T DCD=T CTS=F"  
LET sub1 = string @ RTS ;sub1 will equal "T"  
LET sub1 = string @ CTS ;sub1 will equal "F"
```

## Base Convert

Base Convert is the conversion between strings that represent numbers. The argument *x\_y* indicates the conversion direction, where *x* and *y* may be D (Decimal), B (Binary), H (Hex), or A (ASCII).

Example using string if 1010:

```
LET VAR1 = string # D_H ; VAR1 = "03F2"  
LET VAR1 = string # D_B ; VAR1 = "0000001111110010"  
LET VAR1 = string # B_D ; VAR1 = "10"  
LET VAR1 = string # B_H ; VAR1 = "000A"  
LET VAR1 = string # H_D ; VAR1 = "4112"  
LET VAR1 = string # H_B ; VAR1 = "0001000000010000"
```

Example using string if 36:

```
LET VAR1 = string # D_A ; VAR1 = "$"  
LET VAR1 = string # H_A ; VAR1 = "6"
```

Example using string if Q:

```
LET VAR1 = string # A_D ; VAR1 = "81"  
LET VAR1 = string # A_B ; VAR1 = "01010001"
```

## Line Label

A line label allows you to assign a name to a line so that line may be referenced. Line labels are also used to define specific routines within a script. A line label may consist of up to eight characters followed by a colon. It must be first on the line, but other items may follow.

Syntax:

```
LABEL: optional statement
```

Example:

```
START: LET counter = 16
```

## Comment Field

A comment field provides an explanation or interpretation of the clauses or statements within the script. The comments provide information pertaining to the script to allow for future modifications to or debugging of the script. A comment field may occupy some or all of any line. It is introduced by a semicolon (;). All characters from the semicolon to the end of the line are ignored by the script's interpreter and are not displayed when the file is processed.

Example:

```
; This is an example of a comment line.  
; It is similar to a REM statement in BASIC
```

## Argument

An argument is defined as a command modifier upon whose value a function depends. Arguments include information used in conjunction with CMS 400 functions to execute those functions. Arguments are divided into two types: *standard* for passing arguments to an operation and *function-dependent* for passing arguments to a script (task spawning).

If you develop a script requiring the passing of arguments, they are stored in the string variables ARG1 through ARG9. The total number of arguments is stored in the numeric variable ARGNUM.

If an alarm triggered the script, the channel and address of the alarming unit are passed as the last two arguments in the command line. Multiple arguments are separated with spaces.

Syntax (standard):

```
KEYWORDS scriptfile {arg1} {arg2} {arg3}
```

Example (standard):

**RUN TEST1 BOSTON 5 YES**

Example (operation-dependent):

**end\_test uni="Chicago.1" dur=30**

### Substitution

The value of any variable may be directly inserted into a line by enclosing the variable name in braces. This allows you to define the variable once and then recall it whenever needed. String variables are inserted directly; numeric variables are converted to ASCII-signed decimal strings.

Syntax:

**KEYWORDS {*variable1*}**

Example:

**DISPLAY "The value of Argument1 is {*variable1*}"**

### Task Spawn

Any standard task may be invoked by using its keyword and appending any arguments. A task spawn phrase may follow an IF clause, or it may occupy an entire line. Task results are placed in the string variable result.

Example:

**IF test = "F" mon\_eia cha=channel1 add=1**

### Operator

An operator is a mathematical or logical symbol denoting an operation to be performed. Operators are used in LET clauses to form expressions. There are two types of operators: numeric and string.

Supported numeric operators are: + (plus), - (minus), \* (multiply), and / (divide).

Syntax:

**LET {value3} = value1 \* variable1 + variable2**

Example:

```
LET group3 = group1 * 2 + 22
```

Supported string operators are: + (append) and @ (select).

Syntax for append is:

```
LET value3 = value1 + value2
```

Example:

```
LET group3 = group1 + group2
```

Syntax for select is:

```
LET variable = variable or KEYWORDS @ x:y
```

where *x:y* marks the position of the characters to be selected (i.e., the *x* represents the position of the first character of the selection and the *y* represents the number of characters to parse). If a zero is used in the *x* position, the number of characters represented by *y* is parsed from the end of the string. If zero is used in the *y* position, the entire line is parsed from the character position represented by *x* to the end of the string.

Example:

```
LET result = ABCDEFGHIJKL  
LET rate = result @ 4:5
```

The above example sets rate equal to DEFGH.

```
LET rate = result @ 0:3
```

The above example shows that rate equals JKL. Refer to "Substring" in this chapter for more examples.

## **ALARM**

Inserts an alarm into the alarm queue. Specify mnemonic and optional unit name, channel and address. Use underscore "\_" as placeholder for omitted values. You may also use an optional quoted string as an alarm description.

Example:

```
ALARM lcm _ chan1 16 "Major alarm here"
```

## BEGIN

You may use BEGIN to run any CMS 400 command without awaiting results. The script continues on to the next line without delay. This is particularly useful as a way to initiate CMS tasks (including other scripts) to run in the background.

Syntax:

**BEGIN** *keyword* {arg1} = *value* {arg2} = *value*

Example:

**BEGIN sel\_tes uni=Dallas.3 dur=120 out=F**

## BOX

Draws a box in the current colors. It is followed by four decimal numbers representing the line and column of the upper left corner, and the line and column of the lower right corner.

Syntax:

	top	left	bottom	right
<b>BOX</b>	<i>line</i>	<i>column</i>	<i>line</i>	<i>column</i>

Example:

**BOX 6 20 9 60**

In this example, the box is positioned six lines down, indented 20 columns and measures four lines deep and 41 columns wide.

## CALL

Saves the current position in the command file and then branches to a label which identifies an entry point to a subroutine. (Specify the label of the subroutine without the final colon.)

Syntax:

**CALL** *label*

Example:

**CALL routine2**

This example transfers control to the subroutine labeled "routine2".

**CHAIN**

Allows subsequent scripts to be executed in a series. All variables in the current scripts are passed to the new file.

Syntax:

```
CHAIN filename
```

Example:

```
CHAIN output
```

This example transfers control to the file "output.cmd".

**COLOR**

Sets the current display colors. This keyword is followed by a color code, *fff\_bbb*, where *fff* is the foreground color code and *bbb* is the background code.

Syntax:

```
COLOR fff_bbb
```

Example:

```
COLOR YL!_BL
```

This example displays a bright yellow foreground on a blue background. Codes are shown in Table 7-1.

**Table 7-1. CMS 400 Color Codes**

<b>Code</b>	<b>Color</b>	<b>Code</b>	<b>Color</b>
BK	Black	BK!	Black/Bright
BL	Blue	BL!	Blue/Bright
GR	Green	GR!	Green/Bright
CY	Cyan	CY!	Cyan/Bright
RD	Red	RD!	Red/Bright
MG	Magenta	MG!	Magenta/Bright
YL	Yellow	YL!	Yellow/Bright
WH	White	WH!	White/Bright

## CRUNIT

Compares a unit to one or more criteria. You may specify an explicit unit name (or unit number with a leading #) and a series of criteria. If the unit name is preceded by a plus, the next matching unit after that unit is returned as a RESULT. Otherwise, the specified unit is tested, and RESULT is set to SUCCESS or FAILURE. Omit unit is used to find the first matching unit. Multiple criteria are put (ANDed) together. The valid identifiers are:

CRUNIT SIT=BOSTON	;Find first unit in BOSTON
CRUNIT FRED SIT=BOSTON	;is unit FRED 1 in BOSTON?
CRUNIT +FRED SIT=BOSTON	;Find next unit in BOSTON
CRUNIT #1 SIT=BOSTON	;is unit number 1 in BOSTON?
CRUNIT +#1 SIT=BOSTON	;Find next unit in BOSTON

Supported criteria are:

- CHA=Channel
- ADD=Address
- SIT=Site
- GRO=Group
- SER=Serial Number
- MAP=Y (use Network Map selection)

## DBASE

Fetches selected unit database fields. It specifies the variable for field; explicit unit name and field identifier. The valid identifiers are:

- UN.CHAN: Channel
- UN.NAME: Unit name
- UN.STR: Strap table name
- UN.TYPE: Type code
- UN.DOWN: First down stream unit name
- UN.TIER: Next unit on same tier below upstream unit
- UN.BKST: In backup (Y,N)
- UN.BKTY: Backup type (NONE, X2WDB, XSW56)
- UN.PHO1: First phone number
- UN.PHO2: Second phone number
- UN.GRP1: First group name
- UN.ADD: Address
- UN.SITE: Site name
- UN.UPST: Upstream unit name
- UN.BKTB: Backup table name
- UN.SERI: Serial Number

Syntax:

```
DBASE sitename = unitname UN.SITE
```

Example:

```
DBASE sitename = unit_00001 UN.SITE
```

The unit type codes returned by the UN.TYPE field identifier are:

1: Omni 48	35: 24 LSI	69: TDM D
2: Omni 96	36: CS 24LSI	70: Alpha
3: Om 14.4	37: 24 LSI II	71: Delta V1
4: Om 144FP	38: 24 LSI II	72: RMD3222
5: Omni V33	39: 26 LSI	73: CMM 7
6: Om 1614	40: MPS 48	74: 800 FT1
7: Om 1614B	41: MPS 4801	75: DAP MP A
8: RM 1916	42: MPS 4827	76: OM8000
9: Mux 40	43: 48 MMode	77: Ser 300
10: Mux 80	44: MPS 7201	78: RNX6300
11: Mux 160	45: 72 MMode	79: RMD1690
12: Mux 320	46: MPS 9601	80: RMD3220
13: Mux 82	47: MPS 9629	81: RMD3264
14: Mux 162	48: 96 MMode	82: RMD4491
15: Mux 322	49: 12 LMS	83: RMD4492
16: Mux TDM	50: 24 LMS	84: RMD4891
17: DSU 1500	51: 27 LSI	85: RMD 4891T
18: DSU 1556	52: MPS 14.4	86: RMD901
19: DSU500RD	53: CMS 12	87: RMD930
20: DSU556RD	54: CMS 24	88: RMD 9691
21: RMTS	55: CMS 26X	89: LSI 2401
22: RMTS II	56: CMS 48	90: Om 9644
24: NCM 7	57: CMS 4801	91: CLink 4
25: TCM 7	58: CMS 7201	92: MPS 2426
26: CMS 700	59: CMS 9601	93: DAP SP B
27: IDBU	60: CMS 9629	94: DAP MP B
28: CMS 800	61: LDM V.35	95: OM9000
29: CMS DCU	63: Exc 96	96: Delta V2
30: CLink 3S	64: ALM3223	97: RNX6200
31: CLink 7S	65: Exc 19.2	98: RNX6500
32: Mod 1200	66: DAP SP A	99: NTS200
33: CMS6424	67: ALM3239	100: INX NMM
34: RM 24	68: PremNet	101: INX400L

---

102: INX NTS	145: SET1 MPB	175: ALMMPIV
103: INX5/3	146: RNX6600	176: DAP4200
104: SET1 MPA	147: 5300 1T1	177: LanRover
105: INX400R	148: T1CSU	178: ERAS
106: INX4000L	149: V32Modec	179: V34Modec
107: INX4000R	150: FFram200	180: MD332BU
108: RNX4600	151: MD332	181: DAP4150
109: RNX4800	152:CMS400	182: DAP4550
110: Series90	153: ISX5010	183: ISX5302
111: INX5/12	154: ISX5010	184: 2500 2T1
112: FOIRL	155: EAN 2000	185: 2500 3T1
113: INX 10BT	156: OM7000	186: EAN 4000
114: DAP DBR	157: MPE	187: DAPMS20
115: Excal CC	158: WPA	188: DAP6300
116: Gener 1	159: RNX6400	189: DAP/SNMP
through	160: Safe 64K	190: 3PRI/T-1
131: Gener 16	161: LPA	191: V34HxMod
132: DAP 4000	162: Alpha4	192: SR 4200
133: DAP 4100	163: INX5/1	193: DAP-FR
134: DAP 4500	164: BRI 2000	194: EAN 6300
135: INX CAU	165: ISX5005	195: EAN 6600
136: INX LAM	166: 5300 3T1	196: EAN 6800
137: ALM 3268	167: WFleet	197: ExcChass
138: INX MGR	168: 5PortDAP	198: 5312 1/2
139: CMS 6432	169: MD334	199: 5312 2/2
140: ALM 3228	170: RNX6150	200: 5314 1/4
141: ISX 5540	171: MDS MP	201: 5314 2/4
142: ENAR	172: MDS SET1	202: 5311
143: SET1 SPB	173: 5300 2T1	203: 5311E
144: RNX6100	174: StackHub	

**DEC**

Decreases or subtracts one from the subsequent numeric variable.

Syntax:

DEC *variable*

Example:

**DEC COUNTER**

This example decreases by 1 the value assigned to the numeric symbol COUNTER.

## **DEALM**

Deletes an alarm in the alarm queue. You may specify an optional number field, for example:

Syntax:

DELALM *n*

Example:

**DELALM 66**

Where:

*n* deletes the *n*-th alarm from the start of the queue.

*-n* deletes the *n*-th alarm from the end of the queue.

*#n* deletes the alarm with the unique alarm ID of *n*.

An omitted alarm number deletes the alarm last read by GETALM.

Variable RESULT will be set to SUCCESS if the alarm is found deleted. Otherwise it is a FAILURE.

## **DELAY**

Executes a time delay. It is specified in seconds.

Syntax:

DELAY *seconds*

Example:

**DELAY 15**

**DISPLAY**

Displays the quoted string or variable following it.

Syntax:

```
DISPLAY "text"
```

Examples:

```
DISPLAY "testing in progress"
```

The above example causes the string: `testing in progress` to be displayed.

```
DISPLAY @H "          testing in progress"
DISPLAY          "testing..." ;On user screen
DISPLAY,,          "testing..." ;Suppress new-line;
DISPLAY @H,          "testing..." ;At Hub screen
DISPLAY @P,          "testing..." ;At Hub printer
DISPLAY @C2,          "testing..." ;Out of COM2:
DISPLAY @EUTAH,          "testing..." ;Out EDM channel UTAH

IF count = 1 LET var1 = "BACKUP"
IF count = 2 LET var1 = "RESTORE"
DISPLAY "READY TO PERFORM {var1}"
```

This example allows you to insert a variable previously defined. In this case, `count=1`; therefore, the string: `READY TO PERFORM BACKUP` is displayed.

An implicit new-line is executed after displaying the text, unless a trailing semicolon immediately follows the last set of quotes on that line. Text may include control characters in the format `^nn` where `nn` is a hexadecimal value.

Display strings may also contain cursor positioning, color, or other sequences as indicated by an initial backslash. The `DISPLAY` keyword may also be used to control the display format of your CMS 400 workstation with the following display sequences.

```
\Brrchhww
```

This string paints a box with the upper left corner at row `rr`, column `cc`, a height of `hh`, and width of `ww`. Values `rr` and `hh` range from 01 to 25. Values `cc` and `ww` range from 01 to 78. Do not use 00 for any value.

```
\Crrnn
```

This clears `nn` rows of screen starting at row `rr` to current background color. Values `rr` and `nn` range from 01 to 25. Do not use 00 for either value.

**\Prcc**

This positions the cursor at row *rr*, column *cc*. Value *rr* ranges from 01 to 25. Value *cc* ranges from 01 to 78. Do not use 00 for either value.

**\Abf**

This changes color to background (b) and foreground (f). Values are shown in Table 7-2.

**Table 7-2. CMS 400 Color Key**

<b>b</b>	<b>Color</b>	<b>f</b>	<b>Color</b>
0	Black	0	Black
1	Blue	1	Blue
2	Green	2	Green
3	Cyan	3	Cyan
4	Red	4	Red
5	Magenta	5	Magenta
6	Yellow	6	Yellow
7	White	7	White
8	Black/Blink	8	Black/Bright
9	Blue/Blink	9	Blue/Bright
A	Green/Blink	A	Green/Bright
B	Cyan/Blink	B	Cyan/Bright
C	Red/Blink	C	Red/Bright
D	Magenta/Blink	D	Magenta/Bright
E	Yellow/Blink	E	Yellow/Bright
F	White/Blink	F	White/Bright

Example:

**DISPLAY "\C0120\A97\B05201230\P0836TEST"**

The above sequence clears the screen, changes the color to white on a blue-blinking background, then places a box on the screen with the word TEST in it.

**ELSE**

Provides an alternative when a previous IF condition is false. If the statement was false, the remainder of the ELSE line is executed. Note that ELSE lines may occur at any time after the initial condition is set, and not necessarily in the lines that immediately follow.

Example:

**IF *input* > 5 THEN DISPLAY "Too large!"  
ELSE DISPLAY "Just right!"**

**EXIT**

Script file processing terminates either at the end of the file or when this keyword is encountered.

**FCLOSE**

Closes an open datafile. The required argument is the file number from 1 to 8. An error occurs if that file is not opened.

Example:

```
FCLOSE 1
```

**FKILL**

Deletes a data file. Variable RESULT is set to FAILURE if the file is not found; SUCCESS otherwise. Specify file name in quotes or variable, as in:

Example:

```
FKILL "DATAFILE.DAT"
```

**FMAKE**

Creates a datafile. Required arguments are: a file number from 1 to 8 and a filename, either explicitly in quotes or in a string variable. The resultant file is opened for read/write access. If the filename already exists, it is overwritten by the new file.

Syntax:

```
FMAKE n filename
```

Example:

```
FMAKE 1 "datafile.dat"
```

## **FMOVE**

Moves the file read/write pointer of an open file. Required arguments are: the file number from 1 to 8 and the number of bytes to move, followed immediately by an "S" (from start of file), "E" (from end of file), or "M" (from current file position). An error occurs if that file is not open.

Example:

```
FMOVE 1 150S,           ;Move 150 from start of file
FMOVE 1 S,,           ;Move to start of file
FMOVE 1 E,,           ;Move to end of file
FMOVE 1 -10M,         ;Back up by 10
FMOVE 1 -24E,         ;24 from end of file
```

## **FNAME**

Rename an existing datafile. Specify old and new file names in quotes or variables.

Example:

```
FNAME "old.dat" "new.dat"
```

## **FOPEN**

Opens an existing datafile. Required arguments are: a file number from 1 to 8 and a filename, either explicitly in quotes or in a string variable. The resultant file is opened for read/write access. An error occurs if the file is not found.

Syntax:

```
FOPEN n <filename>
```

Example:

```
FOPEN 1 "datafile.dat"
```

## **FREAD**

Reads a record from a datafile. Specify a file number (from one to eight) and variable to fill.

Example:

```
FREAD 1 value1
```

## FTEST

Test for existence of a file. Variable RESULT is set to SUCCESS or FAILURE accordingly. Specify file name in quotes or variable.

Example:

```
FTEST "datafile.dat"
```

## FWRITE

Write to datafile. Specify file number (1 to 8) and value in quotes or variable.

Example:

```
FWRITE 1 "Answer is" result  
FWRITE 1 value1 "plus" value2 "is" value3
```

## GETALM

Fetch an alarm from the alarm queue. Specify a variable and an optional number field.

Example:

```
GETALM VALUE n
```

Where:

*N* gets the *n*-th alarm from the start of the queue.

*-n* gets the *n*-th alarm from the end of the queue.

*#n* gets the alarm with the unique alarm ID of *n*.

Omitted gets the next alarm in the queue.

A string is displayed containing the following fields:

SEV= Severity

DAT= Date

TIM= Time

UNI=Unit

CHA=Channel

AD1= Address 1

AD2= Address 2

AD3= Address 3

ALM= Alarm mnemonic

PAR= Parameters string

NUM= Alarm Number

## **GETKEY**

Waits for a single key to be input. The result is stored in the variable that may be optionally specified.

Example:

```
GETKEY yes_no
```

## **GOTO**

Transfers processing from one line in a command file to another. (Specify the line label without the final colon.)

Syntax:

```
GOTO label
```

Example:

```
GOTO end
```

This example transfers control to the line containing the label "end".

## **IF**

Compares a numeric or string symbol with another expression of the same type to determine if one of several possible conditions is true. A conditional clause begins with this keyword, followed by a variable name, a relational operator, and an expression. The truth of this relation is stored. If the condition is true, the remainder of the command line is executed.

This truth value is also tested later by THEN and ELSE. Multiple relations may be tested using the Boolean operators AND, OR, XOR, AND\_NOT, OR\_NOT, and XOR\_NOT. Valid relations are = , <> , < , > , <= , and >=.

Example:

```
IF COUNT > 3 AND COUNT < 7 GOTO MODULE3
```

## **INC**

Increases or adds one to the subsequent numeric variable.

Syntax:

```
INC variable
```

Example:

```
INC COUNTER
```

This example increments by 1 the value assigned to the numeric symbol COUNTER.

## INKEY

Check for a keystroke into a variable, or set variable to null if no key was pressed. This provides a means to interrupt an endless loop in a script.

Example:

```
INKEY yes_no
```

## INPUT

Receives data from a serial port. Specify COMx:, variable to fill, and optional terminator data.

Example:

```
INPUT @C2 VAR ;Terminate on any control ;code from COM2
INPUT @C2 VAR "xx" ;Terminate xx immediately ;(purge).These
                    ;characters ;may be control ;codes, ;i.e., "^OD"

INPUT @C2 VAR "Bye" ;Terminate on "Bye" ;received
INPUT @C2 VAR "B?e" ;"?" acts as a wildcard ;here
INPUT @C2 VAR "^OD" ;Terminate on hex OD ;<Enter>
"INPUT @C2 VAR "10" ;Terminate in 10 seconds"
INPUT @C2 VAR 10 "^OD" ;10 SEC or on hex OD ;<Enter>
```

## LET

A LET clause allows you to assign a specific value to a variable. Variables are assigned values by entering a LET statement which includes a name, an equals sign (=), and an explicit value, variable, or expression.

Syntax:

```
LET variable = value
```

Example:

```
LET counter = 16
LET answer = number * 25 / divisor
```

Type conversion is automatic.

## **MOVE**

Moves the cursor to a specific location. It is followed by the line and column numbers (in decimal values) starting at 1.

Syntax:

**MOVE** line column

Example:

**MOVE 12 8**

In this example, the cursor is positioned down twelve lines and across eight columns from the upper left-hand corner.

## **NAME**

Identify this script instance system wide. Specify task name in quotes or as a variable. This provides a means for other running scripts to refer to this script when using the SIGNAL keyword.

Example:

**NAME "MyProg1"**

## **ONERR**

Intercepts script errors within the user routine. Upon detecting an error, the processor passes control to the line starting with the specified label. If the label does not exist, command processing terminates.

Specify the routine label or nothing to let CMS handle errors.

Example:

**ONERROR bugtrap** ;trap errors

The above example traps the errors.

**ONERROR** ;errors are fatal

The above example causes termination of command processing when errors occur (the default condition at script initiation).

## PROMPT

Opens a prompt field and places the input into the subsequent string variable. An optional prompt width variable may be added after the prompt variable to define the width of the prompt. If a width is not supplied, the size of the variable is used as the default.

Syntax:

```
PROMPT string variable
PROMPT string variable optional width
```

Example:

```
PROMPT MYNAME 12 "What is my name? ;width is 12
PROMPT MYNAME "What is my name? ;width is MYNAME's width
```

A prompt string may also be appended for display.

## RETURN

Transfers processing back to the line following the line which previously executed a **CALL**. (Using the example under **CALL**, you will be returned to the line after "CALL routine2".)

## SETEIA

Set EIA signals on an interface. Specify an interface name, a signal name and a state. Currently the interfaces C1 to C8 are supported for COMx: ports, and signals which include DTR, RTS and LOO (Loop TxD to RxD).

Example:

```
SETEIA C1 RTS 1
SETEIA C2 DTR 0
```

## SETPAR

Set various system values. It specifies a value name and a value. Currently the value names C1 through C8 are supported to allow COMx: ports to be configured. The value is a single word consisting of the speed, data bits (7,8), parity (O,E,N) and stop bits (1,2).

Syntax:

```
SETPAR {cha_x} uni tim count bytes
```

Example:

```

SETPAR C1 96007E2
SETPAR C2 192008N1

```

## SIGNAL

Manipulate "signal flags" in current or another running script. Specify operation (Set, Clear, Test, or Wait), flag number (1-8), and name of other task in quotes or variable (self if not specified). Variable RESULT is set to SET or CLEAR (or FAILURE if named task is not found running).

Example:

```

SIGNAL S 3 "Task1",           ;Set flag 3 of Task1
SIGNAL C 5 "Task2",         ;Clear flag 5 of Task2
SIGNAL T 2,                 ;Test own flag 2
SIGNAL W 4,                 ;Wait until own flag 4 is set

```

## THEN

Provides a necessary consequence when a previous IF condition is true. If the statement was true, the remainder of the THEN line is executed. Note that THEN lines may occur at any time after the initial condition is set, and not necessarily in the lines that immediately follow.

Example:

```

IF ANSWER = "No" THEN DISPLAY "As you wish"
THEN GOTO FINISH

```

## ULINK

Allows you to move a given unit downstream to another unit in the database. Specify an explicit unit name to be the downstream unit and an optional unit name as the upstream. If the upstream unit name is omitted, the downstream unit is unlinked and becomes a central unit.

Example:

```

ULINK miami.02 miami.01,       ;Make miami.02 downstream
ULINK miami.02,,               ;Make miami.02 central

```

## Special Variables

The following are special variables (refer to Table 7-3).

**Table 7-3. Special Variables**

<b>Variable</b>	<b>Description</b>
<b>TIME</b>	Displays the current time in the format "HH:MM:SS"
<b>DATE</b>	Displays the current date in the format "MM/DD/YY" or "DD.MM.YY" as set in CMS 400 parameters.
<b>WDAY</b>	Displays the current day in the format (SUN, MON, TUE, WED, THU, FRI, SAT).
<b>RESULT</b>	Shows results of a spawned CMS 400 function and various datafile activities.
<b>XMICE</b>	Shows the column of a mouse-click during GETKEY or INKEY in range 1-80 (zero if a regular key was pressed).
<b>YMICE</b>	Shows the row of a mouse-click during GETKEY or INKEY in range 1-20 (zero if a regular key was pressed).
<b>ARG1</b> through <b>ARG9</b>	Arguments from the RUN command line.
<b>ARGNUM</b>	The number of command line arguments (0-9).

## Receiving Results Into A Script

Many functions can be called from within scripts and can pass the results directly back to the scripts. For example, a test can be run on a line, and based on the line quality, a dial backup can be established.

Each value is extracted using the @ operator and the associated keyword (refer to "Operators" in this chapter). All results are passed to the scripts within the string variable RESULT.

For example:

```
IF RESULT="ERR=15" LET TEST=RESULT@ERR
```

In the above example, TEST is equivalent to 15.

The following functions pass their results back to the scripts in the indicated formats:

### Monitor EIA (MON EIA)

All EIA signals are represented the same as on the screen, with T for true, o for false, and \* for rapid transition. The result string is:

```
TxC=n TxD=n RTS=n CTS=n RxC=n RxD=n DCD=n SQL=n DSR=n DTE=n  
DBU=n DLB=n ALB=n
```

where *n* is the EIA status (T, o, or \*).

The value may be extracted from the string using the @ operator:

```
LET DSRSTAT=RESULT@DSR
```

This script line finds the "DSR=" flag in the RESULT string and sets the variable DSRSTAT to the associated value (T, o, or \*).

### Monitor Mux (MON MUX)

All Mux signals are represented the same as on the screen, with T for true, o for false, and \* for rapid transition. The result string is:

```
BSY=n RTS=n DTR=n FCN=n RID=n DCD=n DSR=n CTS=n DCB=n CTB=n  
RTB=n DTB=n
```

where *n* is the MUX status (T, o, or \*).

The value may be extracted from the string using the @ operator:

**LET DSRSTAT=RESULT@DSR**

This script line finds the "DSR=" flag in the RESULT string and sets the variable DSRSTAT to the associated value (T, o, or \*).

**Self Test (SEL TES)**

The result string is:

```
ERR=nnnnn
```

where *nnnnn* is the bit error rate.

The value may be extracted from the string using the @ operator:

**LET BER=RESULT@ERR**

This script line finds the "ERR=" flag in the RESULT string and sets the variable BER to the associated value (*nnnnn*).

**End-to-End Test (END TES)**

The result string is:

```
ERR=nnnnn ERC=xxxxx
```

Where *nnnnn* is the bit error rate at remote and *xxxxx* is the bit error rate at central. The value may be extracted from the string using the @ operator:

**LET BER=RESULT@ERR**

This script line finds the "ERR=" flag in the RESULT string and sets the variable BER to the associated value.

**Loopback Test (LOO TES)**

The result string is:

```
ERR=nnnnn
```

Where *nnnnn* is the bit error rate. The value may be extracted from the string using the @ operator:

**LET BER=RESULT@ERR**

This script line finds the "ERR=" flag in the RESULT string and sets the variable BER to the associated value (*nnnnn*).

### Serial Scan (SER SCA)

The result string is:

```
SER=nnnnn
PAR=xxxxx
HWR=hhhhh
SWR=sssss
```

Where *nnnnn* is the serial number, *xxxx* is the part number, *hhhh* is the hardware revision and *sssss* is the software revision. The value may be extracted from the string using the @ operator:

```
LET SER=RESULT@SER
```

This script line finds the "SER=" flag in the RESULT string and sets the variable SER to the associated value (*nnnnn*).

### File Services (FIL SER)

The result string is:

```
RES=nnnnn
```

Where *nnnnn* is GOOD, FAIL, or EXITS. The value may be extracted from the string using the @ operator:

```
LET RES=RESULT@RES
```

This script line finds the "RES=" flag in the RESULT string and sets the variable RES to the associated value (*nnnnn*).

FIL=Filename

STA=Target station (1-16)

ADD=IP address of TCP station (in lieu of STA=)

OPT=Operation:

UP Upload file from station to Hub

DOWN Download file from Hub to station

BACK Backup database

CHK=Y: Do not supersede file if found at destination

DES=Destination path for backup (A: if not specified)

INC=Y: Include Event File in backup (default is No)

EXC=List of backup files to exclude (comma-separated)

---

KIL=Y: Causes the hub to be shut down

---

**Note:** You may use the loop batch file to bring hydra right back up, for example: LOOP HYDRA GOTO LOOP

---

### **Strap Unit (STR UNI)**

The result string is:

DIF=*nnn*

Where *nnn* = yes (at least one difference between two sets of straps) or no (no differences between two sets of straps).

### **Speed Control (SPE CON)**

The result string is:

PS1=*x* ... PS6=*x*

CS1=*x* ... CS6=*x*

AGG=*x* for *aggregate*

Where PS is the port speed, CS is the channel speed and AGG is for aggregate. The value may be extracted from the string using the @ operator:

**LET AGG=RESULT@AGG**

### **Loop Unit (LOP UNI)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

### **Test Tone (TES TON)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

**Squelch Unit (SQU UNI)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

**Return To Normal (RET NOR)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

**Initialize Unit (INI UNI)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

**Call Unit (CAL UNI)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

**Alert (ALERT)**

The result string is:

PAS=*nnnn*

FAL=*nnnn*

Where *nnnn* is the occurrences of pass or failure (SOME, ALL, NONE).

### **700 Control (700 CON)**

The result string is:

OPS=*nnnn*

Where *nnnn* is the SUCCESS or FAILURE.

### **Run (RUN)**

The result string is:

RES=NULL

The contents of the variable RESULT are passed, or if RESULT is null, "RES=NULL" is passed.

### **3222 Control (322 CON)**

The result string is:

RES=*nnnn*

Where *nnnn* is the SUCCESS, FAILURE or ALREADY if the unit is already dialed up.

### **Excalibur DBU (EXC DBU)**

The result string is:

OPS=*nnnnn*

CXS=*xxxxx*

Where *nnnnn* is the status of the completed operation and *xxxxx* is the status of the command execution; either SUCCESS or FAILURE.

The valid keywords for OPS=*xxxxx* are:

INVALID	Invalid operation tried
BUSY	Operation in progress
RETRY	Operation in retrial
SUCCESS	Operation successful
BUSYSIG	Busy Signal Detected
REORDER	Reorder Signal
CONGEST	Congestion Signal



Where *nnnnnnnnnnnnnnnnnn* is a binary value expressed as sixteen 1's and 0's.

### Monitor Analog (MON ANA)

The result string is:

TXL=*nnnnnn* RXL=*nnnnnn* SQL=*nnnnnn* SLW=*nnnnnn*  
SHF=*nnnnnn* HIT=*nnnnnn* JIT=*nnnnnn* S2N=*nnnnnn*

Where *nnnnnn* is: (refer to Table 7-4).

**Table 7-4. CMS 400 Monitor Analog Results**

<b>Result</b>	<b>Description</b>
TXL	Transmit level in dB (preceding minus sign possible)
RXL	Receive level in dB (preceding minus sign possible) with trailing "?" if reported reading is not current
SQL	Signal Quality (best, good, fair, poor) with trailing "?" if reported reading is not current
SLW	Clock slew in ppm (preceding minus sign possible)
SHF	Frequency shift in Hz (preceding minus sign possible)
HIT	Line hit count
JIT	Phase jitter in degrees
S2N	Signal-to-noise in db

The value may be extracted from the string using the @ operator:

**LET JITTER=RESULT@JIT**

This script line finds the "JIT=" flag in the RESULT string and sets the variable JITTER to the associated value.

### **Excalibur NAR (ENAR)**

For all options, if there is a failure to execute the option, one of the following could be returned instead of the expected results:

PAS=NO if a major problem prevented the operation from executing. MSG=*n*

Where *n* is an applicable error message up to 32 characters indicating the failure that occurred.

If neither one of the above results is received then one of the following is returned:

For the EIA status of a modem:

TXD=*n*, RTS=*n*, CTS=*n*, DTR=*n*, RXD=*n*, DCD=*n*, DSR=*n*, TST=*n* ERR=*n*,  
SPD=*n*, LST=xxxxxxx and DEVICE=*c:ss:d*

Where:

*n* is the status either T for true or • for false.

xxxxxxx is the line status.

*c* is the chassis number.

*ss* is the slot number.

*d* is the device number of the modems EIA status results.

For analog loopback test and analog loopback error test of a modem:

ERR=nnnnn

Where *nnnnn* is the error rate for analog loopback:

PAS= *nnn*

Where *nnn* is Yes if the loopback was a success or No if the loopback failed.

### **RMTS Control (RMT CON)**

The result string is:

DBU=*x* SPR=*x* DCO=*x* TOF=*x* RTS=*x* DCP=*x* DCS=*x* TXP=*x* TXS=*x*  
POP=*x* POS=*x* RI1=*x* RI2=*x* SH1=*x* SH2=*x* OH1=*x* OH2=*x*

Where *x* = Y (yes) or N (no) (refer to Table 7-5).

**Table 7-5. CMS 400 RMTS Control Results**

<b>Results</b>	<b>Description</b>
DBU	Dial backup active
SPR	Spare unit on-line
DCO	DCD option enabled
TOF	Toggle disabled
RTS	Secondary RTS active
DCP	DCD active : primary
DCS	DCD active : spare
TXP	Transmitter enabled : primary
TXS	Transmitter enabled : spare
POP	Power failure : primary
POS	Power failure : spare
RI1	Ring indicator : line 1
RI2	Ring indicator : line 2
SH1	Switch hook : line 1
SH2	Switch hook : line 2
OH1	Off hook : line 1
OH2	Off hook : line 2

**Excalibur DRS (EXC DRS)**

If the Excalibur DRS function is invoked by a script, the results of an operation are written to an ASCII file. The script reads the file to get the final status of the dial operation for each of the remotes.

In the following description, the length of each line is 80 characters, 78 significant characters plus a carriage return/linefeed. Unused fields contain spaces.

The format of the result file that the Excalibur DRS control function creates when invoked by a script is as follows:

This is a banner containing one of the following, depending upon the selected operation:

Excalibur DRS Control Initiate Dial Backup Final Results  
 Excalibur DRS Control Switch To Dedicated Lines Final Results  
 Excalibur DRS Control Switch To Dial Lines Final Results  
 Excalibur DRS Control Terminate Dial Backup Final Results

This is a banner containing the following text:

Date:mm/dd/yy Time:hh:mm:ss Chassis Controller=*nnnnnnnnnnnn*

Where:

*nnnnnnnnnnnn* is the name of the Chassis Controller

This is a banner containing the following text:

DAD1: *nnnnnnnnnnnn* DAD2: *nnnnnnnnnnnn* DAD3: *nnnnnnnnnnnn* DAD4:  
*nnnnnnnnnnnn*

Where:

*nnnnnnnnnnnn* is the name of a central DAD unit

The unit name is first which consists of 12 characters, followed by the final status which is 8 characters, unused fields are space filled. Each item on the line is separated from the next item by a space.

UNIT=*nnnnnnnnnnnn* STATUS=*xxxxxxxx* UNIT=*nnnnnnnnnnnn* STATUS=*xxxxxxxx*

Where:

*nnnnnnnnnnnn* is the name of the unit that the status is for

*xxxxxxxx* is the final status (see on-line help text for a list of all status)

The name of the file that contains the result information is passed back to the script in the result @ FIL=DRS\_*nnnn*.REP.

Where:

*nnnn* is a unique number

REP is the file extension

The filename is created by Excalibur DRS and is unique based upon the task number of the script that invoked Excalibur DRS control. This ensures that when there are multiple scripts running at the same time, each one gets a unique file containing the results for that script. In the CMS 400, each task running has a unique task number. The Excalibur DRS takes the task number of the script and uses it in the filename.

For example:

If a script is running as Task Number 5, the name of the ASCII file containing the results is DRS\_0005.REP. If a script is going to invoke Excalibur DRS control more than once during its execution and if it wants to keep the results of a previous invocation, then it must rename the result file after each invocation of Excalibur DRS control.

### **Excalibur DRS Control Non-Scripting Result File**

The results can also be written to a result file that you can select to view at a later time. Results are written to the result file if the function is invoked with the command line argument "OUT=F" or if you decide to save results when reviewing the final status of a dial operation. These results are encoded and can only be viewed using Excalibur DRS. You are able to select the results to review based upon the following criteria: starting date and time, ending date and time, chassis controller, or central or remote unit.

## **Creating a Script**

To generate user-defined scripts:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Create Script.

A script name prompt is displayed.

4. Enter a new script name or press [TAB] to scroll through the list of existing names.

If an existing script name is selected, a warning message is displayed stating that the file already exists.

- Select **Y** (yes) to continue and the existing file is overwritten by the new file.
- Select **N** (no) and the display returns to the Define Script menu.

After a valid script name is selected, a blank screen appears.

5. Enter (and change) script information in ASCII text.
  - Select Edit [E] to edit the line the cursor is on.

- Select Insert [I] to open a line above the cursor location for inserting new text and press [PGDN] to accept input and begin a new line.

---

**Note:** The line where information is to be added or changed is displayed in reverse video.

---

6. Press [ESC] to exit the editor (but stay in the script).

You are prompted to save the changes.

7. Press [ESC] again to exit Create Script.

To manipulate text when not in the on-line editor, use the following keys:

**Table 7-6. Input Control Keys**

Key	Description
[PGDN]	Moves down a page within a script.
[PGUP]	Moves up a page within a script.
[HOME]	Moves the cursor to the first line of the scripts.
[END]	Moves the cursor to the last line of the scripts.
[D]	Deletes the entire line where the cursor is located and stores it in the paste buffer.
[P]	Copies the line from the paste buffer and inserts it at the current cursor position.
[F]	Searches for a specific string within the script. You are prompted to enter the phrase to be located.
[G]	Copies entire scripts into the existing one at the cursor location. You are prompted for the script's name to be copied.
[ESC]	Exits the scripts. This automatically saves the script under the chosen file name.

Once a script is created, it may be accessed from the command line (using Run) or by indicating a specific event or time (using Schedule Activity).

---

## Editing a Script

To edit an existing script:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Edit Script.

A script name prompt is displayed.

4. Enter the script name or press [TAB] to advance through existing script names and press [PGDN] when the desired name appears in the field.

The script is then be displayed.

5. Press [PGUP], [PGDN], and arrow keys to move through the file and make your changes. (Refer to "Creating a Script" within this chapter for valid editing keys.)
6. Press [ESC] to exit the script.

You are prompted to save the changes made.

7. Type **Y** to confirm the save.

## Renaming a Script

To rename an existing script:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Rename Script.

A script name prompt is displayed.

4. Enter the script to be renamed or press [TAB] to advance through the existing script names and press [PGDN] when the desired name appears in the field.
5. Enter the old script name.
6. Enter the new script name and press [PGDN].

## Verifying a Script

To verify that a script will run without errors before using it in an actual application:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Verify Script.

A script name prompt is displayed.

4. Enter the script name to be verified or press [TAB] to advance through the existing script names and press [PGDN] when the desired name appears in the field.

The text of the script is then displayed.

5. Enter the command line arguments to be passed to the script.

As the script is running, a Verify Pass Error Count is displayed showing the number of errors encountered during the verification.

When the Verify is complete, the list of various Define Script operations is redisplayed.

---

**Note:** Some errors such as endless loops cannot reliably be detected using this option.

---

## Running a Script

To execute a script from the CMS 400 Automation menu as if it were invoked from the command line:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Run Script.

A script name prompt is displayed.

4. Enter the script name to be run or press [TAB] to advance through the existing scripts names and press [PGDN] when the desired name appears in the field.

5. Enter the command line arguments to be passed to the scripts.
6. Press any key to terminate this operation.

## Printing a Script

To queue a specific script to print at the hub printer:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Print Script.

A screen displays a script name prompt.

4. Enter the file name to be printed or press [TAB] to advance through the existing script names and press [PGDN] when the desired name appears in the field.

The script is queued to the hub printer.

## Monitoring a Script

To monitor the activity of a script:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.

The Select An Operation screen is displayed.

3. Select Monitor Script.

A real-time screen displays the following information about any scripts currently being executed.

**Table 7-7. Monitor Script Field Descriptions**

<b>Field</b>	<b>Description</b>
Script	Name associated with the script.
Task #	System-assigned task number of scripts.
Taskname	CMS 400 command being executed by a script.
STA	Number associated with the CMS 400 workstation which invoked the script.
WIN	Number of windows in which the script is being executed.
Last Line	First 12 characters of last line executed within the script.

Press [PGDN] and [PGUP] to scroll through the display.

Select Zoom [Z] to display various details of a script.

## Deleting a Script

To delete a script from the CMS 400 System:

1. Choose Automation from the CMS 400 Main menu bar.
2. Select Define Script.  
  
The Select An Operation screen is displayed.
3. Select Delete Script.
4. Enter the script name to be deleted or press [TAB] to advance through the existing names and press [PGDN] when the desired name appears in the field.
5. Confirm the deletion and press [PGDN].

## Unique Scripting Interface For Excalibur DRS Control

CMS 400 supports another method of passing information to Excalibur DRS Control concerning the units to dial. This method requires that a script create a file containing information about the units to dial. With this method, a script can build the file when necessary after it has made its decision about which units to put into dial backup and then invoke Excalibur DRS Control with an argument that specifies the filename containing the information.

Example:

```
DRS_CON FIL=BACKUP.DAT OPT=DIAL UN2=CC_1
```

Where:

FIL is the name of the file that contains the information about which units to dial  
UN2 is the unit name of the Chassis Controller

---

**Note:** In the following description, a unit can be passed by either unit name or by T7 address and channel. If the unit name is passed, it always supersedes the T7 channel and address.

---

In the following, the term "keyword" refers to the string to the left of the "=" character, the term "argument" refers to the string to the right of the "=" character.

Each keyword/argument value must be separated by at least one space. Take for example the following line that might be written to a file that the Excalibur DRS function will read:

```
DAD1_UNIT=DAD1 DAD1_RUNI=REMOTE_1
```

The second keyword/argument "DAD1\_RUNI=REMOTE\_1" is separated from the first keyword/argument "DAD1\_UNIT=DAD1" by a space. The information can be placed into the file in any order, i.e., line one could specify a DAD unit for circuit 1 and line two could specify a remote unit for circuit 2.

The format of the keywords and the arguments contained in the file a script creates and passes to Excalibur DRS control in the argument "FIL=" is as follows:

```
DADn_UNIT=xxxxxxxxxxx ;Unit name of a central
                        ;DAD
```

Where:

*n* is a number, 1-4, describing which circuit the unit name is for  
xxxxxxxxxxx - is the unit name up to 12 characters

```
DADn_CHAN=xxxxxxxxxxx ;T7 channel name of a
                        ;central DAD
```

Where:

*n* is a number, 1-4, describing which circuit the channel name is for  
xxxxxxxxxxx is the channel name up to 12 characters

DADn\_ADDR=xxx ;T7 address of a central  
;DAD

Where:

n is a number, 1-4, describing which circuit the unit address is for  
xxx is the T7 address, 1-255

DADn\_RUNI=xxxxxxxxxxx ;Unit name of a remote  
;unit for circuit n

Where:

n is a number, 1-4, describing which circuit the unit name is for  
xxxxxxxxxxx is the unit name up to 12 characters

REM\_CHANn=xxxxxxxxxxx ;Channel name for the  
;remote units for circuit  
;n

Where:

n is the logical channel number, 1-4, for the circuit in which a remote unit is to  
be backed up

---

**Note:** This argument is only required if the unit names are not used and if the remote  
units for a particular circuit are on a different channel than the DAD.

---

xxxxxxxxxxx is the T7 channel name up to 12 characters

DADn\_RADD=xxx ;T7 address of a remote  
;unit for circuit n

Where:

n is the circuit number, 1-4, that the remote unit belongs to  
xxx is the T7 address, 1-255, of a remote unit

DADn\_MCLK=xxx ;Clock source assignment  
;for circuit n

Where:

n is the circuit number, 1-4, that the clock source is being set for  
xxx is the clock source and can be one of the following:

DAD - The timing source for the circuit is the DAD  
DBR - The timing source for the circuit is the DBR

DADn\_TIE2=x ;Auto speed control  
;option for circuit n

Where:

$n$  is the circuit number, 1-4, that the tier 2 option is being set for  
 $x$  can be one of the following:

- N - Do not auto speed second tier devices for circuit  $n$
- Y - Auto speed second tier devices for circuit  $n$

```
DAD $n$ _STRA= $xxx$  ;DBR strapping option for  
;circuit  $n$ 
```

Where:

$n$  is the circuit number, 1-4, that the DBR strapping option is being set for  
 $xxx$  can be one of the following:

- NON - Do not strap the DBR
- DAD - Read the DAD's straps directly from the DAD and write them to the DBR
- TBL - Read the DAD's straps from the DAD's strap table and write them to the DBR

## Scheduling an Activity

The Schedule Activity operation allows you to schedule a user-specified activity (or scripts) to run automatically at a given time or event. An activity may be run once (single instance) or several times (multiple instances). Refer to Chapter 5 for more detail on scheduling scripts.



# Chapter 8

## Converting Database Files to dBASE

---

### Introduction

With CMS 400, you can extract sections of your database and convert those files into dBASE-III- or IV-compatible files. The resultant .DBF files can be submitted directly to a dBASE-III or IV-compatible database package. Reports may then be tailored to your specific needs.

### dBASE-Compatible File Description

Database information from CMS 400 can be placed in a file readable by standard database programs that use dBASE III PLUS format. The files are not "flat files"; they may be submitted directly to the database program for browsing, selecting, and editing. All fields are of the alphanumeric "Character" data type.

---

**Note:** If a database file already exists, you may specify a new name or overwrite the existing file. Refer to "dBASE-Compatible File Description" within this chapter for database file structures.

---

You may create database files as shown in the following procedures.

### Converting Unit Definitions

Unit definitions are stored in UNITS.DBF and include most fields of the defined network unit.

To convert unit definitions to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Unit Definitions.

The message: Now Creating dBASE file UNITS.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-1).

**Table 8-1. Unit Definitions Database Files**

Field Name	Length	Contents
T7_CHANNEL	12	First T7 channel name.
T7_ADDRESS	3	First T7 channel address.
T7_ADDRES2	3	Second T7 channel address.
T7_ADDRES3	3	Third T7 channel address.
T7_ADDRES4	3	Fourth T7 channel address.
UNIT_NAME	12	Unique unit name.
SERIAL_NUM	8	Serial number.
UNIT_TYPE	16	Unit type.
STRAP_TBL	12	Associated strapping table.
IN_GROUP	12	First associated group.
IN_GROUP $n$	12	Associated group. Where $n$ is 2 through 8.
RX_PHONE	24	Receive phone number.
TX_PHONE	24	Transmit phone number.
BACKUP_TBL	12	Strap table contents for backup information.
AT_SITE	12	Associated Site.
HEALTH_TBL	12	Strap table contents for health information.
BACKUPTYPE	12	Unit types that can be backed up (i.e., 2-wire DBU, Switch-56K, RALA, CMS 700, IDBU, EDRS Control, and ISDN IDBU).
UPS_PORT	2	Upstream port of a unit (CMS 6424, DAP, T1CSU, and ENAR).
OFFLINE	1	Status of polling and alarm recognition.
FETCHSTATS	5	Background statistics polling (RMD1690).
CHAN_TBL	12	Strap table contents for channel information.
UNIT_TBL	12	Strap table contents for unit information.
SLOT_NUM	2	Number of a slot in a chassis.
CHASSIS	2	Name of a chassis.
PARTNER	12	EAN2000 is a partner of a DAP unit.

## Converting the Current Alarm List

The Current Alarm List is stored in ALARMS.DBF. It includes all fields for all alarms in the current alarm list. To displayed the list, press [F2].

To convert the alarms list to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Current Alarm List.

The message: Now Creating dBASE file ALARMS.DBF... message is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-2).

**Table 8-2. Network Alarms Database Files**

Field Name	Length	Contents
DATE	8	Date of alarm in format MM/DD/YY.
TIME	8	Time of alarm in format HH:MM:SS.
UNIT_NAME	12	Unique unit name.
T7_CHANNEL	12	T7 channel of alarm.
T7_ADDRESS	3	Unique address name.
ALARM_TYPE	3	Type of alarm.
PARAMETERS	128	Associated alarm parameters, if any.

## Converting the Event Log Entries

The Event Log Entries is stored in EVENTS.DBF and includes all event fields for all or select events in the log.

To convert event log entries to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Event Log Entries.

An Event Selection Criteria screen is displayed.

4. Enter the From date and time, To date and time, each day From time, and To time, or select the event class, event code, alarm type, map marked, channel, T7 address from and to, unit name, at site, in group, by user, and any free text.

The message: Now Creating dBASE file EVENTS.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-3).

**Table 8-3. Event Log Entries Database Files**

Field Name	Length	Contents
CLASS	2	Event class number.
TYPE	2	Event type number.
DATE	8	Date of event in format MM/DD/YY.
TIME	8	Time of alarm in format HH:MM:SS.
T7_CHANNEL	12	T7 channel of alarm.
T7_ADDRESS	3	T7 address of alarm.
UNIT_NAME	12	Unique unit name for event, if any.
EVENT_TEXT	254	Textual description of event.

## Converting Unformatted Sites

Unformatted sites are stored in SITES\_U.DBF and include all sites defined without built-in field names.

To convert unformatted sites to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Sites (Unformatted).

The message Now Creating dBASE file SITES\_U.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-4).

**Table 8-4. Unformatted Unit Sites Database Files**

Field Name	Length	Contents
NAME	12	Name of site.
TEXT1 ... TEXT15	64	Unformatted unit site information.

## Converting Formatted Sites

Formatted sites are stored in SITES\_F.DBF and include all sites defined with built-in field names.

To convert formatted sites to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Sites (formatted).

The message: Now Creating dBASE file SITES\_F.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-5).

**Table 8-5. Formatted Unit Sites Database Files**

Field Name	Length	Contents
NAME	12	Name of site.
ADDRESS1...ADDRESS3	40	Site address.
CONTACT1...CONTACT2	32	Site contact information.
CONPHONE1...CONPHONE2	24	Site contact phone number.
VENDOR1...VENDOR4	32	Site vendor information.
VENPHONE1...VENPHONE4	24	Site vendor phone numbers.
COMMENT1...COMMENT4	64	Comments from site.

## Converting Custom Sites

Custom sites are stored in SITES\_C.DBF and include all sites defined with built-in field names.

To convert custom sites to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Sites (Custom).

The message: Now Creating dBASE file SITES\_C.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-6).

**Table 8-6. Custom Unit Sites Database Files**

Field Name	Length	Contents
NAME	12	Name of site.
F01 ... F20	Variable	The ASCII text field is user definable and must be in sequential order.

## Converting SNMP Monitor Statistics

SNMP Monitor Statistics are stored in SNMPMON.DBF and include all SNMP statistics from a selected .MON file.

To convert these statistics to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select SNMP Monitor Stats.

The message: Now Creating dBASE file SNMPMON.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-7).

**Table 8-7. SNMP Monitor Database Files**

Field Name	Length	Contents
DATE	8	Date of event in format MM/DD/YY.
TIME	8	Time of alarm in format HH:MM:SS.
UNIT_NAME	12	Unique unit name for event, if any.
MIB_NAME	8	Name of the MIB file.
MIB_OBJECT	32	Name of the MIB Object file.
INSTANCE	5	Instance of a MIB object.
VALUE	9	Value of a MIB object.

## Converting RMD1690 Summary Statistics

RMD1690 Summary Statistics are stored in STAT1690.DBF and include all RMD1690 Statistics retrieved from the dial network. These statistics include entries such as unit names, number of calls, and Rx levels specified in dial devices, and reporting options.

To convert RMD1690 Statistics to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select RMD1690 Summary Stats.
4. Enter the RMD1690 Summary Statistics file name.

The message: Now Creating dBASE file STAT1690.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-8).

**Table 8-8. RMD1690 Summary Statistics Database File Fields**

Field Name	Length	Contents
UNIT_NAME	12	Name of unit.
FETCH_TIME	8	Time of the fetch.
FETCH_DATE	8	Date of the fetch.
SERIAL_NUM	9	Serial number code.
DURATION	16	Duration information.
IDLE_TIME	16	Idle time information.
INTERACT	16	Interact information.
ONLINE	16	System is online.
BUSYOUT	16	System was busy.

**Table 8-8. RMD1690 Summary Statistics Database File Fields (Continued)**

<b>Field Name</b>	<b>Length</b>	<b>Contents</b>
ANS_OK	9	System answered.
ANS_NOTOK	9	System did not answer.
ORG_OK	9	The origin is working.
ORG_NOTOK	9	The origin is not working.
NO_DTONE	9	No dial tone.
NO_ANSWER	9	No answer
NO_CARRIER	9	No carrier found.
LINE_BUSY	9	The line is busy.
ORG_OK	9	The origin is working.
AT_ <i>nnnn</i>	9	Speed, where <i>nnnn</i> is the bits per second.
RX_LEVEL	9	Receive level information

## Converting Excalibur DAP Stats

Excalibur DAP Statistics are stored in DAPSTAT.DBF file and include all DAP Statistics records stored on a disk.

To convert Excalibur DAP Statistics to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Excal DAP Stats.
4. Enter the Excalibur DAP Stats file name.

The message: Now Creating dBASE file DAPSTAT.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-9).

**Table 8-9. Excalibur DAP Statistics Database File Fields**

Field Name	Length	Contents
FETCH_DATE	8	Date of statistics retrieval, statistics collection and start/stop times.
FETCH_TIME	8	Time of statistics retrieval, statistics collection and start/stop times.
FM_DATE	8	From the date of statistics retrieval, statistics collection and start/stop times.
FM_TIME	8	From the time of statistics retrieval, statistics collection and start/stop times.
TO_DATE	8	To the date of statistics retrieval, statistics collection and start/stop times.
TO_TIME	8	To the time of statistics retrieval, statistics collection and start/stop times.
LAST_INT	2	The last valid interval reported by the DAP.
INTERVAL	8	DAP Statistics interval, DD:HH:MM.

**Table 8-9. Excalibur DAP Statistics Database File Fields (Continued)**

Field Name	Length	Contents
UNITS	129	The list of DAP unit names for these statistics. (10 names max, separated by commas)
STAT_VALID	7	Encoded field (Y/N) that indicates which statistics are valid. Signal quality, global resync count, resyncs per unit, extended stats, and basic stats.
xxx_PCT	103	Percentages of acceptable performance for the Level, DDS, signal, RLF not active, Network Service Loop not active, and Signal Quality.
xxx_SEC	103	Number of seconds unacceptable performance for the Level, DDS, signal, RLF not active, and Network Service Loop not active, or the condition was active.
OOS...	103	Count of the corresponding conditions.
ABNSTC	103	Abnormal station codes.
NETWKOOF	103	The network is out of frame.
UNKNCC	103	Unknown Central Site Unit.
NET_RESYN	103	Count of the corresponding conditions.
RESYN_UNIT	79	Count of resyncs per remote unit.
RESYN_AVG	3	Average resync count for all units.
TOT_RESYN	3	Total number of resyncs for all units.

---

**Note:** All count fields are limited to three digits, making the maximum value 999. Stored values above this will be represented.

---

## Converting Excalibur T1 CSU Stats

Excalibur T1 CSU Statistics are stored in ESFSTATS.DBF and include all T1 CSU Statistics records stored on a disk.

To convert Excalibur T1 CSU Statistics to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select ESF Statistics.
4. Enter the Excalibur T1 CSU Stats file name.

The message: Now Creating dBASE file ESFSTATS.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-10).

**Table 8-10. Excalibur T1 CSU Statistics Database File Fields**

Field Name	Length	Contents
FETCH_DATE	8	Date of statistics retrieval, statistics collection and start/stop times.
FETCH_TIME	8	Time of statistics retrieval, statistics collection and start/stop times.
INT_NUMBER	3	Interval number containing statistics retrieved.
INT_TIME	12	Interval time containing statistics retrieved.
COMPONENT	5	The Excalibur T1 CSU, ISX5300 (1-T1), (2-T1) and (3-T1), unit types. The field component contains one of the following strings: DS1 A, DS1 B, and DS1 C which represents the T1 line that the statistics are for.
STAT_TYPE	10	Type of statistic retrieved.
LAST_INT	2	The last valid interval reported by the DAP.
INTERVAL	8	DAP Statistics interval, DD:HH:MM.
UNIT_NAME	12	Unique unit name for event, if any.
T7_CHANNEL	12	T7 channel of alarm.

**Table 8-10. Excalibur T1 CSU Statistics Database File Fields (Continued)**

<b>Field Name</b>	<b>Length</b>	<b>Contents</b>
T7_ADDRESS	3	T7 address of alarm.
UNIT_TYPE	16	Type of unit.
STA1_CSR	5	Current Status Register.
STA2_ERC	5	Error Register Count.
STA3_ES	5	Errored seconds.
STA4_UAS	5	Unavailable seconds.
STA5_SES	5	Severely errored seconds.
STA6_BES	5	Bursty errored seconds.
STA7_LOFC	5	Loss of frame count.
STA8_CSS	5	Controlled slip seconds.
STA9_BPV	5	Bipolar violations.
STA10_FBE	5	Frame bit errors.
STA11_SEFE	5	Severely errored framing event.
STA12_FSBE	5	Frame synchronization bit error event.
STA13_LVE	5	Line code violation event.
STA14_PLAE	5	Payload loopback activated.
STA15_COFA	5	Change of frame alignment.
STA16_CRC6	5	CRC6 error count.

## Converting Channel Database Definitions

Channel definitions are stored in CHANNELS.DBF and include all channel records stored on a disk.

To convert channel definitions to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select Channel Definitions.
4. Enter the channel definitions file name.

The message: Now Creating dBASE file CHANNELS.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-11).

**Table 8-11. Channel Definitions Database File Field Descriptions**

Field Name	Length	Contents
CHAN_NAME	12	ASCII name of channel.
DM_NUMBER	3	Number of EDM on which this channel resides, if any.
DM_PORT	3	Port of EDM on which this channel resides, if any.
TIMEOUT	3	No-reply timeout in seconds.
SPEED	5	Speed of channel in bps, if applicable.
OFFLINE	14	Status of polling and alarm recognition.
USAGE	12	Type of data being handled by channel.
COM_PORT	1	COM: port number associated with channel, if any.
VDM_NUMBER	5	Number of VDM on which this channel resides, if any.

## Converting EDM/DDM Definitions

EDM/DDM definitions are stored in DMS.DBF and include all EDM/DDM records stored on a disk.

To convert EDM/DDM definitions to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Export Database.

The Data To Export menu screen is displayed.

3. Select DDM/EDM Definitions.
4. Enter the EDM/DDM definitions file name.

The message: Now Creating dBASE file DMS.DBF... is displayed.

When the export is complete, the Data To Export menu is redisplayed (refer to Table 8-12).

**Table 8-12. EDM/DDM Definitions Database File Field Descriptions**

Field Name	Length	Contents
DM_NUMBER	3	Number of EDM (1-90) or DDM (91-94).
SPEED	5	Aggregate speed in bps.
POLLING	16	How often the xDM is polled, if at all.
RETRIES	3	How many times messages are retried.
ONLINE	1	Active status (Y or N).
PROTOCOL	8	Aggregate protocol (standard or X.25).
COM_PORT	1	COM: port to which this xDM is connected.
DDM_NUMBER	3	Number of DDM on which this EDM resides.
DDM_PORT	3	Port of DDM on which this EDM resides.
PHONE_NUM	16	Phone number to dial up this EDM.
SITE	12	Site at which this xDM resides, if any.

## Import Database

Database information from CMS 400 can be placed in a file readable by standard database programs that use dBASE III PLUS format. The files are not "flat files"; they may be submitted directly to the database program for browsing, selecting, and editing. All fields are of the alphanumeric "Character" data type.

---

**Note:** If a database file already exists, you may specify a new name or overwrite the existing file. Refer to "dBASE-Compatible File Description" within this chapter for database file structures.

---

You may import database files as shown in the following procedure.

### Importing Database Files

The following information explains how to import unformatted and custom formatted dBase source files.

To import a datafile to dBASE:

1. Choose Database from the CMS 400 Main menu bar.
2. Select Import Database.  
  
The Import Database screen is displayed.
3. Enter the full pathname of the datafile to import.
4. Enter the format of the datafile.
5. Enter the destination of the CMS 400 data type.

If you have a conversion template filename, enter that and press [PGDN].

When the import is complete, the Import Database menu is redisplayed.



# Chapter 9

## Proxy Agent

---

### Introduction

CMS 400 provides direct access and management of many proprietary-protocol products, i.e., Milgo products. Management of these products can use a third party network management platform.

Some Milgo products are managed with a standard protocol. Using SNMP, a standard network management system can communicate with CMS 400, which uses Milgo proprietary protocols to access devices. CMS 400 becomes an SNMP proxy agent for Milgo products.

The Proxy Agent allows any SNMP management system to manage and control a CMS 400 and its managed network devices.

Typical of standalone SNMP devices, a MIB must be written to model the objects being managed with CMS 400. A CMS task is written to implement that MIB.

The proxy agent is used to control the units, EDMs, DDMs, alarms, setup parameters, and other items within the CMS 400 system database. When using a MIB, other open view network management platforms can obtain the same knowledge of the network topology.

Another use of the proxy agent is to control devices in the network. For each broad family of devices, a MIB is written.

First you must:

1. Allow the agent to be enabled or disabled.
2. Specify the kinds of events that are passed as TRAPs.
3. Define IP addresses of external SNMP network management platform and their privileges.

### Addressing An Excalibur DAP

When a network management platform uses CMS 400 to drive an Excalibur DAP, it must have some means to identify which DAP it is referring to.

Give each DAP a unique community name. The network management platform uses the IP address of CMS 400. The unique community name is used in the SNMP packet for identification.

If the network management platform sends a packet to CMS 400 with a community defined in the CMS community table (defined under the SNMP Control operation), the request is assumed to be for the CMS 400's own MIB. If the network management platform sends a packet with a community name matching a unit name, the request is proxied for that unit.

## Using SNMP Traps

Traps are system events such as alarms which are sent to the network management platform via SNMP TRAPs.

The CMS 400 event log handler is modified to send events to one or more specified network management platform using user-defined IP addresses and community names.

## CMS 400 Managing CMS 400

You can use a CMS 400 to drive other CMS 400s. This requires some changes to allow easy use of the proxy addressing scheme.

In particular, SNMP devices are currently polled using IP addresses and broadly-defined community names. This option enables SNMP to poll the target unit's name as the community name. The receiving CMS resolves the device's destination.

---

**Note:** The use of proxy agent for device control requires high no-reply time-outs on the SNMP network management platform.

---

## Initial MIBs Implemented

The MIB CMS400.ASN, models the CMS 400 itself, including elements of its database. Using this MIB, a network management platform accesses the units, channels, EDMs, DDMs, setup information, alarms, task table, and initiate system tasks.

The MIB EXCALDAP.ASN, models the Excalibur DAP family. Using this MIB, a network management platform can soft-strap an Excalibur, use its dial backup facilities, set aggregate and port speeds, read serial and part numbers, monitor interface signals and levels, and fetch the interval-based performance statistics.

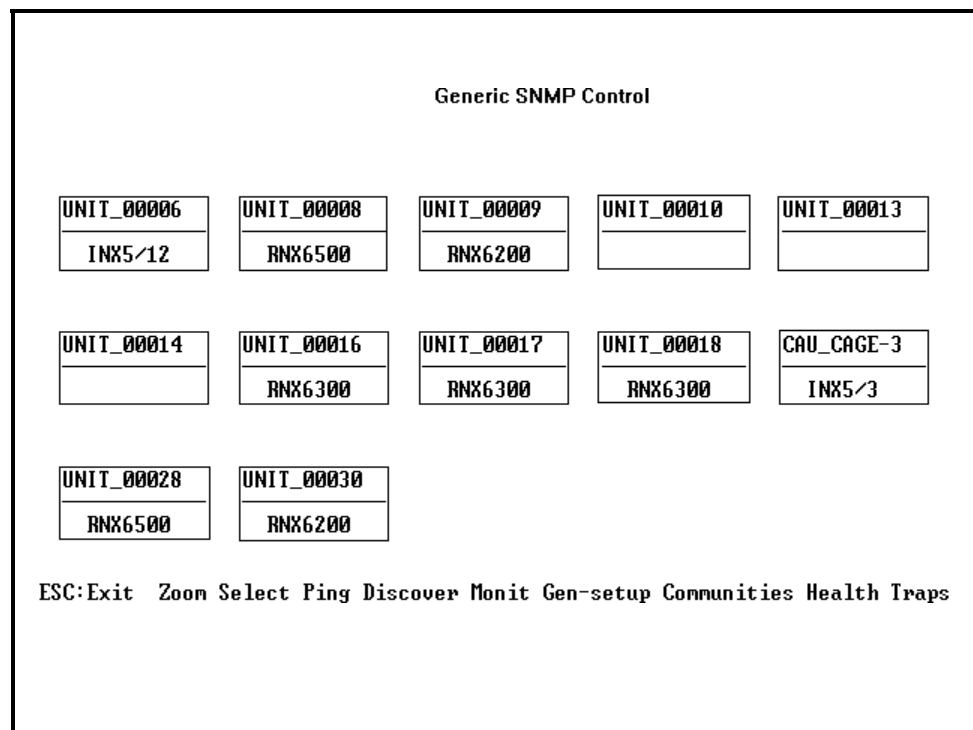
## Enabling the Proxy Agent

SNMP Proxy Agent allows an agent to be enabled.

To get the proxy agent up and running:

1. Choose LAN Control from the CMS 400 Main menu bar.
2. Select Generic SNMP Control.

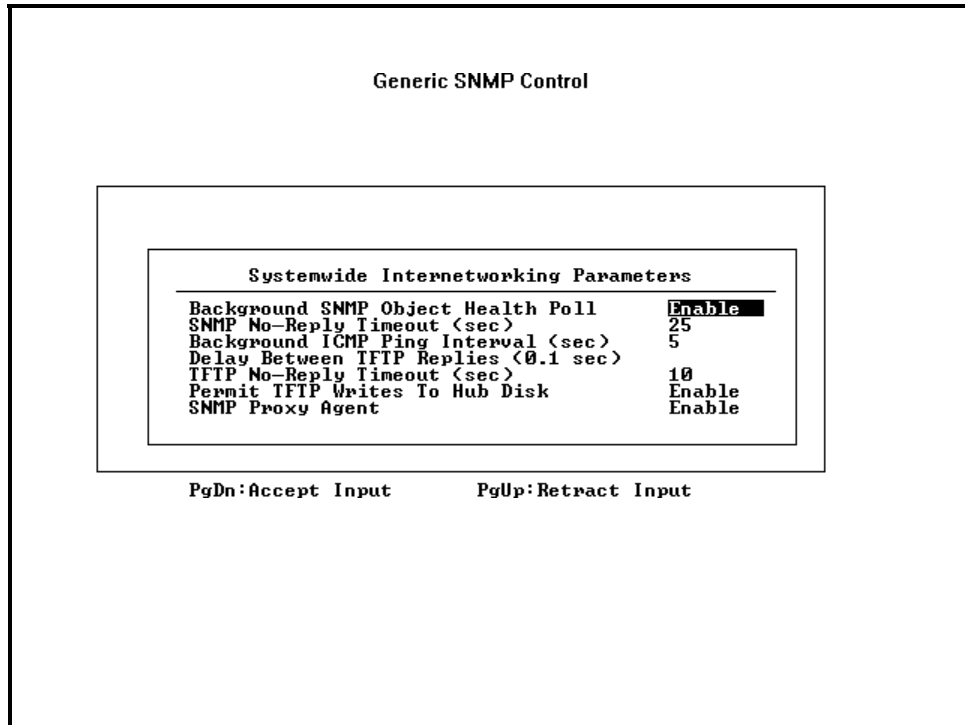
The generic SNMP control screen is displayed (refer to Figure 9-1).



**Figure 9-1. Generic SNMP Control Screen**

3. Select Gen setup [G].

The Systemwide Internetworking Parameters screen is displayed (refer to Figure 9-2).



**Figure 9-2. Systemwide Internetworking Parameters Screen**

4. Change the SNMP Proxy Agent prompt to Enable and press [PGDN].

The system displays the Proxy Agent Parameters screen (refer to Figure 9-3).

**Generic SNMP Control**

---

**Proxy Agent Parameters**

---

Community For Systemwide MIB:

Events NOT To Trap On:

Manager Address	R/W	Traps	User Name	Group Name
130.45.70.109	Yes	Yes	<input type="text"/>	<input type="text"/>
130.45.206.50	Yes	No		
130.45.70.14	Yes	Yes		
130.45.70.12	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		
	Yes	Yes		

PgDn:Accept Input      PgUp:Retract Input

**Figure 9-3. Proxy Agent Parameters Screen**

5. Enter the Community For Systemwide MIB.

This specifies the community name that a network management platform should use to access the CMS400.ASN objects for the entire system. If the field is blank, the default is **public**. The network management platform uses a network device's unique unit name as the community name, if device access is desired.

6. Enter the Events NOT To Trap On.

This accepts a series of event class/code numbers prohibited from being sent as SNMP traps to the network management platform. Entire event classes or specific class:code combinations may be entered, as in "3,4,5:13-15,7,8-9".

7. Enter the network management platform Address table.

This allows you to enter each network management platform entry bearing an IP address, read-write and trap privileges.

8. Enter the User Name.

The network management platform's device access is limited if that user name has a specified domain.

9. Enter the Group Name.

The network management platform's network device access is limited to units that belong to that group.

10. Press [PGDN].

The setup of the Proxy Agent is complete.

# Chapter 10

## Phantom Unit

---

### Introduction

The CMS 700 Control, Excalibur Dial Backup and EDRS Control applications allow one or more remote devices to be specified by unit name only, without validation of current channel association. When the backup procedure is terminated, remote units that originally had no central unit are returned to that state. Temporary T7 channel association established by the cross-channel dialing feature is cleared.

This functionality is reflected in the command line arguments for the application, assuring that scripts can take advantage of it.

### Establish Dial Backup on a CMS 700 Unit

To establish a dial backup on a CMS 700 Unit:

1. From the Main menu, select **Restoral**.
2. Select **CMS 700 Control** from the Restoral menu.
3. Select **Establish Dial Backup**.
4. Enter the name of the CMS 700 backup table you defined for this circuit. (You can press [TAB] to scroll through all defined tables.)
5. Press [PGDN]. The backup table appears.
6. Select **Y** to the option called: **X-Dial: Change Channel Of Downstream Units**.
7. Press [PGDN].

During dial backup, the current upstream unit and channel of each remote is saved in the unit record in the database to allow later dereferencing upon call termination.

### Discontinue Dial Backup on a CMS 700

To Discontinue the CMS 700 Dial Backup:

1. Repeat steps 1 through 2 from the Establish Dial Backup on a CMS 700 Unit procedures.

2. Select Discontinue Dial Backup.
3. Enter the name of the CMS 700 backup table you defined for this circuit. (You can press [TAB] to scroll through all defined tables.)
4. Press [PGDN].

The Discontinue Dial Backup form displays information about the central unit, CMS 700 unit, and up to sixteen remote units. The remote units may already be specified by unit name rather than T7 address. Any existing validation that requires such remote units to have a normal T7 channel association are removed.

5. Press [PGDN].

As each backup connection is terminated, the application consults the database unit record to see which upstream unit and channel to associate the remote unit with. If the remote had no upstream unit or channel prior to the dial backup, this state is restored.

### Script for CMS 700 Dial Backup

For scripting, the **DOW=Y** argument must be specified to allow cross-channel dialing. The remote(s) may be specified either by the **UNI=** keyword or the **MAP=Y** argument. Any existing validation that requires such remote units to have a normal T7 channel association is removed.

## Initiate Dial Backup on an Excalibur Unit

To establish a dial backup on a Excalibur Unit:

1. Select Excalibur Dial Backup from the Restoral menu.

The Select Unit By Criteria screen appears.

2. Enter information to specify the unit you want to control and press [PGDN].
3. Select **Initiate** Dial Backup from the Excalibur Dial Backup menu.

A form displays the central and remote units involved in the backup process. This form is modified to allow these units to be selected by unit name only, not just by T7 address and channel.

4. Select **Y** to the option called: Cross Dialing: Change Channel Of Downstream Units.
5. Press [PGDN].

During the dial backup, the current upstream unit and channel of the remote unit is saved in the unit record in the database to allow later dereferencing upon call termination.

### **Terminate Excalibur Dial Backup**

To terminate a dial backup:

1. Repeat steps 1 through 2 from the Initiate Excalibur Dial Backup procedures.
2. Select Terminate Dial Backup from the Excalibur Dial Backup menu.

The Terminate Dial Backup option consults the database unit record to see which upstream unit and channel to associate the remote with. If the remote had no upstream unit or channel prior to the dial backup, this state is restored.

### **Script for Excalibur Dial Backup**

For scripting, the keyword **UN2=** is now supported to allow the remote unit to be specified by unit name rather than T7 channel and address. Any existing validation that requires the remote unit to have a normal T7 channel association is removed.

## **Initiate Dial Backup on an EDRS**

To initiate a dial backup on an EDRS:

1. Select Excalibur DRS Control from the Restoral menu.

If more than one Chassis Controller is defined in the database, the Chassis Controller screen appears.

or

If only one Chassis Controller is defined, the Cage Control screen appears.

2. If the Chassis Controller screen is displayed, position the cursor on the system where the failure occurred and select **Zoom**.

The Cage Control screen appears.

3. Select Dial Backup Control.

A menu of options appears.

4. Select Initiate Dial Backup.

5. Enter the name of the EDRS backup table you defined for this circuit. (You can press [TAB] to scroll through all defined tables.)
6. Press [PGDN] and page 1 of the backup table appears.
7. At this point, verify whether the table entries are valid for the backup you are initiating and press [PGDN].

Page 2 of the backup table appears.

The system displays a multipart form for central DADs, the EDRS chassis controller, and up to sixteen remote units per DAD. The remote units may already be specified by unit name rather than T7 address. Any existing validation that requires such remote units to have a normal T7 channel association are removed.

8. If necessary, add or delete remote DAPs to be put into dial backup. Then press [PGDN].

Page 3 of the backup table appears.

9. If necessary, add or delete remote DAPs to be put into dial backup. Then press [PGDN].

The CMS 400 starts the dial restoral sequence. During this sequence, the Initiate Dial Backup screen is displayed. This screen continuously updates you on the progress of the dial backup.

During the dial backup, the current upstream unit and channel of each remote unit is saved in the unit record in the database to allow later dereferencing upon call termination.

### **Terminate Dial Backup on a EDRS**

To terminate a dial backup on an EDRS:

1. Repeat steps 1 through 3 from the Initiate Dial Backup EDRS procedures.
2. Select Terminate Dial Backup from the Select an Operation menu.

The system displays a multipart form for central DADs, the EDRS chassis controller, and up to sixteen remote units per DAD. The remote units may already be specified by unit name rather than T7 address. Any existing validation that requires such remote units to have a normal T7 channel association are removed.

As each backup connection is terminated, the application consults the database unit record to see which upstream unit and channel to associate the remote with. If the remote had no upstream unit or channel prior to the dial backup, this state is restored.

### **Script for EDRS Dial Backup**

For scripting, the existing mechanisms for remote unit specification is maintained: the **UNI=** keyword and the syntax of the file expected by the **FIL=** keyword. In both cases, the unit name (not the T7 address and channel) is specified. Any existing validation that requires such remote units to have a normal T7 channel association are removed.



# Appendix A

## Menu Structure and Command Line Abbreviations

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### General Information

Table A-1 lists the menu structure and the associated CMS 400 command line abbreviations.

**Table A-1. CMS 400 Application Menus and Command Line Abbreviations**

Menu	Command Line Abbreviations
<b>File Menu</b> Connect Hub... Disconnect Hub... Dial Up Hub... Hang Up Hub... Login... Logout Exit	<b>DIAL</b> <b>HANG</b> <b>LOGIN</b> <b>LOGOUT</b> <b>QUIT</b>
<b>View Menu</b> Toolbar Status Bar Command Line Operator /Alarm Bar(s) Status Message History... Clear Status	
<b>Commands</b> <b>Database Menu</b> CMS Component Map Network Map Auto-Learn Network Define Group Define Site Export Database Define SNMP MIB Define VDM Define Alarms Map Actions Define Series 300 Compress S300 Files Export S300 Files	<b>CMS_MAP</b> <b>NET_MAP</b> <b>AUT_LEA</b> <b>DEF_GRO</b> <b>DEF_SIT</b> <b>EXP_DAT</b> <b>DEF_MIB</b> <b>DEF_VDM</b> <b>DEF_ALA</b> <b>MAP_ACT</b> <b>300_DEF</b> <b>300_CMP</b> <b>300_EXP</b>

**Table A-1. CMS 400 Application Menus and Command Line Abbreviations**  
(Continued)

<b>Menu</b>	<b>Command Line Abbreviations</b>
<p><b>Commands</b>  <b>Monitor Menu</b>            Monitor EIA            Monitor EIA (SNMP)            Monitor Analog            Monitor Analog (SNMP)            Serial Number Scan            Monitor Multiplexer            Display Alarms            Request Alarms            Request Statistics            Request Statistics (SNMP)            ISX T1/E1-CSU Statistics (SNMP)            FastFrame Performance Manager            Series 300 Topology            Big Picture            Draw Network</p>	<p><b>MON_EIA</b>  <b>WMON_EIA</b>  <b>MON_ANA</b>  <b>WMON_ANA</b>  <b>SER_SCA</b>  <b>MON_MUX</b>  <b>DIS_ALA</b>  <b>REQ_ALA</b>  <b>REQ_STA</b>  <b>WREQ_STA</b>  <b>WCSU_STA</b>  <b>WPM1</b>  <b>300_TOP</b>  <b>BIG_PIC</b>  <b>DRA_NET</b></p>
<p><b>Commands</b>  <b>Test Menu</b>            Test Unit (SNMP)            Self Test            End-to-End Test            Loopback Unit            Loopback Test            Test Tone Unit            Multiplexer Diagnostics            Line Quality Analysis</p>	<p><b>WTES_UNI</b>  <b>SEL_TES</b>  <b>END_TES</b>  <b>LOO_UNI</b>  <b>LOO_TES</b>  <b>TES_TON</b>  <b>MUX_DIA</b>  <b>LQA</b></p>
<p><b>Commands</b>  <b>WAN Control Menu</b>            Control Unit (SNMP)            Return To Normal            Squelch Unit            Bit I/O Control            Call Unit            RMD3222/ALM Control            RMD1690 Control            RMTS Control            DCU Control            Initialize Unit</p>	<p><b>WCON_UNI</b>  <b>RET_NOR</b>  <b>SQU_UNI</b>  <b>BIT_CON</b>  <b>CAL_UNI</b>  <b>322_CON</b>  <b>RMD1690</b>  <b>RMT_CON</b>  <b>DCU_CON</b>  <b>INI_UNI</b></p>

**Table A-1. CMS 400 Application Menus and Command Line Abbreviations**  
(Continued)

Menu	Command Line Abbreviations
<p><b>Commands</b>  <b>WAN Control Menu (Cont'd)</b>  Speed Control  Speed Control (SNMP)  Series 300 Console  Omnimux 8000 Console  ISX5010/ISX5005 Control  DAP 4x00 ISDN TA Control  BRI2000 ISDN TA Control  Excalibur Chassis  Excalibur Front Panel  Excalibur Front Panel (SNMP)  Excal/ISX T1 CSU Control  Excalibur NAR  MD332/334 Control  DAP MS20 Control  FastFrame Control  DAP-FR Control  SNMP ISX T1/E1-CSU Control  DAP Control (SNMP)</p>	<p><b>SPE_CON</b>  <b>WSPE_CON</b>  <b>300_CON</b>  <b>OM8000</b>  <b>ACC_MUX</b>  <b>DAP4000</b>  <b>BRI2000</b>  <b>EXC_CHA</b>  <b>EXC_PAN</b>  <b>WEXC_PAN</b>  <b>CSU_CON</b>  <b>ENAR</b>  <b>MD332</b>  <b>MS20</b>  <b>WEAN6600</b>  <b>WEAN6600</b>  <b>WISX5300</b>  <b>WDAP_CON</b></p>
<p><b>Commands</b>  <b>LAN Control Menu</b>  Generic SNMP Control  SNMP Top-16 Monitor  INX5000 Hub Control  INX NTS Control  INX T-Ring CAU Control  INX Managed Repeater  INX4000 Bridge Control  RNX6x00 Bridge/Routers  RNX6300 User Console  PremNet Control  PremNet SNMP Control  EAN 2000 Control  Wellfleet Control  InterLanLink Stackable Hub</p>	<p><b>SNM_CON</b>  <b>SNM_MON</b>  <b>INX5000</b>  <b>INX_NTS</b>  <b>INX_CAU</b>  <b>INX_MGR</b>  <b>INX4000</b>  <b>RNX6x00</b>  <b>RNX_CON</b>  <b>PREMNET</b>  <b>WPREMNET</b>  <b>EAN_CON</b>  <b>WEL_CON</b>  <b>STK_HUB</b></p>

**Table A-1. CMS 400 Application Menus and Command Line Abbreviations**  
(Continued)

Menu	Command Line Abbreviations
<p><b>Commands</b>  <b>Configuration Menu</b>                      Define Strap Table                      Strap Unit                      Set Thresholds                      Set Thresholds (SNMP)                      SNMP DAP Configuration                      FastFrame Configuration                      DAP-FR Configuration                      SNMP ISX T1/E1-CSU Configuration</p>	<p><b>DEF_STR</b>  <b>STR_UNI</b>  <b>SET_THR</b>  <b>WSET_THR</b>  <b>WSTR_DAP</b>  <b>WSTR_EAN</b>  <b>WSTR_EAN</b>  <b>WSTR_ISX</b></p>
<p><b>Commands</b>  <b>Restoral Menu</b>                      Dial Backup Control                      CMS 700 Control                      Excalibur Dial Backup                      Excalibur Dial Backup (SNMP)                      Delta Plus Dial Backup                      Excalibur DRS Control                      Alpha IV Dial Backup</p>	<p><b>DBU_CON</b>  <b>700_CON</b>  <b>EXC_DBU</b>  <b>WEXC_DBU</b>  <b>DEL_DBU</b>  <b>DRS_CON</b>  <b>ALPHA</b></p>
<p><b>Commands</b>  <b>Automation Menu</b>                      Define Script                      Schedule Activity</p>	<p><b>DEF_SCR</b>  <b>SCH_ACT</b></p>
<p><b>Commands</b>  <b>Report Menu</b>                      Equipment Report                      Topology Report                      Event Report                      Site Report                      Channel Report                      File Report                      Display Results                      Series 300 Reports                      Dial Statistics</p>	<p><b>EQU_REP</b>  <b>TOP_REP</b>  <b>EVT_REP</b>  <b>SIT_REP</b>  <b>CHA_REP</b>  <b>FIL_REP</b>  <b>DIS_RES</b>  <b>300_BAR</b>  <b>DIA_STA</b></p>

**Table A-1. CMS 400 Application Menus and Command Line Abbreviations**  
(Continued)

Menu	Command Line Abbreviations
<b>Commands</b> <b>Administration Menu</b> System Statistics Define Users Dial EDM Unit EDM Status Monitor Users VT220 Emulation TELNET Terminal File Services Trivial File Transfer Ping	SYS_STA DEF_USE DIA_EDM EDM_STA MON_USE VT220 TELNET FIL_SER TFTP PING
<b>Commands</b> <b>Workstation Menu</b> Login Logout Modify Password Chat With A User Mail Facility Alert Stations	LOGIN LOGOUT MOD_PAS CHAT MAIL ALERT
<b>Commands</b> <b>Applications Menu</b> Trouble Ticket Plus Define SNMP Applications Custom SNMP Applications	TIC_MEN DEF_APP SNM_APP
<b>Options Menu</b> Toolbar... System Settings... Reconfigure Hub...	
<b>Help Menu</b> Index Using Help About CMS 400...	

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**Note:** Menu selections with (SNMP) in parentheses are using the SNMP management applications.

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# Appendix B

## Alarm Code Diagnostics

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**Table B-1. Alarm Code Diagnostics**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<b>A12</b>	The modem has changed speed to 12 Kbps.	Line conditions are in transition. Monitor Analog may confirm line quality.
<b>A14</b>	The modem has changed speed to 14.4 Kbps.	Line conditions are in transition. Monitor Analog may confirm line quality.
<b>A16</b>	The modem has changed speed to 16.8 Kbps.	Line conditions are in transition. Monitor Analog may confirm line quality.
<b>A96</b>	The modem has changed speed to 9600 bps.	Line conditions are in transition. Monitor Analog may confirm line quality.
<b>ABI</b> (Automatic Backup Initiated)	An originating unit has determined the need for dial back-up through preconfigured settings, and has started a dial backup operation with its preconfigured primary target unit. The primary target (answering) unit generates an ABI mayday upon the successful establishment of the dial backup connection. This mayday is only generated as a result of automatic dial backup operations.	No corrective action needed.
<b>ABF</b> (Automatic Backup Initiated Failure)	An originating unit has been unable to successfully establish an automatic dial backup after the preconfigured number of retries. Answering units never generate this mayday.	No corrective action needed.

**Table B-1. Alarm Code Diagnostics (Continued)**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<b>ALT</b> (Alternate Line)	This indicates that an entire T1 line is lost and an alternate (new) T1 line has been selected. The existing T1 line went down and the ISX 5300 device automatically switched to an other T1 line.	Investigate why the T1 line went down. Check the connections of the T1 line. If the problem still exists, contact site personnel.
<b>AOK</b> (Normal Operation)	Reported when a unit has been restored to normal operation from a test or busy-out condition (RMD 1690 cards in particular).	No corrective action needed.
<b>AON</b> (Access On)	The network access is on.	No corrective action needed.
<b>ASC</b> (Auto Speed Change)	The modem automatically changes speeds when the quality of the line conditions are changed.	No corrective action needed.
<b>ASP</b> (Anti-Streaming Stopped Mayday)	If the Automatic Anti-Streaming option is chosen when configuring your CMS DSU RD, streaming conditions are detected and the unit is disabled. The ASP alarm indicates when the streaming condition has ceased and the unit is enabled.	No corrective action needed.
<b>AST</b> (Anti-Streaming Started Mayday)	If the Automatic Anti-Streaming option is chosen when configuring your CMS DSU RD, streaming conditions are detected. The AST alarm indicates that the streaming condition exists and that the unit is disabled.	Contact site personnel to distinguish the cause of the streaming condition.
<b>BAN</b> (Bandwidth Change)	This is a notification of when the DTE bandwidth changes. This also includes changing the number of DS0's, the DS0 rate (56K/64K), or T7 mode (N+8K or 8K).	No corrective action needed.
<b>BLU</b> (Mux 800 FT1 Blue alarm)	An Omnimax 800 FT1 blue link condition exists.	Check the primary T1 link and db level. If the problem still exists, contact site personnel.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>BPV</b> (Bipolar Violations)	Bipolar violations were detected on the link.	Check the primary T1 link and db level. If the problem still exists, contact site personnel.
<b>BUS</b> (BUS Down)	This alarm is generated by an overflow of a selected BUS, and the BUS is not operational. The DAP cannot lock on to the BUS framing signal.	Check the BUS framing signal. If the problem still exists, contact site personnel.
<b>CAL</b> (Call Message)	An operator at a remote site has sent a numeric message to the controller site. The significance of the numeric value is user-determined.	No corrective action needed.
<b>CCC</b> (Cage Contents Change)	An operator added a new card, or an existing card went bad.	Run EDRS function to pin point whether a card was added or went bad. If an existing card went bad, contact site personnel.
<b>CKO</b> (Clock Tolerance)	The ISX 5300 generates a Clock Tolerance Failed alarm when it detects the T-1 Transmit Clock is out of the user-specified tolerance range. The unit has internally changed its clock source to one in the user-selectable priority fallback clock list. When a higher priority clock recovers, the unit does not switch to that timing source.	The higher priority clock source must be selected manually from the T7 or SNMP manager's console or from the ISX 5300's front panel. Reset the clock tolerance or call site personnel.
<b>CLK</b> (Reference Clock Change)	The unit's primary transmit clock reference has failed and the unit has changed its clock source to one of the fallback clock sources.	The primary circuit has failed. Investigate cause of failure.
<b>CNF</b> (Configuration Modification)	The configuration of the Omnimax unit has been changed from the front panel.	Check the unit's configuration by using the Strap Unit function.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>COF</b> (Call Out Fail)	A call out has failed or a call attempt failed.	Check for proper configuration via the CMS 400 strap function. If the configuration is set properly and the lines are OK, contact site personnel. If the ISDN lines are bad contact the telephone company.
<b>CON</b> (Connect)	A call is connected on a port.	No corrective action needed.
<b>CPU</b> (Cage Power Up)	An operator powered up the cage, or there was a loss of power to the cage.	Run Request Alarms function to pin point cage. If cage is on, no action needed. If cage remains off, check cords and breakers. If problem persists, contact site personnel.
<b>CSL</b> (Controlled Slip)	The unit has detected a deletion or a replication of a DS1 frame.	Indicates a possible timing problem causing link errors. Investigate source of network timing.
<b>DBF</b> (Dial Backup Failed)	The unit has determined that a previously-established dial connection has failed.	No corrective action needed.
<b>DBR</b> (Dial Backup Released)	The unit has determined that the dedicated lines have been restored, through preconfigured settings, and has terminated a dial backup which had previously been established.	No corrective action needed.
<b>DIA</b> (Diagnostics)	Performed diagnostics from the front panel of an Omnimax unit.	No corrective action needed.
<b>DIS</b> (Call Disconnected)	A call was disconnected on a port due to a network problem.	No corrective action needed.
<b>DLE</b> (Data Link Error)	The configuration parameters of a device are incorrect.	The operator must verify the configuration parameters. If the problem still exists, contact site personnel.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>DLF</b> (Dial Line Failed)	The ISDN DBR has detected that the signal from the phone line has been lost. This occurs while the unit is on the dedicated line.	The dedicated line has failed. Investigate cause of failure. If the problem still exists, contact site personnel.
<b>DNR</b> (Dedicated Line Not Restored)	The Sending modem reports unsuccessful attempt to restore dedicated line from dial backup.	Report the line failure to the telephone company.
<b>DPF</b> (Digit Power Fail)	A terminal has been turn off or the attached digital device has been turned off. The user may have turned the power off to go home for the day.	If the particular device is supposed to always be on, investigate why it is off. Check power cord connections. If the problem still exists, contact site personnel.
<b>DPW</b> (DTE Power Fail)	The device connected to the port has lost power or the DTE is not receiving power.	Check for proper connections of power cords of the device. If problem still exists, contact site personnel.
<b>DRF</b> (Receive Loop Fault)	The CMS DSU 1500 is not receiving a signal or correct framing pattern due to local loop or network failure.	Activate the Return To Normal function. If problem still exists, contact site personnel.
<b>DRO</b> (Drop Unit)	Generated by a central unit which failed to poll a downstream remote unit.	Make sure all drops are defined. If problem still exists, contact site personnel.
<b>DTE</b> (Data Terminal Equipment Power Failure)	Reporting unit indicates presence, absence, or change of a valid EIA level at the DTE interface.	Contact site personnel.
<b>DTF</b> (Transmit Loop Fault)	A central CMS DSU 1500 reports loss of framing on the transmit loop of remote and vice versa.	Activate the Return To Normal function. If problem still exists, contact site personnel.
<b>ECA</b> (Link A Echo)	Data is being looped-back into Link A of a dual aggregate Omnimux unit.	Check aggregate Link A by using the Strap Unit function. Also, check that diagnostics are not being run from the front panel of the Mux.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>ECB</b> (Link B Echo)	Data is being looped-back into Link B of a dual aggregate Omnimux unit.	Check aggregate Link B by using the Strap Unit function. Also, check that diagnostics are not being run from the front panel of the Mux.
<b>EKO</b> (Link Echo)	Data is being looped-back into the single aggregate link of an Omnimux unit.	Check the aggregate link by using the Strap Unit or Monitor Multi-plexer function. Also, check that diagnostics are not being run from the front panel of the Mux.
<b>ELF</b> (Event Nearly Full)	The event log file is reaching full capacity.	Delete old events from the event log file. Also, check that the files are purged after a length of time.
<b>ELO</b> (Event Log Overflow)	The event log files are past full capacity over flowing.	Delete old events from the event log file. Also, check that the files are purged after a length of time.
<b>EXT</b> (External Alarm)	EIA interface pin 13 has received a ground 0 or +5V depending on the modem type. For a CMS DSU, external contact change of state is detected on Connector SJ20.	Data communications are not affected. Contact site personnel.
<b>FAT</b> (Pattern Not aligned)	The DCE pattern is not correctly aligned. This happens if you are doing a backup of a DCE plus equipment.	Use the History-Poll for DCE Plus Event command to verify cause of alarm. Check configuration parameters of the DCE plus. If the problem still exists, contact site personnel.
<b>FOF</b> (Fan Off)	The fan went off. An operator could have powered off the cage, or a fan went bad.	Run Request Alarms function to pin point which cage the fan is in. No corrective action needed if fan is working. If fan does not go on, contact site personnel.
<b>FON</b> (Fan On)	The fan came on. An operator could have powered up the cage, or a fan is going bad.	Run Request Alarms function to pin point which cage the fan is in. No corrective action needed if fan is working. If fan does not stay on, contact site personnel.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>FOR</b> (Foreign Device)	This alarm is caused by a non manageable or another venders device.	Check with the proper vender for equipment problems.
<b>GBL</b> (Garbled Mayday)	Alarms are occurring simultaneously on the same channel.	Initiate the Request Alarms function on the channel's units to determine the cause of the alarms.
<b>HOT</b> (Hot Spare)	This indicates that a T1 line is lost and an alternate T1 line has been selected. The existing T1 line went down and the ISX 5300 device automatically switched to another T1 line.	Investigate why the T1 line went down. Check the connections of the T1 line. If the problem still exists, contact site personnel.
<b>IBO</b> (Input Buffer Overflow)	For an asynchronous port on an Omnimax unit, data is being received faster than it can be processed.	Initiate the Flow Control parameter by using the Strap Unit function.
<b>ICD</b> (Call Detected)	An incoming call is detected.	No corrective action needed.
<b>ICR</b> (Call Rejected)	An incoming call is rejected. A call attempt was rejected by the answering unit on a port.	Check for proper configuration via the CMS strap function. If the configuration was set properly and the lines are OK contact site personnel. If the ISDN lines are bad contact the telephone company.
<b>ILC</b> (Illegal Configuration)	The configuration loaded to the Omnimax TDM over-books it. Loading a Link A speed that is not valid for that Omnimax unit or if the sum of port speeds exceeds the effective link bandwidth.	The sum of the port speeds must be less than the effective link speed. Check port speeds and reconfigure them.
<b>INT</b> (Internal)	Delta Plus reports an internal event such as dial completion.	Depending on your configuration, the alarm may be different. Refer to the Request Alarms function for an accurate description of your alarm.

**Table B-1. Alarm Code Diagnostics (Continued)**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<b>IRN</b> (ISDN Service Return)	The ISDN service has returned to normal.	No corrective action needed.
<b>ISF</b> (ISDN Service Fail)	ISDN service has failed.	Call the telephone company.
<b>LCM</b> (Loss of Communication)	Reporting unit no longer responds to the scan by the EDM.	This is an alert message from the system. Activate the Status Monitor function for the channel status.
<b>LCR</b> (Lost Communication Remote)	<p>An Excalibur central unit, when configured for multipoint-multidrop operation, regularly polls remote units on its tier. The phase 3 DAP / DAD / DAPLET now reports alarms to CMS when multipoint-multidrop communication to a remote unit is lost or regained. These alarms can be used to trigger automated network restoration, and include the unit number right in the alarm message to allow CMS to make quick decisions.</p> <p>A programmable timer is provided for the Lost Communication alarm which allows you to determine the time the remote is out of service before for the central unit reports the alarm.</p> <p><i>Note: The communication lost / regained alarms are not the same as the unit added / unit dropped alarms that are reported during the automatic tier configuration learning process.</i></p> <p>New alarms are generated regardless of whether the poll table is configured or fixed.</p>	No corrective action needed. If problem continues to exist, contact site personnel.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>LDN</b> (Link Down)	A link down condition occurred on the monitor data-com link.	Check host and remote line conditions. Also, check cable connections. No corrective action is needed if link goes up. If problem persists, contact site personnel.
<b>LDU</b> (Link Up)	A link down condition occurred on the monitor data-com link followed by a line up condition.	No corrective action needed. If problem persists, contact site personnel.
<b>LIB</b> (Line Impairment Bursts)	An Omnimode unit's Line Impairment level exceeds the level defined in the database.	Activate the Monitor Analog function to display the actual Line Hit Level and to verify the problem. Call the telephone company if a line problem exists.
<b>LKD</b> (Link Down)	The ISDN line or link went down.	Make sure the ISDN line is connected to the unit. If the line is connected properly, it may be a faulty unit or a bad ISDN line. Contact site personnel if it is a faulty unit or contact the telephone company if the lines are bad.
<b>LKU</b> (Link Up)	The ISDN line came up.	No corrective action needed.
<b>LLL</b> (Local Line Loopback)	The central device reports this alarm to indicate a line loopback (AT&T loop) condition and again when the test is terminated.	Network is unavailable until test is completed.
<b>LOS</b> (Loss of Signal)	The T1 CSU unit has detected a loss of signal.	The T1 line is down. Check line connections to the T1 CSU and contact the network provider.
<b>LOS</b> (Loss of Synchronization)	A LMS (Loop Modem Series) unit reports that it has lost sync with the controller.	Bypass the unit by using the front panel controls.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>MAJ</b> (Major PremNet Alarm)	A major alarm within the PremNet unit has occurred.	If problem continues, contact site personnel.
<b>MIN</b> (Minor PremNet Alarm)	A minor alarm within the PremNet unit has occurred.	If problem continues, contact site personnel.
<b>MIR</b> (Rx Pulses Fault)	The DCE Rx Pulses had a Fault. This happens if you are doing a backup of a DCE plus equipment.	Use the History-Poll for DCE Plus Event command to verify cause of alarm. Check configuration parameters of the DCE plus. If the problem still exists, contact site personnel.
<b>MFR</b> (Multiport Frame Recognition)	Loss of multiport frame recognition detected.	Check all remote units for a loss of multiport framing. If the problem still exists, contact site personnel.
<b>MPF</b> (Modem Power Failure)	An upstream modem reports a power failure of a downstream modem.	Activate the Monitor EIA function on the unit that does not respond.
<b>MRE</b> (Mux Reinitialize)	Main channel data has been disrupted by the reinitialization of the Omnimux unit.	No corrective action needed.
<b>NAK</b> (Negative Acknowledgment)	A retransmission occurred. A particular transmission was not acknowledged and had to be retransmitted.	Check host and remote location. If problem persists, contact site personnel.
<b>NDI</b> (Net Diagnostic Initialize)	A Network diagnostic has started on an ISDN channel.	No corrective action needed.
<b>NLP</b> (Network Line Loopback Stopped)	The network initiated a loopback and has been released by the network provider.	Contact site personnel to confirm that they are aware of the fact that the network provider is testing the lines.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>NLS</b> (Network Line Loopback Started)	A network line loopback has been initiated by the network provider.	Contact site personnel to confirm that they are aware of the fact that the network provider is testing the lines.
<b>NOA</b> (No Access)	Access is not available at this time.	Contact site personnel to confirm that they are aware of the fact that you cannot get access to the network.
<b>NPP</b> (Network Payload Loopback Stopped)	The network initiated a payload loopback and has been released by the network provider.	Contact site personnel to confirm that they are aware of the fact that the network provider is testing the lines.
<b>NPS</b> (Network Payload Loopback Started)	A network payload loopback has been started by the network provider.	Contact site personnel to confirm that they are aware of the fact that the network provider is testing the lines.
<b>OCD</b> (Out Call Detect)	An outside call has been detected.	No corrective action needed.
<b>OOS</b> (Out of Service)	A failure within the higher order facilities of the DDS network has occurred.	Call the telephone company.
<b>OPA</b> (Link A Open)	Data is not being transmitted parameters over Link A of a dual-aggregate Omnimax unit.	Check the Link A parameters and the integral modem parameters by using the Strap Unit or Monitor Multiplexer function. Also, check that diagnostics are not being run from the front panel of the Omnimax unit.
<b>OPB</b> (Link B Open)	Data is not being transmitted over Link B of a dual-aggregate Omnimax unit.	Check the Link B and the integral modem parameters by using the Strap Unit or Monitor Multiplexer function. Also, check that diagnostics are not being run from the front panel of the Omnimax unit.

**Table B-1. Alarm Code Diagnostics (Continued)**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<b>OPE</b> (Link Open)	Data is not being transmitted across the aggregate link of a single-aggregate Omnimax unit.	Check the aggregate link and integral modem parameters by using the Strap Unit or Monitor Multiplexer function. Also, check that diagnostics are not being run from the front panel of the Omnimax unit.
<b>OVR</b> (Over Threshold)	An over threshold transaction occurred. The transaction exceeded the thresholds for a particular line.	Check interference or traffic on the line. If problem persists, increase the threshold value set for the particular line. If the problem still exists, contact site personnel.
<b>PDO</b> (Primary DCD Off)	Remote Modem Transfer Switch (RMTS) reports DCD (Data Carrier Detect) failure of an off-line primary modem.	Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, contact site personnel.
<b>PE1</b> (Series 300 1)	A first-class Series 300 alarm was reported.	Depending on your configuration the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>PE2</b> (Series 300 2)	A second-class Series 300 alarm was reported.	Depending on your configuration, the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>PE3</b> (Series 300 3)	A third-class Series 300 alarm was reported.	Depending on your configuration, the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>PE4</b> (Series 300 4)	A fourth-class Series 300 alarm was reported.	Depending on your configuration, the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>PJL</b> (Phase Jitter Level)	An Omnimode unit's Phase Jitter Level exceeds the level defined in the database.	Activate the Monitor Analog function to display the Phase Jitter Level and to verify the problem. Call the telephone company if a line problem exists.
<b>POF</b> (Power Supply Off)	The cage was powered off, or lost power while running.	Run the Request Alarms function to pin point which cage lost power. No corrective action needed if power is on. If power is not on, contact site personnel.
<b>PON</b> (Power Supply On)	The cage was powered up for the first time.	No corrective action needed if power is on. If power is not on, contact site personnel.
<b>PPF</b> (Primary Power Failure)	RMTS reports the primary modem has lost power.	RMTS switches to the spare modem. Investigate the power failure.
<b>PTO</b> (Poll Time Out)	A poll time out has occurred. The High Speed Analysis (HSA) did not respond to the poll requested within the defaulted answer time.	Check ASA card power and cable connections. If the problem still exists, contact site personnel.
<b>RCI</b> (Receive Channel Idle)	The CMS DSU 1500 reports DCD (Data Carrier Detect) OFF for a time longer than the default duration strapped by the unit.	Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, contact site personnel.
<b>RCM</b> (Regained Communication)	Reporting unit indicates regained communication with EDM. As a result of background polling, refer to LCM.	This is an alert message from the system informing you that there is T7 communication with the report-ing unit. No action is required.

**Table B-1. Alarm Code Diagnostics (Continued)**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<p><b>RCR</b> (Regn Communi- cation Remote)</p>	<p>An Excalibur central unit, when configured for multipoint-multidrop operation, regularly polls remote units on its tier. The phase 3 DAP / DAD / DAPLET now reports alarms to CMS when multipoint-multidrop communication to a remote unit is lost or regained. These alarms can be used to trigger automated network restoral, and include the unit number right in the alarm message to allow CMS to make quick decisions.</p> <p>A programmable timer is provided for the Lost Communication alarm which allows you to determine the time the remote is out of service before for the central unit reports the alarm.</p> <p><i>Note: The communication lost / regained alarms are not the same as the unit added / unit dropped alarms that are reported during the automatic tier configuration learning process.</i></p> <p>New alarms are generated regardless of whether the poll table is configured or fixed.</p>	<p>No corrective action needed. If problem continues to exists, contact site personnel.</p>
<p><b>RCS</b> (Receive Channel Streaming)</p>	<p>CMS DSU 1500 reports that DCD has been ON for a period of time longer than the default duration strapped by the unit.</p>	<p>Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, contact site personnel.</p>
<p><b>RED</b> (Omnimux 800 FT1 Red alarm)</p>	<p>An Omnimux 800 FT1 red link condition exists.</p>	<p>Check the primary T1 link and db level. If the problem still exists, contact site personnel.</p>

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>RFS</b> (Network Down)	The network is down. This happens if you are doing a backup of a DCE plus equipment.	Use the History-Poll for DCE Plus Event command to verify cause of alarm. Check configuration parameters of the DCE plus. If the problem still exists, contact site personnel.
<b>RLF</b> (Receive Line Failure)	Reporting unit has lost DCD signal for approximately three seconds. In some strapping applications, RTS has been off for three seconds.	Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, activate the Monitor EIA function to locate faults on the channel. Establish dial backup using the Dial Backup Control or CMS 700 Control for problem unit(s).
<b>RMC</b> (Remote Modem Control)	This information message is generated by the unit to inform the controller of the status of a test that was generated by RMC.	No corrective action needed.
<b>RN1</b> (Racalan NetExpress 1)	A first-class Racalan NetExpress alarm was reported.	Depending on your configuration, the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>RN2</b> (Racalan NetExpress 2)	A second-class Racalan NetExpress alarm was reported.	Depending on your configuration, the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>RST</b> (System Reset)	The system has been reset.	No corrective action needed.

**Table B-1. Alarm Code Diagnostics (Continued)**

Alarm Code	Cause Of Alarm	Confirmative/Corrective Action
<b>RTA</b> (Retransmission Thresholds Exceeded Link A)	The retransmission threshold of Link A has been exceeded.	Perform a check on aggregate Link A to verify data for transmission.
<b>RTB</b> (Retransmission Thresholds Exceeded Link B)	The retransmission threshold of Link B has been exceeded.	Perform a check on aggregate Link B to verify data for transmission.
<b>RTE</b> (Retransmission Threshold Exceeded)	The Retransmission Threshold of an Omnimax unit is exceeded. (Maximum - 255 Thresholds)	Perform a check on aggregate link to verify data transmission.
<b>RXA</b> (Receive Level, Link A)	Link A of an integral modem for an Omnimax unit reports Receive Level exceeding upper or lower thresholds set in the unit.	Verify the parameters and condition of the link.
<b>RXB</b> (Receive Level, Link B)	Link B of an integral modem for an Omnimax unit reports Receive Level exceeding upper or lower thresholds set in the unit.	Verify the parameters and condition of the link.
<b>RXL</b> (Receive Level)	Unit reports Receive Level exceeding upper or lower thresholds set in the unit.	<p>Activate the Monitor Analog function to display actual receive levels and to verify the problem. Run the Self-Test function on the reporting unit to ensure that it is working properly. Call the telephone company if a line problem exists.</p> <p><i>Note: Data Carrier Detect (DCD) must be set high at the unit being monitored to receive valid Receive Levels.</i></p>
<b>SDO</b> (Spare DCD OFF)	RMTS reports DCD failure of an off-line spare modem.	Activate Return To Normal function. If the problem still exists, contact site personnel.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>SEC</b> (Errored Seconds)	One or more CRC, out of frame, or controlled slip errors have been detected in a one second interval.	Check T1 line quality and levels, code format, and legitimate timing source.
<b>SFA</b> (Security Failure Alarm)	An alarming central unit's downstream unit is resetting its dial backup status, or an alarming remote unit's alarm handler is trying to re-link to the dial backup.	The CMS 400 automatically resets the alarming unit's dial backup status so that Network Map will no longer display the blinking yellow arrows on that unit.
<b>SNL</b> (Signal-to-Noise Level)	An Omnimode unit's Signal-to-Noise level exceeds the level defined in the database.	Activate the Monitor Analog function to display the Signal-to-Noise level and to verify the problem. Call the telephone company if a line problem exists.
<b>SPD</b> (Invalid SPID)	The SPID is invalid. The SPID value sent to the network is incorrect.	Verify the identification of the SPID. Make sure you send the correct SPID value.
<b>SPF</b> (Spare Power Failure)	RMTS reports that the spare modem has lost power.	RMTS switches to the primary modem. Investigate the power failure.
<b>SRD</b> (Secondary Receive Data)	Modem reports that the spare modem has received data.	No corrective action needed.
<b>SRQ</b> (Service Request)	The LMS modem has completed the execution of a block command or the modem requires service from the controller.	No corrective action needed.
<b>SQA</b> (Signal Quality Level, Link A)	Link A of an integral modem for an Omnimux unit reports that the Signal Quality Level set in the unit has been exceeded.	Verify the parameters and the condition of the link.
<b>SQB</b> (Signal Quality Level, Link B)	Link B of an integral modem for an Omnimux unit reports that the Signal Quality Level set in the unit has been exceeded.	Verify the parameters and the condition of the link.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>SQL</b> (Signal Quality Level)	A unit reports that the Signal Quality Level set within the unit has been exceeded.	Activate the End-to-End Test function and then the Self-Test function on the reporting unit. Call the telephone company if a line problem exists.
<b>STR</b> (Streaming)	<p>If reported by a remote unit in a multidrop network, the system indicates that RTS of the reporting unit is on in excess of the strap-selected timeout (usually 15 seconds).</p> <p>If reported by a central unit in a multidrop network, indicates that DCD of the reporting unit is on in excess of the strap-selected timeout (usually 43 seconds).</p>	Disable the unit by using the Squelch Unit function.
<b>SVC</b> (Service)	A channel time-out occurred.	Verify the channel is still operational. If the problem still exists, contact site personnel.
<b>SYS</b> (System)	An HSA alarm has occurred. The HSA card has either been reset or reconfigured.	Look at error code and take appropriate action. 0 = reset, 2 = program checksum and 12 = alarm buffer overflow. If the problem persists, contact site personnel.
<b>T1A</b> (Omnimux 8000 System)	An Omnimux 8000 System class alarm was reported.	Depending on your configuration the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>T1B</b> (Omnimux 8000 Major)	An Omnimux 8000 Major class alarm was reported.	Depending on your configuration the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>T1C</b> (Omnimux 8000 Minor)	An Omnimux 8000 Minor class alarm was reported.	Depending on your configuration the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>T1D</b> (Omnimux 8000 Status)	An Omnimux 8000 Status class alarm was reported.	Depending on your configuration the alarm may be different. Refer to the text parameters in your Display Alarms function for an accurate description of your alarm.
<b>TCI</b> (Transmit Channel Idle)	The CMS DSU 1500 reports that RTS has been OFF for a time period longer than the default duration strapped by the unit.	Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, contact site personnel.
<b>TCS</b> (Transmit Channel Streaming)	The CMS DSU 1500 reports that RTS has been ON for a time period longer than the default duration strapped by the unit.	Activate the Return To Normal function to perform an alarm-bit reset. If the problem still exists, contact site personnel.
<b>TIM</b> (Timeout Exceeded)	Reported when a unit timeout, such as a RMD1690 card busy-out limit timer, has been exceeded.	Return card to normal or leave in current state.
<b>TLF</b> (Terminal Loop Fault)	An LMS subloop modem reports a communication fault in the subloop.	Bypass unit using front panel controls.
<b>TXL</b> (Transmit Level)	Unit reports that Transmit Level exceeds upper or lower thresholds set in the unit.	Activate the Monitor Analog function to display actual transmit levels and to verify the problem. Activate the Self-Test function on the reporting unit to see if it is working properly. Call the telephone company if a line problem exists.  <i>Note: Request-To-Send (RTS) must be high at the modem being monitored for valid transmit level (TXL) readings.</i>

**Table B-1. Alarm Code Diagnostics (Continued)**

<b>Alarm Code</b>	<b>Cause Of Alarm</b>	<b>Confirmative/Corrective Action</b>
<b>YEL</b> (Omnimux 800 FT1 Yellow Alarm)	An Omnimux 800 FT1 Yellow link condition exists.	Check the primary T1 link and db level. If the problem still exists, contact site personnel.

# Appendix C

## Unit Types

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### Description

Appendix C lists the possible unit types referenced in Modify Unit in Network Map. The following are explicit names used to bring up the products.

To select unit types you can:

- Enter the first few letters of the explicit product name and then use the (\*) wildcard.
- Press [TAB] while in the Unit Type field.
- Click on the down arrow on the right side of your type field, and a list of 14 unit types can be viewed at once.

12 LMS	CMS 48
24 LMS	CMS 4801
24 LSI	CMS 6424
24 LSI MKII	CMS 700
26 LSI	CMS 7201
27 LSI	CMS 800
48 Multi-Mode	CMS 9601
72 Multi-Mode	CMS 9629
96 Multi-Mode	CMS DCU
ALM MP IV	CMS DSU 1500
ALM3223 V.32	CMS DSU 1556
ALM3239 V.34	CMS DSU 500RD
ALM3268 V.34	CMS DSU 556RD
Alpha 4	CMS LDM V.35
Alpha 96	CMS TCM-7
BRI2000 ISDN TA	Com-Link 7S
CMM-7	Com-Link III S
CMS 12	Com-Link IV
CMS 24	CS 24 LSI
CMS 26X	CS 24 LSI MKII
CMS 400 NMS	DataMate V.34

DAP4000 Node	FastFrame 300 R4.1
DAP4100 ISDN TA	FastFrame 200 R3
DAP4150 ISDN TA	Generic Type 1
DAP4200 Voice	Through
DAP4500 ISDN IBU	Generic Type 16
DAP4550 ISDN IBU	IDBU
DAP6300	INX 10BaseT
DAPMS20	INX FOIRL
DAP V.34	INX Managed Rptr
Delta Plus V1	INX NTS Term Svr
Delta Plus V2	INX TRing CAU
EAN4000	INX TRing LAM
ERAS	INX4000L Bridge
Excal Chassis	INX4000R Bridge
Excal 5 Port DAP	INX400L Bridge
Excal DAP DBR	INX400R Bridge
Excal DAP MP A	INX5000 1-Slot
Excal DAP MP B	INX5000 12-Slot
Excal DAP SP A	INX5000 3-Slot
Excal DAP SP B	INX5000 NMM
Excal MDS MP DAP	ISX2500 2-T1
Excal SET1 MP A	ISX2500 3-T1
Excal SET1 MP B	ISX5005
Excal SET1 SP B	ISX5010 16-slot
Excalibur 19.2	ISX5010 3-slot
Excalibur 9.6	ISX5010 6-slot
Excalibur CC	ISX5300 (SNMP)
Excalibur NAR	ISX5300 1-T1
Excalibur T1 CSU	ISX5300 2-T1
ExcaliburChassis	ISX5300 3-T1
FastFrame 200	ISX5302 DTE Exp
FastFrame 600 R4.0	ISX5312/1E1/2DTE
FastFrame 600 R4.01	ISX5312/1T1/2DTE
FastFrame 300 R4.01	ISX5312/2E1/2DTE
FastFrame 600 R4.1	ISX5312/2T1/2DTE

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ISX5314/1E1/4DTE	Omnimux 162
ISX5314/1T1/4DTE	Omnimux 320
ISX5314/2E1/4DTE	Omnimux 322
ISX5314/2T1/4DTE	Omnimux 40
ISX5312 T1 DBU	Omnimux 7000
ISX5314 T1 DBU	Omnimux 80
ISX5540 Network	Omnimux 800 FT1
LAN Rover	Omnimux 8000 T1
LPA System	Omnimux 82
LSI 2401	Omnimux TDM B/C
MD332-T7	Omnimux TDM D
MD332BU	PremNet 5000
MDS SET1 MP DAP	PRI/T-1 Triple
MD334-T7	RM 1916-CMS
Modem 1200	RM 24
MPE Engine	RMD1690 Chassis
MPS 14.4	RMD3220 V.32
MPS 2426	RMD3222 V.32
MPS 48	RMD3264 V.32
MPS 4801	RMD4492 V.22bis
MPS 4827	RMD4891 V.27
MPS 7201	RMD4891T V.27/26
MPS 9601	RMD901 Dialer
MPS 9629	RMD930 Callback
NCM-7	RMTS
NTS200 Term Svr	RMTS EIA MK II
Omnimode 14.4	RMTS MK II
Omnimode 14.4 FP	RNX4600 L Bridge
Omnimode 1614	RNX4800 R Bridge
Omnimode 1614B	RNX6100 Router
Omnimode 48	RNX6150 Router
Omnimode 96	RNX6200 Router
Omnimode 9644	RNX6300 Bridge
Omnimode V33	RNX6400 Router
Omnimux 160	RNX6500 Router

RNX6600 Router  
Safe 64K  
Series 300  
Series 90 TR Hub  
SR 4200  
Stackable Hub  
SNMP DAP  
SNMP 6456

V.32 Modem  
V.34 Hex Modem  
V.34 Modem  
VA9691  
VI4491  
Wellfleet Router  
WPA System

# Appendix D

## Event Log Entries

---

### Classes and Codes

The classes and codes for event log entries can be used with the Event Report function to group events by class, code, and content. This useful diagnostic tool can be used to focus on the operations of a specific channel and the network at certain events.

When events are being logged, the event log may not be configured to wrap. In case of overflow (using CMS Component Map), a message is sent to the system console indicating the event file is nearing its capacity of 1500 events. The message is sent as events are logged in increments of 50.

For example:

```
01.34 05/22/94 08:04:14 c=CHAN_004 a=1 ** Alarm Received : RLF
```

```
02.01 05/22/94 09:55:18 u=UNIT_00023 ** Unit Defined Via Network Map
```

```
01.07 05/22/94 08:03:13 c=CHAN_022 a=23 ** Alarm Received : CAL 05
```

```
04.02 05/19/94 14:25:22 ** Log-On By User MORROW
```

A definition of each event entry is described in Table D-1.

**Table D-1. Event Field Descriptions**

Field	Position	Format
Class/Code	First field in line with no introducing character.	Class in two-digit decimal (leading zero), period as separator, code in two-digit decimal (leading zero).
Date	Second field in line preceded by space after CLASS/CODE.	Month in two-digit decimal (leading zero), slash as separator, day in two-digit decimal (leading zero), slash as separator, year in two-digit decimal (leading zero).
Time	Third field in line preceded by space after DATE FIELD.	Hour in two-digit decimal (leading zero), colon as separator, minute in two-digit decimal (leading zero), colon as separator, second in two-digit decimal (leading zero).
Object	One or many fields preceded by space after TIME FIELD.	Introducer letter, equals sign, and object identifier: c=XXX where XXX is T7 channel name of 1-12 characters u=XXX where XXX is unit name of 1-12 of characters a=XXX where XXX is T7 address (1-255) of 1-3 characters s=XXX where XXX is site name of 1-12 characters g=XXX where XXX is group name of 1-12 characters
Description	Last field in line preceded by double-asterisk.	Free text description of event. Alarms in particular take the form "Alarm Received : XXX", where XXX is the 3-character alarm mnemonic. Alarm parameters such as call number or analog levels follow separated by spaces. Note that for readability, this field normally occupies a fixed column position, but the initial double-asterisk should be depended on for reliable parsing.

## Currently-Assigned Class/Code Values

Table D-2 describes the currently-assigned class and code values. The summary of the CMS 400 Event Log Entries are broken down by class, code, and content. Refer to Table D-2.

**Table D-2. Summary of CMS 400 Event Log Entries**

Class	Code	Content					
1	n	Alarms, where n is from the following:					
		1=A96	2=A12	3=A14	4=ASC	5=ASP	6=AST
		7=CAL	8=CNF	9=DIA	10=DNR	11=DPF	12=DRF
		13=DTE	14=DTF	15=ECA	16=ECB	17=EXT	18=GBL
		19=IBO	20=ILC	21=LIB	22=LLL	23=LOS	24=MPF
		25=MRE	26=OOS	27=OPA	28=OPB	29=PDO	30=PJL
		31=PPF	32=RCI	33=RCS	34=RLF	35=RTA	36=RTB
		37=RXA	38=RXB	39=RXL	40=SDO	41=SNL	42=SPF
		43=SQA	44=SQB	45=SQL	46=STR	47=TCI	48=TCS
		49=TLF	50=TXL	51=ABI	52=ABF	53=DBR	54=DBF
		55=LCM	56=RCM	57=SRD	58=SRQ	59=RMC	60=MFR
		61=INT	62=USQ	63=T1A	64=T1B	65=T1C	66=T1D
		67=RED	68=YEL	69=BLU	70=BPV	71=PE1	72=PE2
		73=PE3	74=PE4	75=RN1	76=RN2	77=RN3	78=RN4
		79=AOK	80=TIM	81=MAJ	82=MIN	83=LDN	84=LDU
		85=NAK	86=OVR	87=PTO	88=SVC	89=SYS	90=BUS
		91=CPU	92=CCC	93=POF	94=FOF	95=PON	96=FON
		97=FOR	98=CLK	99=CSL	100=SEL	101=NLS	102=NLP
		103=NPS	104=NPP	105=SFA	106=CKO	107=OOF	108=REM
		109=SYN	110=RTS	111=ISF	112=IRN	113=ICD	114=ICR
		115=DIS	116=COF	117=NDI	118=DPW	119=LKD	120=LKU
		121=LCR	122=RCR	123=SPD	124=BAN	125=DLF	126=NOA
		127=AON	128=CON	129=ELF	130=ELO	131=OCD	132=SWF
		133=DLE	134=MIR	135=FAT	136=RFS		

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
2	1	Unit defined via Network Map
2	2	Unit modified via Network Map
2	3	Unit deleted via Network Map
2	4	Unit(s) moved via Network Map
2	5	Unit xxx is now named yyyy
2	7	Units defined by Auto Learn
2	8	Units Serial Number set to xxxxxxx
2	9	Unit defined by SNMP Control discovery
2	11	Channel defined by CMS Component Map
2	12	Channel modified by CMS Component Map
2	13	Channel deleted by CMS Component Map
2	14	Channel relocated by CMS Component Map
2	15	Channel locked by nnnnnn
2	16	Channel unlocked by nnnnnn
2	21	Group defined by Define Group
2	22	Group modified by Define Group
2	23	Group deleted by Define Group
2	31	Strap table defined by Define Straps
2	32	Strap table modified by Define Straps
2	33	Strap table deleted by Define Straps
2	34	Strap table defined by CSU Control
2	35	Strap table modified by CSU Control
2	41	User name defined by Define User
2	42	User name modified by Define User
2	43	User name deleted by Define User
2	44	User name modified password

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
2	51	EDM xx defined by CMS Component Map
2	52	EDM xx modified by CMS Component Map
2	53	EDM xx deleted by CMS Component Map
2	54	EDM xx relocated by CMS Component Map
2	55	DDM xx modified by CMS Component Map
2	61	System parameters modified by CMS Component Map
2	62	Port assignments modified by CMS Component Map
2	63	SDM assignments modified by CMS Component Map
2	64	Station assignments modified by CMS Component Map
2	71	Script file name modified by Define Script
2	72	Script file name deleted by Define Script
2	73	Script file name run by Define Script
2	74	Script file name renamed by Define Script
2	81	Site name defined by Define Site
2	82	Site name modified by Define Site
2	83	Site name deleted by Define Site
2	84	Object defined by Draw Network
2	85	Object modified by Draw Network
2	86	Object deleted by Draw Network
2	91	Activity name defined by Schedule Activity
2	92	Activity name modified by Schedule Activity
2	93	Activity name deleted by Schedule Activity

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
3	1	Database re-created by Create Database
3	2	RMD1690 summary statistics file full
3	3	Site file expanded by Create Database
4	1	User name logged on at station nn
4	2	User name logged off at station nn
4	3	Unrecognized user failed to log on at station nn
4	4	User name tried to run Task name without privilege
5	1	Device does not respond to poll: EDM xx
5	2	Device is now responding to poll: EDM xx
6	1	Activity name initiated by event handler
6	2	Activity name failed initiation by event handler
6	3	Activity name initiated by scheduler
6	4	Activity name failed initiation by scheduler
6	5	Activity name initiated by Schedule Activity
6	6	Activity name failed initiation by Schedule Activity
6	7	Activity name killed by Schedule Activity
7	1	Dial backup established by 700 Control
7	2	Dial backup discontinued by 700 Control
7	3	Dial backup established by Excalibur DBU
7	4	Dial backup discontinued by Excalibur DBU
7	5	Units switched to leased lines by Excalibur DBU
7	6	Units switched to dial lines by Excalibur DBU
7	7	Dial initiated by RMD1690: target unit x phone x

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
7	8	Dial backup established by DRS Control
7	9	Dial backup discontinued by DRS Control
7	10	Unit switched to leased lines by DRS Control
7	11	Unit switched to dial lines by DRS Control
7	12	Dial backup attempt failed by 700 Control
7	13	Dial backup attempt failed by Excalibur DBU
7	14	Switch to leased lines failed by Excalibur DBU
7	15	Switch to dial lines failed by Excalibur DBU
7	16	Terminate dial backup failed by Excalibur DBU
7	17	Dial backup attempt failed by DRS Control
7	18	Switch to leased lines failed by DRS Control
7	19	Switch to dial lines failed by DRS Control
7	20	Terminate dial backup failed by DRS Control
7	21	Terminate dial backup failed by 700 Control
7	22	Dial initiated by RMD3222/ALM Control target unit x phone number x cell x
7	23	Call Manually Terminated by RMD3222/ALM Control
7	24	Dial Backup Discontinued by RMD1690 (for terminating calls via remote ALM-type units)
7	25	Dial Backup Initiated by FastFrame Control
7	26	Dial Backup Established by FastFrame Control
7	27	Dial Backup by FastFrame Control Failed
7	28	Terminate Dial Backup Initiated by FastFrame Control
8	1	CMS 400 initialized
8	2	Workstation nn requested initialization
8	3	SDM requested initialization
8	4	CMS 400 manually shut down
8	5	Task initiated

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
9	1	File downloaded to station nn: name
9	2	File uploaded from station nn: name
9	3	Unit software download succeeded
9	4	Unit software download failed
10	1	Unit(s) initialized by initialize Unit
10	2	Unit(s) normalized by Return to Normal
10	3	Unit(s) affected by Speed Control
10	4	Unit(s) squelched by Squelch Unit
10	5	Unit(s) configured by Strap Unit
10	6	Unit placed in Self Test
10	7	Units placed in End-To-End Test
10	8	Unit placed in Loopback
10	9	Unit placed in Loopback Test
10	10	Unit placed in Test Tone
10	11	Self Test completed: errors=nnnnn
10	12	End-To-End Test completed: errors=nnnnn
10	13	Loop Test completed: errors=nnnnn
10	14	Unit configured by CSU control
10	15	Unit configured by ENAR
10	16	Self Test cancelled
10	17	Self Test terminated
10	18	Loop Test cancelled
10	19	Loop Test terminated
10	20	Loopback cancelled
10	21	Loopback terminated
10	22	Unit Configuration Modified By EAN6000
10	23	File Configuration Modified By EAN6000
10	24	Unit Placed in Data Test
10	25	Unit Placed in Raise EIA Signals
10	26	Loopback Data Test Cancelled



**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
15	4	Chassis nnn Failed to answer call due to nnnn
15	5	Failure to attach to chassis
15	6	Failure to retrieve statistics
15	7	Buffer overflow
15	8	Failure to retrieve remainder of statistics
17	4	LAT disconnection on NTS port n
18	1	Unit squelched by streaming-resolver
18	2	Unit unsquelched by streaming-resolver
18	3	Garbled alarm resolved by polling
18	4	STR ignored because unit was in test
19	1	End of call
19	2	Incomplete call
19	3	Call established
19	4	ABI Alarm deleted
19	5	Dial Disconnect Sent To Modem: Serial Number Of Remote Unit=xxxxxxx
19	6	Unit Reset By ENAR
19	7	Time set on ASET-1 chassis
20	1	Card busied out
20	2	Card returned to normal
20	3	Card reset
20	4	Manually terminated card call
20	5	Card test menu accessed
20	6	Card options modified
21	1	Success Writing Speeds By DRS Control During Operation nnn: C1=xxxxx C2=xxxxx C3=xxxxx C4=xxxxx C5=xxxxx C6=xxxxx
21	2	Communication Failure Reading Speeds By DRS Control During Operation nnn

**Table D-2. Summary of CMS 400 Event Log Entries (Continued)**

<b>Class</b>	<b>Code</b>	<b>Content</b>
21	3	Communication Failure Writing Speeds By DRS Control During Operation nnn: C1=xxxxx C2=xxxxx C3=xxxxx C4=xxxxx C5=xxxxx C6=xxxxx
21	4	Unit Did Not Accept Speed Change By DRS Control During Operation nnn: C1=xxxxx C2=xxxxx C3=xxxxx C4=xxxxx C5=xxxxx C6=xxxxx Where nnn is one of the following: Initiate Dial Backup Terminate Dial Backup Switch To Dedicated Switch To Dial Auto Speed Control and xxxxx is the channel speed
22	1	Poll Table Downloaded By Request Statistics
23	1	NetBIOS Resources Exhausted - Restarting NetBIOS
23	2	NetBIOS Interface Unresponsive - Resetting Adapter



# Appendix E

## Telephone Number Codes

---

### Telephone Number Codes

Input fields for telephone numbers use the following codes for dialing up devices. These codes are used with the Restoral function and can be used to focus on the operation of a specific channel and the network. This capability is a useful diagnostic tool for testing your devices.

---

**Note:** Dialing devices such as CMS 700 do not support all of these codes.

---

**Table E-1. Telephone Number Codes**

Code	Represents	Code	Represents
1	the digit 1	D	the letter D
2	the digit 2	E	wait 1 second
3	the digit 3	F	wait 2 seconds
4	the digit 4	G	wait 4 seconds
5	the digit 5	H	wait 9 seconds
6	the digit 6	I	wait 15 seconds
7	the digit 7	J	wait 30 seconds
8	the digit 8	K	wait 60 seconds
9	the digit 9	N	no sense call-progress
0	the digit 0	P	pulse-dial
*	the symbol *	S	sense call-progress
#	the symbol #	T	tone-dial
A	the letter A	W	wait for dial tone
B	the letter B	,	wait 2 seconds
C	the letter C		



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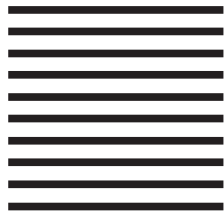
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