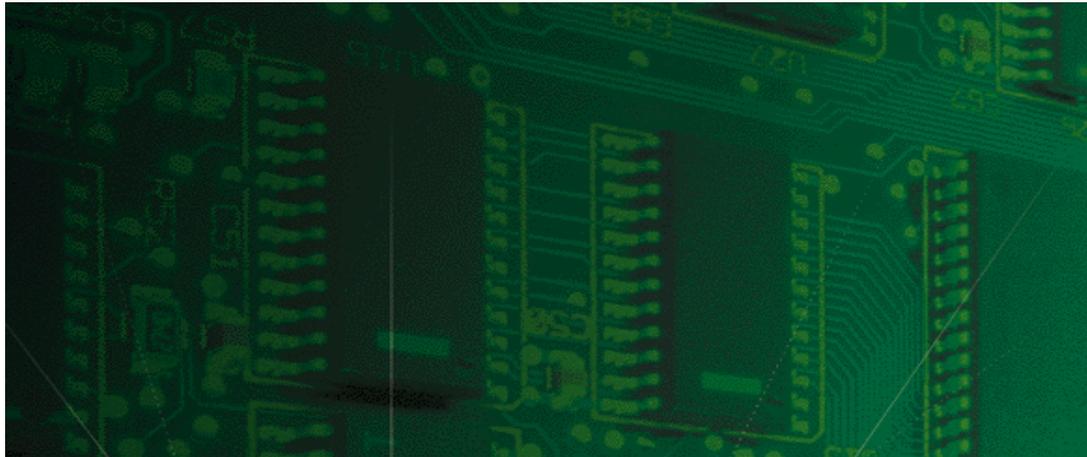




Total Control Manager for UNIX

Software Reference



Part No. 1.024.1039-02
Version Number 6.0



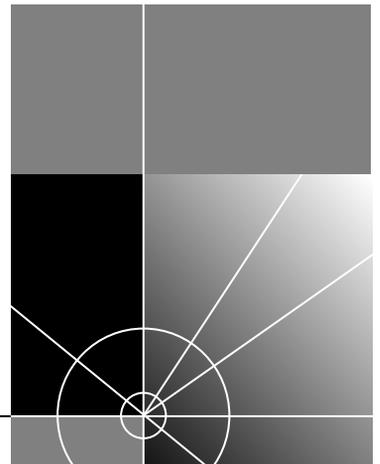


Total Control Manager for UNIX Software Reference

Version 6.0

<http://www.3com.com/>

Part No. 1.024.1039-02



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CONTENTS

ABOUT THIS REFERENCE

Conventions.....	ii
Related Documentation.....	iii
The Total Control Enterprise Network System Documentation Library CD-ROM.....	iii
Contacting 3Com.....	iv

PART I OVERVIEW

1 SYSTEM OVERVIEW

About the Total Control Enterprise Network Hub.....	1-1
About Total Control Manager.....	1-1
Simple Network Management Protocol.....	1-1
Communication Protocols.....	1-1
Management Bus Protocol Communication.....	1-2
SNMP Trap Implementation.....	1-2
System Requirements.....	1-2
Before Using Total Control Manager.....	1-3

2 USING THE DEVICE DISPLAY

Total Control Manager Device Display?.....	2-1
--	-----

3 THE COMMAND TOOL

Launching the Command Tool.....	3-1
Card-Level vs. Channel-Level Commands.....	3-1
The Command Window.....	3-2
Command Window Elements.....	3-2
Command Status Box.....	3-3
Control Buttons.....	3-3

PART II CONFIGURING DEVICES

4 CONFIGURING COMPONENTS

Overview	4-1
Launching the Configuration Tool	4-1
Selecting a Parameter Group.....	4-1
Card-Level vs. Channel-Level Parameter Groups	4-2
Configuration Window Elements	4-2
Context-sensitive Help	4-3
Using the Configuration Table.....	4-4
Changed Value Indicator.....	4-4
Adjusting Column Width	4-4
Configuring Multiple Components.....	4-4
Configuring the NMC's Authorized Access List.....	4-5
Authorized Stations Window Elements	4-6
Authorized Access List	4-6
Defining a Range of IP Addresses for Authorized Access	4-6
Clearing Authorized Access Lists	4-7

5 SAVING CONFIGURATIONS

Methods for Saving Configurations.....	5-1
Saving or Restoring Chassis Configurations.....	5-1
Initiating a Device Save or Restore.....	5-1
Saving a Chassis Configuration	5-2
Restoring a Chassis Configuration.....	5-3
Component Save to NVRAM.....	5-5
NMC Save Chassis to NVRAM.....	5-5
From OVW or SNM:.....	5-5
From the Total Control Manager Console:.....	5-6
From the UNIX Command Line:	5-6
Save Chassis NVRAM	5-6

6 AUTORESPONSE

Basic AutoResponse Operation.....	6-1
AutoResponse Configuration	6-1
Selected Devices	6-2

Events	6-2
Response Script Usage	6-2
Responses/Responses Configured	6-2
AutoResponse Editing	6-2
Load From	6-2
Add Response	6-3
Delete Response	6-3
Delete All Responses	6-3
Get	6-3
Set	6-3

PART III MONITORING THE SYSTEM

7 VIEWING STATISTICS

Using the Performance Monitor	7-1
-------------------------------------	-----

8 SETTING TRAPS

What is a Trap?	8-1
Setting traps for a device	8-1
Context-sensitive Help	8-3
Setting Trap Destinations	8-3
To add to or modify the trap destination database:	8-3
Trap Destination Window	8-4

9 CHASSIS INVENTORY

Launching the Chassis Inventory Utility	9-1
Chassis Inventory Window Elements	9-1
Inventory Data Table	9-1
Inventory Control Buttons	9-2
Inventory Print Window	9-2
Using the Inventory Data Table	9-3
Scroll Bars	9-3
Adjusting Column Width	9-3

PART IV MAINTENANCE AND TROUBLE CLEARING

10 SOFTWARE DOWNLOAD

Before performing a software download	10-1
To copy an upgrade code:	10-1
Import SDL Files Utility	10-1
Launching the Software Download Utility	10-2
Selecting SDL, NAC, and DMF Files	10-3
Upgrade File Identification	10-3
Filename Prefixes	10-4
Progress Windows	10-6

11 TESTING

Tone Tests	11-1
Launching the Tone Test Utility	11-1
Sending a Tone Test	11-2
Test Description	11-2
Status Box	11-2
To Begin a Tone Test.....	11-2
Stopping the Tone Test	11-2
Receive Tone Test	11-3
Test Description	11-3
Status Box	11-3
To Begin the Receive Tone Test	11-3
Test Results	11-3
To Stop the Tone test	11-3
Modem Tests	11-4
Launching the Modem Test Utility	11-4
The Modem Tests Window	11-5
Selected Targets.....	11-5
Tests Status Box	11-5
Recall	11-5
Performing Modem Tests	11-6
Loopback Tests	11-6
Exiting the Tests Window.....	11-6
Responder Tests	11-6

12 FEATURE ENABLE

Total Control Manager Feature Enable	12-1
Manual Feature Enable	12-1
File-Based Feature Enable	12-2

13 CELLULAR MODEM SUPPORT

What is Cellular Modem Support?	13-1
What Can Cellular Modem Support Do for Me?	13-1
Enhanced Throughput Cellular	13-1
MNP10	13-2
Installing Cellular Modem Support.....	13-2
Using Cellular Modem Support.....	13-3
Activating ETC and MNP10	13-3
Loading a template	13-3
MNP10 Negotiation	13-3
MNP Extended Services	13-4
ETC Fixed Site Cellular Template	13-4
ET	13-4
ETC Fixed Site Operations.....	13-4
ETC Calling Tone Enabled.....	13-4
DCE Startup Rate	13-5
Wait for Carrier 90 Seconds	13-5
Loss of Carrier Disconnect	13-5
ETC Mobile Cellular Template	13-5
Enable ETC Mobile	13-5
Cellular Configuration Group	13-5
ETC Parameters.....	13-5
ETC Max Link Rate	13-5
ETC Transmit Level	13-6
ETC Negotiation.....	13-7
ETC Fixed/Mobile Site.....	13-7
ETC Calling Tone	13-7
Force ETC Settings	13-8
ETC DCE Startup Rate	13-8
ETC Transmit Deemphasis	13-9
Do not Originate with ETC	13-9
MNP10 Parameters	13-9

MNP10 Negotiation	13-9
MNP Extended Services.....	13-10
MNP10 Compression Type	13-10
MNP10 Celllark	13-11
MNP10 Link Speed	13-11
MNP10 Fallback.....	13-11
MNP10 Fall Forward	13-11
MNPX Detection Pattern.....	13-12
MNP10 V.42 bis Short Form Negotiation Rules	13-12

PART V REFERENCE APPENDICES

A ERROR MESSAGES

Overview	A-1
Invocation Errors Message Descriptions	A-1
Errors in Command Line Target Selection	A-1
Chassis Restore.....	A-2
Chassis Save	A-2
Command Tool.....	A-3
Configuration Tool.....	A-4
Software Download.....	A-4
Test Tool	A-5
Total Control Manager Console	A-6
Tone Send/Receive	A-6
Trap Destination	A-7
Execution Errors Message Descriptions	A-7
All Applications	A-7
Chassis Restore.....	A-9
Chassis Save	A-10
Command Tool.....	A-10
Configuration Tool.....	A-11
Test Tool	A-12
Total Control Manager Console	A-13
Tone send/receive	A-13
Trap destination.....	A-14
Software Download.....	A-15

B COMMAND LINE INTERFACE

General Syntax	B-1
x Prefix (GUI Interface).....	B-1
Log Output (-l)	B-1
Help (-h).....	B-2
Community Strings (-c, -C)	B-2
Target.....	B-2
Target Designation	B-2
Target Examples	B-3
Total Control Manager Console	B-3
Configuration.....	B-3
tcmget examples:	B-6
tcmset examples:	B-6
Actions/Commands	B-7
Query Current Command Status (-q)	B-7
Command (-E).....	B-7
Group (-G)	B-7
Parameter (-P)	B-7
Force Command (-F).....	B-7
Polling Rate (-p).....	B-8
Target.....	B-8
Set Trap Destination	B-8
To List Current Trap Destination Entries (-q).....	B-8
To Add a Trap Destination Entry (-a).....	B-8
To Modify a Trap Destination Entry (-m)	B-8
To Delete a Trap Destination Entry (-d)	B-8
Tone Test	B-9
Send Tone Test (-S)	B-9
Receive Tone Test (-R)	B-9
Modem Tests	B-9
Query Current Test Status.....	B-9
Test Type (-T)	B-9
Duration (-s).....	B-10
Device Save and Restore	B-10
Save Configuration	B-10
Restore Configuration	B-10
Software Download.....	B-11

Upgrade File Identification	B-11
Filename Prefixes	B-12
Software Download Progress Messages	B-13
Feature Enable	B-13
Logfile (-l)	B-14
-h	B-14
Readcomm (-c)	B-14
Writecomm (-C).....	B-14
Target	B-14
Inventory	B-14
Logfile (-l)	B-15
-h	B-15
Readcomm (-c)	B-15
Writecomm (-C).....	B-15
Delimiter (-d)	B-15
Filename (-f)	B-15
Target	B-15
Authorized Station Tool.....	B-16
Logfile (-l)	B-16
-h	B-16
Readcomm (-c)	B-16
Writecomm (-C).....	B-16
Target	B-16
CLI Parameters (-q, -a, -m, -d).....	B-17
AutoResponse	B-17
Event (-E).....	B-17
Chassis Level Events and Responses	B-18
Slot Level Events and Responses.....	B-18
Modem Channel Level Events and Responses.....	B-19
-h	B-21
Readcomm (-c)	B-21
Writecomm (-C).....	B-21
Target	B-21

C COMMAND TABLES

Modem Commands.....	C-1
Modem Analog NIC Commands	C-2

NMC Commands C-3
T1 Commands..... C-3
PRI Commands..... C-4
X.25 Gateway Commands..... C-4
NETServer Commands C-5

ABOUT THIS REFERENCE

About This Reference provides an overview of this reference, describes reference conventions, tells you where to look for specific information and lists other publications that may be useful.

This reference is intended for network administrators with some training or experience working in a data center using Total Control equipment. Prior experience with Total Control Manager is helpful, but not required. This reference is most useful if you are already familiar with networks and installing software on a UNIX platform.

This software reference provides information on how to use *Total Control Manager* effectively. This document also provides detail on the functionality of the software.

This reference mentions several different network devices and software applications. However, it does not provide an extensive discussion of each piece of software and each device mentioned. Please refer to the documentation provided for a particular device or piece of software for a complete description.

This reference does provide an extensive discussion of the functions available in *Total Control Manager*.



3Com® ships release notes with some products. If the information in the release notes differs from the information in this reference, follow the instructions in the release notes.



This document was written with the assumption that the user has some knowledge of data processing, telecommunications, and networking.

Conventions

The following tables list conventions that are used throughout this guide.

Notice Icons

Icon	Notice Type	Description
	Information note	Information that contains important features or instructions.
	Caution	Information to alert you to potential damage to a program, system, or device.
	Warning	Information to alert you to potential personal injury or fatality. May also alert you to potential electrical hazard.
	ESD	Information to alert you to take proper grounding precautions before handling a product.

Text Conventions

Convention	Description
Text represented as a screen display	This <code>typeface</code> represents displays that appear on your terminal screen, for example: Netlogin:
Text represented as commands	This typeface represents commands you enter for example: setenv TCMHOME directory <i>This guide always gives the full form of a command in uppercase and lowercase letters. However, you can abbreviate commands by entering only the uppercase letters and the appropriate value. All UNIX commands are case-sensitive.</i>
Text represented as menu or sub-menu names .	This typeface represents all menu and sub-menu names within procedures, for example: On the File menu, click New .

Related Documentation

The *Total Control Manager* documentation set also includes the following documents. To order additional copies of this documentation set, contact your sales representative.

- **The *Total Control Manager* for Windows and UNIX Getting Started Guide**

This Getting Started Guide contains a brief overview of *Total Control Manager* for Windows and UNIX and instructions to install, start, and use the software.

- **The *Total Control Manager* online Help System**

This Help system describes how to use *Total Control Manager*. It also contains context-sensitive help for all the system parameters. Online Help is supplied with both Windows and UNIX versions of Total Control Manager.

- **The *Total Control Manager* for Windows Software Reference**

This reference contains an overview of *Total Control Manager* for Windows and information about the optional features. This document also provides instructions for customizing cards and devices, monitoring and maintaining the system, and troubleclearing.

The Total Control Enterprise Network System Documentation Library CD-ROM

Documentation specific to each of the devices managed by Total Control Manager is also available. The Total Control Enterprise Network System Documentation Library CD-ROM contains installation and reference documentation for the following:

- Chassis and Fan Tray
- Network Management Card (NMC)
- Quad Modem Card
- NETServer
- Security and Accounting
- HiPer DSP Card
- HiPer ARC
- E1 Card
- T1 Card
- EdgeServer
- X.25 Card

Contacting 3Com

Call the appropriate toll free number listed below for technical support.



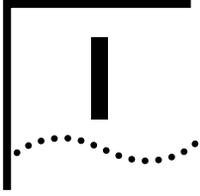
For European countries that do not have a toll free number listed, call +31 30 602 9900.

Country	Toll Free Number	Country	Toll Free Number
Austria	06 607468	Netherlands	0800 0227788
Belgium	0800 71429	Norway	800 11376
Canada	1800 2318770	Poland	00800 3111206
Denmark	800 17309	Portugal	0800 831416
Finland	0800 113153	South Africa	0800 995014
France	0800 917959	Spain	900 983125
Germany	0800 1821502	Sweden	020 795482
Hungary	00800 12813	Switzerland	0800 553072
Ireland	1800 553117	UK	0800 966197
Israel	0800 9453794	United States	1800 2318770
Italy	1678 79489	All Other Locations (Outside Europe)	1847 7976600

Refer to the Total Control Hub Documentation CD-ROM for more information regarding product warranty.

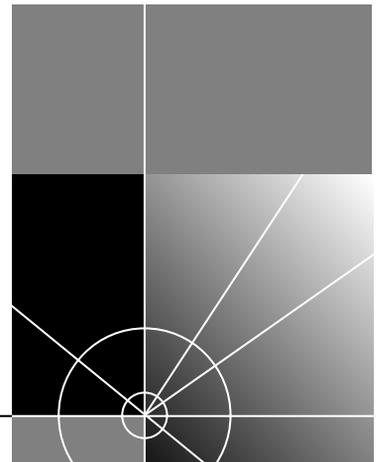


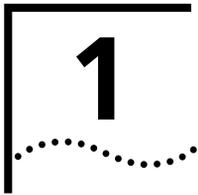
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OVERVIEW

- Chapter 1** System Overview
- Chapter 2** Using the Device Display
- Chapter 3** The Command Tool





SYSTEM OVERVIEW

This chapter introduces Total Control Manager for UNIX. It provides a general overview of the software, system requirements, and steps to take before using Total Control Manager.

About the Total Control Enterprise Network Hub

The Total Control Enterprise Network Hub is a data communications platform that supports a wide variety of data, voice, and video applications. It was designed to combine any or all of these applications within a single chassis. Application features are provided by Network Application Cards (NACs) which plug into the front of the chassis. Local and wide-area network (LAN and WAN) and Public Service Telephone Network (PSTN) interfaces are provided by Network Interface Cards (NICs) which are installed in the back of the chassis.

About Total Control Manager

Total Control Manager is a software application that runs on a personal computer called a management station. This application remotely manages 3Com NACs and NICs through a Network Management Card (NMC) installed in an Enterprise Network Hub.

Two protocols govern these management functions: Simple Network Management Protocol (SNMP) between the NMC and the management station, and a proprietary 3Com protocol between the NMC and the managed cards.

Simple Network Management Protocol

Total Control Manager communicates with the NMC via SNMP rules. Since the other Network Application Cards (NAC) installed in the hub do not use SNMP agent software, the NMC acts as a proxy agent between these cards and the management station.

Communication Protocols

The management station uses Management Information Bases (MIBs), defined for each card in the hub, to issue commands to the NMC. The

NMC executes the commands and obtains the results using a proprietary 3Com protocol. The NMC uses SNMP to return these results to the management station.

Management Bus Protocol Communication

The NMC communicates with each installed card using a 3Com proprietary Management Bus Protocol (MBP). The NMC provides configuration management for each NAC in the hub and can set each parameter for a NAC to a desired value. The NMC also automatically configures parameters to predetermined values when a NAC is installed in the hub. To help manage the configuration, the NMC can also query the current value of parameters for each NAC and download software for upgrades.

SNMP Trap Implementation

Standard SNMP traps can be enabled to send a trap message (or event notification) to one or more management stations. The management stations use these traps to create logs, trigger alarms, and initiate actions.

For more information about SNMP, refer to the NMC documentation set or the Total Control Manager online Help system.

System Requirements

Total Control Manager for UNIX is available for the UNIX workstation configurations listed in the following tables.

For HP-UX®:

Resource	Requirement
Hardware Platform:	HP 9000 and HP 712/100 or higher with CD-ROM drive
Operating System:	HP-UX V10.20 or higher
Prerequisite Software:	X-Windows - X11R5-SHLIBS, Motif 1.2
System Memory:	at least 64 MB
Application Disk Space:	100 MB minimum on one partition, not across many
Monitor:	Color
Network Connection:	Ethernet or Token Ring
Optional Software:	Open View Windows Network Node Manager 4.x

For Sun Solaris™:

Resource	Requirement
Hardware Platform:	Sun™ SPARCstation™ 5/85 or larger with CD-ROM drive
Operating System:	Sun Solaris V2.5.1 or above
Prerequisite Software:	X-Windows - X11R5, Motif Runtime Kit (SUNWmfrun package)
System Memory:	at least 32 MB
Application Disk Space:	100 MB minimum on one partition, not across many
Monitor:	Color
Network Connection:	Ethernet or Token Ring
Optional Software	SunNet Manager (SNM) 2.3, Open View Windows Network Node Manager 4.x

Before Using Total Control Manager



Before installing Total Control Manager on your system:

The Total Control Manager software usually manages Enterprise Network Hubs, but it can also manage other network devices like the Modem Pool/16.

- Install all the Total Control devices that will be managed through Total Control Manager. For more information on installing these devices, refer to the specific device's documentation.
- Uninstall any previous versions of the software. See the *Uninstalling Total Control Manager for UNIX* section later in this chapter.



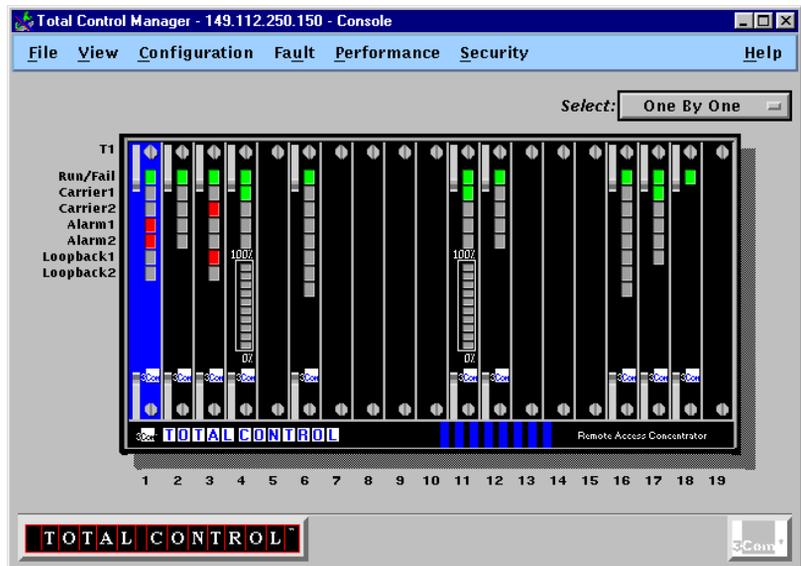
2

USING THE DEVICE DISPLAY

The Total Control Manager device display is used to select target components whenever you are performing configuration, sending commands, or upgrading components via software download.

Total Control Manager Device Display?

The Total Control Manager device display is included as a part of the Total Control Manager Console. It also appears when using the x prefix from the command line or when launching Total Control Manager functions from within your OVW or SNM network management platform.



The device display contains "hot spots," or areas that you can click to select targets for Total Control Manager functions.

In general:

- Click on LEDs to select individual channels, or the area just outside of the LEDs to select the whole component. For Network Interface Cards (NICs), click the connectors.
- The component identity is displayed to the left of the device display.
- Hold the Shift key down to select more than one channel or component one at a time.
- Only one type of component can be selected at a time (for example, two Quad Modem Cards can be selected, but not a Quad Modem Card and a Dual Modem Card).
- To select all of one type of channel or component in a device, use the All Like Devices setting in the Select drop down box at the upper right corner of the device display window.

3

THE COMMAND TOOL

Use the Command Tool to perform actions on a component, such as busy-out, disconnect, reset, or save to NVRAM.

Launching the Command Tool

You can launch the Command Tool in any of the following ways:

- From your network management platform network map (either OVW Network Node Manager or SNM): highlight the icon for a Total Control Manager device, then select **Actions/Commands** from the **Configuration Menu**.



For instructions on accessing these menus, refer to [Installing and Integrating Total Control Manager for UNIX in the Total Control Manager for Windows and UNIX Getting Started Guide](#).

- From the Total Control Manager Console: Select a component from the device display, then select **Actions/Commands** from the **Configuration Menu**.
- From the UNIX command line: use the **xtcmcmd** command, specifying the target device IP address or hostname and the target slots and channels.



*For complete syntax for the **tcmcmd** command, see [Appendix B, Command Line Interface](#).*

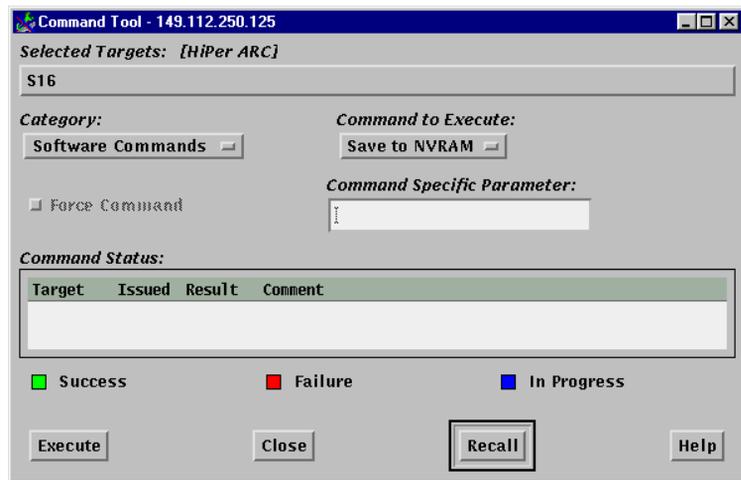
Card-Level vs. Channel-Level Commands

There are different command options depending on whether you select the whole component or individual channels within a component. See [Appendix C](#) for a list of commands for each type of card.

The Command Window

After launching the Command Tool, the Command window appears.

- 1 Select the type of command you want to perform from the Command to Execute or Category drop down boxes.
- 2 Click **Execute** at the bottom of the window.
- 3 After executing the command, compare the results with the color coded key below the status box.



Command Window Elements

The Command Window contains the elements listed in the table below:

Element	Description
Selected Targets	Displays the component type and the slots and channels that will receive the command.
Category	Some components have different command categories. If the selected targets have only one command category, this box is grayed out.
Command to Execute	Click this box to select the command you want to execute for the selected targets.
Force Command	The component may be in a state where the selected command is normally rejected (for example, a modem in dial mode). Check this box to override this lockout.

(continued)

Element	Description
Command Specific Parameter	Commands for some device types require an additional parameter to be specified when the command is issued. Not required for the Total Control chassis.

Command Status Box

Use the color-coded key below the Command Status box to interpret the command result. The keys indicate the following information:

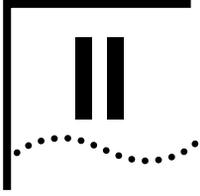
Key	Indication
Issued	Indicates whether or not the command was successfully initiated.
Result	Indicates the results of the command.
Comment	Displays details about failed commands.

Control Buttons

The control buttons perform the following functions:

Button	Function
Execute	Executes the selected command for the selected targets.
Result	Queries selected targets for the results of the last executed command.
Close	Closes the Command Window.



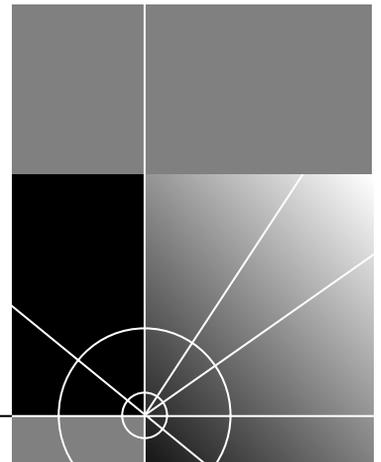


CONFIGURING DEVICES

Chapter 4 Configuring Components

Chapter 5 Saving Configurations

Chapter 6 AutoResponse



4

CONFIGURING COMPONENTS

Overview

Use the Total Control Manager Configuration Tool (a graphical user interface for selecting and setting component parameters) to configure device components. Unlike other Total Control Manager functions, you cannot configure device components from the command line.

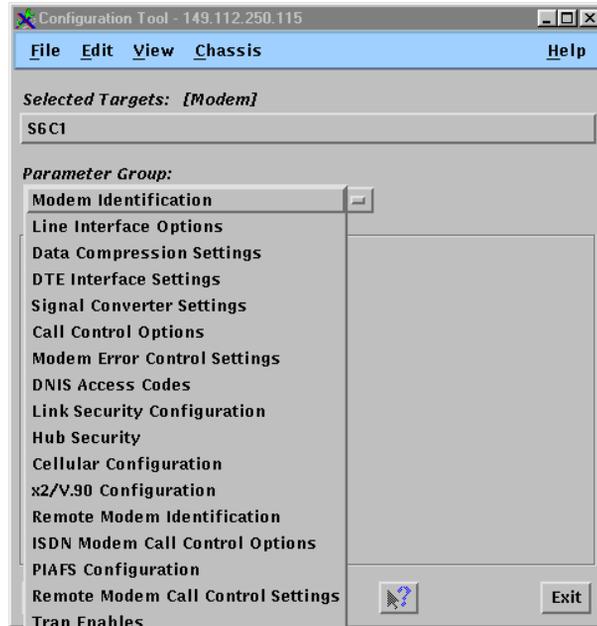
Launching the Configuration Tool

There are three ways to launch the Configuration Tool:

- From the Total Control Manager Console, select a target from the device display, and then select **Programmed Settings** from the **Configuration Menu**.
- From the integrated Total Control Manager menu of your OVW or SNM network management platform, select **Programmed Settings**.
- From the UNIX command line, type **xtcmconf** followed by the IP address or hostname of the target device and the target slots and channels (see Appendix B for more details on using the command line interface).

Selecting a Parameter Group

Parameters for a given component may be divided into several groups. When the Configuration Tool first appears, the parameter group drop-down box is activated, prompting you to select a parameter group. You must select a group from the Parameter Group drop down box to continue.



Card-Level vs. Channel-Level Parameter Groups

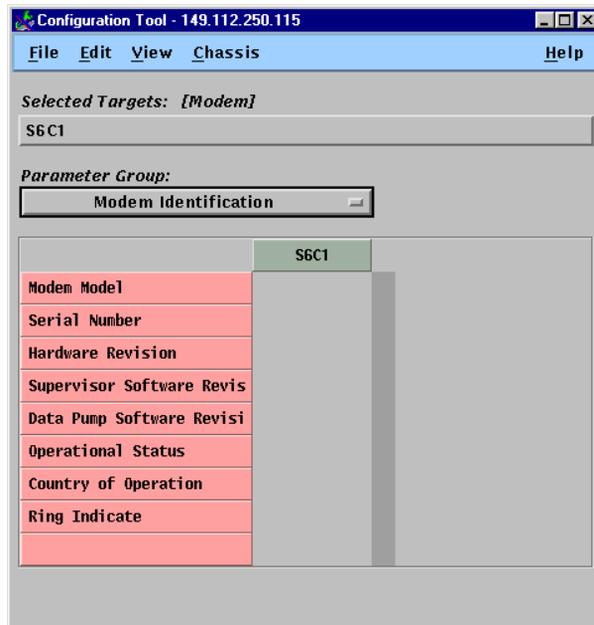
Total Control Manager components have different parameter groups depending on whether you have selected the whole component or individual channels within a component. For example, the T1 Programmed Settings parameter group is only available if you select a T1 card, while the DS1 Trunk Settings parameter group is available only when you select one or more individual channels on a T1 card. Likewise, if you select Channel 1 from a Quad Modem Card, a number of parameter groups are available, but if you select the whole card, the Configuration Tool is not available because there are no parameter groups at the card level for Quad Modem Cards.

Configuration Window Elements

After selecting a parameter group, the configuration table appears, listing the current settings for each selected component.



Column headings display slot and channel numbers for each selected component.



Field or Button	Function
Window Title Bar	Displays the target device IP address.
Selected Objects	Displays the slot and channel numbers of the selected components. For instance, S3C1-4 means that channels 1-4 of the component in slot 3 of a device has been selected. This field is read only.
Get and Set Buttons	Triggers the SNMP Get or Set operation for the selected parameter group. The Get operation updates the display with the last-saved values. The Set operation writes the displayed values to the device MIB.
Default Button	Loads the default value for the selected parameter.

Context-sensitive Help

To display information about configurable parameters, use the context-sensitive help button, pictured here:



When you click this button with the mouse, the pointer picks up the context-sensitive help icon. Simply point and click the parameter you want more information about, and a pop-up help window appears.

Using the Configuration Table

Click on the cell with the setting you want to edit with the mouse. If a value is read-only, the cursor changes to the "ban" sign when placed over that value. Fields can also be navigated using the Tab key.

Some fields make use of a drop-down box-when you select the field, an arrow appears on the right. Click on it to list options for that field.



Changed Value Indicator

Once a value has been changed in the configuration table, it turns blue. The new value is not changed in the component, however, until a Set has been issued. After a Set is issued and the value has been changed in the component, the color returns to normal.

Adjusting Column Width

Column width can be adjusted using the mouse. Place the cursor over the column divisor line until it changes to a bar and arrow, then click and drag the line left or right.

	S1C1	S1C2
g Mode	ds1D4	ds1D4
oding Options	ami	ami
se to Remote Loopba	ignore	ignore
Attenuation	attenJitterOnTxmtr	attenJitter0

Configuring Multiple Components

To configure multiple components with the Load Feature:

- 1 Configure one component with the desired settings. This component will act as a model for all other components.
- 2 Launch the Configuration Tool, selecting all components that you want to match the settings of the model component (these components should appear in the Selected Objects field at the top of the Configuration window). You must select a parameter group to activate the Load From button. (After you have selected a group, however, you can use the

Cancel button to stop discovery for that group. The Load From button then becomes active.)

- 3 Click on the **Load From** button to bring up the Load From window.
- 4 Enter the IP address and Slot and Channel number of the model component (from which you want to load settings). All the settings from each parameter group of the model component are loaded to the selected components (listed in the Selected Objects field of the Configuration window).
- 5 Select from the following preload options using the corresponding radio buttons:
 - Preload targets and show changes. Changes only those values that differ from the target component. Changed values are displayed in blue in the Configuration window.
 - Skip Preload and consider everything changed. Loads all values and does not perform the comparison.

Configuring the NMC's Authorized Access List

The chassis NMC (or MP/16 management module) contains an authorized access list that allows you to limit management capability to certain management stations on your network. Once you have created entries in the authorized access list, only those management stations can send SNMP requests to that device.

To set up an authorized access list:

- 1 Open a console window for the device whose authorized access list you want to change.
- 2 From the **Security Menu** select **Authorized Station**. The authorized stations window appears.
- 3 From the authorized stations window, click the **Add** button. The authorized stations Add dialog box appears.
- 4 In the Add dialog box, enter the IP address for the workstation you are currently working from and click **OK**.



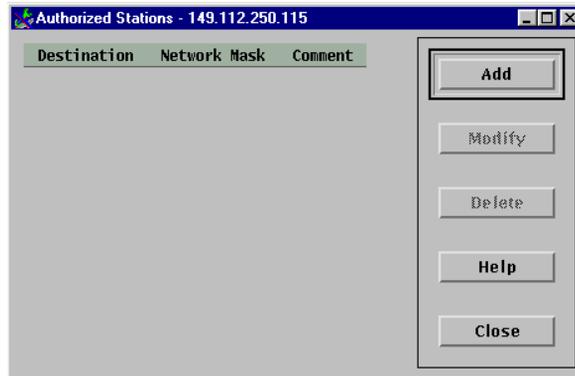
For information about setting the network mask, refer to [Defining a Range of IP Addresses for Authorized Access](#) later in this chapter.

- 5 Click **Add** to add additional entries for other workstations for which you want to grant management access.

- 6 Repeat these steps for each device on your network.

Authorized Stations Window Elements

Use the Add, Modify, and Delete buttons to change authorized access list entries.



Button	Function
Add	Brings up a dialog box for entry of new authorized stations.
Modify	You must select an entry from the list before using this button. Brings up a dialog box for changing the network mask or comment for the selected device.
Delete	Delete the selected entry.

Authorized Access List

The following information appears for every item in the Authorized Access List:

Information Field	Description
Destination	Displays the IP address of the authorized station.
Network Mask	Displays the network mask for the destination IP address that defines a range of IP addresses for authorized stations.
Comment	User-entered description of the station.

Defining a Range of IP Addresses for Authorized Access

A range of IP addresses for authorized access can be defined using the Network Mask field in the authorized access list.

The network mask that you type in this field masks the IP address for that entry to define a range of authorized IP addresses.

For example, a network mask of 255.255.255.255 prevents access from all IP addresses except the destination IP address. An entry with a destination IP address of 139.78.202.192 and a network mask of 255.255.0.0 grants access to all stations with IP addresses within the range of 139.78.0.0 and 139.78.255.255. An entry with the same IP address and a network mask of 255.0.0.0 grants access to all stations with an IP address beginning with 139.

Clearing Authorized Access Lists

If your management station is listed in the authorized access list:

- 1** Open a console window for the device whose authorized access list you want to clear.
- 2** From that console window, launch the authorized stations tool.
- 3** Select the first entry from the authorized access list with the mouse and then click **Delete**. Repeat this step for each entry until all entries are deleted.
- 4** If your management station is NOT an authorized station: If you need to clear the access list to gain management capability for a device, you must use the User Interface on the back of the NMC (or MP/16). See the operator's guide or installation manual for that device for instructions on how to use the User Interface.



5

SAVING CONFIGURATIONS

This chapter describes the methods and procedures for saving configurations.

Methods for Saving Configurations

There are four ways to save configurations:

- **Device Save and Restore.** This feature lets you save the configurations of every component of a device to a file (for example, the configuration of all the cards and channels in an Enterprise Network Hub). The device configuration can be restored to that device, or applied to other devices with similar components.
- **Component Save to NVRAM.** Most components contain their own Non-volatile read access memory (NVRAM). The component's current configuration can be saved to its NVRAM, and later retrieved, either through a direct command or by resetting the component.
- **NMC Save Chassis to NVRAM.** An entire device's configuration can be saved to the Network Management Card (NMC) NVRAM.
- **Chassis NVRAM Save.** An entire device's configuration can be saved to a file on the network.

Saving or Restoring Chassis Configurations

The Save Configuration utility performs a discovery of the configuration of a device and saves it to a file, using the .whb extension. Once saved as a file, the Restore Configuration utility is used to restore the configuration to that device, or it can be used to apply the .whb file to other devices with similar components.

Initiating a Device Save or Restore

You can initiate a device save or restore in any of the following ways:

- From your network management platform (HP OpenView Windows or SunNet Manager), select **Restore Configuration** or **Save**

Configuration from the integrated Total Control Manager menu items.

- From the **File** Menu of the Total Control Manager Console, select either **Save Chassis Configuration** or **Restore Chassis Configuration**.
- From the UNIX command line using the **xtcmrestore** and **xtcmsave** commands.



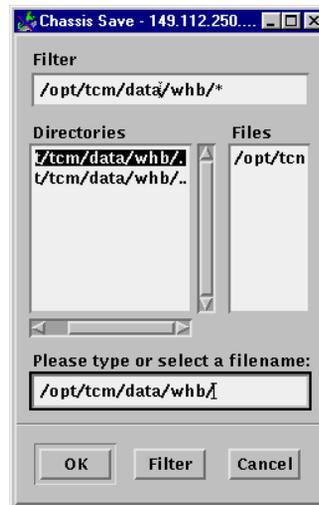
For information on performing save and restore operations from the command line, see Appendix B, Command Line Interface.

Saving a Chassis Configuration

Use the following procedure to save a chassis configuration using the Total Control Manager Virtual Front Panel Display (VFPD).

- 1 On the **File Menu**, click **Save Chassis Configuration**.

The **Save Chassis** dialog box appears



- 2 Enter or select the `.whb` file you are saving to and click **OK**.

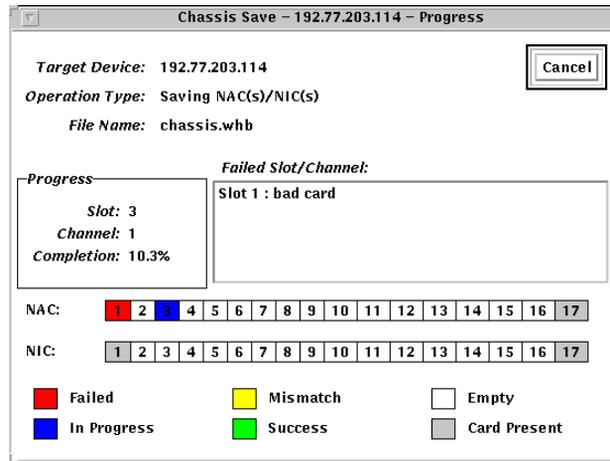


The default directory for `.whb` files is: `$TCMHOME/data/whb/`.



If performing save or restore from the command line and you are not using the `x` prefix option, progress is reported as status messages on screen. For more information see Appendix B, Command Line Interface.

The Chassis Save Progress window appears.



The Chassis Progress dialog box provides the following information:

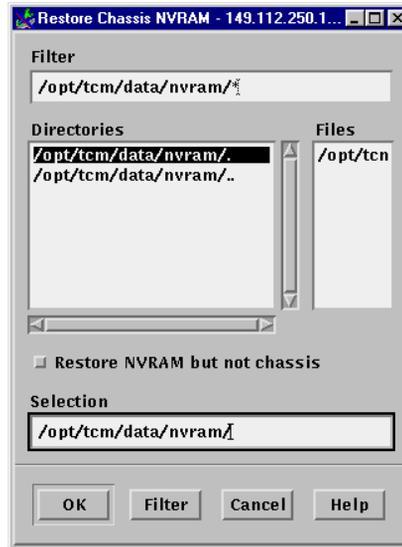
- IP address of the target device.
- Operation Type (save or restore).
- File name the configuration is being saved to or restored from.
- Status of the current operation, including the slot and channel currently being saved from or restored to and the percentage already completed.
- List of any slot or channels from which the utility was unable to retrieve a MIB objects.

Restoring a Chassis Configuration

To restore a chassis configuration using the Total Control Manager Virtual Front Panel Display (VFPD):

- 1 On the **File Menu**, click **Restore Chassis Configuration**.

The **Restore Chassis** dialog box appears



- 2 Enter or select the .whb file you are saving to and click **OK**.

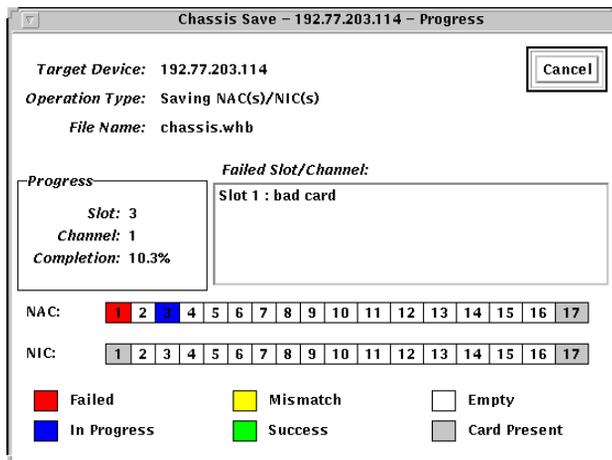


The default directory for .whb files is: `$TCMHOME/data/whb/`.



If performing save or restore from the command line and you are not using the `x` prefix option, progress is reported as status messages on screen. For more information see Appendix B, Command Line Interface.

The **Chassis Save Progress** window appears.





See *Saving Chassis Configurations* for more information on the *Chassis Save Progress Window*.

Component Save to NVRAM

Some device components, such as modems and T1 Cards, store their settings in their own NVRAM and use them for power-on and reset defaults.

To save a component's settings to NVRAM, use the Command Tool to issue the Save to NVRAM command. This command is found in the Software Command group for that component.

To load a component's NVRAM settings, issue the Restore from NVRAM command from the same command group as the Save to NVRAM command.



Not all components support the Save to NVRAM feature. For those that do support this feature, you must select the right command type and group. For example, the modem software command group is only available when you select modems at the channel level, as opposed to selecting the whole card. For T1 cards, you must select the whole card and choose the software command group. See Appendix C for a list of available commands for each type of Total Control Manager component.

NMC Save Chassis to NVRAM

Use the **Save Chassis to NVRAM** command to save the configuration of each component in a device to the NMC's NVRAM. This configuration can then be restored to that device using the **Restore Chassis from NVRAM** command.

To execute the **Save Chassis to NVRAM** and **Restore Chassis from NVRAM** commands, follow these steps:

From OVW or SNM:

- 1 Select a Total Control Manager device icon from the OVW or SNM network map.
- 2 Launch the Command Tool from the integrated Total Control Manager menu items by selecting **Configuration** then **Actions/Commands**. The device display window appears. (For instructions on accessing these menus, refer to *Installing and Integrating Total Control Manager for UNIX* in the *Total Control Manager for UNIX Getting Started Guide*.)

- 3 Select the NMC card (or management module) from the device display.
- 4 Select **Save Chassis from NVRAM** or **Restore Chassis from NVRAM** from the Command to Execute drop-down box.
- 5 Click **Execute**, and wait for the Success result.

From the Total Control Manager Console:

- 1 Select the NMC card (or management module) from the device display.
- 2 Select **Actions/Commands** from the **Configuration** Menu. The Command window appears.
- 3 Select **Save Chassis from NVRAM** or **Restore Chassis from NVRAM** from the **Command to Execute** drop-down box.
- 4 Click **Execute**, and wait for the Success result.

From the UNIX Command Line:

- 1 Execute **Save Chassis to NVRAM** using the following command:

```
tcmcmd -E "save chassis" -G s IPaddr:Sslot
```

or

Execute **Restore Chassis to NVRAM** using the following command:

```
tcmcmd -E "restore chassis" -G s [IPaddr]:S[slot ]
```

where:

- IPaddr = the IP address or hostname of the device
- slot = the slot number where the NMC or management module is located (slot 17 for chassis, and slot 3 for MP/16 units).



For a complete syntax description for the tcmcmd command, see Appendix B, Command Line Interface.

Save Chassis NVRAM

Use the **Save Chassis NVRAM** command to save the configuration of each component in a device to a file on your system. This configuration can then be restored to that device using the **Restore Chassis NVRAM** command.

For more information on the **Save Chassis NVRAM** command, refer to About NVRAM Save/Restore in the online Help system.

6

AUTORESPONSE

AutoResponse allows network managers to define a set of actions (auto response script) they wish to be taken automatically when a specified event occurs in the chassis. The event may be specific to a particular module (NAC or NMC) in a given slot of the chassis, or specific to a particular entity (such as a single modem channel).

Refer to the Total Control Manager online Help for detailed descriptions of all available AutoResponse events and responses.

Basic AutoResponse Operation

Total Control Manager provides a convenient graphical user interface (GUI) through which the Network Manager can configure these auto responses. It is accessed when you select AutoResponse from the Configure menu.



Total Control Manager does not need to be running when an event occurs in order for the NMC to invoke the appropriate response, since these responses are programmed into the NMC.



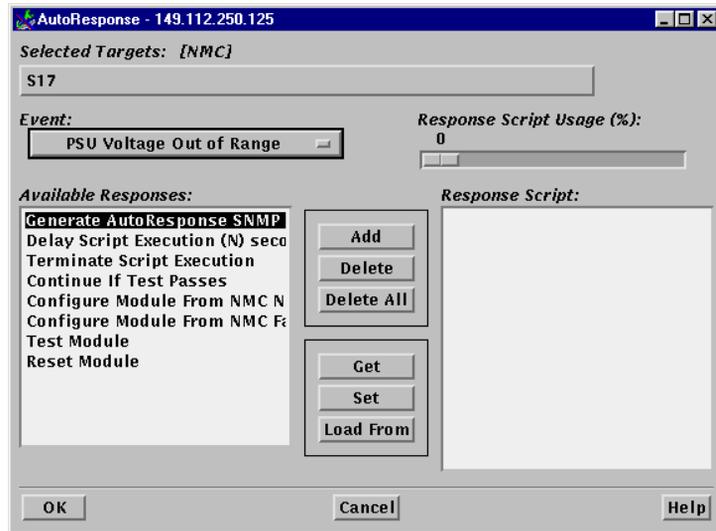
When there are thresholds for an event, they must be programmed through the Configuration Tool. For instance, the Connection Time Limit Expired event requires that you specify the Connection Time Limit threshold.

AutoResponse Configuration

To configure AutoResponse:

- 1 Highlight one or a group of slot(s)/channel(s) on the device display.
- 2 On the **Main Menu** bar, click **Configuration**, and then click **AutoResponse**.

The AutoResponse Window appears.



Selected Devices This box shows the slot(s) or channel(s) selected in the chassis display.

Events Click this box to select an event. If you select an event that requires a descriptor, be sure that you have programmed the descriptor.

Response Script Usage This indicator shows the percentage of available script space you have programmed. Each response may take up a different amount of script space. Monitor this gauge to avoid programming too many responses to a single event.

Responses/Responses Configured The responses available for the event are displayed on the left, and the responses configured for the event are displayed on the right. See AutoResponse Editing for a description of how to configure the list. When you select a response that has descriptors, a window appears presenting you with descriptor options.

AutoResponse Editing

This section describes how to edit AutoResponse settings.

Load From This button brings up the Load From Device window. Enter the IP address, slot and/or channel of the device whose AutoResponse settings

you want to copy, and the response scripts are loaded from the device specified to the currently selected device(s).

Add Response To assign a response to an event:

- 1 Select the response from the Responses List and then click **Add**.

The response is added to the Responses Configured list box.



Responses can only be added one at a time. Some responses may require additional information (e.g., Delay N. Seconds). For responses that require additional input (a descriptor), the AutoResponse Parameters window is displayed.

- 2 Fill in your desired value and click **OK** to set the descriptor.

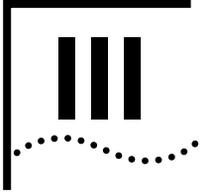
Delete Response To remove a response, select a response from the Responses Configured list and then click the **Delete** button.

Delete All Responses Click the **Delete All** button to remove all the responses from the Responses Configured list.

Get The **Get** button queries the NMC for the response script associated with the event.

Set The **Set** button assigns the response script to the event.



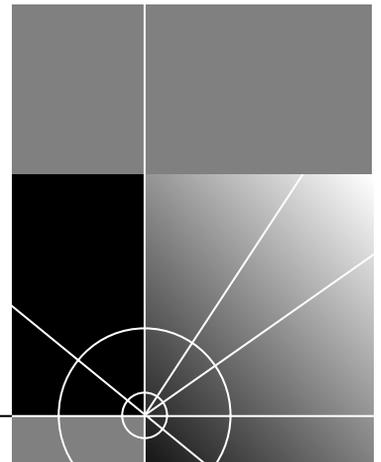


MONITORING THE SYSTEM

Chapter 7 Viewing Statistics

Chapter 8 Setting Traps

Chapter 9 Chassis Inventory



7

VIEWING STATISTICS

This chapter explains how to monitor the performance of cards installed in a hub.

Using the Performance Monitor

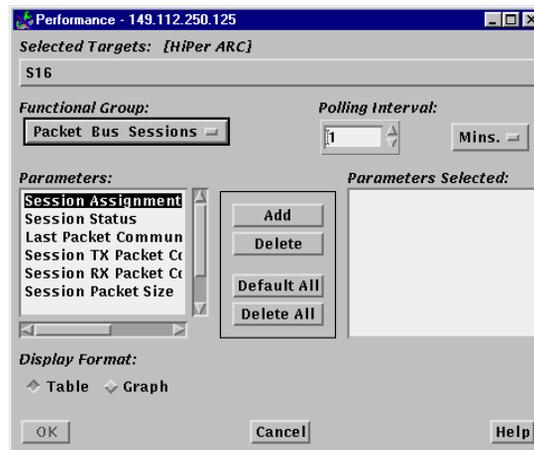
Total Control Manager sets up a systematic approach to monitoring the performance of cards installed in a hub.

You can monitor multiple cards from the chassis display at one time, but they must all be the same type of card. Up to ten parameters can be selected for any one monitoring session.

To monitor a session:

- 1 From the Total Control Manager Console, select the card(s) to monitor.
- 2 From the **Performance** menu, click **Performance Monitor**.

The Performance dialog box appears.



- 3 Click on **Functional Group** to display the list of available groups.

- 4 Select a group to monitor.
- 5 From the **Parameters** field, click the displayed parameters to select them for monitoring.
- 6 Click **Add** to add your choices to the Parameters Selected field.



*If you press **OK** before selecting any parameters to query, the first ten parameters in the first functional group are queried.*

- 7 From the **Polling Interval** area, use the spin box to set your polling interval. The default value is one minute.
- 8 Choose a **Display Format**. The default display is a table.
- 9 Click **OK** to start the query operation.

The Performance Table appears with the statistics for your selected parameters.

S1 C25		Sun	Feb	7				
Time Elaps	254							
Number of	96							
Receiver G	negdB23pt2							
Active Pri	priSw5ESS							
D Channel	dChannelDo							
Continuous	false							
Physical S	psF3Fc2Los							
Line Statu	100							
Loopback I	none							
Timeslot S								
Active Sig	message0ri							
No Idle Mo	0							
No Ring Of	0							
Setting up	0							
E&M Wink S	0							
E&M Wink T	0							
No Channel	0							

8

SETTING TRAPS

This chapter briefly describes traps and shows how to set traps.

What is a Trap?

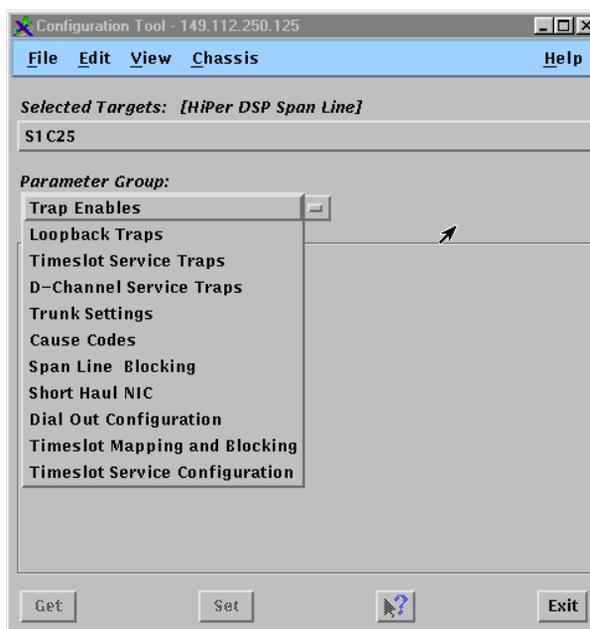
A trap is an SNMP message sent from a device to signal that a specific event or fault has occurred in one of the cards or on the chassis. Traps allow you to detect, isolate, and correct problems or events that occur.

Setting traps for a device

To set a trap for a device:

- 1 On the **Main Menu**, click **Fault** then **Trap Settings**.

The Configuration Tool dialog box appears.



- 2 Select the card or group of like cards to set traps for.
- 3 Select a group of traps from the Parameter Group drop-down box.
The Configuration Table appears with the trap parameters.



Some components, such as the NMC, have several parameter groups with trap settings.

The following table displays common trap parameters and their description. For more information on specific traps, refer to the NMC documentation set and the Total Control online Help system.

Trap Parameter	Description
enableTrap	Trap message is sent to all trap destination entries
enableLog	No trap sent, but event logging information is sent to Accounting Server.

Some parameters do not have the enableLog option. These parameters cannot produce traps for Account Logging

Trap Parameter	Description
EableAll	Both trap and event logging information is sent.

Be careful configuring traps with the enableAll setting. When you enable a trap and a log, the same information is sent twice by the NMC.



Some modem fault parameters require that you to set thresholds. Use the context-sensitive online Help to see if the parameter you selected requires a threshold setting. Go to the Modem Event Thresholds parameter group to set thresholds.

Context-sensitive Help

To display information about trap setting parameters, use the context-sensitive Help button, pictured here:



When you click this button, the pointer picks up the context-sensitive Help icon. Simply point and click the parameter you want more information about, and a pop-up Help window appears.

Setting Trap Destinations

Traps are sent to only those destinations specified in the trap destination database.

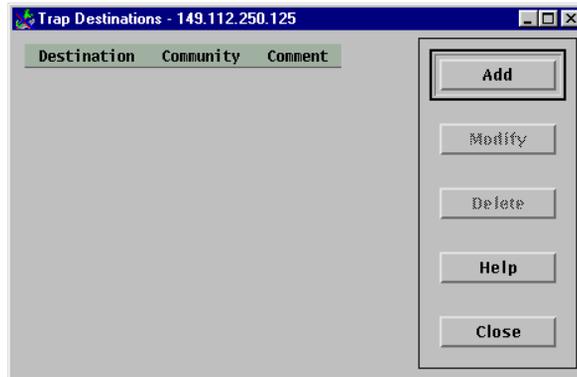
To add to or modify the trap destination database:

Use the trap destination utility, which can be launched in any of the following ways:

- Select **Trap Destinations** from the **Fault Menu**
- From the integrated Total Control Manager menu of your OWW or SNM network management platform select **Trap Destinations**.
- From the UNIX command line type **xtcmtrap** followed by the IP address or hostname of the device from which the traps will be sent. (See Appendix B for more details on using the command line interface.)

Trap Destination Window

Use the Add, Modify, and Delete buttons to change trap destination entries.



Button or Field	Description
Add	Displays a dialog box for entry of new destinations.
Modify	You must select an entry from the destination database before using this button. Displays a dialog for changing the community string or comment for the selected device.
Delete	Deletes the selected entry.
Destination	Displays the IP address to which the NMC sends traps.
Community	Must display the current community string for the destination device.
Comment	User-entered description of the destination device.

9

CHASSIS INVENTORY

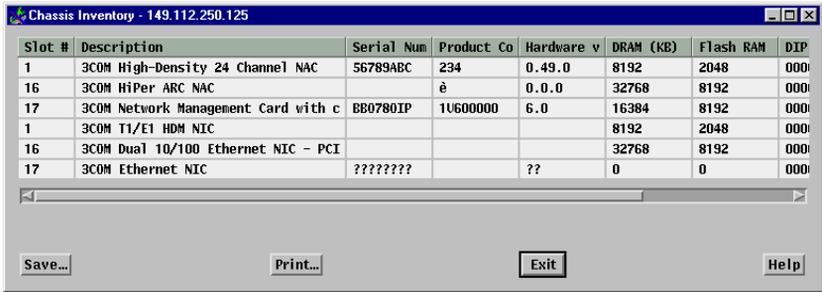
The chassis inventory utility displays detailed descriptions of the components in a chassis.

Launching the Chassis Inventory Utility

To launch the Chassis Inventory utility:

- 1 Open a console window for the device that you want to inventory.
- 2 On the **Main Menu** bar, click **Configuration** then click **Inventory**.

Chassis Inventory Window Elements



The screenshot shows a window titled "Chassis Inventory - 149.112.250.125". It contains a table with the following data:

Slot #	Description	Serial Num	Product Co	Hardware v	DRAM (KB)	Flash RAM	DIP
1	3COM High-Density 24 Channel NAC	56789ABC	234	0.49.0	8192	2048	0000
16	3COM HiPer ARC NAC		e	0.0.0	32768	8192	0000
17	3COM Network Management Card with c	BB0780IP	1U600000	6.0	16384	8192	0000
1	3COM T1/E1 HDN NIC				8192	2048	0000
16	3COM Dual 10/100 Ethernet NIC - PCI				32768	8192	0000
17	3COM Ethernet NIC	????????		??	0	0	0000

At the bottom of the window, there are four buttons: "Save...", "Print...", "Exit", and "Help".

Inventory Data Table

The following table displays the information for each installed component. These fields are read-only.

Field	Description
Slot #	Each entry in the inventory data table is labeled by its slot number in the chassis.
Description	Textual description of the chassis being displayed.
Serial Number	Serial number of the component.

Field	Description
Product Code	Hardware product code of the component.
Hardware version	Hardware version of the component.
DRAM (KB)	Amount of dynamic RAM installed in the component.
Flash RAM	Amount of flash RAM installed in the component.
DIP Switches	<p>A bit field value displaying DIP switch settings currently in effect. Graphically, the displayed binary corresponds to settings in the following way:</p> <p>DIP Switch Numbers: 16151413121110987654321</p> <p>Bit Field Placeholders: 0000000000000000</p> <p>Where a "1" at any of the above positions means that the corresponding DIP switch is ON.</p> <p>For example, 0000000010010000 means that DIP switches 8 and 5 are ON and all others are off. See DIP Switch Field Conversion</p>
Software Version	Version of software currently installed in the component's flash RAM.

Inventory Control Buttons

The following table describes the inventory control buttons.

Button	Description
Save	Saves the inventory data table to an ASCII text file.
Print	Prints displayed data to a printer or file either in postscript or ASCII format.
Exit	Exits the inventory utility.

Inventory Print Window

The following table describes the Inventory Print Window options.

Option	Description
Print Target	Selects whether to print to file or print to a printer.
Print Format	Selects whether to print in postscript format or ASCII text format.
Print Command	Postscript output is piped to this command. The TCM_PRINT_COMMAND system parameter sets the default.

Using the Inventory Data Table

The following section describes the features of the Inventory Data Table.

Scroll Bars

Use the scroll bars to the right and bottom of the data table to navigate the table. Click on the arrows at the ends or click and drag the bar in the middle.



Adjusting Column Width

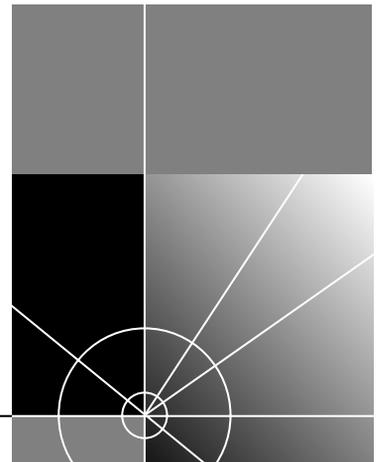
Column width can be adjusted using the mouse. Place the cursor over the column divisor line until it changes to a bar and arrow, then click and drag the line left or right.

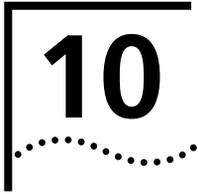




MAINTENANCE AND TROUBLE CLEARING

- Chapter 10** Software Download
- Chapter 11** Testing
- Chapter 12** Feature Enable
- Chapter 13** Cellular Modem Support





SOFTWARE DOWNLOAD

The Total Control Manager software download utility upgrades the device component software.

Before performing a software download

Before performing a software download, you must copy the upgrade code for the component you are upgrading to the workstation where you are running Total Control Manager. Update codes are provided on disk as a part of the upgrade kit for each component.

To copy an upgrade code:

Copy the *.nac (NAC) and *.sdl (SDL) files (for devices using the SDL-1 download mechanism) or *.DMF files (for devices using the SDL-2 download mechanism) to the following directory:

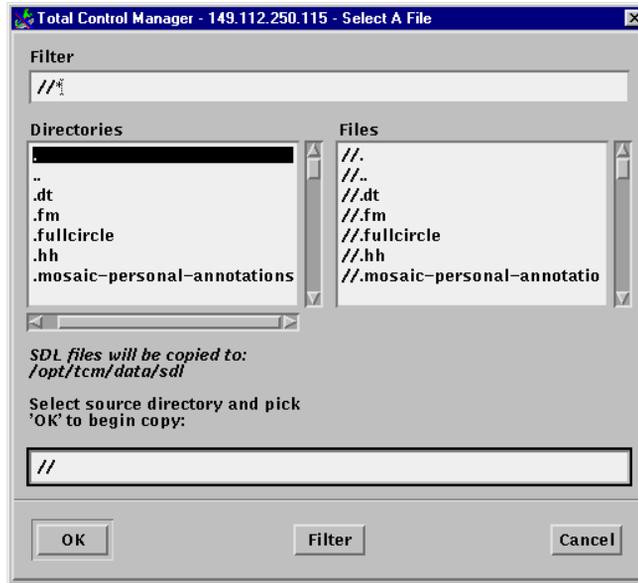
```
$TCMHOME/data/sdl/
```

Import SDL Files Utility

The Software Download (SDL) file import utility lets you automatically copy SDL files to the correct SDL directory from within the Total Control Manager Console.

To copy files to the SDL directory:

- 1 On the **Main** Menu bar, click **File**, and then click **Import SDL Files**. The Select a File dialog box appears.



- 2 Type or choose the name of the directory that contains the SDL/NAC files you want to copy.

Launching the Software Download Utility

Software downloads can be initiated in one of three ways:

- From the integrated Total Control Manager menu items in your OVV or SNM network management platform, select **Software Download**.
- From the Total Control Manager Console, select **Software Download** from the **Configuration** Menu.
- From the UNIX command line, send the following command:

```
xtcmsdl target
```

where target = the IP address or hostname of the device that contains the component you are upgrading. (For more information on the command line interface, see Appendix B.)



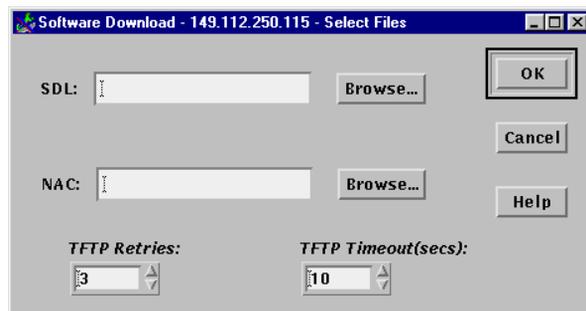
Total Control Manager only performs software downloads at the card level. You cannot select an individual channel as the target for a software download.

Selecting SDL, NAC, and DMF Files

To select files to use when downloading software:

- 1 On the **Main Menu** bar, click **Configuration**, and then click **Software Download**.

The Software Download dialog box appears.



- 2 For SDL-1, type or choose the name of the SDL and NAC files to use for the upgrade.

For SDL-2, type or choose the name of the SDL and DMF files to use for the upgrade.



NMC, HiPer DSP, and NETServer NAC upgrades do not require an SDL file. When downloading to these devices, the SDL field is grayed-out.

The latest versions of SDL and NAC files automatically appear in the file boxes if they were copied to the \$TCMHOME/data/sdl directory. If the desired files are not in this directory, click the Browse¼ buttons to locate them.

Upgrade File Identification

SDL and NAC filenames contain identifying information about card type, version level, and file type. The examples below show how to interpret this information from the filename.

Filename	Card-specific Prefix	Version #	File Type
nm040100.nac	nm (Network Management Card)	4.1.0	NAC
qf030005.nac	qf (Quad V.34 Modem)	3.0.5	NAC
li010101.sdl	li (NETServer ISDN Card)	1.1.1	SDL

Filename Prefixes Filename prefixes indicate which component type uses a given SDL, NAC, or DMF file. In most cases, the NAC and SDL files for a given component have the same prefix. There are some exceptions, such as the Single T1 Card, as shown in the following table.

SDL Prefix	NAC Prefix	Card
NM	NM	Network Management Card
QF	QF	Quad V.34 Modem (Analog, Digital, Analog/Digital)
QM	QM	Quad V.32 bis Digital Modem
QT	QT	Quad V.32 terbo Modem (Analog, Digital, Analog/Digital)
QR	QR	Single Sided Modem Card
T1	ST	Single T1 Card
T1	T1	Dual T1 Card
CT	CT	Channelized T1 Card
EN	EN	Ethernet TCP/IP Gateway Card
TR	TR	Token Ring TCP/IP Gateway Card
XP	XP	X.25 PAD Gateway Card
TR	LE	NETServer Ethernet Card
TR	LT	NETServer Token Ring Card
TR	LF	NETServer Frame Relay Card
PM	PM	MP/16 Management Module
PF	PF	MP/16 V.34 Modem Module
DP	DP	T1 Primary Rate ISDN Card
LI	LI	NETServer ISDN Card
EP	EP	E1 Primary Rate ISDN Card
WG	WG	Wireless Access Gateway
EC	EC	Channelized E1 Card
IF	IF	Quad I-Modem Card
IR	IR	Quad I-Modem Card
LR	LR	Netserver Token Ring ISDN Card

Progress Windows The following progress windows appear successively to inform you of the progress of the download.

1 Establishing a Connection



2 Transferring the SDL File (NACs other than the NMC only)



3 Erasing Flash ROM



If the Flash ROM erasure is not finished before the default time out value, the software download aborts. The default timeouts have the following values:

- NMC: 600 seconds
- All other NACs: 180 seconds

4 Transferring NAC File



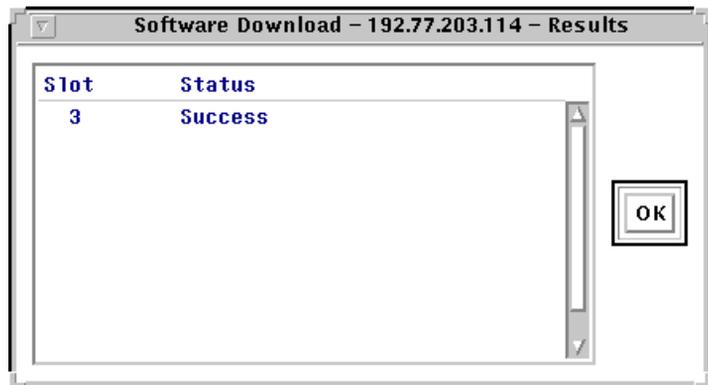
Percentage of transfer completed is displayed.

5 NMC Reset

NMC upgrades only: A dialog box displays seconds remaining before timeout. The default time out is 90 seconds. If the time out is exceeded, the software download aborts.

6 Results Window

When the software download has finished (or is aborted), a dialog box appears, showing the final status of each attempted download.





11

TESTING

This chapter describes the different types of testing available.

Tone Tests

Use the tone test utility to test the line quality of a T1 DS0 channel. One side sends a tone at a specified frequency and amplitude. The other side receives the tone and reports its frequency and amplitude. Variances between the send tone and receive tone indicate poor line quality.



During a tone test, the DS0 is placed in transparent mode so that any signaling (E&M) is ignored.

Launching the Tone Test Utility

You can initiate receive and send tone tests in any of the following ways:

- From the integrated Total Control Manager menu items in your OVW or SNM network management platform, select **Send a Tone** or **Receive a Tone**.
- From the Total Control Manager Console, select a modem from the device display and then **Send a Tone** or **Receive a Tone** from the **Fault Remote Tests** menu.
- From the UNIX command line, send the following commands:

To send a 404 Hz tone at 0 dBm:

```
xtcmtone -S target
```

To receive a tone:

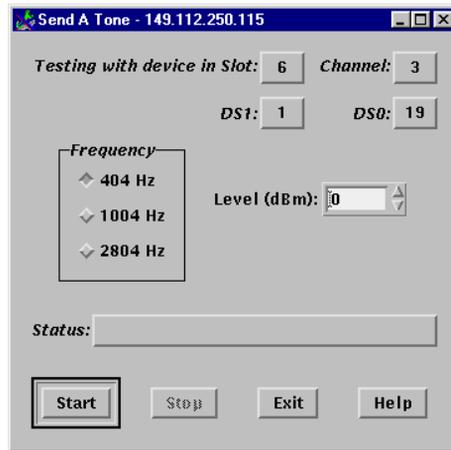
```
xtcmtone -R target
```



***target** = IP address or hostname of the device with the component you want to upgrade. (For additional tone test parameters, and more information on the command line interface, see Appendix B.)*

Sending a Tone Test

After launching the Send Tone utility (and a target is selected) the send tone dialog box appears.



Test Description

The following fields describe the test to be performed:

- Slot/Channel-shows slot and channel of the target modem you selected for this test.
- DS0/DS1-shows the T1 time slot assigned to the target modem.

Status Box

The status box shows the status of the last test performed. The status box clears only after starting a new test.

To Begin a Tone Test

- 1 Select the desired tone type using the following fields:
 - Frequency-select a frequency for the tone by clicking on one of three radio buttons.
 - Level-select an amplitude (in dBm) for the tone by clicking on the arrows.
- 2 Click **Start** to start the test.

Stopping the Tone Test

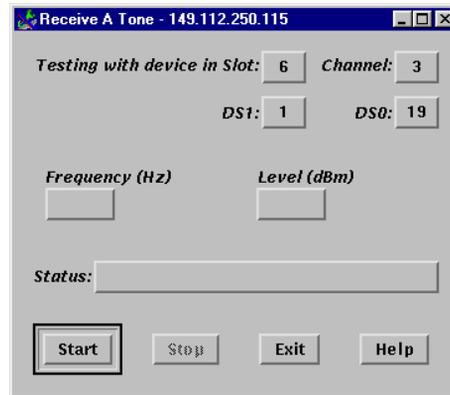
To stop sending a tone test, click **Stop**.



The test continues until you click **Stop**. Exiting the tone test dialog box **DOES NOT** terminate the test.

Receive Tone Test

After launching the Receive Tone utility (and a target is selected) the receive tone dialog box appears.



Test Description

The following fields describe the test to be performed:

- Slot/Channel-shows slot and channel of the target modem you selected for this test.
- DS0/DS1-shows the T1 time slot assigned to the target modem.

Status Box

The status box shows the status of the last test performed. The status box clears only after starting a new test.

To Begin the Receive Tone Test

Click **Start** to start the test.

Test Results

- Frequency-displays frequency of the received tone.
- Level-displays the amplitude (in dBm) of the received tone.

To Stop the Tone test

To stop sending a tone test, click **Stop** in the Test window.

The Stop button also freezes detection results, as Total Control Manager will update results as long as you run the test.



You must click Stop in the Test window to terminate active Tone tests. These tests do not automatically terminate when you close the Test window.

Modem Tests

Use the modem tests utility to perform all modem tests. The following tests are available:

- Local Analog Loop Back
- Local Digital Loop Back
- Remote Digital Loop Back
- V54 Local Analog Loop Back
- V54 Remote Digital Loop Back
- Self Tests
- Test RAM
- Test ROM
- Test NVRAM
- Idle Phone Line Test

Launching the Modem Test Utility

The modem test utility can be launched in any of the following ways:

- From the integrated Total Control Manager menu items in your OVW or SNM network management platform, select **Modem Tests**.
- From the Total Control Manager Console, select one or more modems from the device display, then **Modem Tests** from the **Fault** Menu.
- From the UNIX command line, send the following commands:

```
xtcmtest target
```

where **target** = IP address or hostname of the device with the component you want to upgrade. (For more information on the command line interface, see Appendix B.)

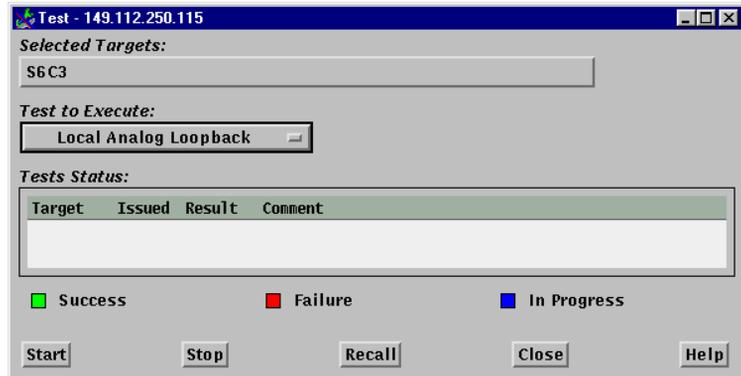


To query a modem to determine whether a test is already in progress or view the results of the last issued command, send the following command:

```
tcmtest [-q] target
```

The Modem Tests Window

After launching the Modem Test utility (and a target is selected), the test dialog box appears.



Selected Targets

The selected targets field indicates the slot and channel numbers of all the components that you selected to be tested.

Tests Status Box

The Tests Status box shows the status of the last test performed. Use the color-coded key directly below the status box to interpret the test results. The test status fields are described in the following table.

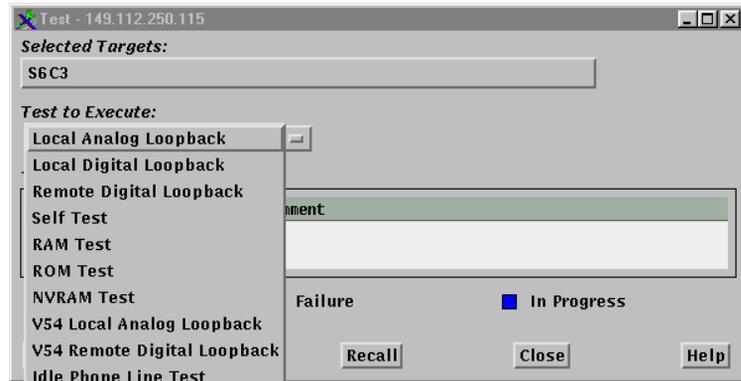
Field	Description
Target	Indicates the slot and channel number of the target component.
Issued	Indicates whether or not the command was successfully initiated.
Result	Indicates the results of the command.
Comment	Displays details about failed commands.

Recall

The **Recall** button displays the results of the last commands issued to the selected components (before issuing a new command). The type of command issued for each component is displayed in the comments field (if it differs from the currently selected Test to Execute).

Performing Modem Tests

- 1 Select which type of test you want to perform from the Test to Execute drop down box (click the box).



- 2 After you have selected a test, click **Start** to start the test.
- 3 When the test finishes, compare the results with the color coded key below the status box.

Loopback Tests

Total Control Manager closes the modem test window while running loop back tests. Closing the modem test window does not terminate loop back tests. To stop loopback tests, click **Stop** in the Modem Test window.



You must click Stop in the Test window to terminate active Loop back tests. These tests do not automatically terminate when you close the Test window.

Exiting the Tests Window

Click **Close** to exit the tests window.

Responder Tests

102/105 Responder testing is usually associated with T1 trunks. In the Total Control Manager chassis, the test is performed by the modem.

The 102/105 responder tests are performed in two directions: Near to Far and Far to Near. In accordance with AT&T Compatibility Bulletin No. 106, these tests measure the following:

- Any 2-way loss of signal, measured at 404, 1004 and 2804 Hz in decibels.



The 102 Responder test is a subset of the 105 Responder test, and only uses the 1004 Hz tests.

- C-Message Noise (in dB_{rnC}, or decibels relative to reference noise with C-message weighting)
- C-Notched Noise (in dB_{rnC}, or decibels relative to reference noise with C-message weighting)

These tests also compute the Signal to Noise ratio, reported in decibels.

For more information on 102/105 Responder tests, refer to 102/105 Responder Tests in the online Help system.



12

FEATURE ENABLE

This chapter describes how to enable an optional feature for Total Control Manager.

When you purchase an optional feature for the chassis, such as cellular support, you must enable that feature through the chassis NMC to activate it.

Feature enable is controlled through the NMC. Once the feature has been enabled for a particular NMC, the feature is enabled for all components in the chassis.

There are two methods for performing feature enable: manual feature enable and file-based feature enable. Both methods require that you contact 3Com Customer Service and provide them with the serial number(s) of the NMC(s) in the chassis to be activated.

Total Control Manager Feature Enable

Some features must be enabled in each NMC and once for each installation of the Total Control Manager software. The feature enable is performed with a disk that you can obtain from your 3Com Sales Representative. Insert the disk on the PC where Total Control Manager is installed, and run the Setup program. Once the feature is enabled, you will be able to configure the related parameters in the Configuration Window.

Manual Feature Enable

Manual feature enable is recommended if you have fewer than five chassis for which you want to enable a feature. If you have a large number of chassis for which you want to enable a feature, we recommend using the file-based feature enable.

- 1 Contact 3Com Customer Service to obtain the feature key for each NMC in the chassis for which you want to enable the feature. You must

provide them with the serial number for each of the NMCs. (You can easily obtain the serial number for an NMC using the chassis inventory utility.)

- 2 Once you have obtained the feature key(s), open a console window for the chassis that contains the NMC associated with that key.



Feature keys are specific to a particular NMC. If you use a feature key on the wrong NMC, the feature will not be enabled.

- 3 Select the NMC from the device display by clicking it.
- 4 On the **Main Menu** bar, click **Configuration** and then click **Feature Enable**. The manual feature key window appears.



If you did not select the NMC, a file browser appears. This is for file-based feature enable. Cancel out of this window and select the NMC before launching the feature enable utility.

- 5 Type in the feature key you received from 3Com Customer Service.
- 6 Click **Set** to apply the feature key. If the key is properly set, a pop-up appears: "Feature key was set for this device."



The feature enable utility sets the key, but it does NOT validate it. If you are using the wrong feature key (for instance, a feature key for a different NMC) the "Feature key was set for this device" will appear, but the new feature will not work.

File-Based Feature Enable

File-based feature enable is recommended if you want to enable a feature in a large number of chassis.

With file-based feature enable, you receive a file from 3Com Customer Service that contains the feature keys for all of your chassis NMCs. Total Control Manager's feature enable utility is then able to automatically set the right keys for each of your chassis NMCs in one step.

- 1 Contact 3ComCustomer Service to obtain a key file. You must provide them with the following information for each NMC:
 - The serial number
 - The IP address

- The slot number (17 in the full-size chassis, and 7 in the seven-slot chassis)



If you do not have an NMC serial number, use the chassis inventory utility to display it.



Do not select an NMC before launching the feature enable utility. If an NMC is selected, the manual feature enable window appears. If necessary, cancel out of this window and de-select the NMC before launching the feature enable utility.

- 2 From any open console window, select **Feature Enable** from the Configuration menu. A file browser appears.
- 3 From the file browser, select the file that you received from 3Com Customer Support and click **OK**. The file-based feature enable table window appears.
- 4 Fill in any missing or changed information by clicking a cell and then editing its contents.
- 5 Click **Set** to initiate the feature enable sequence. "Success" is displayed for each slot in the Results column. The feature is now enabled.
- 6 Click **Close** to exit the feature enable utility.



13

CELLULAR MODEM SUPPORT

This chapter describes how to install and start using the optional Cellular modem software.

What is Cellular Modem Support?

Cellular Modem Support is an optional feature you can purchase for use with Total Control Manager. This feature supports cellular modem applications by providing direct configuration of new cellular objects added to the modem MIB. This direct configuration includes configuration objects for MNP10 and Enhanced Throughput Cellular (ETC).

What Can Cellular Modem Support Do for Me?

Modems with cellular support can negotiate for either of two cellular protocols: ETC and MNP10. These protocols are designed to combat a variety of link establishment and data transfer problems specific to cellular calls.

Enhanced Throughput Cellular

Enhanced Throughput Cellular (ETC) allows a modem to recognize calls from other modems using ETC and alter its settings for increased performance when transmitting data across cellular links. ETC requires that the modems establish V.42 error control. ETC also requires a V.32 bis, V.32, or V.22-type connection. ETC does not function under V.34 modulation.

The modem implements ETC whenever it answers a call and receives the ETC calling tone from an originate modem. The modem must receive the ETC calling tone from the originate modem. It is the only way for the modem to know that it will be transmitting over a cellular link. If the modem does not receive the ETC calling tone, the call progresses normally without ETC.

The modem also implements ETC settings for all outgoing calls. This means that the modem forces a V.32- or V.22-type modulation and V.42 with a reduced packet size, and will not connect using V.34. It also transmits using de-emphasis and reduced transmit level, even if it is not connecting across a cellular link, which results in reduced throughput or even dropped calls. If the modem is going to be used for originating calls across noncellular links, we recommend using the Do not Originate with ETC (mdmCeDbNoEtcDis/S66.7) setting.

MNP10 MNP10 modifies data transfer techniques for increased reliability over cellular links. It uses three major strategies:

- Aggressive Adaptive Packet Assembly (AAPA) adjusts the data packet size during data transfer in response to line conditions, ensuring the maximum allowable packet size at all times.
- Link Management Idle (LMI) monitors line conditions when no data is being sent, and helps guard against lost connections.
- Dynamic Transmit Level Adjustment (DTLA) changes the transmit level during transmission to adapt to changing line conditions. DTLA is only necessary for calls across cellular links. Unless the modem is set for MNP10 Cellular (mdmCeOperDis/S60.3), it uses DTLA only when the originating modem is set for MNP10 Cellular.

MNP10 can also be negotiated for noncellular calls, but does not offer any advantage over other protocols for noncellular calls.

MNP Extended Services (mdmCeMnpxDis/S60.1) must be disabled to originate calls under V.34, V.FC, HST, or V.32 terbo.

Installing Cellular Modem Support

In order to provide flexibility for our systems customers who may have a large installed base of product, the feature can be enabled in one of two ways:

The modem is shipped from the factory with Cellular support permanently enabled (quad modem versions 2.0 and higher).

The NMC and the Quad Modem Card (versions 2.0 and higher) provide the ability to enable Cellular support on a chassis-wide basis through the NMC. This eliminates the need to obtain and perform individual feature enables for all of the modems in a network and ensures that if a modem is swapped, the replacement will also support cellular protocols. When

this feature is enabled, the NMC will inform the modems that they need to support the Cellular protocols any time a modem is installed, reset, or restored to service.

Using Cellular Modem Support

This section describes how to use cellular modem support. For more information, refer to the Total Control Manager online Help system.

Activating ETC and MNP10

Three cellular templates stored in the modem's read-only memory (ROM) activate ETC or MNP10 with the modem settings that offer maximum performance.

Loading a template

To activate both ETC and MNP10:



CAUTION: Do not load cellular templates if you have made special configuration changes to the modems. When you load a cellular template, it loads the hardware flow control defaults (&F1). Instead, configure cellular parameters individually with the settings listed under the appropriate template.



Only one template may be loaded at a time.

- 1 Load the MNP10 Cellular Template.
- 2 Configure the modem with the settings listed for the ETC fixed site (or mobile site) template.
 - MNP10 Cellular Template
 - Total Control Manager Modem Software Command: Load MNP10 Cellular Defaults
 - MIB Extension: loadMnp10CllulrDflt(25)
 - AT Command: &F4



This template loads the hardware flow control defaults (&F1) and the following settings:

MNP10 Negotiation

The modem negotiates MNP10 for incoming and outgoing calls. If the connecting modem does not support MNP10, the call progresses without MNP10.

DTLA is only used if the originate modem negotiates MNP10 cellular, or if the modem is set for Link Across a Cellular Network.

MNP Extended Services

Extended Services (MNPX) allows the modems to negotiate MNP10 as a part of the V.42 negotiation process. If the connecting modem supports MNPX, V.42 negotiation and V.42 bis are the modulation and compression engine of choice. If the connecting modem does not support either V.42 or MNPX, MNP10 is negotiated under MNP, and MNP5 compression is used.

ETC Fixed Site Cellular Template

- Software Command: Load V42 Cellular Fixed Defaults
- MIB Extension: loadV42CllulrFxdDflt(27)
- AT Command: &F6

This template loads the hardware flow control defaults (&F1) and the following settings:

ET The modem implements ETC whenever it answers a call and receives the ETC calling tone from an originate modem. The modem must receive the ETC calling tone from the originate modem. It is the only way for the modem to know that it will be transmitting over a cellular link. If the modem does not receive the ETC calling tone, the call progresses normally without ETC.

The modem also implements ETC settings for all outgoing calls. This means that the modem forces a V.32- or V.22-type modulation and V.42 with a reduced packet size, and will not connect using V.34. It also transmits using deemphasis and reduced transmit level, even if it is not connecting across a cellular link, which results in reduced throughput or even dropped calls. If the modem is going to be used for originating calls across noncellular links, we recommend using the Dialback without ETC setting.

ETC Fixed Site Operations

The modem sets transmit levels for fixed site cellular operations when ETC is used.

ETC Calling Tone Enabled

The modem generates an ETC calling tone when it originates a call. The calling tone indicates to the answering modem that you wish to use the ETC cellular protocol.

DCE Startup Rate Some cellular links may be so poor that calls are dropped even before the modems can initialize modulation and error control negotiation. To reduce the number of dropped calls, the modem is set to a 9600 bps startup rate. The modems negotiate at the lower and more stable link rate, and after ETC has been implemented, they raise the link rate to the higher levels afforded by ETC.

Wait for Carrier 90 Seconds Over cellular links, modems often take longer to establish a carrier. This setting lengthens the time the modem waits for a carrier to 90 seconds.

Loss of Carrier Disconnect Cellular links frequently receive disturbances that cause extended loss of carrier. This setting lengthens the time before the modem hangs up upon loss of carrier to 10 seconds.

ETC Mobile Cellular Template

- Software Command: Load V42 Cellular Mobile Defaults
- MIB Extension: loadV42CellularMblDflt(26)
- AT Command: &F5

Use this template to enable ETC when the modem is answering or dialing from a cellular phone. Although Quad Modem Cards are usually not located on the mobile end (cell side) of a connection, you can advise callers to use these settings when placing calls from mobile locations.

The settings for this template are identical to those for the V.42 fixed site template (&F6), except for the following setting:

Enable ETC Mobile The modem sets transmit levels for mobile site (cell side) cellular operations when ETC is used.

Cellular Configuration Group

The parameters in this modem configuration group apply only to cellular calls. The settings do not affect normal connections.

ETC Parameters The following settings only affect ETC calls.

ETC Max Link Rate

This parameter sets the maximum DCE rate, preventing modems from connecting or falling forward to link rates higher than specified. Lowering

the maximum link rate to 9600 bps can provide more stability for cellular calls under adverse conditions. However, higher throughput is sacrificed for calls over stronger cellular links that can support higher link rates.

- MIB Object: `mdmCeDceBitraLim`
- Command Setting Equivalent: `S64`
- Settings:
 - Max DCE Rate
 - 4800 bps
 - 7200 bps
 - 9600 bps
 - 12000 bps
 - 14400 bps
- Default: Max DCE Rate

ETC Transmit Level

This parameter setting allows a cellular modem to control the DCE transmit level (default) or permits a specific decibel level to be imposed for a cellular operation.

A reduced transmit level is required for data transfer across cellular links. When ETC is established for a call, the modem automatically reduces its transmit (TX) level to the value specified by this parameter.

With the default setting, the modem sets the TX level according to ETC specifications based on whether it is transmitting over T1 or analog lines and whether the modem is set for fixed site or mobile. We do not recommend changing this setting.

- MIB Object: `mdmCeDceTxLev`
- Command Setting Equivalent: `S65`
- Settings: Modem control TX level (dBm)
 - 10 - 25
- Default: Modem control TX level

ETC Negotiation

This parameter setting controls whether or not the modem will use ETC in response to the ETC calling tone.

- MIB Object: mdmCeV42EtcDis
- Command Setting Equivalent: S66.0
- Settings:
 - Disable
 - Enable
- Default: Disable

ETC Fixed/Mobile Site

This parameter determines whether a cellular modem will use a fixed site or mobile site cellular profile. The cellular profile sets transmit levels based on ETC specifications. With the exception of certain nautical and aerospace applications, most Total Control Manager installations are fixed site.

- MIB Object: mdmCeV42CellSite
- Command Setting Equivalent: S66.1
- Settings:
 - Fixed site
 - Mobile site
- Default: Fixed site

ETC Calling Tone

This parameter determines whether or not the ETC calling tone is sent out by a Cellular modem during link establishment, telling the answering modem to use ETC settings.

Enable the ETC calling tone when originating calls from the mobile side (cell side) of a cellular link. Disable calling tone only if you experience problems when originating calls to noncellular modems.

- MIB Object: mdmCeV42EtcCallToneDis
- Command Setting Equivalent: S66.2
- Settings:
 - Disable

- Enable
- Default: Disable

Force ETC Settings

If ETC negotiation is enabled, this setting forces ETC transmit level control for all incoming calls.

Some callers may wish to negotiate ETC using the earlier 1.0 version, which does not generate the ETC calling tone used in version 1.1. In order for the modem to implement ETC when answering calls from modems with the earlier 1.0 version, it must be set to force ETC for every call it receives. (In this circumstance, the system administrator may wish to dedicate some modems for cellular calls only.)

- MIB Object: `mdmCeV42EtcTxLevConDis`
- Command Setting Equivalent: `S66.3`
- Settings:
 - Disable
 - Enable
- Default: Disable

ETC DCE Startup Rate

This permits selection of the DCE start-up rate for a Cellular modem.

Some cellular links may be so poor that calls are dropped even before the modems can initialize modulation and error-control negotiation. To reduce the number of dropped calls, the modem should be set to a 9600 bps startup rate. The modems negotiate at the lower and more stable link rate, and after ETC has been implemented, raise the link rate to the higher levels afforded by ETC.

- MIB Object: `mdmCeDceStartRate`
- Command Setting Equivalent: `S66.4` and `S66.5`
- Settings:
 - Auto
 - 4800 bps
 - 9600 bps

- Default:Auto

ETC Transmit Deemphasis

This parameter permits selection of DCE transmit deemphasis for a Cellular modem. Transmit de-emphasis is recommended when connecting over a cellular link, whether the modem is on the fixed site or mobile site. When enabled, transmit de-emphasis is automatically implemented whenever the modem receives an ETC call.

- MIB Object: mdmCeV42DceTxDemDis
- Command Setting Equivalent: S66.6
- Settings:
 - Disable
 - Enable
- Default: Disable

Do not Originate with ETC

Use the "disable" setting to disable ETC when originating calls to a noncellular modem, yet allows ETC negotiation in answer mode. If the modem is used to place outgoing calls to noncellular modems, use this setting to disable ETC during originate mode.

- MIB Object: mdmCeDbNoEtcDis
- AT Command: S66.7=1
- Settings:
 - Disable
 - Enable
- Default: Disable

MNP10 Parameters

The following settings only affect MNP10 calls.

MNP10 Negotiation

Enabling this option for a Cellular modem allows a cellular modem to connect using MNP10.

- MIB Object: mdmCeMnp10Dis
- Command Setting Equivalent: S60.0

- Settings:
 - Disable
 - Enable
- Default: Disable

MNP Extended Services

Extended Services (MNPX) allows the modems to negotiate MNP10 as a part of the V.42 negotiation process. If the connecting modem does not support either V.42 or MNPX, MNP10 is negotiated under MNP.

With MNPX disabled, modems can not negotiate MNP10 under V.42. If MNPX is disabled, calls from modems using MNPX and V.42 connect without MNP10.

- MIB Object: `mdmCeMnpDis`
- Command Setting Equivalent: `S60.1`
- Settings:
 - Disable
 - Enable
- Default: Disable

MNP10 Compression Type

This option applies to a Cellular modem for which data compression has been enabled. With the V.42 bis setting, the modem decides which type of compression engine to use on a case-by-case basis. Selecting MNP5 allows only that type of compression to be used on a cellular call.

- MIB Object: `mdmCeComp`
- Command Setting Equivalent: `S60.2`
- Settings:
 - MNP5
 - V.42 bis
- Default: MNP5

MNP10 Celllark

Uses Dynamic Transmit Level Adjustment (DTLA). With the default, noncellular setting, DTLA is only used if the remote modem originates an MNP10 cellular call. Enable only when originating from a cellular link.

- MIB Object: mdmCeOperDis
- Command Setting Equivalent: S60.3
- Settings:
 - Disable
 - Enable
- Default: Disable

MNP10 Link Speed

Use the 1200 bps option to provide stability and reliability for extremely noisy MNP10 link conditions.

- MIB Object: mdmCeLinkSpeed
- Command Setting Equivalent: S60.4
- Settings:
 - Link at High Speed
 - Link at 1200 bps (V.22)
- Default: Link at High Speed

MNP10 Fallback

When enabled, prevents the modem from falling back to lower speeds during MNP10 connections. Used for testing purposes only.

- MIB Object: mdmCeMnp10FallbackDis
- Command Setting Equivalent: S60.5
- Settings:
 - Enable
 - Disable
- Default: Disable

MNP10 Fall Forward

This parameter prevents the modem from falling forward to higher speeds during MNP10 connections. Used for testing purposes only.

- MIB Object: mdmCeMnp10FallforDis
- Command Setting Equivalent: S60.6
- Settings:
 - Enable
 - Disable
- Default: Disable

MNPX Detection Pattern

The MNPX pattern expedites MNP10 negotiation when connecting to other modems that support MNPX.

The MNPX detection pattern can cause problems when dialing to modems without MNPX—they connect, but without MNP10. Disable the MNPX detection pattern if you experience this problem when dialing to modems without MNPX. In answer mode, the MNPX detection pattern should always be enabled.

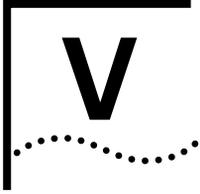
- MIB Object: mdmCeMnpxDetPhaEna
- Command Setting Equivalent: S60.7
- Settings:
 - Enable
 - Disable
- Default: Enable

MNP10 V.42 bis Short Form Negotiation Rules

Provides V.42 bis compatibility when originating to some older MNP10 modems that do not have MNPX capabilities. The short form assumes that the maximum string length is 32 octets and the direction of compression is always bi-directional. When disabled, V.42 bis is negotiated with MNPX.

- MIB Object: mdmCeShortFormRules
- Command Setting Equivalent: S61
- Settings:
 - Disable
 - Form 1 Code Words 512
 - Form 2 Code Words 1024

- Form 3 Code Words 2048
- Default: Disable

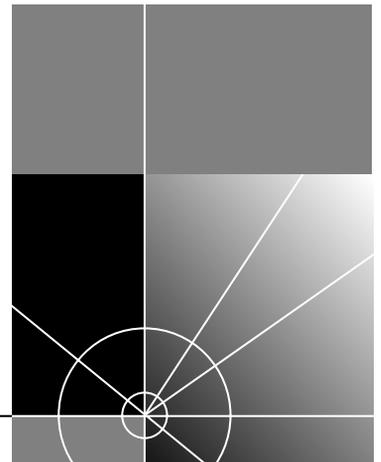


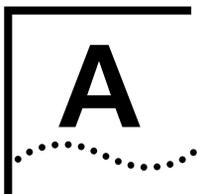
REFERENCE APPENDICES

Appendix A Error Messages

Appendix B Command Line Interface

Appendix C Command Tables





ERROR MESSAGES

Overview

Error messages are divided into two types:

- Invocation errors result from missing or invalid use of command syntax, and are reported immediately to stderr.
- Execution errors result from problems occurring after an application is successfully launched.

Invocation Errors Message Descriptions

Errors in Command Line Target Selection

The following table describes the Command Line Target Selection error messages.

Error Message	Description
Range out of order <target specification>	A range is backwards (e.g., S5-3 instead of S3-5).
Slot selection is not allowed <target specification>	The application cannot be invoked at the slot level.
Channel selection is not allowed <target specification>	The application cannot be invoked at channel level (e.g., software download).
Time slot selection is not allowed <target specification>	The application cannot be invoked at time slot level. (True for all except commands.)
Slot number out of range <target specification>	A slot number refers to a slot out of range for the given type of chassis. (e.g., slot 10 in a 7-slot chassis.
Channel number out of range <target specification>	A large channel number (not valid for any kind of TCM card) was specified.
Channel number out of range at slot <target specification>	A channel number refers to a channel not present on the given type of card in the selected slot.
Channel range contains zero: <target specification>	A channel range includes 0 (e.g., S1C0-2).

(continued)

Error Message	Description
Time slot range contains zero: <target specification>	A time slot range contains zero.
Expected slot-level target: <target specification>	The target specification began with a slot-level target but also has targets at some other level.
Error Message	Description
Expected time slot-level target: <target specification>	The target specification began with a time slot-level target but also has targets at some other level.
Slot <number> empty: <target specification>	There is no card in the specified slot, based on information available at the last discovery or TCM Console poll.
Unknown card in slot <number>	The card in the specified slot is unknown and the application does not allow operation against unknown cards.
Mismatched targets: slot <number>, slot <number>	The two slots contain cards that are not compatible for the present application's purposes.
Time slot selection not applicable: <target specification>	There is no time slot-level support for the particular card for which a time slot specification was given (e.g., the card is not a T1 or ISDN card).

Chassis Restore

The following table describes the Chassis Restore error messages.

Error Message	Description
Error: No target specified	The user did not supply an IP address or host name on the command line.
Error: Too many targets specified	The user specified more than one IP address/host name (there is more than one white space-separated word in the target list).

Chassis Save

The following table describes the Chassis Save error messages.

Error Message	Description
Unknown target name or IP address format	The target does not specify a valid IP address or host name.

(continued)

Error Message	Description
Error, unexpected command line format.	The user did not supply an IP address, or (Non-GUI only) did not provide a filename.

Command Tool

The following table describes the Command Tool error messages.

Error Message	Description
Missing -E option	The user did not choose a command to execute using the -E option. (Non-GUI only)
Missing -G option	The user did not choose a command group using the -G option. (Non-GUI only)
Non-graphical time slot selection is not supported: <specification>	The user requested time slot selection in the non-GUI by supplying an empty time slot range (e.g., S1C1T). (Non-GUI only)
Warning: force not supported for this command	The user provided the -F option for a command that does not allow forcing. The -F option will be ignored. (Non-GUI, warning only)
Error: invalid poll interval value <value> for -p option	The poll interval value given on the command line is not a positive integer.
Error: cannot use -E and -q at the same time	The user specified both a command and a command query. This is not allowed.
Error: No target specified	The user did not supply at least an IP address or host name on the command line.
Error: Too many targets specified	The user specified more than one IP address/slot-channel combination. (There is more than one whitespace-separated word in the target list.)
Invalid target format	The target does not specify a valid IP address or host name.

Configuration Tool

The following table describes the Configuration Tool error messages.

Error Message	Description
Error: No target specified	The user did not supply at least an IP address or host name on the command line.
Error: Too many targets specified	The user specified more than one IP address/slot-channel combination. (There is more than one white space-separated word in the target list.)
Invalid target name	The target does not specify a valid IP address or host name.

Software Download

The following table describes the Software Download error messages.

Error Message	Description
Error: No target specified	The user did not supply at least an IP address or host name on the command line.
Error: Invalid target format	The target does not specify a valid IP address or host name.
Selected Targets do not match each other	Fatal error. Multiple NACs were selected for software download, but one or more of the selected NACs is not the same card type. Only the first mismatch is displayed. For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.
All selected slots are empty	Fatal error. Selected slots do not contain a card. For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.
extension is not 'NAC'	Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the specified SDL file does not have the correct extension (*.nac). For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select the correct file.

(continued)

Error Message	Description
Extension is not 'sdl'	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the specified SDL file does not have the correct extension (*.sdl).</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select a NAC file.</p>
No default NAC file	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the SDL file was selected, but the NAC file was not.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select a NAC file.</p>
No default SDL file	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the NAC file was selected, but the SDL file was not.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select the correct file.</p>
<filename> does not match card type <type>	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the SDL file and the NAC file apply to different card types.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select the correct file.</p>

Test Tool

The following table describes the Test Tool error messages.

Error Message	Description
Error: invalid Loop Back Duration value <value> for -s option	The loopback duration given on the command line is not a positive integer.
Error: cannot use -T and -q at the same time	The user specified both a test and a test query. This is not allowed.
Error: No target specified	The user did not supply at least an IP address or host name on the command line.

(continued)

Error Message	Description
Error: Too many targets specified	The user specified more than one IP address/slot-channel combination. (There is more than one white space-separated word in the target list.)
Invalid target format	The target does not specify a valid IP address or host name.
Missing -T option	The user did not choose a test to execute using the -T option. (Non-GUI only)
<target>: Non-Modem Test operation	Reported in the test tool final summary when a command or other non-modem test result is in the target's result table. (Non-GUI, warning only)
Program exit during execution	The command or test program was terminated (e.g., by a signal) while a command or test was in progress. (Warning only)

Total Control Manager Console

The following table describes the Total Control Manager Console error messages.

Error Message	Description
Error: Too many targets specified	The user specified more than one IP address/host name. (There is more than one white space-separated word in the target list.)

Tone Send/Receive

The following table describes the Tone Send/Receive error messages.

Error Message	Description
Error: Invalid amplitude value <value>	The amplitude level given on the command line is out of range.
Error: invalid poll interval value <value>	The poll interval value given on the command line is not a positive integer.
Error: invalid test length value <value>	The test duration value given on the command line is not a positive integer
Error: No target specified	The user did not supply an IP address or host name on the command line.
Invalid target specification: <specification>	The target does not specify a valid IP address or host name.

Trap Destination

The following table describes the Trap Destination error messages.

Error Message	Description
Error: insufficient arguments	A "-a", "-m", or "-d" directive ended unexpectedly.
Error: no target supplied	The user did not supply an IP address or host name on the command line.
Error: invalid target format	The target is not a valid IP address or host name, or contains slot/channel specifications.
Warning: at most 256 trap commands accepted.	The user specified more than 256 "-a", "-m", or "-d" directives. The remaining directives will be ignored.
Unexpected argument: <argument>	A directive other than "-a", "-m", or "-d" was seen on the command line.
Warning: trap directives on GUI command line are ignored.	The user provided "-a", "-m", or "-d" directives to the GUI (xtcmtrap).

Execution Errors Message Descriptions

This section describes all error messages that can occur as Execution errors.

All Applications

The following table describes the Execution error messages for all applications.

Error Message	Description
Error constructing target specification...hostname no longer valid?	The user was prompted for target slot/channels using the chassis selection dialog. After targets were selected, the construction of a target failed, probably because an IP host name could not be found in the hosts database even though the host name was valid at program initialization. (The host database has probably been changed or is no longer accessible.)
Target not responding because NMC is in a software download state. Please wait until software download is completed.	The NMC is being actively downloaded, or a download was initiated and not finished. It will not respond to SNMP requests until download is completed.

(continued)

Error Message	Description
NMC in software download state!	The NMC is being actively downloaded, or a download was initiated and not finished. It will not respond to SNMP requests until download is completed.
SNMP Get: <error>	An error occurred while TCM was issuing an SNMP operation: either a timeout or an SNMP protocol error. If it is a protocol error, the SNMP variable information in the error response can be seen in the TCM log (e.g., syslog).
SNMP Get-Next: <error>	An error occurred while TCM was issuing an SNMP operation: either a timeout or an SNMP protocol error. If it is a protocol error, the SNMP variable information in the error response can be seen in the TCM log (e.g., syslog).
SNMP Set: <error>	An error occurred while TCM was issuing an SNMP operation: either a timeout or an SNMP protocol error. If it is a protocol error, the SNMP variable information in the error response can be seen in the TCM log (e.g., syslog).
Cannot find device files for NMC version <version>!	TCM is communicating with an NMC version too recent for it. Contact 3Com sales personnel for a newer version of TCM.
This device is not a Total Control Chassis. Exiting.	TCM was launched against an SNMP device that was not an Enterprise Network Hub or Modem Pool.
Missing or invalid card.dat file!	TCM has a corrupt device configuration schema, or other internal error.
Missing or invalid device.dat file!	TCM has a corrupt device configuration schema, or other internal error.
Missing or invalid software.dat file!	TCM has a corrupt device configuration schema, or other internal error.
TCM Discovery error: <specific error>	An error occurred in attempting to launch TCM against a chassis (e.g., the discovery process timed out or had some other error).
Invalid host name: <name>	TCM was launched against a host name not in the hosts database.
Target Selection Error	The user was prompted for target slot/channels using the chassis selection dialog. After targets were selected, an internal error occurred.

Chassis Restore

The following table describes the Chassis Restore error messages.

Error Message	Description
Configuration parse error: <specific error>	The chassis configuration file being restored is invalid and the restore will not occur. (Nonfatal configuration parse warnings are also produced.)
File is not a Chassis Configuration File	The user specified a file that does not begin with the 3Com chassis configuration file header.
Can't access <filename>	The user specified a file that does not exist or is not readable.
<filename> is a directory.	The user specified a file that is a directory. Only plain text files may be restored.
There is no matching configuration to restore	The chassis configuration file being restored contains no parameters to be restored, or those sections which actually match working target slots (if any) contain no parameters.
Restore was unsuccessful	At least one of the slots being restored experienced an SNMP error or other serious failure. ("Bad cards" that are skipped by the restore are not counted in this evaluation.)
The selected configuration file was saved from a chassis of a different size. Continue?	Select either Yes or No.
.whb file does not match chassis size	Fatal error unless -F (force mismatch) is specified.
The selected configuration file is from a chassis with a different card configuration. Continue?	Select either Yes or No.
.whb file does not match chassis card configuration	Fatal error unless -F (force mismatch) is specified.
The selected .whb file is from a chassis with a different size and card configuration. Continue?	Select either Yes or No.
.whb file does not match chassis size or card configuration	Fatal error unless -F (force mismatch) is specified.

(continued)

Error Message	Description
The chassis configuration file is for a different chassis size (7/17 slot) and/or card profile than the chassis to be restored.	Select either Yes or No.

Chassis Save

The following table describes the Chassis Save error messages.

Error Message	Description
<file> already used by another process	Another program is currently saving to the specified file.
error opening <file>	<file> is on a remote machine.
link to that machine is no longer active	A remote mount of the file is not working.
unable to lock <file>	The lock mechanism that prevents two users from writing the same file is in deadlock (due to a system error or unusual race condition).
There is no matching configuration to save	No working, known cards in the chassis contain any configurable parameters to be saved.

Command Tool

The following table describes the Command Tool error messages.

Error Message	Description
An unrecoverable error has occurred.	An SNMP error or other problem prevented the cycle of commands from being issued to all target devices. The user may retry the command if desired (GUI); fatal in non-GUI. Detailed error information may be available in the TCM log.
Unrecoverable error	An SNMP error or other problem prevented the cycle of commands from being issued to all target devices. The user may retry the command if desired (GUI); fatal in non-GUI. Detailed error information may be available in the TCM log.
Error in time slot specification	The user was prompted for target time slots; after selection, an internal error occurred. (GUI only)
There are no commands for this type of device.	The device configuration files do not list any commands for the target device.

(continued)

Error Message	Description
Invalid group name: <name>	The device configuration files do not list <name> as a valid group.
Invalid command: <name>	The device configuration files do not list <name> as a valid command within the current group.
Slot <number> T1/PRI query: <specific error>	An error occurred in trying to verify or solicit a time slot range specified against a T1 or ISDN card.
Invalid time slot range for card: specification>	The user specified a time slot range which includes time slot numbers not valid for the given type of card.
Command Specific Parameter exceeds maximum length of <length>	The user entered a command parameter that was too long (GUI only). The command will not be executed.
Slot <number>: graphical selection of time slots in this card is not supported.	TCM is not able to present a selection dialog for the given card. (The card type is not supported by this particular version of TCM.)
Continued on the next page...	
<target>: Non-command operation	Reported in the command tool final summary when a modem test or other non-command result is in the target's result table. (Non-GUI, warning only.)
Cancel Execution and exit program?	Issued in a "Yes/No" dialog when user quits from window frame while command/test is in progress. (GUI, warning only)
Program exit during execution	The command or test program was terminated (e.g., by a signal) while a command or test was in progress. (Non-GUI, warning only)

Configuration Tool

The following table describes the Configuration Tool error messages

Error Message	Description
This device is not the same type as target(s).	The "load from" source does not match the target devices whose new values are to be loaded.
Cannot load between channel and card levels	The "load from" source is at channel level while the target devices are at card level, or vice versa.
Missing device configuration file	There is no configuration schema file for the target devices.

(continued)

Error Message	Description
There are no configurable parameters for this type of card	The target slot or channel has no configurable parameters.
Modification(s) in current group will be overwritten. Proceed with update?	Issued in a "Yes/No" dialog when the user selects "get" in a group that has un-set modifications. (Warning only)
Modification(s) in all groups will be overwritten. Proceed with loading?	Issued in a "Yes/No" dialog when the user selects "load from" and there are groups that have un-set modifications. (Warning only)

Test Tool

The following table describes the Test Tool error messages.

Error Message	Description
No defined tests to execute	The device configuration files do not list any tests for the target device.
Invalid Test: <string>	The specified test is not in the list of valid tests.
Selected device is not a modem	Test Tool may be invoked only against modems.
No "Software Commands" found	The Test Tool could not locate the list of tests within the "Software Commands" group of the device configuration file. This indicates a probable internal error or corrupt device configuration schema.
An unrecoverable error has occurred.	An SNMP error or other problem prevented the cycle of tests from being issued to all target devices. The user may retry the test if desired. Detailed error information may be available in the TCM log.
Unrecoverable error	An SNMP error or other problem prevented the cycle of tests from being issued to all target devices. The user may retry the test if desired. Detailed error information may be available in the TCM log.
<target>: Non-Modem Test operation	Reported in the test tool final summary when a command or other non-modem test result is in the target's result table. (Non-GUI, warning only)
Cancel Execution and exit program?	Issued in a "Yes/No" dialog when user quits from window frame while command/test is in progress. (GUI, warning only)
Program exit during execution	The command or test program was terminated (e.g., by a signal) while a command or test was in progress. (Non-GUI, warning only)

Total Control Manager Console

The following table describes the Total Control Manager Console error messages.

Error Message	Description
There are other TCM console(s) viewing this chassis from your system. (This is not a problem as long as you are coordinating your usage with other users.)	A TCM Console has already been opened on the current system against the given chassis. That console is performing chassis polling and providing chassis internal status to all TCM applications at the time they are launched. The TCM Console reporting this message will poll chassis status independently of the first Console, but will not provide chassis status information to other TCM applications. (Warning only)
Could not acquire ownership of chassis status file. Launched processes will perform their own discovery.	This usually means that the user launching the TCM Console does not have write ownership of the chassis status information file for this chassis. This can occur if a user such as root opens a TCM Console and exits it, and other users then launch TCM Console. (The file can be manually removed in this case; it resides in /tmp/vfpd.<ip-hex> where <ip-hex> is the hexadecimal representation of the IP address.) (Warning only)
Internal error acquiring chassis status file. Launched processes may perform their own discovery.	An unknown error occurred in trying to update the chassis status information file for this chassis. (The TCM log may provide more information.) (Warning only)
<command>: exec failed: <reason>	TCM Console experienced an error when trying to launch a TCM application. This is printed on the controlling terminal of the TCM console (the terminal from which TCM console or its parent was launched).

Tone send/receive

The following table describes the Tone send/receive error messages.

Error Message	Description
Invalid slot number: <number>	The target slot is not a NAC slot number.
Selected device is not a modem	The target slot is not a modem.
Channel number out of range: <number>	The target channel number is invalid for the particular type of card.

(continued)

Error Message	Description
No DSO assigned to modem. Test aborted.	The modem does not have a time slot assignment and tone test is therefore impossible.
Extra targets, only the first will be used	The user selected more than one modem when invoking a tone test. The first specified modem will be used, and the others ignored. (Warning only)
Extra command argument after target: <string>	Unused information was seen at the end of the command line and will be ignored. (Warning only)
Receive ignores frequency/amplitude command arguments	Receive Tone was invoked with frequency/amplitude arguments, which will be ignored. (Warning only)
Test in progress. Stop it before exiting?	Issued in a "Yes/No" dialog when user quits from window frame while a tone test is in progress. (GUI, warning only)

Trap destination

The following table describes the Trap Destination error messages.

Error Message	Description
Invalid IP address: <ip-addr>	The IP address entered is not a valid dot-notation IP address or host name in the host database.
You must enter an IP Address!	When adding a trap destination, the user entered a blank IP address/host name. (GUI only)
String 'invalid' may not be used	The community string 'invalid' is a reserved value and is not allowed to be entered as data. (GUI only)
Community string too long. Truncate?	Issued in an "OK/Cancel" dialog when a community string and/or comment is entered that is too long. (GUI, warning only)
Comment too long. Truncate?	Issued in an "OK/Cancel" dialog when a community string and/or comment is entered that is too long. (GUI, warning only)
Community string and Comment too long. Truncate?	Issued in an "OK/Cancel" dialog when a community string and/or comment is entered that is too long. (GUI, warning only)
Trap query overrides -a/-m/-d	The user specified both -q (query) and -a/-m/-d (table manipulation) arguments; only -q will be used. (Non-GUI, warning only)

(continued)

Error Message	Description
Nothing to do	No trap destination-modifying arguments were given on the command line. (Non-GUI, warning only)
Community string longer than <number> chars: <string>	The specified string exceeded the size limit for community strings. (Non-GUI, warning only)
Comment longer than <number> chars: <string>	The specified string exceeded the size limit for community strings. (Non-GUI, warning only)
String 'invalid' may not be used	The community string 'invalid' is a reserved value and is not allowed to be entered as data. (Non-GUI, warning only)

Software Download

The following table describes the Software Download error messages

Error Message	Description
TCM Discovery Error: Device not responding	<p>Fatal error. The Software Download utility was unable to discover some or all of the cards in the chassis.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>
Target is not responding because its NMC is in the software download state\loading NAC file\ Please load target when NMC download is completed.	<p>Fatal error. The Software Download utility was unable to discover the chassis objects because the NMC was in a Software Download state-either erasing Flash ROM or loading the NAC file.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>
<Filename> does not exist	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if you selected a filename that does not exist.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select the correct file.</p>

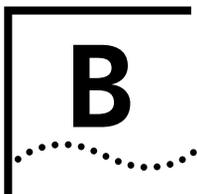
(continued)

Error Message	Description
No Default SDL File for Card Type <type>	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if there are no SDL/NAC files for the selected card type in the default /\$TCMHOME/data/sdl directory.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select the correct file.</p>
<p><filename> is corrupt</p> <p><filename> has a corrupt header marker</p> <p><filename> has wrong software type</p> <p><filename> has a crc error</p>	<p>Fatal Error (tcmsdl). Nonfatal error (xtcmsdl). This error occurs if the internal header or the SDL or NAC file is incorrect.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility terminates. For xtcmsdl, click OK to bring up the Select Files dialog box and select an uncorrupted SDL or NAC file. If one is not available, you will have to acquire an uncorrupted version from the 3COM BBS or Internet FTP site.</p>
Devices are not ready yet. This could be due to a previously aborted SDL followed by a premature new SDL. Please try waiting a few minutes or invoking a hardware reset on the affected cards.	<p>Fatal error. This error occurs if the target card is communicating with the Software Download utility, but is unable to accept a software download.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>
SNMP Set Failed	<p>Fatal error. This error occurs if the target card is communicating with the Software Download utility, but does not respond correctly to a SNMP Set command. The exact SNMP error is displayed.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>

(continued)

Error Message	Description
SNMP Get Failed	<p>Fatal error. This error occurs if the target card did not respond to an SNMP Get request. The exact error is also displayed.</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>
Erase ROM time out	<p>Fatal error. This error occurs if the target card's Flash ROM is not erased within the specified timeout (600 seconds).</p> <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>
TFTP: <error>	<p>Fatal Error: This is a series of errors that can occur when the Software Download utility is overwriting the target card's configuration with the new code. Such errors include:</p> <ul style="list-style-type: none">file not foundfile already existsno such usertime outdisk full or allocation exceededaccess violation; this could indicate a corrupt or incorrectly named file. This error occurs if a NAC is pulled out of its slot while the download is taking place.illegal TFTP transfer ID; this occurs if there is an internal NMC or chassis error during downloading.undefined error code <p>For tcmsdl, an error message is displayed on the screen or output to the log file, and then the utility automatically terminates. For xtcmsdl, clicking on the OK button of the dialog box terminates the utility.</p>





COMMAND LINE INTERFACE

The command line interface consists of a number of non-interactive commands or utilities. These utilities are run at the command line from a shell prompt or a shell script.

General Syntax

The following command parameters are available for all utilities:

```
[x]command [-l logfile] [-h] [-c readcomm] [-C writecomm]  
target
```



Brackets indicate that the parameter is optional.

x Prefix (GUI Interface)

An "x" placed at the beginning of any Total Control Manager command omits command parameters and the target slot and channel designation—only the target IP address or hostname is required. Graphic user interfaces (GUIs), such as the Total Control Manager device display, appear and assist you in selecting component parameters and targets.



When using the "x" prefix, for any Total Control Manager command, only the target IP address or hostname is required. All other parameters are optional.

For example, if you wish to make a modem go off hook, you could simply send the following command, which launches the Command Tool:

```
xtcmcmd 192.78.203.68
```

First, the device display appears, allowing you to select targets for the command. Once you select your targets, the Command window appears, allowing you to select and execute the Off Hook command.

Log Output (-l)

```
[-l logfile]
```

logfile = filename for the log

- If omitted from the command line, messages are sent to the screen by default (handled as stderr).
- If using the x prefix, messages are sent to syslog
- To send messages to syslog by default, specify "-" (hyphen) in place of logfile ("-l-" can be sent by itself, it doesn't have to be included in the command line).
- The "-l-" command also changes the GUI default log output to stderr.

Help (-h) This switch can be used by itself to display the syntax for a given utility. For instance, to display Help for the Software Download utility, type the following command:

```
tcmsdl -h
```

Community Strings (-c, -C)

```
[-c readcomm][-C writecomm]
```

readcomm = read only community string

writecomm = read/write community string

Used to specify the SNMP community strings that have been assigned to the device. Note that these switches are optional, but can be used to override Total Control Manager's initialization file settings.

Target See the following section on Target Designation.

Target Designation

For all utilities, you must specify the IP address or hostname for the device on which the operation is to be performed. Some utilities require a more specific target designation that includes slot and channel. T1 cards also allow timeslot designations for some utilities.



The x command prefix requires only the IP address or hostname, even if the command calls for specific slots and channels.

Option/Parameter	Description
target	Is the following format for an unlimited number of targets within the same device: IPhost:[[Srange [Crange[Trange]]],[[Srange [Crange[Trange]]], . . .

(continued)

Option/Parameter	Description
lphost	The IP address or hostname of the target device.
Range	A single integer or a range of integers (for example, 1-4).
: (colon)	Place after the lphost designation.
, (comma)	Place between slot groups.
S	Sets target slots in the specified range
C	Sets target channels in the specified range. If omitted, execution at the card level is assumed.
T	sets target timeslots in the specified range. If omitted, execution at the channel (span line) level is assumed. When used with the Command Tool, this part of the target can be given as T (without a range) and you will be prompted for a timeslot (for xtcmmcmd only).



Only one type of component can be selected at a time. For example you can select all Quad modem channels, but you CANNOT select a Quad modem channel and a T1 DS0.

Target Examples

```
193.77.205.45
193.77.205.45:S3C4,S4C1,S5C2-4
193.77.205.45:S3-12C1-4
scotty:S17
scotty:S1C2T2-12
```

Total Control Manager Console

To launch the Total Control Manager Console, use the following command:

```
xtcmvfpd target
```

where target = an IP address or hostname

Configuration

The configuration command line interface (CLI) uses the following syntax:

```
tcmget command:
tcmget [-h] [-l logfile] [-c readcomm] [-C writecomm] [-z]
[-L] [-a] [-f file] [-F] [-G group [parameter]...]... target
tcmset command:
tcmset [-c readcomm] [-C writecomm] [-h] [-l logfile] [-z]
[-L] [-f filename] -G group parameter value [parameter
value]...target
```

The options and parameters for the `tcmget` and `tcmset` commands are described in the following table. Parameters are shown in parenthesis after the flag name as appropriate.

Option/Parameter	Description
-c (readcomm)	SNMP read community string.
-C (writecomm)	SNMP write community string.
-h	Displays this help message.
-l (logfile)	Log file for system diagnostic messages. GUI default: log to UNIX syslog; CLI default: stderr. Specify '-' (hyphen) to reverse these two behaviors.
-z	Disable set logging for this application.
-L	List all groups, or if -G is provided, list parameters for each group specified as part of a -G argument.
-f (filename)	<ul style="list-style-type: none"> ■ <code>tcmget</code>: Place the result output of the get operation in a file given by <filename> (stdout can be designated using a filename of '-'). ■ <code>tcmset</code>: Read the output of the get operation from the file given by <filename> and use it to set the values. For example: <code>tcmset -f <filename> 192.77.203.74:s17</code>
-a	<p>This flag is available in the <code>tcmget</code> command only.</p> <p>Store output in 'argument' format.</p> <p>When used with -f, this allows the data in the output file to be supplied to a later <code>tcmset</code> operation, using commands like:</p> <p><code>tcmset -f <filename> target</code></p> <p>(This is most appropriate if there is only one current target being retrieved.)</p>
-F	<p>This flag is available in the <code>tcmget</code> command only.</p> <p>List full name of each parameter in the result output. Otherwise, the abbreviated parameter names supplied in the -G argument will be used.</p>

(continued)

Option/Parameter	Description
-G (group)	<p>Selects a group, followed by a list of parameters within that group which are to be retrieved (for <code>tcmget</code>) or set (for <code>tcmset</code>). (For example, 'NMC Identification'.)</p> <p>Group specifications must appear after all other command arguments, and before the target.</p> <p>Group names are matched using substring comparison against the list of known group names for the target. Substrings that match at the beginning of a group name have precedence over substrings that match internally.</p>
(parameter)	<p>Parameter whose value is to be printed (for <code>tcmget</code>) or set (for <code>tcmset</code>). (For example, 'Serial Number'.)</p> <p>Each parameter should be separated by a space and requires proper shell quoting. At least one parameter should be supplied per group, unless <code>-L</code> (list parameters by group) is specified.</p> <p>Parameter names are matched using substring comparison against the list of known parameter names within the currently selected group. Substring matching has the same 'initial match priority' and ambiguity rules as for group name matching.</p>
(value)	<p>This parameter is available in the <code>tcmset</code> command only.</p> <p>Value of the parameter. Parameters can be one of the following value types:</p> <ul style="list-style-type: none"> ■ Integer--Decimal numeric value. ■ Display String--Printable characters, suitably quoted. ■ Octet String--Printable characters, or an ASCII hex string beginning with '0x' (any string starting with '0x' is assumed to be ASCII hex). ■ IP Address--IP dot notation ■ Object Identifier--Must be a valid numeric object identifier (e.g. 1.3.6.1.4.1.429...) ■ Enumeration--An enumeration, specified using substring match against the list of known for this variable (as seen in the Programmed Settings GUI). Rules for substring match similar to those for group and parameter names (see the "-G" option above). <p>Parameter types may be determined by using the <code>-L</code> option</p>

(continued)

Option/Parameter	Description
(target)	<p>Specifies slots or channels to be issued commands. Target has the following format:</p> <pre><IP-host>:S<s-range>[C<c-range>] [,S<s-range>[C<c-range>]...]</pre> <p>where IP-host can be IP-dot notation, or a host name that is defined in the host database or /etc/hosts file</p> <p>: literal colon S literal</p> <ul style="list-style-type: none"> ■ s-range is a decimal number or a range s1-s2 (where s1 and s2 are decimal numbers and - is a literal hyphen) representing the location of card(s) within the chassis. <p>C literal</p> <ul style="list-style-type: none"> ■ c-range is a decimal number or a range c1-c2 (where c1 and c2 are decimal numbers and - is a literal hyphen) representing the location of channel(s) on the specified card(s). <p>, Literal comma used to separate slot/channel ranges</p>

tcmget examples:

```
tcmget -G 'NMC Identification' 'Serial Number'
192.77.203.74:S17
```

(or using substring matching rules)

```
tcmget -G 'nmc id' 'erial nu' 192.77.203.74:S17
```

To list parameters in NMC tests and system group:

```
tcmget -L -G 'nmc tests' -G 'system group' 192.77.203.74:S17
```

tcmset examples:

```
tcmset -G 'DTE Interface Settings' 'Default DTE Data Rate'
BPS19K\ mychas:s3c1
```

(or using substring matching rules)

```
tcmset -G 'dte int' 'dte data rate' bps19k mychas:s3c1
```

To list parameters in NMC Logging Group and Logging Traps Group:

```
tcmset -L -G 'logging gr' -G 'logging tr' 192.77.203.74:S17
```

Actions/Commands

The command utility uses the following syntax:

```
tcmcmd -E command -G group [-P parameter][ -F ][ -p  
seconds ]target
```

**Query Current
Command Status (-q)**

Issue the following command to display the results of the last-issued command for selected targets:

```
tcmcmd [-q]target
```

Command (-E)

-E command

command = a substring of valid commands (see the command tables in Appendix C).

A substring match to the beginning of a command string has precedence over internal matches. For example, "res" executes the Restore from NVRAM command rather than the Software Reset command. Matching is case insensitive. Spaces in the command name must be quoted properly according to shell rules.

Command substrings can mean different commands depending on which group is selected and whether the command is being executed at the slot level or channel level. For example, for a modem, "reset" will perform a Hardware Reset at the slot level, but a Software Reset at the channel level. For a T1 card, "software" will initiate a Software Download if the Hardware group is selected, but a Software Reset if the Software group is selected.

Group (-G)

-G group

group = the command type, hardware or software (see the command tables in Appendix C).

Parameter (-P)

[-P parameter]

parameter = parameter to be supplied with command. Required for some devices, but can be omitted where not used.

Force Command (-F)

[-F]

The component may be in a state where the selected command is normally rejected (for example, a modem in dial mode). Include this

switch to force the command to execute, regardless of the safeguards. Not all commands use this feature.

Polling Rate (-p) `[-p seconds]`

Sets amount of time, in seconds, between polls.

Target Follows general syntax. Note that if you omit a channel range, the command is assumed to be targeted at the slot level. This applies as well to timeslot designations for commands sent to T1 cards—if the timeslot is omitted, the command will issued at the channel (span) level.

Set Trap Destination



Except for the general syntax, the following trap destination-specific syntax must appear after the target designation in the command string.

To List Current Trap Destination Entries (-q)

Use the following command:

```
tcmtrap target -q
```

To Add a Trap Destination Entry (-a)

Use the following command, notice that the target must be

```
tcmtrap target [-a ipaddr trapcomm comment]
```

Option/Parameter	Description
ipaddr	IP address of destination device to be added.
Trapcomm	Community string to supply with trap.
Comment	inert descriptive comment—use shell quoting if necessary.

To Modify a Trap Destination Entry (-m)

Use the following command to change a current entry, where ipaddr is the IP address of the entry to change, and the other parameters are the information that will replace the old information.

```
tcmtrap target [-m ipaddr trapcomm comment]
```

To Delete a Trap Destination Entry (-d)

To delete a trap destination entry, use the following command, where ipaddr is the IP address of the entry to be deleted:

```
tcmtrap target [-d ipaddr]
```

Tone Test

This section describes how to send and receive a tone test.

Send Tone Test (-S)

The following command causes the modem to send a tone of the specified frequency, duration, and amplitude.

```
tcmtone -S[-t][-s num][-p num][freq[hz] [level[db] ] ]target
```

Option/Parameter	Description
-S	Initiates send tone test.
-t	Leave in test mode after exiting program.
-s	Specifies duration num in seconds. Default = 10.
-p	Specifies time between polls num in seconds. Default = 1.
Freq	Specifies frequency. Must be one of the following: 404, 1004, 2804. Default = 404. If specified, frequency must appear after all other flags and before level and target.
Hz	Optional (ignored). "hz" or "Hz" can be included for clarity.
Level	Specifies amplitude (integer) in dBm. Valid range = 0 to -43. Default = 0. If specified, frequency must immediately precede level.
Db	Optional (ignored). "db" or dBm" can be included for clarity.

Receive Tone Test (-R)

Use the following command to receive a tone test:

```
tcmtone -R [-t] [-s num] [-p num] target
```

Modem Tests

```
tcmtest -T test [-s num] target
```

Query Current Test Status

To query a modem to determine whether a test is already in progress, send the following command:

```
tcmtest [-q] target
```

Test Type (-T)

```
-T test
```

test = modem test type substring. Select from the following list of tests:

- Local Analog Loop Back
- Local Digital Loop Back
- Remote Digital Loop Back

- V54 Local Analog Loop Back
- V54 Remote Digital Loop Back
- Self Tests
- Test RAM
- Test ROM
- Test NVRAM
- Idle Phone Line Test

A substring match to the beginning of a command string has precedence over internal matches. For example, "local analog" executes the Local Analog Loop Back test, not the V54 Local Analog Loop Back test. Matching is case insensitive. Spaces in the command name must be quoted properly according to shell rules.

Duration (-s) [-s num]

num = number of seconds to remain in loop back mode. Default = 60

Device Save and Restore

Save Configuration

```
tcmsave -f filename target
```

Option/Parameter	Description
filename	The .whb output file to which the configuration is stored.
target	The IP address or hostname of the device.

For example:

```
tcmsave -f chassis1.whb 192.77.203.66
```

In this example, the utility saves the configuration data from the chassis with the IP address of 193.72.205.76 to a file called CHASSIS1.WHB.

Restore Configuration

To run tcmrestore, issue the following command:

```
tcmrestore -f filename [-F] target
```

Option/Parameter	Description
filename	Filename of the .whb file with the configuration to be restored.
-F	Force restore. Restore configuration from .whb file regardless of component mismatch.

For example:

```
tcmrestore -f chassis1.whb 192.77.203.98
```

In this example, tcmrestore is using the file CHASSIS1.WHB to restore the configuration to the chassis with the IP address of 192.77.203.98.

Software Download

To run tcmsdl, issue the following command:

```
tcmsdl [-s sdlfile] [-n nacfile] [-F] [-v] target
```

Option/Parameter	Description
sdlfile	The SDL file name (if omitted, uses latest version available for card type).
nacfile	The NAC file name (if omitted, uses latest version available for card type).
-F	Force download to an NMC that is already in a download state.



Default directory for .nac and .sdl files is \$TCMHOME/data/sdl.

For example:

```
tcmsdl -s qf020202.sdl -n qf030000.nac 192.77.203.127:s11-12
```

This example uses the Quad Modem SDL file qf020202.sdl and Quad Modem NAC file qf030000.nac to update the modem code in slots 11 and 12 of the chassis with IP address 192.77.203.127.

Upgrade File Identification

SDL and NAC filenames contain identifying information about card type, version level, and file type. The examples below show how to interpret this information from the filename:

Filename	Card-specific Prefix	Version #	File Type
nm040100.nac	nm	4.1.0	NAC
qf030005.nac	qf	3.0.5	NAC
li010101.sdl	li	1.1.1	SDL

Filename Prefixes

Filename prefixes indicate which component type uses a given SDL or NAC file. In most cases, the NAC and SDL files for a given component have the same prefix. There are some exceptions, such as the Single T1 Card, as shown in the table below:

SDL Prefix	NAC Prefix	Card
NM	NM	Network Management Card
QF	QF	Quad V.34 Modem (Analog, Digital, Analog/Digital)
QM	QM	Quad V.32 bis Digital Modem
QT	QT	Quad V.32 terbo Modem (Analog, Digital, Analog/Digital)
QR	QR	Single Sided Modem Card
T1	ST	Single T1 Card
T1	T1	Dual T1 Card
CT	CT	Channelized T1 Card
EN	EN	Ethernet TCP/IP Gateway Card
TR	TR	Token Ring TCP/IP Gateway Card
XP	XP	X.25 PAD Gateway Card
TR	LE	NETServer Ethernet Card
TR	LT	NETServer Token Ring Card
TR	LF	NETServer Frame Relay Card
PM	PM	MP/16 Management Module
PF	PF	MP/16 V.34 Modem Module
DP	DP	T1 Primary Rate ISDN Card
LI	LI	NETServer ISDN Card
EP	EP	E1 Primary Rate ISDN Card
WG	WG	Wireless Access Gateway
EC	EC	Channelized E1 Card
IF	IF	Quad I-Modem Card

(continued)

SDL Prefix	NAC Prefix	Card
IR	IR	Quad I-Modem Card
LR	LR	Netserver Token Ring ISDN Card

Software Download Progress Messages

The Software Download utility displays the following messages or outputs them to the log file:

Message	Description	Additional Information
BEGIN	Software Download utility invoked	Command is issued from the UNIX shell
BDISC	Begin chassis discovery	IP address
EDISC	End chassis discovery	IP address
BCONN	Begin connection to chassis	IP address
CONN	Chassis connection established	IP address
BSDL	Begin downloading SDL file	SDL file name, IP address, slot(s)
ESDL	End downloading SDL file	SDL file name, IP address, slot(s)
BERASE	Begin erasing target card's Flash ROM	IP address, slot(s)
ERASE	End erasing target card's Flash ROM	IP address, slot(s)
BNAC	Begin downloading NAC file to target card	NAC file name, IP address, slot(s)
ENAC	End downloading NAC file to target card	NAC file name, IP address, slot(s)
ERR	Error message	IP address, slots, description of error, and possible causes
SUM	Summary of Software Download process	IP address(es), slot(s) and status
SIG	Software Download utility received a UNIX signal	Signal received. TCM/Solaris catches the following signals (to avoid termination): PIPE, TERM, USR1, and USR2.
END	Utility is terminated	

Feature Enable

The following command line launches the Feature Enable option:

```
tcminv [-l logfile] [-h] [-c readcomm] [-C writecomm]
[target]
```

Logfile (-l) `-l logfile`

logfile = log file for system diagnostic messages

The GUI log file default is the UNIX syslog file. The CLI default is stderr. You can reverse these defaults by specifying a "-" (hyphen).

-h **-h** displays the command line parameters and the descriptions of the parameters and their flags.

Readcomm (-c) `-c readcomm`

readcomm = the SNMP read community string

Writecomm (-C) `-C writecomm`

writecomm = the SNMP write community string

Target `target`

target = an optional parameter that specifies the chassis device to be feature enabled

If no target is specified, the GUI presents the file selection dialog and proceeds with file-based feature enable. If the target is specified, the GUI invokes manual feature enable.

The format for target is as follows:

```
<IP-host>[:S<slot>]
```

Option/Parameter	Description
IP-host	Can be in IP-dot notation, or a host name that is defined in the host database or \etc\hosts file.
S	Literal.
Slot	The decimal number representing the location of the card in the chassis.

Inventory

Use the following syntax to launch the Inventory utility:

```
tcminv [-l logfile] [-h] [-c readcomm] [-C writecomm]
[-d delimiter]
[-f filename] target
```

Logfile (-l) `-l logfile`

logfile = log file for system diagnostic messages

The GUI log file default is the UNIX **syslog** file. The CLI default is **stderr**. You can reverse these defaults by specifying a "-" (hyphen).

-h **-h** displays the command line parameters and the descriptions of the parameters and their flags.

Readcomm (-c) `-c readcomm`

readcomm = the SNMP read community string

Writecomm (-C) `-C writecomm`

writecomm = the SNMP write community string

Delimiter (-d) `-d delimiter`

-d delimiter = supplies field separators for a saved file

If this is omitted, fields are padded with spaces to make columns line up.

Filename (-f) `-f filename`

-f filename = file to save inventory to (for CLI only)

Target `target`

target = specifies chassis host(s) to be displayed

The format for target is as follows:

<IP-host>

IP-host = can be in IP-dot notation, or a host name that is defined in the host database or /etc/hosts file

Authorized Station Tool

The Authorized Station Tool can be accessed using the following syntax:

```
[x]tcmauth [-l logfile] [-h] [-c readcomm] [-C writecomm]
target [-q]
[-a ipaddr mask comment | -m ipaddr mask comment |
-d ipaddr]...
```

Logfile (-l) -l logfile

logfile = log file for system diagnostic messages

The GUI log file default is the UNIX syslog file. The CLI default is stderr. You can reverse these defaults by specifying a "-" (hyphen).

-h -h displays the command line parameters and the descriptions of the parameters and their flags.

Readcomm (-c) -c readcomm

readcomm = the SNMP read community string

Writecomm (-C) -C writecomm

writecomm = the SNMP write community string

Target target

target = an optional parameter that specifies the IP address or hostname of the NMC in which stations are being configured

If no target is specified, the GUI behaves as if -h was the only parameter passed.

The format for target is as follows:

<IP-host>

IP-host = can be in IP-dot notation, or a host name that is defined in the host database or /etc/hosts file

CLI Parameters (-q, -a, -m, -d)

The CLI parameters must be supplied after the target at the end of the command line. Any, or all of them can be present in any order. They will be executed in the order in which they appear in the command line.

These CLI parameters are described in the following table:

Parameter	Description
-q	Lists all Authorized Station currently configured in the target NMC and then exits. This overrides the specification of -a, -m, or -d.
-a	Adds an Authorized Station to the Authorized Station Table.
lpadr	IP address of the new station.
Mask	New network mask.
Comment	New descriptive comment; use shell quoting as necessary.
-m	Changes the network mask/comment of an Authorized Station.
lpadr	IP address of entry to be modified.
Mask	New network mask.
Comment	New descriptive comment; use shell quoting as necessary.
-d	Deletes an Authorized Station from the Authorized Station Table.
lpadr	IP address of the entry to be deleted.

AutoResponse

The AutoResponse can be invoked by the following syntax:

```
tcmarsp [-E event] [-h] [target]
```

Event (-E) -E event

event = specifies which event to use as the default

The specified parameter must be a substring of one of the event descriptive strings described below. Substrings that match at the beginning of the descriptive string have precedence over those that match in the middle. When there are embedded spaces in the substring, the event should be properly quoted according to shell rules. The match is case insensitive.

If no event is specified, the GUI will default to the entire list of AutoResponse events.

Chassis Level Events and Responses

Events

- PSU Voltage Out of Range
- PSU Failed
- Fan Failed
- HUB Temperature Out of Range
- Global Timer 1 Expired
- Global Timer 2 Expired
- Global Timer 3 Expired
- Global timer 4 Expired

Responses (the "(N)" notation indicates that the response requires a parameter):

- Generate AutoResponse SNMP Trap ID (N)
- Delay Script Execution (N) Seconds
- Terminate Script Execution
- Continue If Test Passes
- Configure Module From NMC NVRAM
- Configure Module From NMC Factory Defaults
- Test module
- Reset module

Slot Level Events and Responses

Events:

- Module Inserted
- Module Re-initialized
- Module Removed
- Module Non-operational
- Module Watchdog Time-out

Responses (the "(N)" notation indicates that the response requires a parameter):

- Generate AutoResponse SNMP TRAP ID (N)

- Delay Script Execution (N) Seconds
- Terminate Script Execution
- Continue if Test Passes
- Configure Module from NMC NVRAM
- Configure Module from NMC Factory Defaults
- Remove Module from Service
- Restore Module to Service
- Test Module
- Reset Module
- Busy-Out Module's Analog Phone Lines
- Restore Module's Analog Phone Lines



The last two responses pertaining to analog phone lines are not available on slots that contain an unknown card type.

Modem Channel Level Events and Responses

Events:

- Incoming Connection Established
- Outgoing Connection Established
- Incoming Connection Terminated
- Outgoing Connection Terminated
- Connection Attempt Failed
- Connection Time Limit Expired
- Reset By DTE
- DTE Transmit Idle
- Block Error Count at Threshold
- Fallback Count at Threshold
- Dial Out Login Failure
- Dial Out Restricted Number
- Dial In Login Failure
- Dial Back Restricted Number
- Dial Back Using Restricted Modem

- Login Attempt Limit Exceeded
- User Blacklisted
- Attempted Login by Blacklisted User
- Response Attempt Limit Exceeded
- Modem Watchdog Reset
- Management Bus Failure
- DTR True
- DTR False
- Modem Ring No Answer
- DTE Ring No Answer
- No Dial Tone
- No Loop Current Detected
- Global Timer 1 Expired
- Global Timer 2 Expired
- Global Timer 3 Expired
- Global Timer 4 Expired
- Packet Bus Active
- Packet Bus Lost
- **Responses**, (the "(N)" notation indicates that the response requires a parameter):
 - Generate AutoResponse SNMP TRAP ID (N)
 - Delay Script Execution (N) Seconds
 - Terminate Script Execution
 - Continue if Test Passes
 - Reconfigure from NVRAM
 - Reconfigure from Modem Factory Defaults
 - Test Modem
 - Test Analog NIC
 - Test Analog Phone Line
 - Restore Analog Phone Line
 - Busy out DS0 - T1 Slot (N) Span (N) Channel (N)

- Restore DS0 - T1 Slot (N) Span (N) Channel (N)
- Modem Software Reset
- Terminate Connection
- Busy Out Analog Phone Line

-h -h displays the command line parameters and the descriptions of the parameters and their flags.

Readcomm (-c) -c readcomm

readcomm = the SNMP read community string

Writecomm (-C) -C writecomm

writecomm = the SNMP write community string

Target target

target = an optional parameter that specifies the IP address or hostname of the NMC in which stations are being configured

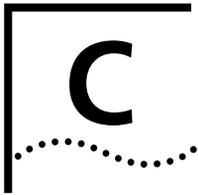
If no target is specified, the GUI behaves as if -h was the only parameter passed.

The format for target is as follows:

<IP-host>:S<s-range>[C<c-range>][,S<s-range>[C<c-range>]...]

Option/Parameter	Description
IP-host	Can be in IP-dot notation, or a host name that is defined in the host database or \etc\hosts file.
:	Literal.
S	Literal
s-range	A decimal number of a range s1-s2 (where s1 and s2 are decimal numbers separated by a literal hyphen) representing the location of the card(s) in the chassis.
C	Literal.
c-range	A decimal number or a range c1-c2 (where c1 and c2 are decimal numbers separated by a literal hyphen) representing the channel number(s) on the specified cards.

Only the IP address of the of the chassis needs to be specified. If this is the case, a graphical window will open showing the VFPD allowing the user to graphically select the desired targets.



COMMAND TABLES

This chapter contains the following command tables for Total Control Manager:

- Modem Commands.
- Modem Analog NIC Commands.
- NMC Commands.
- T1 Commands.
- PRI Commands.
- X.25 Gateway Commands.
- NETServer Commands.

Modem Commands

Level	Group	Command
Card	Hardware	No Command
		Remove from Service
		Restore to Service
		Hardware Reset
		Software Download

(continued)

Level	Group	Command
Channel	Software	No Command
		Software Reset
		Store to NVRAM
		Restore from Default
		Restore from NVRAM
		Off Hook
		On Hook
		Load HW Flow Control Defaults
		Load SW Flow Control Defaults
		Load MNP10 Cellular Defaults
		Load V42 Cellular Mobile Defaults
		Load V42 Cellular Fixed Defaults

Modem Analog NIC Commands

Level	Group	Command
Card	Hardware	Remove from Service
		Restore to Service
		Hardware Reset
		Software Download
Channel	Software	Non-disruptive Self Test
		Busy Out Phone Line
		Non-Busy Out Phone Line
<p>NOTE: The Quad Analog/Digital NIC has only one channel, so test results from channels 2-4 are invalid.</p>		

NMC Commands

Level	Group	Command
	Software	Save Chassis to NVRAM
		Restore Chassis from Default
		Restore Chassis from NVRAM
		Non-Disruptive Self-Test
		Software Reset
		Save UI to EEPROM
		Restore NMC from Default
		Restore NMC from NVRAM

T1 Commands

Level	Group	Command
Card	Hardware	Remove from Service
		Restore to Service
		Hardware Reset
		Software Download
Card	Software	Save to NVRAM
		Restore from NVRAM
		Restore from Default
		Non-disruptive Self-Test
		Disruptive Self-Test
		Software Reset
		Reset -> Hi Pri. Timing Src
		Force TDM Bus Mastership
DS1	Software	No Command
		Force Receiver Reframe
DS0	Software	Hard Busyout
		Soft Busyout
		Restore
		Disconnect
		Transparent Test

PRI Commands

Level	Group	Command
Card	Hardware	Remove from Service Restore to Service Hardware Reset Software Download
Card	Software	Save to NVRAM Restore from NVRAM Restore from Default Non-disruptive Self-Test Disruptive Self-Test Software Reset Reset -> Hi Pri. Timing Src Force TDM Bus Mastership
DS1	Software	No Command Force Receiver Reframe
DS0	Software	Hard Busyout Soft Busyout Restore Disconnect Transparent Test

**X.25 Gateway
Commands**

Level	Group	Command
Card	Software	Save to NVRAM Restore from Defaults Non-Disruptive Self Test Disruptive Test Software Reset Download Configuration Upload Configuration

 (continued)

Level	Group	Command
Card	Hardware	Remove from Service Restore to Service Hardware Reset Software Download

NETServer Commands

Level	Group	Command
Card	Hardware	Remove from Service Restore to Service Hardware Reset Software Download



INDEX

Symbols

(NMC) Network Management Card iii

A

About the Total Control Enterprise Network Hub 1-1
About Total Control Manager 1-1
Actions/Commands B-7
Activating ETC and MNP10 13-3
Add Response 6-3
Adjusting Column Width 4-4, 9-3
All Applications A-7
Authorized Access List 4-6
Authorized Station Tool B-16
Authorized Stations Window Elements 4-6
AutoResponse 6-1, 6-2, 6-3, B-17, B-18, B-20
AutoResponse Configuration 6-1
AutoResponse Editing 6-2

B

Basic AutoResponse Operation 6-1
Before performing a software download 10-1
Before Using Total Control Manager 1-3

C

Card-Level vs. Channel-Level Commands 3-1
Card-Level vs. Channel-Level Parameter Groups 4-2
Category 3-2
Cellular Configuration Group 13-5
Cellular Modem Support 13-1, 13-2, 13-3
Changed Value Indicator 4-4
Chassis iii, 1-1, 3-3, 4-5, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 6-1, 6-2, 7-1, 8-1, 9-1, 11-6, 12-1, 12-2, 12-3, 13-2, A-1, A-2, A-7, A-8, A-9, A-10, A-13, A-15, A-17, B-6, B-10, B-11, B-13, B-14, B-15, B-18, B-21, B-22, C-3
Chassis Inventory Window Elements 9-1
Chassis Level Events and Responses B-18
Chassis Restore A-2, A-9
Chassis Save A-2, A-10
Clearing Authorized Access Lists 4-7
CLI Parameters (-q, -a, -m, -d) B-17

Command 1-1, 2-1, 3-1, 3-2, 3-3, 4-1, 5-1, 5-2, 5-4, 5-5, 5-6, 8-3, 9-2, 10-2, 11-1, 11-4, 11-5, 13-3, 13-4, 13-5, 13-6, 13-7, 13-8, 13-9, 13-10, 13-11, 13-12, A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-10, A-11, A-12, A-13, A-14, A-15, A-16, B-1, B-2, B-3, B-4, B-5, B-7, B-8, B-9, B-10, B-11, B-13, B-14, B-15, B-16, B-17, B-21, C-1, C-2, C-3, C-4, C-5
Command (-E) B-7
Command Communication 1-1
Command Line 5-2
Command Line Target Selection A-1
Command Status 3-3
Command Status Box 3-3
Command Syntax A-1
Command to Execute 3-2
Command Tool 3-1, 3-2, A-3, A-10
Command Window 3-2
Command Window Elements 3-2
Communication Protocols 1-1
Community Strings (-c, -C) B-2
Component Save to NVRAM 5-5
Configuration 1-2, 2-1, 3-1, 4-1, 4-2, 4-4, 4-5, 5-1, 5-2, 5-3, 5-5, 5-6, 6-1, 8-1, 8-2, 9-1, 10-2, 10-3, 12-1, 12-2, 12-3, 13-1, 13-3, 13-5, A-4, A-8, A-9, A-10, A-11, A-12, A-17, B-3, B-10, B-11, C-4
Configuration Table 8-2
Configuration Tool A-4, A-11
Configuration Window Elements 4-2
Configuring Multiple Components 4-4
Configuring the NMC's Authorized Access List 4-5
Contents C-1
Context-sensitive Help 4-3, 8-3
context-sensitive help iii
Control Buttons 3-3
Copyright ii
Customer Service 12-1, 12-2

D

DCE Startup Rate 13-5
Default 4-3, 5-2, 5-4, 7-2, 9-2, 10-6, 10-7, 13-6, 13-7, 13-8, 13-9, 13-10, 13-11, 13-12, 13-13, A-5, A-16, B-2, B-4, B-6, B-9, B-10, B-11, B-14, B-15, B-16, B-17, C-2, C-3, C-4

Defining a Range of IP Addresses for Authorized Access 4-6
 Delete All Responses 6-3
 Delete Response 6-3
 Delimiter (-d) B-15
 Device Save and Restore B-10
 Do not Originate with ETC 13-9
 Duration (-s) B-10

E

E1 Card iii, 10-5, B-12
 EdgeServer iii
 Enable ETC Mobile 13-5
 Enhanced Throughput Cellular 13-1
 Enterprise Network Hub 1-1, 5-1, A-8
 Errors in Command Line Target Selection A-1
 ET 13-4
 ETC 13-1, 13-2, 13-3, 13-4, 13-5, 13-6, 13-7, 13-8, 13-9, B-6, B-14, B-15, B-16, B-21
 ETC Calling Tone 13-7
 ETC Calling Tone Enabled 13-4
 ETC DCE Startup Rate 13-8
 ETC Fixed Site Cellular Template 13-4
 ETC Fixed Site Operations 13-4
 ETC Fixed/Mobile Site 13-7
 ETC Max Link Rate 13-5
 ETC Mobile Cellular Template 13-5
 ETC Negotiation 13-7
 ETC Parameters 13-5
 ETC Transmit Deemphasis 13-9
 ETC Transmit Level 13-6
 Event (-E) B-17
 Events 6-2
 Execution Errors Message Descriptions A-7
 Exiting the Tests Window 11-6

F

Fan Tray iii
 Feature Enable B-13
 Features 1-1, 9-2, 12-1
 File-Based Feature Enable 12-2
 Filename (-f) B-15
 Filename Prefixes 10-4, B-12
 For more information 5-2, 5-4, 5-6, 11-7, 13-3
 Force Command (-F) B-7
 Force ETC Settings 13-8
 From OVW or SNM 5-5
 From the Total Control Manager Console 5-6
 From the Total Control Manager/SNMP Console 5-6
 From the UNIX Command Line 5-6

G

General Syntax B-1
 Get 6-3
 Graphical User Interface 4-1, 6-1
 Graphical User Interface (GUI) 6-1
 Group (-G) B-7
 GUI A-3, A-6, A-7, A-10, A-11, A-12, A-14, A-15, B-2, B-4, B-5, B-14, B-15, B-16, B-17, B-21

H

-h B-14, B-15, B-16, B-21
 Help 1-2, 4-1, 4-3, 5-6, 6-1, 8-2, 8-3, 11-7, 13-3, B-2, B-4
 Help (-h) B-2
 HiPer ARC iii
 HiPer DSP Card iii

I

Import SDL Files Utility 10-1
 Initiating a Device Save or Restore 5-1
 Installing Cellular Modem Support 13-2
 Inventory B-14
 Inventory Control Buttons 9-2
 Inventory Data Table 9-1
 Inventory Print Window 9-2
 Invocation Errors Message Descriptions A-1
 IP 3-1, 4-1, 4-3, 4-5, 4-6, 4-7, 5-3, 5-6, 6-2, 8-3, 8-4, 10-2, 10-5, 11-1, 11-4, 12-2, A-2, A-3, A-4, A-5, A-6, A-7, A-13, A-14, B-1, B-2, B-3, B-5, B-6, B-8, B-10, B-11, B-12, B-13, B-14, B-15, B-16, B-17, B-21, B-22

L

LAN 1-1
 Launching the Chassis Inventory Utility 9-1
 Launching the Command Tool 3-1
 Launching the Configuration Tool 4-1
 Launching the Modem Test Utility 11-4
 Launching the Software Download Utility 10-2
 Launching the Tone Test Utility 11-1
 Load From 6-2
 Loading a template 13-3
 Log Output (-l) B-1
 Logfile (-l) B-14, B-15, B-16
 Loopback Tests 11-6
 Loss of Carrier Disconnect 13-5

M

Management Bus Protocol 1-2
 Management Bus Protocol Communication 1-2
 Management Information Bases 1-1
 Management Station 1-1, 1-2, 4-7
 Manual Feature Enable 12-1
 MBP 1-2
 Methods for Saving Configurations 5-1
 MIB 1-1, 4-3, 5-3, 13-1, 13-3, 13-4, 13-5, 13-6,
 13-7, 13-8, 13-9, 13-10, 13-11, 13-12
 MNP Extended Services 13-4, 13-10
 MNP10 13-1, 13-2, 13-3, 13-4, 13-9, 13-10, 13-11,
 13-12, C-2
 MNP10 Cellulark 13-11
 MNP10 Compression Type 13-10
 MNP10 Fall Forward 13-11
 MNP10 Fallback 13-11
 MNP10 Link Speed 13-11
 MNP10 Negotiation 13-3, 13-9
 MNP10 Parameters 13-9
 MNP10 V.42 bis Short Form Negotiation Rules 13-12
 MNPX Detection Pattern 13-12
 Modem Analog NIC Commands C-2
 Modem Channel Level Events and Responses B-19
 Modem Commands C-1
 Modem Tests 11-4, B-9

N

NAC 1-1, 10-1, 10-3, 10-4, 10-5, 10-6, A-4, A-5,
 A-13, A-15, A-16, A-17, B-11, B-12, B-13
 NACs 1-1, 10-6, A-4
 NETServer iii, 10-3, 10-5, B-12, B-13, C-1, C-5
 NETServer Commands C-5
 Network Application Card 1-1
 Network Application Cards 1-1
 Network Interface Cards 1-1, 2-2
 Network Management Card iii, 1-1, 5-1, 10-5, B-12
 NIC B-20, C-1, C-2
 NICs 1-1
 NMC 1-1, 1-2, 4-5, 4-7, 5-1, 5-5, 5-6, 6-1, 6-3,
 8-2, 8-3, 8-4, 10-3, 10-6, 10-7, 12-1, 12-2, 12-3,
 13-2, 13-3, A-7, A-8, A-15, A-17, B-5, B-6, B-11,
 B-16, B-17, B-18, B-19, B-21, C-1, C-3
 NMC Commands C-3
 NMC Save Chassis to NVRAM 5-5

O

Online Help System iii, 4-1, 5-6, 11-7, 13-3
 online Help system 1-2, 5-6, 8-2, 11-7, 13-3
 Overview 4-1, A-1

P

Parameter (-P) B-7
 Performing Modem Tests 11-6
 Polling Rate (-p) B-8
 PRI Commands C-4
 Progress Windows 10-6
 PSTN 1-1
 Public Service Telephone Network 1-1

Q

Quad Modem Card iii, 2-2, 4-2, 13-2
 Query Current Command Status (-q) B-7
 Query Current Test Status B-9

R

Readcomm (-c) B-14, B-15, B-16, B-21
 Recall 11-5
 Receive Tone Test 11-3
 Receive Tone Test (-R) B-9
 Responder Tests 11-6
 Response Script Usage 6-2
 Responses/Responses Configured 6-2
 Restore Configuration 5-1, 5-2, B-10
 Restoring a Chassis Configuration 5-3

S

Save Chassis NVRAM 5-6
 Save Configuration 5-1, 5-2, B-10
 Saving a Chassis Configuration 5-2
 Saving or Restoring Chassis Configurations 5-1
 Scroll Bars 9-3
 Security and Accounting iii
 Selected Devices 6-2
 Selected Targets 11-5
 Selecting a Parameter Group 4-1
 Selecting SDL, NAC, and DMF Files 10-3
 Send Tone Test (-S) B-9
 Sending a Tone Test 11-2
 Set 6-3
 Set Trap Destination B-8
 Setting Trap Destinations 8-3
 Setting Traps 8-1
 Setting traps for a device 8-1
 Simple Network Management Protocol 1-1
 Simple Network Management Protocol 1-1
 Slot Level Events and Responses B-18
 SNMP ii, 1-1, 1-2, 4-3, 4-5, 5-5, 5-6, 8-1, A-7, A-8,
 A-9, A-10, A-12, A-16, A-17, B-2, B-4, B-14, B-15,
 B-16, B-18, B-20, B-21, C-1
 SNMP Trap Implementation 1-2
 Software Download A-4, A-15, B-11

Software Download Progress Messages B-13
 Status Box 11-2, 11-3
 Stopping the Tone Test 11-2
 Support 5-5, 12-1, 12-3, 13-1, 13-2, 13-3, 13-4,
 13-6, 13-10, 13-12, A-2
 System Requirements 1-2
 System Requirements, Sun Solaris 1-3
 System Requirements, HP-UX 1-2

T

T1 Card iii, 4-2, 10-4, 10-5, B-7, B-12
 T1 Commands C-3
 Target B-2, B-8, B-14, B-15, B-16, B-21
 Target Designation B-2
 Target Examples B-3
 tcmget examples B-6
 tcmset examples B-6
 Test Description 11-2, 11-3
 Test Results 11-3
 Test Tool A-5, A-12
 Test Type (-T) B-9
 Tests Status Box 11-5
 The Command Window 3-2
 The Modem Tests Window 11-5
 To Add a Trap Destination Entry (-a) B-8
 To add to or modify the trap destination database 8-3
 To Begin a Tone Test 11-2
 To Begin the Receive Tone Test 11-3
 To copy an upgrade code 10-1
 To Delete a Trap Destination Entry (-d) B-8
 To List Current Trap Destination Entries (-q) B-8
 To Modify a Trap Destination Entry (-m) B-8
 To Stop the Tone test 11-3
 Tone Send/Receive A-6
 Tone send/receive A-13
 Tone Test B-9
 Tone Tests 11-1
 Total Control Enterprise Network System Documentation
 Library CD-ROM iii
 Total Control Manager Console A-6, A-13, B-3
 Total Control Manager Device Display? 2-1
 Total Control Manager Feature Enable 12-1
 Total Control Manager/SNMP Console A-6, A-13
 Total Control Manager/SNMP documentation set iii
 Trap Destination A-7, A-14
 Trap Destination Window 8-4

U

UNIX Getting Started Guide iii
 Upgrade File Identification 10-3, B-11
 Using Cellular Modem Support 13-3
 Using the Configuration Table 4-4
 Using the Inventory Data Table 9-3

Using the Performance Monitor 7-1

W

Wait for Carrier 90 Seconds 13-5
 WAN 1-1
 What Can Cellular Modem Support Do for Me? 13-1
 What is a Trap? 8-1
 What is Cellular Modem Support? 13-1
 Wide-Area Network 1-1
 Windows Software Reference iii
 Writcomm (-C) B-14, B-15, B-16, B-21

X

x Prefix (GUI Interface) B-1
 X.25 Card iii
 X.25 Gateway Commands C-4
 xtc restore 5-2
 xtc save 5-2

Y

Year 2000 compliance ii



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