Total Control Manager for Windows



Software Reference



Part No. 1.024.1040-02 Version Number 6.0



Total Control Manager for Windows Software Reference

Version 6.0



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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 Windows 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

lcon	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 typeface represents displays that appear on your terminal screen, for example:
	Netlogin:
Text represented as commands	This typeface represents commands that you enter for example:
	setenv TCMHOME directory
	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. Commands are not case-sensitive.
Text represented as menu or sub-menu	This typeface represents all menu and sub-menu names within procedures, for example:
names.	On the File menu, click New .

Related Documentation

The Total Control Manager documentation set also includes the following documents. To order additional copies or a document that you do not have, 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 of the system parameters. Online Help is supplied with both Windows and UNIX versions of Total Control Manager.

The Total Control Manager for UNIX Software Reference

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

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.



For information about Customer Service, including support, training, contracts, and documentation, visit our website at *http://totalservice.3com.com*

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OVERVIEW

- Chapter 1 Application Overview
- **Chapter 2** System Requirements
- Chapter 3 Graphical User Interface





APPLICATION OVERVIEW

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 NACs 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.			
<i>Total Control Manager</i> Features	This software configures 3Com devices remotely from a management station on a Local-Area Network (LAN) or Wide-Area Network (WAN). Versions of the Total Control Manager are available for Windows and UNIX environments.			
	In addition to all the functionality that comes with Total Control Manager, 3Com offers optional functions for this software application:			
	 AutoResponse 			
	 Cellular Modem Support 			
AutoResponse	AutoResponse defines a set of actions to be taken automatically when a specified event occurs in the hub. The software refers to this set of actions as an AutoResponse script. The event may be hub-wide, specific to a particular NAC in a given hub slot, or specific to a particular entity, for example a single modem channel.			
	In short, AutoResponse can be defined as a software application you can use to write a script or a list of actions or commands to execute when an event occurs that either applies to the entire hub or to an entity in the hub.			
	Total Control Manager provides a convenient graphical user interface (GUI) through which the Network Manager can configure these automatic responses. Total Control Manager does not need to be running when an event occurs for the NMC to invoke the appropriate response script. These scripts are preprogrammed into the NMC and saved to nonvolatile random access memory (NVRAM).			

What events can AutoResponse detect?

AutoResponse recognizes three categories of events:

- Hub or NMC events
- Device or slot events
- Modem or channel events

AutoResponse events are SNMP traps and may require you to specify thresholds, also called descriptors. Thresholds for an event must be programmed through the Total Control Manager dialog book.

Cellular Modem Support This feature supports cellular modem applications by providing direct configuration of cellular objects added to the modem MIB. This direct configuration includes configuration objects for MNP10 and Enhanced Throughput Cellular (ETC).

For more information on how to install Cellular Modem Support, refer to the Total Control Manager for Windows online Help system.

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.

- **Software Download** Software Download allows you to change or upgrade card specific software on a card-by-card or chassis-wide basis. For more information on Software Download, refer to the online Help System or *Performing a Software Download* later in this book.
 - **Hub Inventory** Inventory keeps accurate records of cards and devices in the hub. Inventory provides the name and IP address of the hub. The inventory window also includes the following information about the cards:
 - Name and Version of the cards
 - Slot Number
 - Card Serial Number
 - Description of the device
 - Product Code

- Hardware and Software Versions
- DRAM and Flash RAM
- DIP Switches

For more information about using Inventory, refer to the Total Control Manager online Help system.

Real Time StatusThe Real Time Status Monitoring feature shows you the actual status of
any hub, NMC, card, slot, or channel element that Total Control Manager
is managing.

Auto Configuration Auto Configuration controls whether or not an NMC automatically configures cards.

First each card must be manually configured and saved to the NMC's Non-Volatile Random Access Memory (NVRAM). The configurations become the values used by the NMC during an autoconfigure operation where the NMC automatically configures the NACs upon NAC installation, NMC installation, or hub power-up. As the NMC discovers NACs on power-up, it loads the configuration for each of the 16 slots from the values previously saved to the NMC's NVRAM.

For more information on Total Control Manager features, refer to the online Help system.

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SYSTEM REQUIREMENTS

This chapter contains the system requirements for Total Control Manager for Windows.

Minimum Hardware	 80486-based IBM PC or compatible 				
Requirements	 33 MHz 				
	 16 Mbytes RAM 				
	VGA graphics adapter and monitorCD ROM drive				
	 Mouse 				
	 40-Mbyte hard drive, with 20 Mbytes free 				
Recommended	 80486-based IBM PC or compatible 				
Hardware Requirements	■ 66 MHz				
Requirements	 Super VGA graphics adapter and monitor resolution set to 800 x 600 256 colors 				
	As with all other Windows programs, lower screen resolutions and certain fonts may slightly alter the appearance of the Total Control Manager window, but the menu items remain completely functional.				
	 120-Mbyte hard drive, with 60 Mbytes free 				
	 16-bit Network Adapter (Token Ring or Ethernet) 				
	 RS-232 Serial Communications Port with 16550 UART 				

Minimum Software Requirements	 DOS 5.0 or higher Windows 3.1 ODI Device Driver 				
Supported Hardware/Software Platforms	 These support Total Control Manager: 386/486 Pentium with 32M RAM Windows 95 Windows NT with Service Pack 4 				
Supported Accessories	 The following accessories support Total Control Manager: Dual Analog Modem Network Application Card (NAC) Quad digital modem NAC Dual T1 NAC Dual PRI NAC X.25 Gateway NAC LAN Gateway NACs HiPer DSP HiPer ARC EdgeServer HiPer NMC IWF CDMA HiPer TRAX 				

3

GRAPHICAL USER INTERFACE

This chapter explains the Total Control Manager graphical user interface (GUI), sometimes called the Virtual Front Panel Display (VFPD).

The Front Hub Display

A standard Enterprise Network hub has 17 slots to hold the Network Application Cards (NACs). The Network Management Card (NMC) is always installed in slot 17. The hub also uses two power supply units (PSUs).

NACs are located in the front of the hub; the corresponding Network Interface Cards (NICs) are located in the back of the hub. Each NAC displays the 3Com logo and light emitting diodes (LEDs). The following graphic displays the GUI display of the front view of a hub.



Selecting a Card When you select or click a card, it turns blue. This color indicates that the card is selected. You can configure the selected card, set the trap

destinations, and view the Light Emmitting Diode (LED) polling information.

How to select a card in the GUI

 To select a single channel: Click the LED that represents the status of that channel. The LED changes color to indicate the selection.

 To select all channels: Click the RN/FL LED. All LEDs change color to indicate that the channels are selected.



To select the channels of a HiPer DSP card, click the Modem Utilization LEDs.

- To select an entire card: Click anywhere on the black area of the card. The card, including all LEDs and the background, changes color.
- To select a range of objects: Hold down the CTRL button and click on each object until you select all of the objects you want to include.



The selected objects must be identical.

- To select all objects of the same type:
 On the File Menu, click View, and then click Select All.
- **LEDs** LEDs on each card help you monitor the cards. Total Control Manager always displays the NAC name and the LED names on the left side of the GUI.

The LEDs can be either red, green, or yellow depending on the condition of the card. For more information about LEDs, refer to the Troubleshooting section of this book or to the specific card's documentation.

The Back HubThe back view of the hub displays each installed NIC. On a selected NIC,
the GUI shows the following:

- Power supplies
- Name of each NIC
- Name of each power supply portal

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• A red question mark if the card is unknown

The following graphic shows the GUI display of the back of the hub.



Managing Optional
FeaturesMenus and menu options for managing optional features display only if
the feature is enabled. Total Control Manager manages only enabled
optional features.

The Toolbar The toolbar provides shortcuts for many common tasks available from the pull down menus. By default, the toolbar is located at the top of the screen under the menu bar. The toolbar is displayed below; descriptions of the functions are listed in the following table.



lcon	Name of Icon	Icon Function
	New Device	Opens the New Device dialog box so you can create a new device
	Open Device	Opens the Open dialog box.
	Save Device	Saves the Device and does not open a dialog box.
\$	View Other Side	Views the other side of the hub.
	Configuration	Opens the Programmed Settings dialog box to configure the card.
2	Commands	Opens the Total Control Manager Commands Dialog Box.
	Faults	Opens the Faults dialog box.
U :,	Software Download	Opens the Software Download dialog box.
۲	Performance	Opens the Functional Group Monitor Setup dialog box.

(continued)

lcon	Name of Icon	Icon Function
	Cascade Windows	Arranges windows to overlap.
	Tile Windows	Arranges windows as non-overlapping tiles.
?	Help	Allows you to call up help topics for selected items.

GUI Menu Options

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> The pull down menus in the Menu Bar allow you to perform all Total Control Manager tasks. The following figure shows the menus and menu options that Total Control Manager offers.

File	View	Configuration	Fault	Performance	Security	Window	Help
New	Other Side	Programmed Settings	Trap Settings	Session Monitor	Community Names	Cascade	Index
Open	Select All	Actions / Commands	Trap Destinations		Authorized Stations	Tile	Commands
Close	LED Polling Information	Software Download	Modem Tests			Arrange Icons	Procedures
Save	Toolbar	Feature Enable	Remote Testing			Close All	Keyboard
Save As	Status	Inventory		-			Using Help
Modify		AutoResponse					About Total Control Manager
Delete		HiPer DSP Mapping					
Save Configuration		Configure					
Restore Configuration			-				
Save NVRAM							
Restore NVRAM							
Import SDL Files							
Upload File							
Exit							

Dialog Boxes

This section discusses the Total Control Manager dialog boxes that control the major functions of the software.

Programmed Settings and Card Faults Dialog Boxes

Open the Programmed Settings dialog box from the Configure menu. The following graphic shows the Programmed Settings dialog box.

NMC Card Programm	ed Settings			X
Selected Objects:	149.112.209.100:<	\$17C0>;		Load From
Parameter Group:	NMC Identification		•	
		S17		Current Group
Operational Status		operational		
Serial Number		11		2 <u>Li</u> et
Hardware Revision	1	10.9		
Software Version		6.2.7		3 <u>S</u> et
General NMC State	us	nonCriticalFailure		
Chassis Temperatu	ure (.01 deq. C)	27		Dia
Number of Power L	Jp Failures	1		4 <u></u>
Software Compatib	ility Version	6.0.0		
DIP Switch Setting	18	727		5 <u>C</u> opy
DRAM Installed (K	B)	16384		
ROM Installed (KB	1	8192		A Mour Bu Bour
Packet Bus Clocki	ng Source	backplaneActive		6 <u>view by how</u>
				7 <u>o</u> k
				8 Cancel
				9 <u>H</u> elp
•				

The Programmed Settings dialog box and the Faults dialog box contain the same buttons. The following table explains functions for these dialog boxes.

Callout #	Button	Function
1	Load From	Copies the full set of parameters available via the Parameter Group from one card to another
2	Get	Retrieves the last-saved configuration from the MIB
3	Set	Sets the current configuration to theMIB
4	Print	Prints the displayed information
5	Сору	Copies the selected data to the clipboard so you can paste it into another application
6	View	Alters the view of the Programmed Settings dialog box to swap the axis of the grid
7	OK	Saves all changes made in the Programmed Settings dialog box
(continued	3)	

Callout #	Button	Function
8	Cancel	Closes the Programmed Settings dialog box without saving changes
9	Help	Opens the online Help file

Actions/Commands Dialog Box

The following graphic shows the Actions/Commands dialog box.



The table below describes the areas of the Actions/Commands window.

Callout #	Area of GUI	Function
1	Selected Devices	Displays the selected devices
2	Command to Execute	Allows you to select a command from the drop-down menus. Commands can be related to hardware or software.
3	Command Specific Parameter	Allows you to enter more specific criteria in this area
4	Command Status	Displays the results of the command
5	Force Command	Allows you to force this command.
6	Polling Interval	Sets the polling interval for current status in number of seconds
7	Execute	Executes a command
8	Close	Closes the Actions/Commands dialog box
9	Help	Opens online Help file



Resetting the NMC via the Actions/Commands dialog box will result in the loos of communication until the reboot completes. During this reboot, status may be invalid.

Software Download Dialog Box

The Software Download dialog box allows you to change or upgrade card specific software on a card-by-card or hub-wide basis.

The following graphic shows the Software Download dialog box.

Selection	Slot	NAC/DMF File	SDL File	Status
-	1 · T1 PRI			
	2 · QADV34 GII			
	3 - Empty Slot			
	4 - QADV34			
	5 - Empty Slot			
	6 - Empty Slot			
	7 - Empty Slot			
	8 - Empty Slot			
	9 - EdgeServer			
	10 - Empty Slot			
	11 - Empty Slot			
	12 - Empty Slot			
	13 - QADV34			
	14 - QDV34			
	15 - Empty Slot			
	16 - Empty Slot			
	17.NMC			

Use the Start button in the Software Download dialog box to begin downloading software. For more information on this feature, refer to the *Performing a Software Download* chapter later in this book or to the Total Control Manager online Help system.

Inventory Box The Inventory dialog box includes the following information in the Inventory report:

- Slot Number
- Description
- Serial Number
- Hardware Version
- DRAM (KB)

- Flash RAM (KB)
- DIP Switches
- Software Version

The following graphic shows the Inventory dialog box.

	Hardware version	DBAM (KB)	Flash BAM (KB)	DIP Switches	Software version
1					
2					
3					
4					
5	0.2.0	0	0	0000000110000100	6.0.2
6	0.2.0	0	0	0000000110000101	6.0.2
7	3.0.0	0	0	0000000110000100	6.0.2
8	0.2.0	0	0	0000000110001000	6.0.2
9	0.49.0	8192	2048	000000000000000000000000000000000000000	2.0.2
10	3.0.0	0	0	0000000110000100	6.0.2
11	3.0.0	0	0	0000000110001000	6.0.2
12	4.0.0	4096	1024	0000000001000001	3.1.3
13	6.0.0	8192	2048	000000000000000000000000000000000000000	3.6.25
14	19.0.0	65536	8192	0000000000010011	4.1.11
15	10.9	16384	8192	0000001011010111	6.2.7
r		n	0	000000000000000000000000000000000000000	

The following table describes the buttons in the Inventory dialog box.

Callout #	Button	Function	
1	Devices	Displays hubs saved by Total Control Manager	
2	Save	Saves the current report to a text file	
3	Print	Prints the current report	
4	Сору	Copies the Inventory report to the Windows clipboard	
5	Exit	Closes the Inventory dialog box	
6	Help	Opens online Help file	

AutoResponse The AutoResponse dialog box defines a set of actions (auto response script) to automatically take when a specified event occurs in a hub.

The following graphic shows the AutoResponse dialog box

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AutoResponse - 149.112.209.100	×
Selected Devices: 149.112.209.100: <s17c0></s17c0>	
Event: PSU Voltage Out of Range	Response Script Usage: 0%
Responses:	Responses Configured:
Generate AutoResponse SIMP TRAP I Delay Script Execution (N) seconds Terminate Script Execution Configure Module From NMC NYRAM Configure Module From NMC Factory De Test Module Reset Module 4 Undo All Get Set	
Load From OK C	ancel

In addition to the standard Total Control dialog box functions, the AutoResponse dialog box has four commands explained in the following table.

Callout #	Button	Function
1	Add	Adds a Response to the Responses Configured box
2	Remove	Removes the Response from the Response box on the left
3	Remove All	Removes all of the Responses from the Response box
4	Undo All	Restores the last Response used by the NMC

For more information about AutoResponse, refer to the Total Control Manager online Help system.

Session Monitor The Session Monitor dialog box monitors the performance of the cards in a hub.

The following graphic shows the Session Monitor dialog box for a HiPer NMC.

CHAPTER 3: GRAPHICAL USER INTERFACE

Functional Group Mo	onitor Setup	
	Chassis Performance mo	nitor
Polling Interval: 1 Functional Group	Min V	OK Cancel Help
Parameters: General NMC Status Amount of DRAM Ins Amount of NVRAM In Sequence Number o Chassis Temperature Packet Bus Clocking NMC's packet bus co	stalle 1 -> Add -> f La 2 <- Remove <- e (0 5 oct 3 -> Default -> 4 <- Remove All <-	Parameters Selected:

The Session Monitor dialog box commands are explained in the following table:

Callout #	Button	Function
1	Add	Adds a parameter to the Parameters Selected box
2	Remove	Removes the parameter from the Parameters Selected box
3	Default	Adds all parameters to the Parameters Selected box
4	Remove All	Removes all parameters from the Parameters Selected box

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CONFIGURING DEVICES

- Chapter 4 Total Control Manager Basic Functions
- **Chapter 5** Customizing Device Configurations
- **Chapter 6** Using Load From to Automatically Configure Devices





TOTAL CONTROL MANAGER BASIC FUNCTIONS

This chapter provides procedures for commands available for basic functions in Total Control Manager.

Performing Basic Functions	The following procedures will help you perfo Control Manager.	orm basic tasks within Total		
Creating New Devices	Use the following procedure to create a new device configuration.			
1	On the Main Menu bar, click File, and then	click New. Or click 📔		
	The New dialog box appears.			
2	To identify the device, type a name in the Device Name box.	New X		
3	Specify the IP Address or Host Name of the NMC for the hub you want to configure in the Target Host box.	Device Name: USRDevice1 Target Host: 0.0.0 Device Type: WAN HUB		
4	Define the SNMP Community Strings.	SNMP Community Strings		
5	Use the Notepad field to include optional comments for the device.	Read Only: public Read+Write: private		
6	Click OK to open the new device. Total Control Manager discovers the device.	Notepad		



For a hub, the IP Address is the address assigned to the NMC Network Interface Card (NIC) port you are using.



To change Read and Write authority after the initial configuration, you must change the privileges in two places, the NMC and in Total Control Manager.

Using Optional Settings for a New Device

The graphic to the right shows the optional settings for a new device. For more information about these optional settings, refer to the Total Control Manager online Help system.

Remote Serial Communications		
Modem Timeout (sec)	60	*
Dial-Up Networking Connection		
LED Monitoring		
Polling Rate (sec)	15	÷
TFTP Parameters		
Timeout (sec)	10	÷
Retries	3	-
SNMP Parameters		
Timeout (sec)	10	×
Retries	3	×

Saving a new configuration

- 1 On the Main Menu bar, click File.
- 2 Click Save. Or click



Use the Open command to access this saved configuration.

Opening a Device The Open command accesses saved device configurations. To open a previously saved device:

1 On the **Main Menu** bar, click **File**, and then click **Open**. Or click The Open dialog box appears.



2 In the Open dialog box, highlight the device to open.



If the Open dialog box is blank, then no devices were saved for this installation of the software. Use the new dialog box to specify a device to work with.

3 Click OK.

Total Control Manager attempts to open the highlighted device.

Modifying a Device The Modify command allows you to edit previously defined device parameters.

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Modifying a Chassis Configuration

Use the Modify dialog box to change the following settings for a Chassis:

- **Device Name**
- Host Name
- Address

Modifying a Card Configuration

Use the Modify dialog box to change the following settings for a Card:

- SNMP Community Strings Read Only Authority
- SNMP Community Strings Read and Write Authority.

To modify a device:

- 1 On the Main Menu bar, click File, and then click Modify.
- 2 In the Modify dialog box, highlight the device to modify.
- If Modify is grayed out, there are no saved devices to modify.
- 3 Click OK.

Total Control Manager makes the changes you specified.

Deleting a Device



- 1 On the **Main Menu** bar, click **File**, and then click **Delete**.
- If Delete is grayed out, there are no devices to remove.
- **2** In the Delete dialog box, select a device to remove.
- 3 Click OK.

Total Control Manager removes the highlighted device.

Using the Save Use the following commands to save hub configurations or to save device Commands configurations. On the Main Menu bar, click File, and then click Save. Or click Save



Total Control Manager saves the current device information.


Save As The Save As command allows you to copy a device, rename it, and make changes to it without changing the original device.

To save a device as a different name or file type:

- 1 On the Main Menu bar, click File, then click Save As.
- **2** In the Save As dialog box, specify a device Name and an IP Address to associate with the file.



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You may also highlight a device Name and IP Address from the list of saved devices to associate with the file.

3 Click OK.

Total Control Manager saves the file with the specified card name and IP address.

Save Configuration The Save and Restore Configuration options apply to all parameters, or management information base (MIB) objects, for the hub and each of its installed cards. These options are useful for backing up configuration work performed on installed hubs.

To save a device configuration:

- 1 On the Main Menu bar, click File, then click Save Configuration.
- **2** In the Save Configuration dialog box, specify the File Name, File Type, Drive, and Folder for the configuration. The default file type is WHB.
- 3 Click OK.

Total Control Manager saves the configuration file.

Save NVRAM

1 On the Main Menu bar, click File, then click Save NVRAM.

The Save and Restore NVRAM dialog box appears.

- **2** The software lists the IP address of the NMC you are currently managing in the Target Host box. To copy the NVRAM from a card other than the current NMC, in the Target Host box, type either the IP address or the host name of the NMC from which you want to copy the NVRAM.
- **3** Use the Browse button to select the drive and directory for the save file. If the save file already exists, use the Browse button to select the file. If the save file does not exist, type the file name in the Configuration File box.

4	In the Type of Operation box, confirm that the Save Configuration circle is selected. If this circle is empty, click on the circle.	
5	If you have made changes to the hub configuration since saving to NVRAM and you want those changes included in the save file, click on the Update NVRAM Before Saving Configuration box.	
6	To check the Time Out, Retry, and Community String settings click Settings . Total Control Manager displays the current values for these parameters. Modify the settings, if necessary. Click OK .	
7	Click Start to save the file.	
Using the Restore Commands	Use the following commands to restore hub configurations or to restore device configurations.	
Restore Configuration	Use the Restore Configuration option to copy the configuration for all the cards and parameters in the hub to a file. The Network Management Card (NMC) Internet Protocol (IP) address must be different on the second hub.	
	To restore a chassis configuration to memory in the management station:	
1	On the Main Menu bar, click File .	
2	On the File menu, click Restore Configuration.	
3	In the Restore Configuration dialog box, specify the File Name, File Type, Drive, and Folder for the configuration.	
4	Click OK .	
	Total Control Manager restores the specified configuration to the management station's memory.	
Restore NVRAM		
1	On the Main Menu bar, click File, and then click Restore NVRAM.	
	The Save and Restore NVRAM dialog box appears.	
2	Total Control Manager shows the IP address of the NMC you are currently managing in the Target Host box. To restore a file to the NVRAM from a card other than the current NMC, type in the IP address or the host name of the card you are restoring to the NVRAM.	

3	Use the Browse button to select the drive, directory, and file name for the configuration file.
4	In the Type of Operation box, confirm that a dot appears in the Restore Configuration circle. If this circle is empty, click the circle.
5	If you want to make changes to the hub configuration after restoring to NVRAM and before applying the restored NVRAM, click the Configure Devices After Restore .
6	To check the Time Out, Retry, and Community String settings click Settings . Total Control Manager displays the current values for these parameters. Modify the settings. Click OK .
7	Click Start to restore the configuration file to NVRAM.
Using Security	and Authorized Stations.
Community Name	The Community Name feature changes the Read-Only and Read-Write authority of the NMC SNMP agent.
	To assign Read-Only or Read-Write authority to a community:
1	On the Main Menu bar, click Security.
2	On the Security menu, click Community Names.
3	In the Community Names dialog box, type the name of the community to which you are assigning Read-Only authority in the Read-Only box.
4	Type the name of the community to which you are assigning Read-Write authority in the Read-Write box.
5	Click OK .
	Total Control Manager assigns the new authority levels.
	These values need to be modified for the chassis saved in Total Control Manager to match the new settings or Total Control Manager will be excluded.
Authorized Stations	Authorized Stations control which management stations have access to a card.

4-6 To add, delete, or modify IP addresses, network masks, and optional text annotation for management stations permitted to access a card:



The first entry in the Authorized Stations dialog box must be the current management station. If the current management station is not the first entry, it will be excluded making further configurations impossible.

- 1 On the Main Menu bar, click Security.
- 2 On the Security menu, click Authorized Stations.

This list may hold as many as ten entries. The default condition for this group is empty, which allows a management station to manage any card on the same subnet as the management station. All entries must contain nonzero network masks.

3 Use the Add, Modify, and Delete buttons to manage which PCs have access to a card.



Any change made here must be saved to NVRAM by executing the Save to NVRAM command on the NMC for the change to remain valid after an NMC reset.

Closing and Exiting Use the following procedures to close and exit device sessions. Total Control Manager

Close

- 1 On the Main Menu bar, click File, and then click Close.
- 2 If you have already saved the session changes for the current device, the device session closes. If you have not saved the changes, Total Control Manager prompts you to save the changes. Click **Yes** to save changes and close. Click **No** to close without saving the changes. Click **Cancel** to return to the current card session.

Total Control Manager closes the device session.

Exit

- 1 On the Main Menu bar, click File, and then click Exit.
- 2 If you have already saved the session changes for the current device, the device session closes. If you have not saved the changes, Total Control

	Manager prompts you to save the changes. Click Yes to save change and close. Click No to close without saving the changes. Click Cance return to the current card session.		
	Total Control Manager exits the device session.		
Viewing Options	Use the following procedures to use the toolbar options.		
Displaying the	To display the Toolbar:		
looibar	On the Main Menu bar, click View and then click Toolbar to display or remove the Toolbar.		
	Total Control Manager displays or removes the Toolbar as soon as you click on the option and returns you to where you were before you displayed the View menu.		
Other Side	To switch between the front view displaying the NACs and the rear view displaying the NICs:		
	On the Main Menu bar, click View , and then click Other Side to see the front or back.		
	Or click		
	The software switches between the front and rear view for the display.		
Select All	To select all the objects of a similar type, select an object of the that type. For example, click a modem.		
	On the Main Menu bar, click View, and then click Select All.		
	Total Control Manager selects all the objects of that type installed in the hub.		
LED Polling Information	The LED Polling information command tests the light-emitting diodes (LEDs) on a device.		
1	On the Main Menu bar, click View .		
2	Select the device for which you want to view LED polling.		

- **3** On the **View** menu, click **LED Polling Information**. Total Control Manager displays the following information:
 - Time of last valid LED polling
 - First error encountered
 - Number of polling errors
- 4 After you are done viewing the LED Polling Information window, click **OK**.

Total Control Manager returns you to the main view of the device being managed.

Status Bar The Status Bar is located at the bottom of the GUI. If the mouse pointer is resting on a button in the Toolbar, the Status Bar displays the button's function.

To display the Status Bar:

- 1 On the Main Menu bar, click View.
- 2 To display or remove the Status Bar, click **Status Bar** on the **View** menu. Total Control Manager displays the Status Bar and returns you to where you were before.
- **Tile** Tile arranges the open windows in a session to display in a tile format.

To arrange open windows as tiles:

On the Main Menu bar, click Window, and then click Tile.



Total Control Manager arranges the open windows into tiles.

Cascade To view all the title areas for the open windows:

On the Main Menu bar, click View, and then click Cascade.



Total Control Manager arranges all the open windows laying one window on top of the next with the title areas for all the open windows.

Arrange Icons	Arrange Icons organizes the icons.		
	To automatically arrange the icons:		
	On the Main Menu bar, click Window, and then click Arrange Icons.		
	Total Control Manager arranges the icons for the software with equal spacing between them.		
Using Optional Features	Use the following to view the online Help options.		
Feature Enable	 The Feature Enable function in Total Control Manager activates optional software features, which are purchased separately. To enable an optional feature, you must get a code from 3Com. Once you enable the feature for a particular NMC, the feature is enabled for all components in the hub. You do not need to enable optional features more than once. To enable optional features: 		
	to view the Feature Enable window.		
2	If you are using a feature code supplied to you by technical support to enable an optional feature, type that code in the Feature Key field.		
3	Feature Enable Image: Cancel Help Open Set Cancel Help If you are using a disk or file to enable an optional feature, click Open.		
5	Use the Open dialog box to identify the file and its location.		

4 Click **Set** to enable the optional feature.

Reboot the NMC to enable the optional feature.

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Using Help

Contents	
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- 1 In the Using Help window, click the Contents tab.
- **2** Click the subjects listed to display additional topics.
- **3** Click a topic to display the Help on this topic.
- **Using Help** The Using Help dialog box looks up information about the Help system on three different levels of detail. The lowest level is the Contents tab level. The Index tab provides the next level of detail. The Find tab takes you straight to a Help topic.

To display the Using Help Window:

On the **Main Menu** bar, click **Help**, and then click **Using Help**. The Help topics dialog box displays. This dialog box contains tabs for the Contents, Index, and Find in Help.

Index To view the online Help system main menu:

On the Main Menu bar, click Help, and then click Index.

The online Help system main menu displays.

If you are just learning how to use a feature in this software, you may want to leave the online Help system window open. You can switch between Total Control Manager functions and Help.

- **Find** To lookup a Help topic directly:
 - 1 In the **Using Help** Window, click the **Find** tab.
 - **2** Either scroll through the Help topics using the scrollbar or type in a word. The Help topic closest to the words being typed displays in the scrolling region.
 - **3** Click a Help topic to display the information about this topic.

About Total Control Manager	To view the version of Total Control Manager:
	On the Main Menu bar, click Help, and then click About Total Control Manager.
2	2 After viewing this information, click OK .
	You return to the window you were on before displaying the Help menu.
Setting Parameters	Management of a device by SNMP requires the definition of a set of managed objects, or variables that can be written to and/or read from. The write operation (SET) configures or takes action, and the read action (GET) obtains status information about the object.
	To change a parameter:
ŕ	Select the device or channel to which the parameters changes will apply.
2	2 On the Main menu bar, click Configure , and then click Programmed Settings .
	The Configuration dialog box displays with a window briefly overlaying it that indicates the progress of the software in retrieving the current parameters.
3	Click in the Parameter Group box and change the group, if necessary, to display the parameter you want to change.
2	Highlight the parameter to change in the drop-down list box.
5	To define the setting, click the currently displayed value and type the desired setting.
e	Click Set to send the changes to the selected devices or channels.
	When you initiate a change, an SNMP Set operation, the Device Configuration Status window displays. This window communicates the progress of your change. It shows the destination slot and channel number, the Parameter Group being changed, and the packet number of the data being sent.

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CUSTOMIZING DEVICE CONFIGURATIONS

This chapter provides an overview of customizing card and device configurations.

Using the Configuration Window	The Configuration dialog box is the primary interface for sending SNMP commands to devices installed in the hub.	
Title Bar	The title bar at the top of the Configuration dialog box describes the function being performed (either Programmed Settings or Fault Management) and the card selected from the hub display. For instance, when you select a Modem card from the hub display and select Programmed Settings from the Configuration menu, "Modem Programmed Settings" is the title of the Configuration dialog box.	
Selected Objects	The Selected Object dialog box displays the IP address of the selected hub NMC, and the slot numbers and channel numbers of the selected devices. For example, "192.77.203.65: <s2c2>" denotes that channel two of the device in slot two of a hub with the address 192.77.203.65 is selected. This box is read only.</s2c2>	
Parameter Group	This box provides a list of all configurable parameter groups related to the selected device and selects a parameter group. The parameters for the group display in the spreadsheet section.	
Inventory	The Inventory spreadsheet displays configurable parameters in the parameter group selected. The spreadsheet views and revises settings for the device(s) or channel(s) selected from the hub display.	
	Column heading titles indicate which device or channel is configured. The values display in that column. For instance, if the column header reads	

"S10C4," the configuration values for channel four of the device in slot 10 display in the column.

Grayed out values are read-only. You can edit any other spreadsheet cell. If a value is restricted to a particular range or set of options, a drop-down box lists the available options.

The first column of the spreadsheet box lists the parameter names.

Account/Event Logging The NMC client communicates with the PC-based server via Ethernet or Token Ring IP LAN. Call statistics and specific chassis events are sent by NMC clients across a LAN connection to be logged. Then Account/Event Logging uses a post-processing application or database script to format the logged data.

3Com recommends that the Accounting Server be on a dedicated PC and discourages putting it on the same PC to which traps are sent.

Use discretion when configuring Traps with the enableAll setting. Too much information could overload the server. When you enable a trap and a log, the NMC sends information.

Parameter Group Number	
and Description	Parameters
Group 1:	User Name
Usage Statistics	Call Start Date/Time
	Call End Date/Time
	Call Termination Reason
	Number Dialed (Out Going Only)
	ANI (Incoming Only)
	DNIS (Incoming Only)
	Call Duration

(continued)

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Parameter Group Number and Description	Parameters
Group 2:	Characters Sent
Data Transfer Statistics	Characters Received
	Octets Sent
	Octets Received
	Blocks Sent
	Blocks Received
	Block Resent
	Characters Lost
Group 3:	Block CRC Error
Performance Statistics	Link NACs
	Link Fallbacks
	Link Upshifts
	Link Timeouts
	Initial Link TX Rate
	Final Link TX Rate
	Initial Link RX Rate
	Final Link RX Rate
	Retains Requested
	Retains Granted
Group 4:	Sync/Async Mode
Operating Mode Statistics	Modulation Type
	Originate/Answer Mode
	Error Control Type
	Data Compression Type
	HST Back Channel Rate
	Default DTE Data Rate
	High Freg Equali

You can use other parameters in the NMC Fault window to set traps, and generate log entries for different events. Several traps include an option to enable or disable a trap, and the option to specify enable/disable for both trap and log record generation. The default trap setting is Disable All. You may also select Enable Trap, Enable Log, or Enable All.

After the NMC is programmed to send data to the server, you can configure the format of the data when it is logged. The RADIUS protocol enables the NMC to communicate its log data to generic RADIUS servers. This ability makes the NMC compatible with an open systems log facility.

Wherever possible, the NMC log uses the standard RADIUS attributes to maximize the amount of data interpreted by a generic RADIUS report generator. RADIUS provides a robust delivery mechanism for the log records using an acknowledged UDP/protocol.

RADIUS accounting uses two types of packets:

Accounting Request: To log an event, the NMC client sends an
Accounting-Request packet containing the event log information to
the IP address of the selected server.

 Accounting Response: The server processes the packet and responds to the NMC with an Accounting-Response packet.

An Accounting-Request packet contains a number of attributes with information to be stored. Each attribute Type corresponds to a specific item defined by the RADIUS draft. The NMC client has over 40 pieces of information that do not fall under defined attribute Types and must use the Vendor-Specific attribute. The 3Com data is in this attribute.

The Accounting/Event Logging application operates on one set of files for 24 hours. At midnight, the server closes the files and opens a new set of log files.

Mapping & Configuring Cards	The following sections contains information for mapping HiPer DSP cards and configuring HiPer ARC Manager. For more information on these cards, refer to the Total Control Manager online Help system and the card's specific documentation.	
HiPer DSP Mapping	HiPer DSP Mapping assigns the channels of one or more HiPer DSP cards to any of the four available configuration templates. All channels on a card are initially assigned to template1.	
	Templates store configurations for multiple channels at the same time. These configurations can be refreshed to other channels. When you	

These configurations can be refreshed to other channels. When you select a group for configuration, Total Control Manager treats all of the channels assigned to that group as a single channel. This makes

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modifying and maintaining configurations more efficient. Changes only have to be made once, and not many times over for the channels assigned to a group.



You must refresh the mapped channels in order to incorporate your changes.

At any given time, a channel can be assigned to one template only.



This feature is only available if the HiPer DSP card is selected.

To perform HiPer DSP mapping:

- 1 Click the HiPer DSP card.
- 2 On the Main Menu bar, click Configure.
- 3 On the Configure menu, click HiPer DSP Mapping.

Total Control Manager displays the current channel mapping configuration in the Group <->Channel Mapping dialog box.

- 4 Click on a Slot tab 1-16 to select the HiPer DSP card to map.
- **5** Click once in the rectangle that intersects the channel you want to assign and the group it should belong to. An *x* indicates the group assignment of each channel. Assign as many channels as you want.
- 6 If you want to assign channels to groups on another card, select the matching Slot tab and repeat this procedure.



Use the **Clone** button to clone selected channel mappings on the current card to all other selected cards.

7 Click **OK** to save your channel mappings.

Configuring HiPer ARC Manager

The Configure option accesses and launches the HiPer ARC Manager
 Software. This software is used in all facets of network management and administration HiPer ARC functionality.

This feature is only available through Total Control Manager if:

- a HiPer ARC card is installed in the hub
- HiPer ARC Manager software is installed on the same workstation as Total Control Manager

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To use the Configure option to access the HiPer ARC Manager:

- 1 Click the **HiPer ARC** card.
- 2 On the Main Menu, click Configure.
- **3** On the **Configure** menu, click **Configure**.
- 4 Click HiPer ARC.

Total Control Manager accesses and launches the HiPer ARC Manager software. All HiPer ARC Manager features and commands now apply.

Refer to the HiPer ARC Manager documentation and online Help system for additional information.



USING LOAD FROM TO AUTOMATICALLY CONFIGURE DEVICES

This chapter contains information about using the Load From function in Total Control Manager.

Loading a Configuration

This option applies the settings of one instance of a certain type of configuration to one or more instances of the same type. To Load From a Device:

- **1** Click the card(s) to configure.
- 2 On the Main Menu bar, click Configure then click Programmed Settings.

The Configuration Dialog box displays.

NMC Programmed Settings		×
Selected Objects: 149.112.250.125: <s17cd>; Parameter Group: Configuration Group</s17cd>		Load From.
	\$17	Current Group
System Time	09:04:41	Get
System Date	03/19/99	
Greenwich Mean Time Time Zone	921834281	Set
Auto Config on Card Initialization	disable	Print
NMC LED Display	JIM	
TFTP Timeout	4	Copy
		View By Row
		<u>O</u> K Cancel

3 In the **Configuration** dialog box, click **Load From**.

The Load Configuration From Device dialog box displays.

Load Configuration From Device				
Target Host:	149.112.250.125			
Community String:	public			
Slot #:	17 🚊			
Channel#				
OK	Cancel Help			
Note: Read-Only attributes will be excluded from the Load From operation. These attributes may indicate invalid results. This is normal.				

- **4** If the device being copied is installed in another hub, type the address in the IP address box. If the device is installed in the same hub, use the default value.
- **5** Type the slot number of the card containing the settings to copy.
- 6 Type the channel number of the object containing the settings to copy.
- 7 Type the Read-Only SNMP Community String for the other hub.
- 8 Click OK.

The Configuration window is filled with values from the selected object for all parameter groups.

9 Click OK.

The settings from the card you have specified in the Load From window are sent to all the cards you selected before opening the Configuration window. A Device Configuration Status window displays as these settings are sent.

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MONITORING THE SYSTEM

- Chapter 7 Monitoring Performance
- **Chapter 8** Configuring Traps



7	MONITORING PERFORMANCE
	 This chapter gives an overview of Total Control Manager's ability to monitor the performance of an Total Control Hub or device installed in the hub. This chapter also provides procedures for using the following features: Session Monitor Inventory AutoResponse
Monitoring the Hub	The following procedures will help you monitor the performance of a session, maintain an accurate inventory of the devices installed in a hub and use the AutoResponse feature.
Session Monitor	This feature monitors the performance of selected groups and parameters in Total Control Manager.
1	On the Main Menu bar, click Performance . Or click

3 In the Functional Group Monitor Setup dialog box, use the Polling Interval spinbox to select the number of minutes or seconds between polling.

devices installed in a hub,

- **4** Select the functional group to monitor.
- **5** Select the parameters in the functional group to monitor.
- 6 Click OK.

Total Control Manager displays the Performance Monitor window containing a spreadsheet with the performance monitor results for the selected parameters.

Inventory The Inventory feature displays information for one or more hubs in one window without opening a separate window for each device.

The inventory feature lists the following information:

- Cards in the hub
- Slot number
- Serial numbers
- Dip switch settings.

To use the Inventory window:

- 1 On the **Main Menu** bar, click **Configure**, and then click **Inventory** to view the card list window. This window lists the device configuration saved with this installation of the software.
- **2** To view the inventory for a saved card, place a check mark by the card.
- **3** To view the inventory for an unsaved card, type the device's IP address in the IP column and place a check mark in the check box column.
- 4 Click OK.

Total Control Manager retrieves the inventory for each device and displays the information in the Inventory dialog box.

AutoResponse AutoResponse is a feature that automatically sends commands to a card or hub when a specific event occurs and it notifies you. For example, if a card does not answer a call, AutoResponse sends incoming calls to a different card and notifies you. Total Control Manager provides some AutoResponse scripts for your use. The software also allows you to create your own script if needed.

For additional information on this feature, refer to the online Help system.

To use AutoResponse:

On the Main Menu bar, click Configure and then click AutoResponse.

Use the AutoResponse dialog box to assign Actions/Commands to events for network cards.

For more information on AutoResponse, refer to the Total Control Manager online Help system.

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CONFIGURING TRAPS

This chapter provides an overview of traps and describes how to configure a trap. This chapter also describes alarms and how to use Alarm Server.

About Traps

Traps are SNMP messages sent from a network device to a management station to signal that a specific event or fault occurred on or within that network device. Traps help detect, isolate, and correct problems or events that occur with an object. An alarm refers to how a management station reacts when it receives an SNMP trap.

> Traps are usually configured in Total Control Manager through Fault management. For many traps, it is also possible to log the occurrence of an event using the Accounting/Event Logging feature.

> You can configure any Network Application Card (NAC) in a Total Control Hub to send traps specific to the functionality of that card. The NACs send the traps to the Network Management Card (NMC) via the Management Bus.

Setting Traps

In order to use traps, it is important to understand how traps and alarms interact. First, a trap or set of traps are configured in Total Control Manager. Then, a fault or event occurs in the system and the NAC sends a trap to the NMC. The NMC then sends an SNMP trap message to either a Logging Server or an Alarm Server.

When setting traps with Total Control Manager, you have four options:

- disableAll—disables all traps
- enableTrap—enables a trap to an Alarm Server
- enableLog—enables a trap to a Logging Server

 enableAll—enables a trap to both the Logging Server and Alarm Server

When the enableAll setting is selected, information is sent twice. The NMC sends trap messages to both the Logging Server and the Alarm Server.

Setting or Viewing Traps

To view current traps or or to set new traps:

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



- **2** In the Selected Objects field, confirm that the settings are for the correct card. If the correct card is not listed in this field, return to the main window and select the correct card.
- 3 Select the parameter group settings to display.
- **4** Double click on the spinbox to set the parameter. After selecting the new value for the parameter, click **Set**.
- **5** After setting all the parameters in a parameter group to the desired values, click **OK**.

The NMC uses the new values.

- **Trap Destinations** The Trap Destinations feature designates which network card SNMP sends traps. To view the Trap Destination Table:
 - 1 On the Main Menu bar, click Fault, and then click Trap Destinations.
 - 2 Select the table entry to add, modify, or delete.
 - **3** Click the appropriate button to add, modify, or delete the table entry.
 - **Modem Tests** The Modem Tests feature conducts Loopback and selftests on modems connected to the network. To use Modem Tests:
 - 1 On the Main Menu bar, click Fault, and then click Modem Tests.
 - 2 In the Modem Loopback/Self Test dialog box, type the slot number in the Testing with card in Slot box.
 - **3** Type a value in the Channel box.
 - **4** Select the test to execute.

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- **5** In the Polling Interval spinbox, designate the number of seconds between polling.
- 6 Click **Start** to execute the test.

Total Control Manager displays the results and errors in the corresponding fields.

- **Remote Testing** The Remote Testing feature tests modems remote to the card being managed. To use Remote Testing:
 - 1 On the Main Menu bar, click Fault, and then click Remote Testing.
 - 2 In the Remote Testing dialog box, click test to run.
 - **3** Configure the test using the window for the selected test.
 - 4 Click **Start** to run the test.



MAINTENANCE AND TROUBLE CLEARING

- **Chapter 9** Performing a Software Download
- Chapter 10 LED Indicators for Total Control Devices





Performing a Software Download

This chapter contains information on how to perform software downloads to various cards.

Overview	 There are two kinds of software downloads: Software Download 1(SDL1) Software Download 2(SDL2) The SDL2 is a utility that allows remote software download to the Total Control chassis across a LAN or WAN. SDL2 is only used when downloading to HiPer NACs. All other software downloads use SDL1
	The procedure describes how to install the software into a management station and download it to a NAC from Total Control Manager.
What Happens During a Download	When the software download program begins, the management station sends an AT command sequence to the appropriate NAC which enables the software download mode. Control then transfers to the software loader. While in software download mode, the NAC's RN/FL LED flashes green. Once the NAC enters SDL mode, no other code applications can run and the NAC is entirely devoted to performing the SDL.
	The SDL program verifies the initialization and operation software, then begins the download. As the program executes, status messages are displayed.

Performing a To perform a software download: Software Download 1 First launch the application

2 From the Device Display on the Total Control Manager window, select the card(s) to which you want to perform the download.

Once you have entered the Software Download window, you have the option of selecting or deselecting cards according to their slot number.

3 Select the software download option from the Configure Menu or click on the Software Download icon in Total Control Manager Toolbar. The software download window then appears. This window contains five columns.

Column	Use
Selection	Allows you to select multiple cards of various types to perform downloads on. A check mark appears for every selected card. If you selected a card on the Device Display, the card will have a checkmark in this column when the window is opened.
Slot	Lists the slots of the chassis by number as well as the NACs that occupy them.
NAC/DMF File	Lists the most current NAC and DMF file version in the C:\NMS\BIN\SDL directory. If this version is a more recent version of software than is on the NAC itself, it will be shown in red.
SDL File	Lists the most current SDL file version in the C:\NMS\BIN\SDL directory. If this version is a more recent version of software than was previously used, it is shown in red.
Status	Lists the status of each software download task on a card by card basis. Such messages as "In Progress" or "Complete" appear in this column as the download progresses.

4 Click **Start** to begin the download.



If you receive a Device Not Responding error message while trying to perform a software download, the cause may be too much other management traffic to the chassis. Reduce other operations (including multiple Management Station access) and try the operation again.

During the download, progress messages display in the upper left corner of the Software Download window. A Success message indicates that the operation is complete.



If you selected more than one card to download to and wish to cancel the operation after it is in progress, you can click on the stop button in the bottom left of the window. The SDL operation already in progress cannot be stopped, but the remaining operations are cancelled and the corresponding checkmarks are removed.

The SDL Dialog Box The following table describes the fields in the Software Download dialog box.

Field	Description		
Selection	The Selection field allows you to checkmark which cards are receiving new software.		
Slot	Lists the slots of the hub by number and the NACs that occupy them.		
NAC/DMF File	Lists the most current NAC file version in the SDL directory on the management station. If this version is a more recent version of software, it displays in red.		
SDL File	Lists the most current SDL utility file version in the SLD directory on the management station. If this version is a more recent version of software, it displays in red.		
Status	Lists the status of each software download task on a card-by-card basis. Such messages as "In Progress" or "Complete" display in this column as the download progresses.		

The following table lists the available commands for each command type.

Command Type	Command	
Card-Level	No Command	
Modem Hardware	Remove from Service	
Commands	Restore to Service	
	Hardware Reset	
	Software Download	

(continued)

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Command Type	Command			
Channel-Level	No Command			
Modem Software	Software Reset			
Commands	Store to NVRAM			
	Restore from Default			
	Restore from NVRAM			
	Off Hook			
	On Hook			
	Load HW Flow Control Default			
	Load SW Flow Control Default			
	Load MNP10 Cellular Defaults			
	Load V42 Cellular Mobile Defaults			
	Load V42 Cellular Fixed Defaults			
Card-Level	No Command			
Modem Analog NIC	Nondisruptive Self Test			
Hardware Commands	Busy Out Phone Line			
	NonBusy Out Phone Line			
	The Quad Analog/Digital NIC has only one channel, so test results from channels 2-4 are invalid.			
NMC Software	No Command			
Commands	Save Chassis to NVRAM			
	Restore Chassis from Default			
	Restore Chassis from NVRAM			
	Nondisruptive Self-Test			
	Software Reset			
	Save UI to EEPROM			
	Restore NMC from Default			
	Restore MC from NVRAM			
Card-Level	Hardware No Command			
T1 Card Hardware	Remove from Service			
Commands	Restore to Service			
	Hardware Reset			
	Software Download			

(continued)

Command Type	Command		
Card-Level	DT1 No Command		
T1 Card Software	Save to NVRAM		
Commands	Restore from NVRAM		
	Restore from Default		
	Nondisruptive Self Test		
	Software Reset		
	Reset Hi Pri Timing Src		
T1 Card Software	No Command		
Commands (DS1)	Force Receiver Reframe		
T1 Card Software	No Command		
Commands (DS0)	Hard Busyout		
	Soft Busyout		
	Restore		
	Disconnect		
	Transparent Test		
X.25 Gateway	No Command		
Software Commands	Save to NVRAM		
	Restore from Defaults		
	Nondisruptive Self Test		
	Disruptive Test		
	Software Reset		
	Download Configuration		
	Upload Configuration		
X.25 Gateway	No Command		
Hardware	Remove from Service		
Commands	Restore to Service		
	Hardware Reset		
	Software Download		
NETServer	No Command		
Hardware	Remove from Service		
Commands	Restore to Service		
	Hardware Reset		
	Software Download		

Downloading Software	Use the following procedure when downloading new software to a device.			
Importing Software Download Files	The Software Download (SDL) file allows you to update the operation software for the NACs installed in the hub.			
	To import an SDL file:			
1	On the Main Menu bar, click File .			
2	On the File menu, click Import SDL File.			
3	In the Import SDL Files window, select either a local file or a network file import.			
4	Click OK .			
	Total Control Manager imports the file into the SDL subdirectory associated with this installation of the software.			
Software Download	Total Control Manager downloads card-level or modem-level software from the PC to cards or modems installed in a hub. It can also simultaneously download software to cards in different hubs. This makes it extremely easy to upgrade cards.			
	To upgrade card or modem-level software using the Software Download dialog box:			
1	On the Main Menu bar, click Configure .			
2	On the Configure menu, click Software Download . The Software Download dialog box appears.			
3	Under Selection, click the check box in the row of the card to which you will download software. A number and a description of each card displays in the Slot column. You can select multiple cards of various types. The NMC downloads to cards installed in the same hub in a serial process.			
	If you have loaded or moved the .NAC or .DMF files for the download in a directory other than the default directory, double click on the NAC/DMF File column with the left mouse button. Use the Open dialog box to identify the version and location of these files.			

The NAC/DMF File column lists the most current .NAC or .DMF file version

9-6 in the selected directory. If this version is more recent than the software on the NAC, the file displays in red.

If you have loaded or moved the SDL utility to a directory other than the default directory, click the SDL File column. Use the Open dialog box which appears to identify the version and location of these files.

The SDL File column lists the most current SDL utility file in the selected directory or the directory you specified. If this utility sees a more recent version of software than was previously used, it displays in red.

4 Click **Start** to begin the software download.

The Status column displays information on the progress of each card's software download.

5 To stop a software download, click on **Stop** before its status changes to In Progress.

You can perform simultaneous software downloads to multiple network cards. Open each card and perform the steps above.



LED INDICATORS FOR TOTAL CONTROL DEVICES

ChT1_386 LED				
Indicators	Carrier (1,2) LED Color	Alarm (1,2) LED Color	Loopback (1,2) LED Color	T1 CONDITON
	Green	Off	Off	No Alarm
	Green	Red	Off	Remote Frame Alarm (RFA)
	Off	Red	Off	Loss Of Signal Alarm (LOS)
	Red	Red	Off	Out Of Frame Alarm (OOF)
	Red	Red	Off	Unframed All Ones Alarm (AIS)
	Green	Off	Green	Loopback In Progress

ChT1_386				
correcting alarms/error conditions	Alarm/Error	Level	Diagnosis/Troubleshooting	
	Remote Frame Alarm (RFA)	Remote Frame Alarm Yellow Verify that the NAC is properly according to provisioned by the Tellow		
			Contact the Telco if necessary.	
	Loss of Signal (LOS)	Red	 Verify that the span is plugged into the NIC properly. 	
			 If the cabling is correct, there is most likely a problem at the Telco. Contact the Telco for service. 	

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Alarm/Error	Level	Diagnosis/Troubleshooting
Out-of-Frame (OOS) Red		 Verify that the NAC is configured properly according to the services provisioned by the Telco.
		 If your configuration is correct, there may be a problem with the Telco's equipment. Contact the Telco for service
Unframed all ones (AIS)	Blue	 Indicates a red alarm at the Telco. Contact the telco for service.
RFA and Continuous CRC (CCRC) errors	N/A	 Verify that the NAC is configured properly according to the services provisioned by the Telco.

E1/CAS LED Indicators

Carrier (1,2) LED Color	Alarm (1,2) LED Color	Loopback (1,2) LED Color	E1 Condition	Physical State
Green	Off	Off	No Alarm	F1
Red	Off	Off	Remote Frame Alarm (RFA)	F2
Off	Red	Off	Loss Of Signal Alarm (LOS)	F3
Off	Red	Off	Out Of Frame Alarm (OOF)	F3
Green	Red	Off	Unframed All Ones Alarm (AIS)	F4
Red	Red	Off	CRC & RAI	F5
Any	Any	Red	Bad Line Condition	
Green	Off	Green	Locally Initiated Loopback In Progress	

Correcting E1/CAS alarm/error conditions

Level	Diagnosis/Troubleshooting		
Yellow	 Verify that the NAC is configured properly according to the services provisioned by the PTT. 		
	 Contact the PTT if necessary. 		
	Yellow		

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Alarm/Error	Level	Diagnosis/Troubleshooting
Loss of Signal (LOS)	Red	 Verify that the span is plugged into the NIC properly.
		 If the cabling is correct, there is most likely a problem at the PTT. Contact the PTT for service.
Out-of-Frame (OOS)	Red	 Verify that the NAC is configured properly according to the services provisioned by the PTT.
		 If your configuration is correct, there may be a problem with the PTT's equipment. Contact the PTT for service.
Unframed all ones (AIS)	Blue	 Indicates a red alarm at the PTT. Contact the PTT for service.
RFA and Continuous CRC (CCRC) errors	N/A	 Verify that the NAC is configured properly according to the services provisioned by the PTT.

T1/PRI LED Indicators

Carrier (1,2) LED Color	Alarm (1,2) LED Color	Loopback (1,2) LED Color	T1 CONDITON	
Layer 1 Alarms				
Green	Off	Off	No Alarm	
Green	Red	Any	Remote Frame Alarm (RFA)	
Off	Red	Any	Loss Of Signal Alarm (LOS)	
Red	Red	Any	Out Of Frame Alarm (OOF)	
Red	Red	Any	Unframed All Ones Alarm (AIS)	
Any	Any	Green (solid or flashing)	Loopback In Progress	
			 Solid: Local or PTT initiated 	
			 Flashing: On both spans, span-to-span loopback 	
Layer 2 (D-Channel Status)*				
Any	Any	Off	Signaling Channel Up	
Any	Any	Amber	Signaling Channel Down	

Correcting T1/PRI alarm/error conditions

Alarm/Error	Level	Diagnosis/Troubleshooting
Remote Frame Alarm (RFA)	Yellow	 Indicates to the Telco end that there is a problem at their end. Contact the Telco.
Out-of-Frame (OOS)	Red	 Verify that the NAC is configured properly according to the services provisioned by the Telco.
		 If your configuration is correct, there may be a problem with the Telco's equipment. Contact the Telco for service
Unframed all ones (AIS)	Blue	 Verify that the NAC is configured properly according to the services provisioned by the Telco.
Loss of Signal (LOS)	N/A	 Verify that the span is plugged into the NIC properly.
		 If the cabling is correct, there is most likely a problem at the Telco. Contact the Telco for service.
Signaling Channel down	N/A	 Contact the Telco to see what their side is receiving. If they're showing that the Signaling Channel is up, there is most likely a problem in the receiving pair at your site.
		 If the module is indicating alternating Signaling Channel Up (Loopback LED off) and signaling Channel Down signals, there is most likely a cabling mismatch between the TX and Rx signals.

E1/PRI LED Indicators

Carrier (1,2) LED Color	Alarm (1,2) LED Color	Loopback (1,2) LED Color	E1 CONDITON	Physical State
Green	Off	Off	No Alarm	F1
Red	Off	Off	Remote Frame Alarm (RFA)	F2
Off	Red	Off	Loss Of Signal Alarm (LOS)	F3

(continued)

Carrier (1,2) LED Color	Alarm (1,2) LED Color	Loopback (1,2) LED Color	E1 CONDITON	Physical State
Off	Red	Off	Out Of Frame Alarm (OOF)	F3
Green	Red	Off	Unframed All Ones Alarm (AIS)	F4
Red	Red	Off	CRC & RAI	F5
Any	Any	Amber	D-Channel Down	
Green	Off	Green (solid or flashing)	Loopback In Progress	
			 Solid: Local or PTT initiated 	
			 Flashing: On both spans, span-to-span loopback 	

Correcting E1/PRI alarm/error conditions

Alarm/Error	Level	Diagnosis/Troubleshooting
Remote Frame Alarm (RFA)	Yellow	 Verify that the NAC is configured properly according to the services provisioned by the PTT.
	I	 Contact the PTT if necessary.
Loss of Signal (LOS)	Red	 Verify that the span is plugged into the NIC properly.
		 If the cabling is correct, there is most likely a problem at the PTT. Contact the PTT for service.
Out-of-Frame (OOS)	Red	 Verify that the NAC is configured properly according to the services provisioned by the PTT.
	I	 If your configuration is correct, there may be a problem with the PTT's equipment. Contact the PTT for service
Unframed all ones (AIS)	Blue	 Indicates a red alarm at the PTT. Contact the PTT for service.
RFA and Continuous CRC (CCRC) errors	N/A	 Verify that the NAC is configured properly according to the services provisioned by the PTT.
/ (¹)		

(continued)
Alarm/Error	Level	Diagnosis/Troubleshooting
Signaling Channel down	N/A	 Contact the PTT to see what their side is receiving. If they're showing that the Signaling Channel is up, there is most likely a problem in the receiving pair at your site.
		 If the module is indicating alternating Signaling Channel Up (Loopback LED off) and signaling Channel Down signals, there is most likely a cabling mismatch between the TX and Rx signals.

HiPer DSP LED Indicators

Physical State	Carrier LED State	Alarm LED State	Loop back/ D-channel LED State	Condition/ Physical State
F1	Green	OFF	OFF	No Alarm
F2	RED	OFF	OFF	Remote Frame Alarm (RFA) - Yellow Alarm
F3	OFF	RED	OFF	Loss of Signal (LOS) - Red Alarm
F3	OFF	RED	OFF	Out of Frame (OOF) - Red Alarm
F4	GREEN	RED	OFF	Unframed all ones (AIS) - Blue Alarm
F5	RED	RED	OFF	CRC & RAI
			AMBER	D-Channel down
	GREEN	OFF	GREEN	Loop Back in progress

Correcting HiPer DSP alarms/error conditions

Alarm/Error	Level	Diagnosis/Troubleshooting
Remote Frame Alarm (RFA)	Yellow	The remote end has lost the HiPer DSP's framing or signal and sends this alarm to the HiPer DSP.

(continued)

Alarm/Error	Level	Diagnosis/Troubleshooting
Loss of Signal (LOS)	Red	 The received T1 or E1 signal has been lost.
		 The HiPer DSP declares a red alarm and sends a yellow alarm to the remote end.
Out-of-Frame (OOS)	Red	 The received T1 or E1 framing has been lost and the framed payload can no longer be received.
		 The HiPer DSP declares a red alarm and sends out a yellow alarm to the remote end.
Unframed all ones (AIS)	Blue	 The remote end is sending out an all ones signal. This is usually done when the remote end can't send out a framed signal.
RFA and Continuous CRC (CCRC) errors	N/A	 The HiPer DSP has received excessive CRC errors in a 1 second period and declares state F5. (For E1-PRI certification this is > 931 errors in 1 second.

NMC LED Indicators

RN/FL LED colors	Indicates
Solid green	Normal - no failures
Flashing red and green	No NIC installed behind NMC NAC at power-up
	Installing a NIC behind a powered-up NMC will cause the NMC to reset.
Solid red	Critical failure
	A critical failure affects start-up and is typically hardware related. A critical failure will cause the NMC to reboot.
No LEDs lit	No power to NAC
	Make sure chassis is powered on and NAC is installed properly.

NMC LED Indicators

Tx LED colors	Rx LED colors	Indicates	
Flashing green	Flashing green	Normal - no failures	
(continued)			

Tx LED colors	Rx LED colors	Indicates
No LEDs lit	No LEDs lit	 Bad physical connection.
		 SLIP - PC COM port may be addressed incorrectly
		 LAN - If you are using a NAC, the PC COM port may be addressed incorrectly
No LEDs lit	Flashing green	 The PING may be reaching the NMC, but the IP address is incorrect. Be sure the IP address for the PING matches the address set within the NMC UI.
		 The baud rate may be incompatible
		 SLIP - You may be trying you use a baud rate greater than 19.2 kbps with a PC COM port that uses an 8250 UART. Use a 16550 UART for higher speed connections.



If you are using a LAN connection, use the LAN RX and LAN TX LEDs. If you are using a SLIP connection, use the WAN RX and WAN TX LEDs.

Quad Modem	LED
Indicators	

RN/FL LED colors	Indicates
Solid green	Normal - no failures
Solid red	Critical Failure
Chan 1-4 LED colors	Indicates
Solid green	On-line
Flashing green	Test or software download
Orange	Dialing or negotiating a call
Solid red	Critical Failure
Off	Modem is idle

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Dual 10/100Mb Ethernet PCI LED Indicators

Link Status LED colors	Indicates
Solid green	Normal Operation - port has a valid link on the network connection.
Off	Transmit and receive are not possible. The port didn't find a valid link on the network connection.

Activity LED colors	Indicates
Green	A packet is being received.
Yellow	A packet is being transmitted.



REFERENCE **A**PPENDICES

 Appendix A
 HiPer DSP / Total Control Manager Modem Configuration Summary





HIPER DSP / TOTAL CONTROL MANAGER MODEM CONFIGURATION SUMMARY

The following list includes the HiPer DSP T1 and E1 modem settings you can configure and permanently save while using Total Control Manager. The list pertains to both template- and channel-level configurations.

Traps are not included in this list.



Template-level refers to configuring multiple modems, all at one time. Channel-level refers to configuring a single modem, and it is often used for trouble clearing.

You can configure the Channel Mapping Group Number from the channel level, but not from the template level. (Channel Mapping is a MIB object, Group Number is one of it's parameters.)

The following list is valid for TCS 3.5 system components only.

Line Interface Options
Dial Pause Delay (sec) (S8)
Carrier Detect Delay (* .1 sec) (S9)
Carrier Loss Detect Delay (* .1 sec) (S10)
Tone Dial Spacing (ms) (S11)
Guard Tone Frequency (&G)
2100 Hz Answer Tone (V.42) (S27.3)

Data Compression Settings

Data Compression Mode (&K)

DTE Interface Settings

Carriage Return Character (S3)

Line Feed Character (S4)

Backspace Character (S5)

Echo DTE Data (E)

DTE NVRAM Lock (R&W)

Signal Converter Settings

Link Rate Speed Select (&N)

Non-ARQ Transmit Buffer Size (S15.3)

Buffer RX During MNP Negotiation (S37.0)

V.21 Modulation (S27.0)

V.32 Unencoded Modulation (S27.1)

V.32 Modulation (S27.2)

V.32 bis Modulation (S34.0)

V.32 Enhanced Mode (S34.1)

V.32 Fast Retrain (S34.2)

V.23 Call Negotiation (S34.3)

Fallback Disable (S15.1)

V.32 Terbo Modulation (S34.7)

V.34 Modulation (S56.6)

V.FC 2400 Symbol Rate (S54.0)

V.FC 2743 Symbol Rate (S54.1)

V.FC 2800 Symbol Rate (S54.2)

V.FC 3000 Symbol Rate (S54.3)

V.FC 3200 Symbol Rate (S54.4)

V.FC 3429 Symbol Rate (S54.5)

V.FC 8S-2D Mapping (S55.0)

V.FC 16S-4D Mapping (S55.1)

V.FC 32S-2D Mapping (S55.2)

V.FC 64S-4D Mapping (S55.3)

V.FC Non-linear Coding (S56.0)

V.FC TX Level Deviation (S56.1)

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Signal Converter Settings V.FC Pre-emphasis (\$56.2) V.FC Precoding (\$56.3) V.FC Shaping (\$56.4) V.8 Mode (\$54.7) V.8 Call Indicator (\$54.6) V.34+ (\$56.5) 300 Baud (\$48.0) (continued) 1200 Baud (\$48.1) 2400 Baud (\$48.2) High Speed (\$48.3) V.42 Selective Reject (\$51.6) Minimum High-Speed Direction Link Speed (&U)

Call Control Options

Dial Tone Delay (sec) (S6)

MNP/V.42 Link Request Timeout (sec) (S52)

Carrier Detect Delay (S7)

Inactivity Timer (min) (S19)

Result Codes (Qn)

Verbal/Numeric Result Codes (Vn)

Result Code Groups (X)

ARQ Result Codes (&A)

Response to +++

AT Command Recognition

V.32 300/600 Hz Tone Times (S28)

V.21 to V.23 Fallback Timer (S29)

Rings for Auto Answer (S0)

Additional Answer Tone Time (S49)

Answer in Originate Mode (\$13.1)

Billing Delay Timer (S50)

Default Phone Number (&Z0)

(continued)



Call Control Options
Stored Phone Number 1 (&Z1)
Stored Phone Number 2 (&Z2)
Stored Phone Number 3 (&Z3)
ARQ Negotiation (&M)
MNP/V.42 @ 1200 bps (S51.0)
MNP/V.42 @ 2400 bps (S51.1)
MNP/V.42 @ 9600 bps (S51.2)
T1 Call Setup (S47.0)
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Dial Sequence Tone Encapsulation (S47.2)
Call Init String (S47.3)
ANI/DNIS Call Init Strings (S47.4)
ANI-Based Incoming Call Digits (S62)
DNIS-Based Incoming Call Digits (S63)

Modem Error Control Settings

MNP Level 3 Error Correction (S13.6)

MNP Level 4 Error Correction (S15.4)

Special 2400bps MNP (S15.6)

V.42/MNP Negotiation Method (S27.4-5)

DNIS Access Codes

DNIS Group 1

DNIS Init String 1

DNIS Group 2

DNIS Init String 2

DNIS Group 3

DNIS Init String 3

DNIS Default String

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Low-speed Direction Minimum Speed (S74)

Low-speed Channel Maximum Speed (S75)

x2 Client Mode (S76.0)

x2 Server Mode (S76.1)

x2 Symmetric Mode (S76.2)

x2 High-power Constellation (S76.7)

V.90 Analogue Mode (s81.4)

V.90 Digital Mode (s81.5)

V.90 All Digital Mode (s81.6)

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V110 Rate Adaption (S67.0)

Force Fixed Network Rate (S67.1)

Force Network Rate Speed (S67.2)

Enable 45-65 Second Link Delay (S67.4)

Analog Calls Over Digital (S68.0)

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X.75 (S68.5)

Set Data Mode of Modem (*V2=x)

Set Originate HDLC Protocol (*U1=x)

Set Originate Non-HDLC Protocol (*U2=x)

Set Originate Analog Modem/Fax Data Mode (*U3=x)

V120 (S68.6)

X75 Frame Size

X75 Window Size

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