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Operation

TEAM SC 553

**for HP OpenView/UNIX
Version 3.0.0**



General DataComm

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Table of Contents

Preface

1 Introduction

Overview	1-1
SC 553 DSU	1-1
SpectraComm Manager Card	1-1
TEAM SC 553 Applications	1-2

2 Operations

Introduction	2-1
Map Window Menu Bar Access	2-1
SC 553 Front Panel	2-2
Common Window Features.....	2-5
Performance Functions.....	2-5
Statistics Polling	2-5
Alarm Detail	2-6
Status.....	2-9
Reports.....	2-10
Current Interval Error Reports.....	2-22
Configuration Functions.....	2-23
Configure	2-23
Maintenance.....	2-24
Diagnostics.....	2-24
Miscellaneous Functions	2-24
Information	2-24
Front Panel Poll Rate.....	2-25
Note Pad.....	2-25

3 Configuration

Introduction	3-1
To Start TEAM SC 553 Configuration	3-1
Templates	3-1
Configuration Procedure	3-1
Configuration Option Values.....	3-2
Main Configuration Window	3-2

Main Configuration Window Display 3-4

DSU Options 3-5

 Buttons 3-5

 Options 3-5

CSU Options 3-9

 Buttons 3-10

 Network/Cascade Options 3-10

 Timing Options 3-12

Alarms Reported 3-12

 Buttons 3-13

 Options 3-13

System Options 3-15

4 Maintenance

Introduction 4-1

To Start TEAM SC 553 Maintenance 4-1

Maintenance Window Buttons 4-1

5 Diagnostics

Overview 5-1

Diagnostics Window 5-1

T1 Tests 5-3

 T1 Test Instructions 5-7

DS0 Tests 5-8

 DS0 Test Instructions 5-10

Channel Tests 5-11

 Channel Test Instructions 5-13

Diagnostics History 5-13

Index

Figures

2-1 SC 553 DSU Front Panel..... 2-3

2-2 Real Time Statistics Window 2-6

2-3 Alarm Detail Window 2-7

2-4 Status Window..... 2-9

2-5 Error Reports Window 2-10

2-6 Error Reports Totals Screen 2-13

2-7 Errored Seconds Reports Display Screen..... 2-14

2-8 Severely Errored Seconds Reports Display Screen..... 2-15

2-9 Bursty Errored Seconds Reports Display Screen 2-16

2-10 Unavailable Seconds Reports Display Screen..... 2-17

2-11 Cyclic Redundancy Checksum Errors Reports Display Screen 2-18

2-12 Controlled Slip Seconds Reports Display Screen 2-19

2-13 Loss of Frame Count Reports Display Screen 2-20

2-14 Errors Summary Reports Display Screen..... 2-21

2-15 Current Interval Error Report Window 2-23

2-16 TEAM SC 553 Information Window 2-24

2-17 Front Panel Poll Rate Window 2-25

3-1 Main Configuration Window 3-4

3-2 TEAM SC 553 DSU Options Window 3-5

3-3 TEAM SC 553 CSU Options Window 3-9

3-4 TEAM SC 553 Alarms Reported Window..... 3-13

3-5 System Options Configuration Window 3-15

4-1 Maintenance Window..... 4-1

5-1 TEAM SC 553 Diagnostics Window 5-2

5-2 Diagnostics History 5-13

Preface

Scope

This manual describes how to operate the TEAM SC 553 Network Manager, Version 3.0.0. It assumes familiarity with HP OpenView.

The TEAM SC 553 software is an HP OpenView application that employs the Simple Network Management Protocol (SNMP) to configure and control the operation of GDC SpectraComm 553 Data Service Units (DSUs). The DSUs support DTE interface functions and provide fractional T1 capability on the network.

This manual assumes a working knowledge of DSU functions and operation.

Revision History

This is the initial issue of the manual for Version 3.0.0 of the TEAM SC 553 product. The immediately preceding version was 1.2.0.

This software has been tested to be Year 2000 Compliant in accordance to GDC ENG-STD-003. Check GDC's web site at <http://www.gdc.com> for the latest year 2000 information.

This release also includes support for the Fault Tolerant Switching (FTS) network application.

Version 1.2.0 differed from Version 1.1.0 through

- addition of functions related to the DSU's optional optional cascade port interface
- revised presentation format for Reports data
- addition of icon tool bars to some screens

Version 1.1.0 differed from Version 1.0.0 through the addition of two features: Statistics Polling, and Save to File capability for the Reports function.

Organization

This manual has six chapters. The information is arranged as follows:

- *Chapter 1 - Introduction* describes the product and its features.
- *Chapter 2 - Operation* provides directions for accessing the smaller individual applications that are responsible for the TEAM SC 553 functions. It describes how to access the functions from a shelf map window menu bar, and from the Select menu of a DSU front panel display. The chapter provides full descriptions of the TEAM SC 553 applications that display read-only windows. It provides access information for the applications that display read/write windows and require greater operator interaction.
- *Chapter 3 - Configuration* provides instructions for accessing the Configuration application and using it to set operating parameters in a selected DSU. The chapter covers how to save configuration changes to the unit or as templates at the controller workstation, and defines the parameters you can set.
- *Chapter 4 - Maintenance* provides instructions for accessing the Maintenance application and using it to control functions of the DSU.

- *Chapter 5 - Diagnostics* provides instructions for accessing the Diagnostics application window and using it to perform test procedures.

Document Conventions

Level 1 paragraph headers introduce major topics.

Level 2 paragraph headers introduce subsections of major topics.

Level 3 paragraph headers introduce subsections of secondary topics.



Notes present special instructions, helpful hints or general rules.

Related Publications

The following documents have additional information that may be helpful when using this product:

- *SC 553 Data Service Unit
Operation and Installation Manual* 058R155-000

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NNN	identifies the product family
R	denotes a technical publication
nnn	a number assigned by Technical Publications
000	identifies a hardware product and does not change
Vnnn	the software version associated with a product may be updated periodically

The Issue Number changes when a manual is revised or reprinted with changes for some other reason; it does not automatically change when the software is updated. A new Software Version is always Issue 1. Other specialized publications such as Release Notes or Addenda may be available depending on the product.

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1 Introduction

Overview

This manual covers the General DataComm TEAM SC 553 Unix Application for HP OpenView. You should be familiar with HP OpenView and with the operation of digital data service units (DSUs) in order to use this manual effectively.

The TEAM SC 553 Unix Application is actually a collection of integrated applications for the HP OpenView Network Management Platform. The applications use the Simple Network Management Protocol (SNMP) to manage GDC SC 553 Data Service Units (DSUs).

TEAM SC 553 applications enable you to

- Configure SC 553 DSUs.
- Monitor the operation of the DSUs through displays of Alarms and DTE Interface States, and through a Front Panel display that shows LED indicators as they appear on the front panel of the physical unit.
- Diagnose suspected problems using local and remote loops (with or without an internally generated test pattern).

SC 553 DSU

The SpectraComm 553 DSU provides interface to Fractional T1 (FT1) services for one channel of user data. It gives you the flexibility to utilize only the bandwidth you need, from 56 Kbps up to the full T1 rate of 1.536 Mbps.

The DSU provides T1-, DS0-, and channel-level diagnostics for extensive diagnostic capabilities that can be commanded from the TEAM SC 553 application.

SpectraComm Manager Card

The DSU operates in conjunction with a GDC SpectraComm Manager (SCM) card to provide comprehensive network management capabilities using the Simple Network Management Protocol (SNMP). The SCM acts as the SNMP agent through which TEAM management applications communicate with SC 553 DSUs and other compatible equipment.

All management communications are directed to the SCM card Internet Protocol (IP) address. The SCM card relays commands and responses between management applications and hardware components, using a slot addressing scheme to communicate over the SpectraComm shelf backplane with the other components. The SCM is transparent to the applications, which operate as though they were communicating directly with the hardware units. The SCM card is managed by the TEAM Core application, which is also responsible for the Discovery and Mapping functions by which HP OpenView keeps track of the devices being managed.

TEAM SC 553 Applications

The applications that make up the TEAM SC 553 manager are grouped on menus under the headings Performance, Configuration, Fault, and Misc (Miscellaneous). Menus for the applications are available in two ways:

- From the menu bar of the HPOV Map window when an SC 553 DSU is selected in the window
- From the Select button on the SC 553 Front Panel display.

SC 553 Front Panel displays current status information on the SC 553 DSU by displaying the states of the LED indicators on the front panel of the unit; provides Select button menus by which you can invoke all other functions of the TEAM SC 553 manager. Front Panel is a selection on the Performance menu in the HPOV Map window menu bar. You can also launch the Front Panel display from that window by double clicking on the shelf icon of the DSU you need to work with.

The following TEAM SC 553 applications appear on both the Map window and Select button menus:

- Performance:
 - Statistics Polling – displays accumulated total counts of error conditions
 - Alarm Detail – furnishes detailed information about alarm state changes
 - DTE Status – displays information on the current status of signals in the DTE interface
 - Reports – displays detailed information on operations over the past 24 hours
 - Current Interval Reports – displays information on operations during the current 15-minute period
- Configuration:
 - Configuration – enables you to configure a selected SC 553 DSU
 - Maintenance – enables you to set device specific attributes that are not set as configuration options
- Fault:
 - Diagnostics – enables you to run diagnostic tests on a selected SC 553 DSU
- Misc:
 - Information – displays revision level information on the TEAM SC 553 software

The Misc menu in the Map window menu bar contains two selections that do not appear in the Front Panel Select button menu:

Front Panel Poll Rate – enables you to set a default polling interval to be in effect each time the Front Panel display is opened

Note Pad – opens a shell tool on the workstation running the TEAM software. You can use the shell tool to run a text editor, mail tool, or any other software that resides on the workstation. The Note Pad application provides this access for keeping records on the system.

2 Operations

Introduction

The TEAM SC 553 controller application consists of a group of smaller applications, each devoted to a specific aspect of controlling or monitoring SC 553 DSUs. There are two means of access to the TEAM SC 553 applications: the map window menu bar, and the Front Panel window Select button menus. This chapter describes both.

In the Performance category of both menus there are five applications that display read-only windows: Statistics Polling displays counts of error events, Alarms displays alarm information; Status displays the status of signals in the DTE interface; Reports displays information on a variety of error conditions that may be experienced by the DSU over a 24-hour period; Current Interval Reports displays the most recent information concerning error conditions. The map window Performance menu also includes a selection for launching the Front Panel display. This chapter fully describes all six applications.

There are two applications in the Configuration category: Configuration and Maintenance. Each supports read/write windows by which you can review and alter unit operating parameters. This chapter describes how to access the Configure and Maintenance applications. Instructions for using the two applications appear in subsequent, individual chapters.

The Fault menu provides access to the Diagnose application by which you can command test functions of the units and view test results. This chapter describes how to access the Diagnose application. Instructions for its use appear in a subsequent chapter.

Three items appear on menus as Misc (miscellaneous): Information, Front Panel Poll Rate, and Note Pad. Only the first of those appears on the Select button menu of the Front Panel display.

Map Window Menu Bar Access

The table on the following page illustrates how the TEAM SC 553 application functions are arranged on the menu bar at the top of the HPOV Map window. The table shows only the menu selections for the TEAM SC 553 applications. The map window menus include selections in addition to those that apply to TEAM SC 553 because the window also provides access to other applications.

You must select the unit you intend to work with before you open the menu you intend to use. Select the unit by clicking the mouse once on its icon in the map.



The menu item Agent Templates, which appears under Misc in the menu listing on the next page, does not apply to SCM-based applications such as TEAM SC 553. The use of that function is therefore not documented in this manual.

Its functionality is employed by standalone TEAM application products such as TEAM 540 and TEAM 553. The Agent Templates function is documented in the manuals for those products.

Menu Bar	Menu Selections
Performance	Front Panel... Statistics Polling... Alarm Detail... DTE Status... Reports... Current Interval Reports...
Configuration	Configuration... Maintenance...
Fault	Diagnostics...
Misc	Agent Templates... Information... Front Panel Poll Rate... Note Pad...

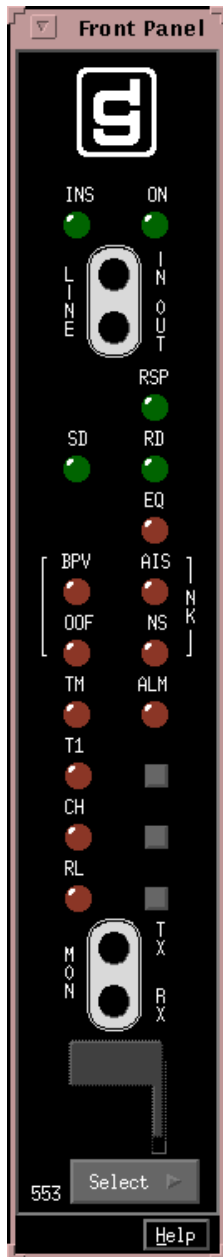
The Performance menu Front Panel selection opens the Front Panel display window. The Select button menus in the Front Panel display window include the selections that appear above, with the exceptions of Front Panel under Performance, and Front Panel Poll Rate and Note Pad under Misc.

SC 553 Front Panel

The SC 553 Front Panel display windows provide graphical interface to a selected DSU. To launch a Front Panel, select the unit you intend to work with in the HPOV Map window, then either select Front Panel from the Performance menu for that window or double click the mouse on the icon for the selected unit.

The application responds by displaying a window that depicts the front panel of the selected unit, shown in *Figure 2-1*.

The LEDs shown in a Front Panel display reflect the states of the actual indicators on the physical unit:



INS	In Service normally remains On continually after the DSU successfully completes its power-on test; can be caused to blink continually by the Blink INS menu selection
ON	Power On
RSP	Response indicates when lit that a packet has been transmitted through the management port
SD	Send Data indicates when lit that a space is detected in transmit data
RD	Receive Data indicates when lit that a space is detected in receive data
EQ	Equipment indicates when lit that the cascade interface is installed
OOF	Out of Frame indicates when lit that the unit cannot synchronize to the network signal
LOS	Loss of Signal indicates when lit that the unit has lost the network signal
BPV	Bipolar Violations indicates when lit that the unit has detected bipolar violations in the network signal
AIS	Alarm Indication Signal indicates when lit that the unit has received an Alarm Indication Signal from the network
TM	Test Mode is lit red while the unit performs a Local Loop diagnostic test
ALM	Alarm, indicates by its color, which matches that of the map icon for the unit, that the unit has detected an alarm condition
T1	is lit red while the unit performs a T1 diagnostic test
CH	is lit red while the unit performs a Channel diagnostic test
RL	is lit red while the unit performs a Channel Remote Data Loop diagnostic test

Figure 2-1 SC 553 DSU Front Panel

The application polls the unit to keep the states of the LEDs in the Front Panel display current. The time of the most recent poll appears in the bottom left corner of the Front Panel display. The time is displayed in white when Auto Poll is enabled, and in yellow when it is disabled.

The Select button, at the bottom of the Front Panel displays provides access to menus for the rest of the TEAM SC 553 application functions. The following table shows the arrangement of the Select button menus. It differs somewhat from the arrangement on the Map window menu bar.

Select Menu Items	Menu Selections
Performance	Statistics Polling... Alarm Detail... DTE Status... Reports... Current Interval Reports...
Configuration	Configuration... Maintenance...
Fault	Diagnostics...
Misc	Information...
Demand Poll	
Auto Poll (*)	15 seconds 30 seconds 60 seconds Disable
Blink INS (*)	On Off
Exit	

The two Poll selections in the Select button menu determine – for the current session – when the application is to collect new information from the unit to update the Front Panel window:

- Selecting Demand Poll causes an immediate update of the display.
- Auto Poll enables you to select updates at 15, 30, or 60 second intervals, or to disable automatic polling. If you select Disable, the Front Panel window displays a static snapshot of the LED states as they were at the last poll, either when the window was launched or a subsequent Demand Poll.

The Blink INS selection, when set to On, causes the In Service indicator to blink continuously on the SC 553 DSU being controlled. When you determine that a unit requires replacement or other on-site attention, this feature enables you to identify it for easy location by on-site personnel. The menu selection is grayed out when the SC 553 DSU being controlled by the application is an older revision that does not support this feature.

Each time the Front Panel display is opened, its initial polling rate is determined by the Front Panel Poll Rate selection of the HPOV map window Misc menu.

The menu selection Exit dismisses the Front Panel window when you click on it.

Common Window Features

Each TEAM SC 553 application you select opens an on-screen window in which to operate. A number of features are common to many of the windows:

Triangle button – in the title bar; reduces the window to an icon when you click on it. Double clicking on icon restores the window. This button appears on the top level window for each application.

Title bar – identifies the specific TEAM SC 553 application running in the window; for example TEAM SC 553 Main Configuration or TEAM SC 553 Diagnostics

Menu bar – always contains the selections File, on the far left, and Help, on the far right. File menu always contains the selection Exit, by which you can dismiss the window; some window File menus contain selections special to the window. Help menu provide access to information concerning the window. Some windows have additional Menu bar selections.

The Menu bar appears on the top level window for each application. A Menu bar appears in the Main Configuration window, for example, but not in the windows you access from Main Configuration.

Name field – identifies the SC 553 the application is currently connected to by displaying the user-configured shelf name, followed by the DSU slot number, and the user-configured device name.

Descriptions in this manual of the individual TEAM SC 553 applications identify window features that are specific to the applications, such as selections in the Menu bar and menus, and buttons.

Performance Functions

Statistics Polling

You can launch the TEAM SC553 Real Time Statistics application from the Performance Menu of the Map window or from the front panel menu. The selection appears as Statistics Polling in both menus.

The body of the Real Time Statistics window is divided into two panels:

- **Statistics Totals** contains eight display fields and a button labeled Clear Totals. Seven of the display fields show total occurrence counts of error conditions that the DSU monitors; the eighth shows Percent of Error Free Seconds. The displayed totals are the counts accumulated either since the TEAM SC553 application started running or since the last time the Clear Totals button was clicked.
- **Statistics Polling** contains the Poll Interval field and the Poll Time display. You can select the Poll Interval for the window to be 5 seconds (default), 10 seconds, 15 seconds, or 60

seconds. When you change the Poll Interval, the application automatically saves the new value. The Poll Time display shows the time period over which count totals have been accumulated. Poll Time is initialized when the TEAM SC5531 application starts running and when the Clear Totals button is clicked.

The footer, bottom margin, of the Real Time Statistics window displays two items of information:

- **Status**, in the left corner, indicates whether or not the SC 553 DSU is presently responding to polling; it displays either Unit Responding or Unit Not Responding.
- **History**, in the right corner, provides indication of past polling problems; it displays No Errors when all polls have been responded to, and it displays Poll Failed when there has been a poll without a response. The Poll Failed message remains on display, even when successful polling has resumed, as an indication that counts may be inaccurate. The History display returns to No Errors when you reset the counts by clicking on the Clear Totals button.

Figure 2-2 illustrates the Real Time Statistics window.

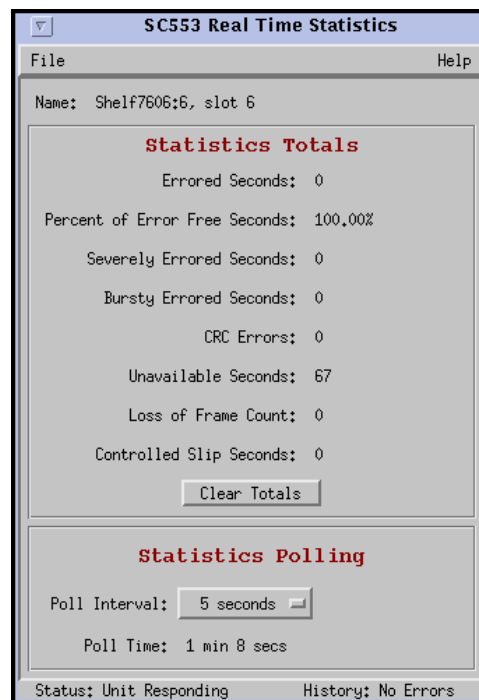


Figure 2-2 Real Time Statistics Window

Alarm Detail

You can launch the TEAM SC 553 Alarm Detail application from the Performance menu of the HPOV Map window menu bar or of the Front Panel display Select button menu. The application displays the read-only Alarm Detail window for the selected unit (*See Figure 2-3*).

The TEAM SC 553 application gets alarm indications from the unit in two ways:

- By receiving traps sent automatically in response to alarm conditions at the unit
- By polling the unit for changes in alarm conditions

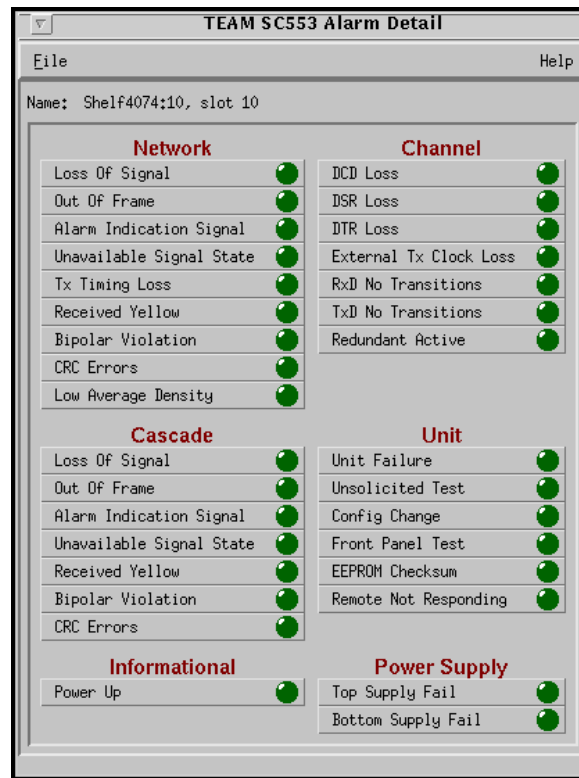


Figure 2-3 Alarm Detail Window

The Alarm Detail window displays alarms grouped into six categories:

- Network
- Channel
- Cascade
- Unit
- Informational
- Power Supply (valid only for SC 2000 shelf)

Network Alarms

Loss of Signal – indicates that the unit is not receiving a signal from the network

Out of Frame – indicates that the unit cannot synchronize to the signal from the network

Alarm Indication Signal – indicates that the unit has received an AIS from the network

Unavailable Signal State – indicates that the unit has detected at least 10 severely errored seconds at its network interface

Tx Timing Loss – indicates that the unit has lost Transmit Timing

Received Yellow – indicates that the unit has received a Yellow alarm from the network

Bipolar Violations – indicates that the unit has detected bipolar violations at its network interface

CRC Errors – indicates that the unit has detected Cyclic Redundancy Checksum errors at its

network interface

Low Average Density – indicates that the unit has detected violations of ones density enforcement at its network interface; occurs only when unit is configured for 8(N+1) Restrict

Channel Alarms

DCD Loss – indicates that the unit cannot recover data from the incoming signal at the network interface

DSR Loss – indicates that the unit is not outputting Data Set Ready to the DTE

DTR Loss – indicates that the unit is not receiving the DTR signal from its DTE

External Tx Clock Loss – indicates that the unit has lost External Transmit Timing from its DTE; occurs only when unit is configured for External Timing

RxD No Transitions – indicates that Receive Data being output to the DTE by the DSU consists of all ones or all zeros

TxD No Transitions – indicates that Transmit Data coming to the DSU from the DTE consists of all ones or all zeros

Cascade Alarms

Loss of Signal – indicates that the unit is not receiving a signal at the cascade port

Out of Frame – indicates that the unit cannot synchronize to the signal at the cascade port

Alarm Indication Signal – indicates that the unit has received an AIS at the cascade port

Unavailable Signal State – indicates that the unit has detected at least 10 severely errored seconds at the cascade port

Received Yellow – indicates that the unit has received a Yellow alarm at the cascade port

Bipolar Violations – indicates that the unit has detected bipolar violations at the cascade port

CRC Errors – indicates that the unit has detected Cyclic Redundancy Checksum errors at the cascade port

Unit Alarms

EEPROM Checksum – indicates that the non-volatile memory that stores the unit configuration has become corrupted

Front Panel Test – occurs each time the unit is commanded into a test mode by its front panel switches

Unit Failure – indicates that the unit has failed its power on self test

Unsolicited Test – occurs each time the unit is commanded into a test mode by any means other than SNMP or its front panel switches

Config Change – occurs each time unit configuration is changed

Informational Alarm

Power Up – occurs each time power is cycled or a reset is performed at the unit

Power Supply Alarms

Top Supply Fail – valid only for SC 553 DSU installed in SC 2000 enclosure that has a power supply installed in the upper power supply location; occurs when that power supply malfunctions

Bottom Supply Fail – valid only for SC 553 DSU installed in SC 2000 enclosure that has a power supply installed in the lower power supply location; occurs when that power supply malfunctions

Alarm Detail Window Menus

The Alarm Detail window has the selections File and Help in its menu bar.

The File menu contains only the selection Exit, by which you can dismiss the window.

Status

You can launch the TEAM SC 553 Status application from the Performance menu of the HPOV Map window menu bar or of the Front Panel display Select button menu. The application displays the read-only Status window for the selected DSU (See Figure 2-4). The window is divided into two displays:

DTE Status displays EIA signal indicators that represent the states of the DTE interface signals. Dark green indicates Off, light green indicates On, and light green with a superimposed two-headed arrow indicates transitions.

Network Rx Level displays the strength of the signal being received, in dB.

Status Window Menu

The Status window has a File menu in its menu bar with the selections Demand Poll, Auto Poll, and Exit.

Selecting Demand Poll causes an immediate update of the display.

Auto Poll enables you to select updates at 15, 30, or 60 second intervals, or to disable automatic polling. If you select Disable, the Status window displays a static snapshot of the EIA indicators as they were at the last poll, either when the window was launched or a subsequent Demand Poll.

The time of the most recent poll appears in the bottom left corner of the window. The time is displayed in white when Auto Poll is enabled, and in yellow when it is disabled.

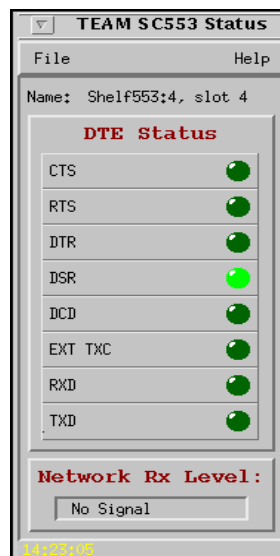


Figure 2-4 Status Window

Reports

You can launch the TEAM SC 553 Reports application from the Performance menu of the HPOV Map window menu bar or of the Front Panel display Select button menu. The application displays statistics accumulated by the DSU concerning seven types of error conditions and provides a mechanism for saving those statistics to a file.

When you launch the Report application it initially displays the Error Reports window shown in *Figure 2-5*. That window is the access point from which you select individual error condition displays. It contains four menus in the menu bar at the top of the window, a tool bar consisting of display selection buttons, and an End Selection button.

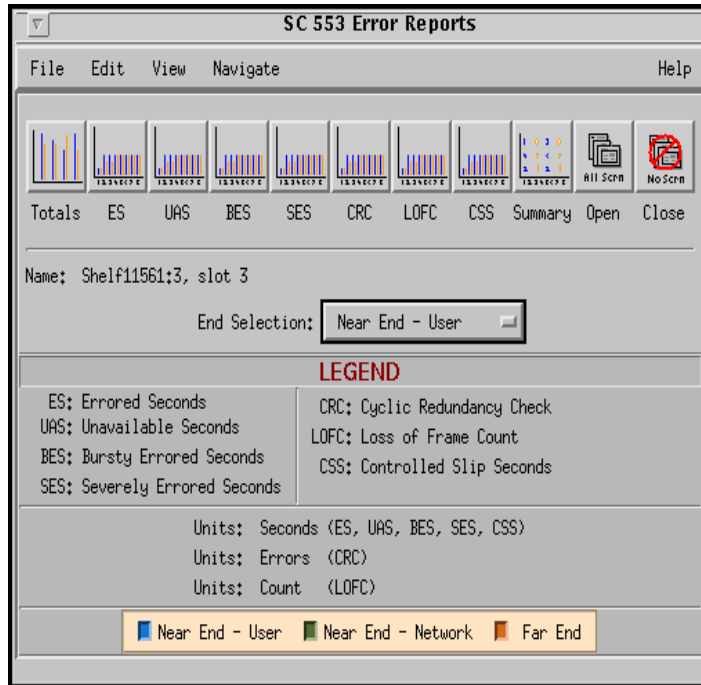
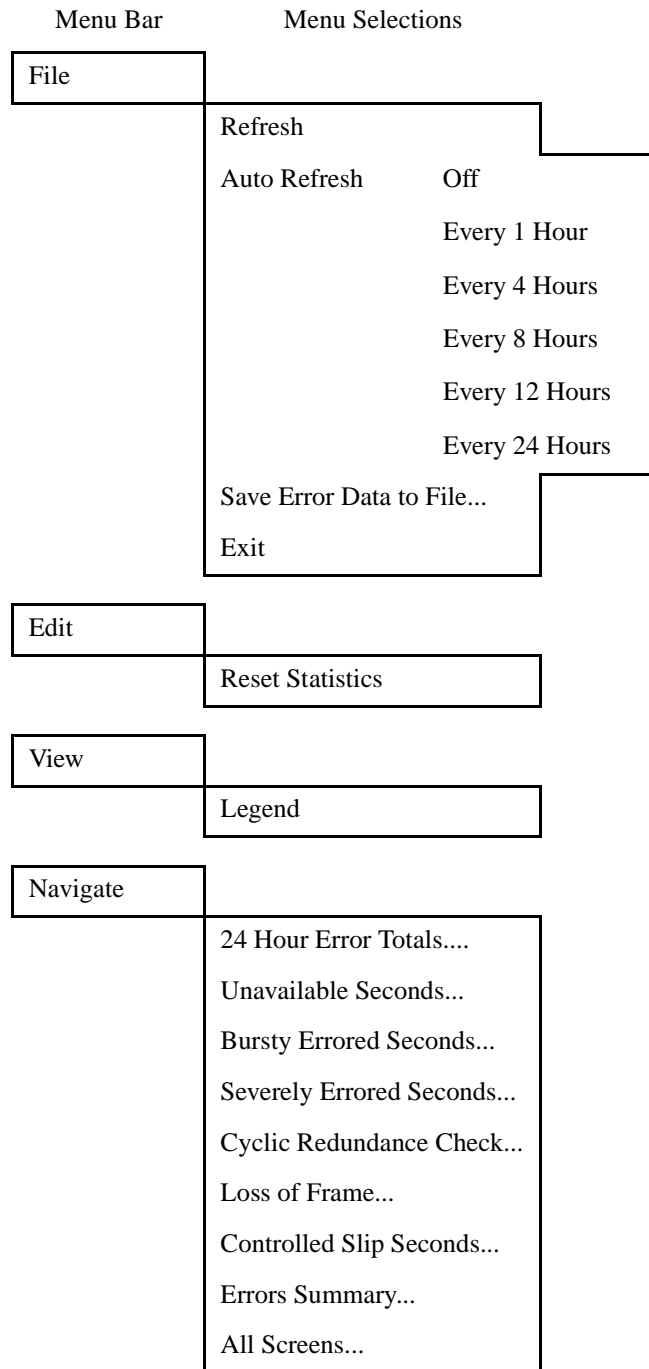


Figure 2-5 Error Reports Window

The End Selection button determines which of three sets of registers the application reads to acquire the data it displays:

- Near End User – selects the registers internal to the SC 553 itself
- Near End Network – selects the registers supported by the carrier at the local end of the T1 line
- Far End Network – selects the registers supported by the carrier at the remote end of the T1 line

The menus are



File Menu

The File menu contains two selections for refreshing the data displayed on-screen, one selection to initiate the procedure for saving Report data to a file, and one selection for dismissing the Reports application.

When the Reports application is launched, it reads data for the selected DSU from the register set selected by the End Selection button. The application continues to display the same data without updating unless you invoke either the Refresh or the Auto Refresh selection from the File menu. The Refresh selection causes the application to perform an immediate read of the selected register

set. The Auto Refresh selection enables you to select the application to update the Report data at specified intervals. The Reports application continues reading data at the selected Auto Refresh interval until either the interval is changed or Exit is selected from the File menu.

The Save Data to File selection of the File menu opens a dialog window in which you can specify the directory path and name of a file for storing formatted Error Reports data. Use of this selection is explained in detail following the description of the display screens.

The Exit selection of the File menu dismisses the Reports application.

Edit and View Menus

The Edit and View menus each contain a single selection.

The Edit menu's one selection is Reset Statistics; which causes the application to zero out the accumulated Reports data in the Near End User registers when it is invoked.

The View menu Legend selection toggles display of the lower portion of the Reports window. When the definitions labeled Legend are displayed the selection causes them to be hid; when they are not displayed the selection causes them to appear.

Navigate Menu

The Navigate menu and the display selection buttons in the toolbar both provide access to the display windows:

- Totals
- Errored Seconds
- Unavailable Seconds
- Bursty Errored Seconds
- Severely Errored Seconds
- Cyclic Redundancy Check
- Loss of Frame Count
- Controlled Slip Seconds
- Summary
- All Screens

The Totals screen, first in the Navigate menu, displays total values for the error conditions that the Reports application tracks. The next seven screens display detail information on the individual error conditions, displaying the number of error events occurring in each 15-minute interval. The ninth screen, Summary, displays all seven error conditions as interval values. The tenth selection in the Navigate menu opens all the Reports windows at once.

24 Hour Error Totals

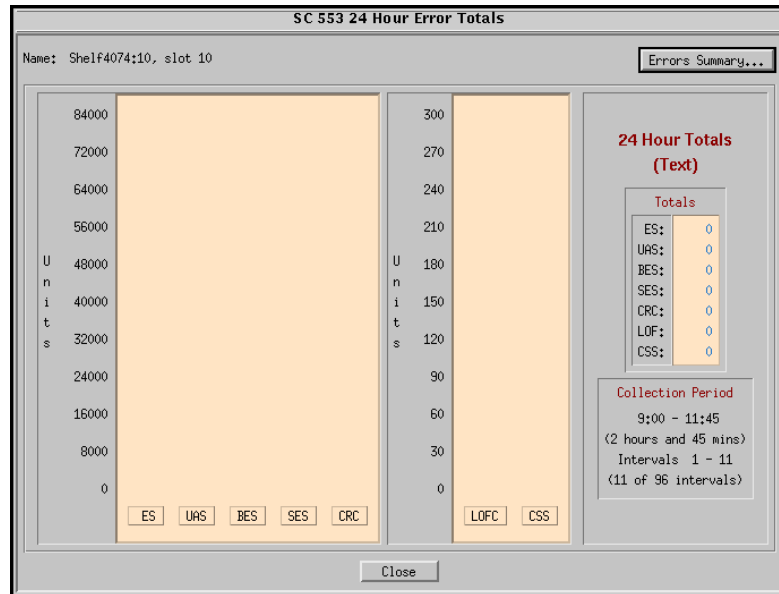


Figure 2-6 Errors Reports Totals Screen

The screen displays total events over a 24-hour period in two ways. The two large windows display graph bars to indicate the magnitude of the total values; and the small window on the right displays the specific numeric total values.

The Errors Summary button in the upper right corner of the window causes the application to open the Errors Summary window without closing the Totals window. The Errors Summary window is described in detail under its own heading.

Click on the Close button to dismiss the window when done viewing it.

Errored Seconds Display Screen

The Errored Seconds display screen graphically illustrates the number of errored seconds that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

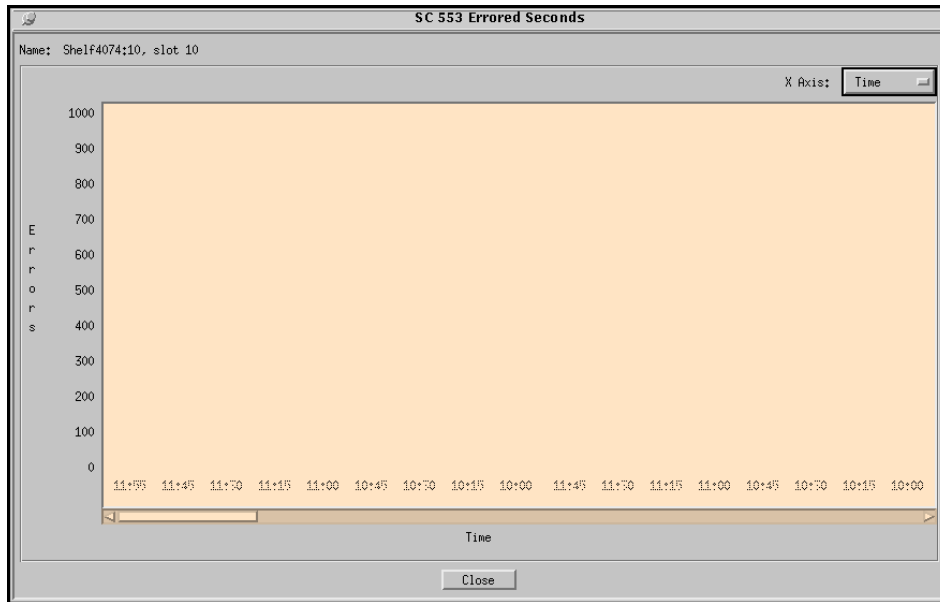


Figure 2-7 Errored Seconds Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

- Time – each interval is identified by the time at which it was completed

- Interval – each interval is identified by a number, with 1 being the most recently completed

- Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of errored seconds.

Click on the Close button to dismiss the window when done viewing it.

Severely Errored Seconds Display Screen

The Severely Errored Seconds display screen graphically illustrates the number of severely errored seconds that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

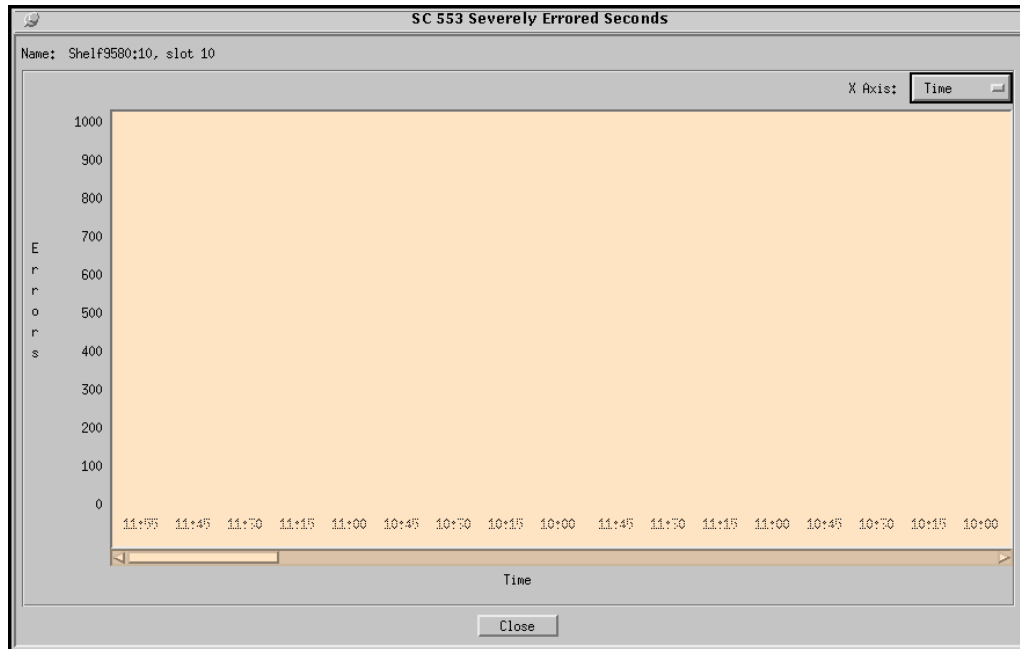


Figure 2-8 Severely Errored Seconds Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

- Time – each interval is identified by the time at which it was completed
- Interval – each interval is identified by a number, with 1 being the most recently completed
- Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of severely errored seconds.

Click on the Close button to dismiss the window when done viewing it.

Bursty Errored Seconds Display Screen

The Bursty Errored Seconds display screen graphically illustrates the number of bursty errored seconds that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

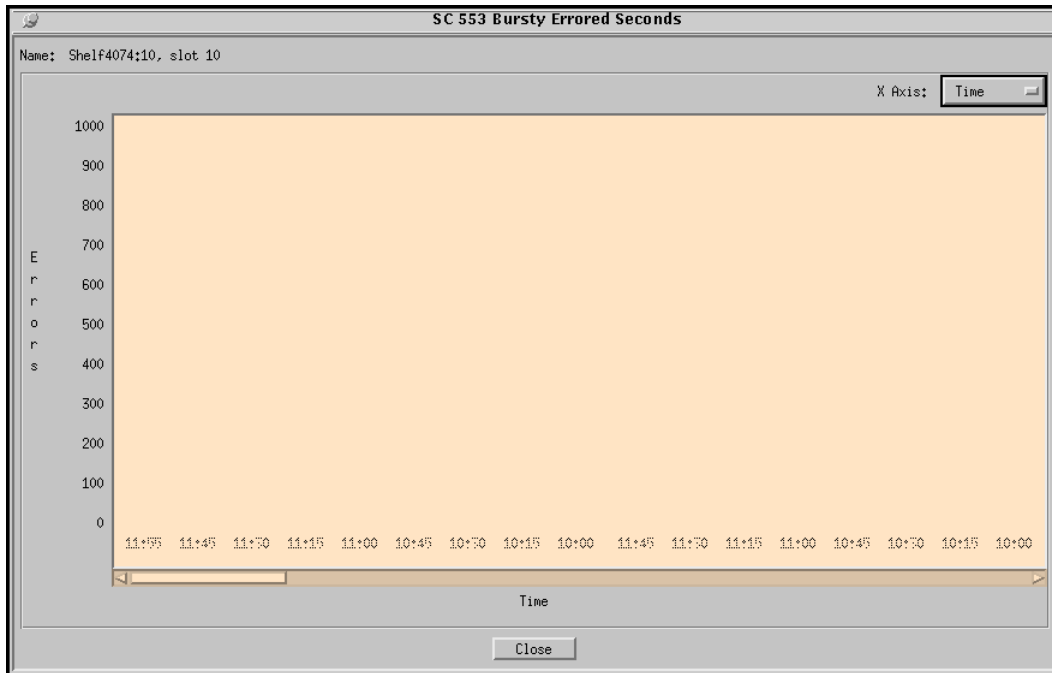


Figure 2-9 Bursty Errored Seconds Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

- Time – each interval is identified by the time at which it was completed

- Interval – each interval is identified by a number, with 1 being the most recently completed

- Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of bursty errored seconds.

Click on the Close button to dismiss the window when done viewing it.

Unavailable Seconds Display Screen

The Unavailable Seconds display screen graphically illustrates the number of unavailable seconds that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

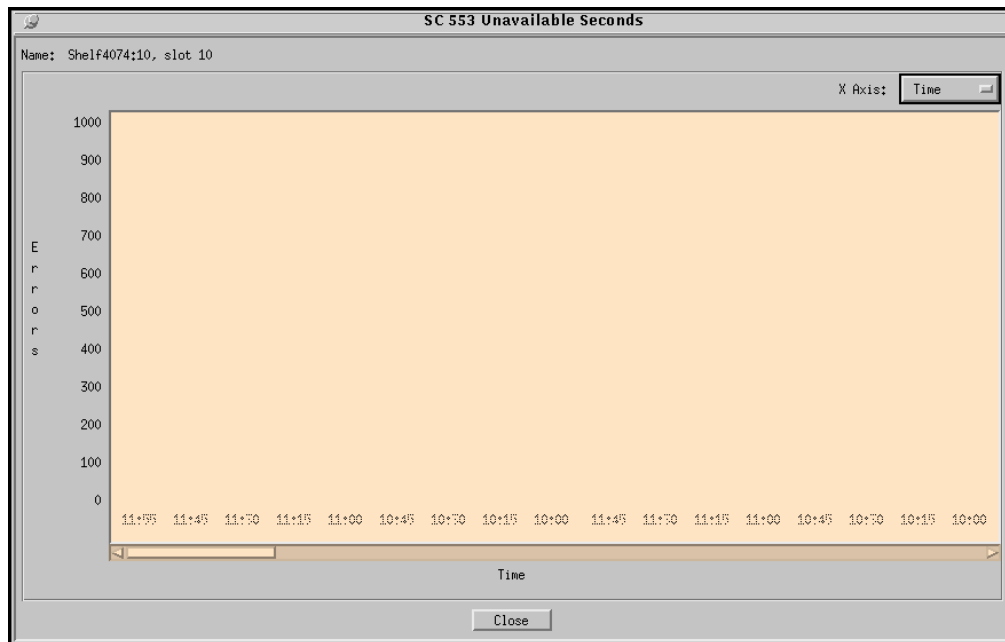


Figure 2-10 Unavailable Seconds Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

Time – each interval is identified by the time at which it was completed

Interval – each interval is identified by a number, with 1 being the most recently completed

Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of unavailable seconds.

Click on the Close button to dismiss the window when done viewing it.

Cyclic Redundancy Checksum Errors Display Screen

The Cyclic Redundancy Check display screen graphically illustrates the number of cyclic redundancy checksum errors that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

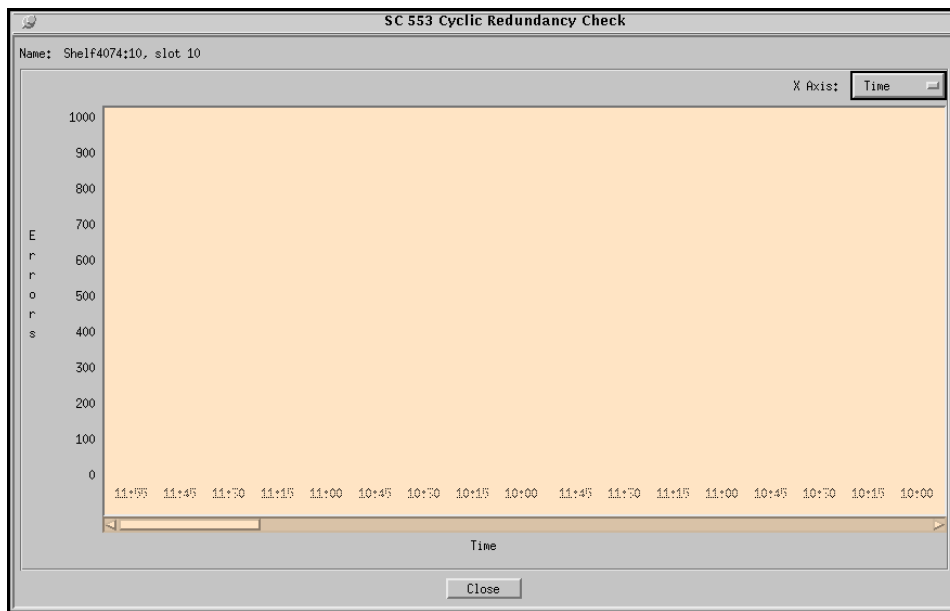


Figure 2-11 Cyclic Redundancy Checksum Errors Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

Time – each interval is identified by the time at which it was completed

Interval – each interval is identified by a number, with 1 being the most recently completed

Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of CRC errors.

Click on the Close button to dismiss the window when done viewing it.

Controlled Slip Seconds Display Screen

The Controlled Slip Seconds display screen graphically illustrates the number of controlled slip seconds that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

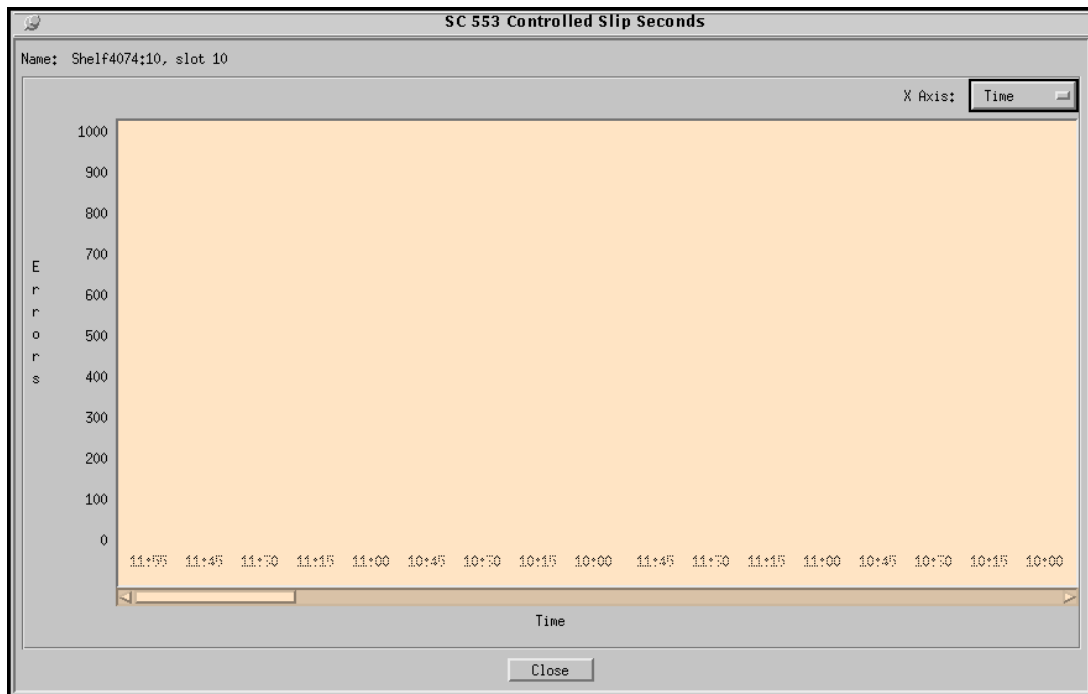


Figure 2-12 Controlled Slip Seconds Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

- Time – each interval is identified by the time at which it was completed

- Interval – each interval is identified by a number, with 1 being the most recently completed

- Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of controlled slip seconds.

Click on the Close button to dismiss the window when done viewing it.

Loss of Frame Count Display Screen

The Loss of Frame Count display screen graphically illustrates the number of frame losses that occurred during each 15-minute interval of the most recent 24 hours. The window is wide enough to display 17 intervals of data at a time, just over four hours. To move through the entire 24-hours of data, click on the scroll bar located under the display area and drag it to the right or left to adjust the time period being displayed.

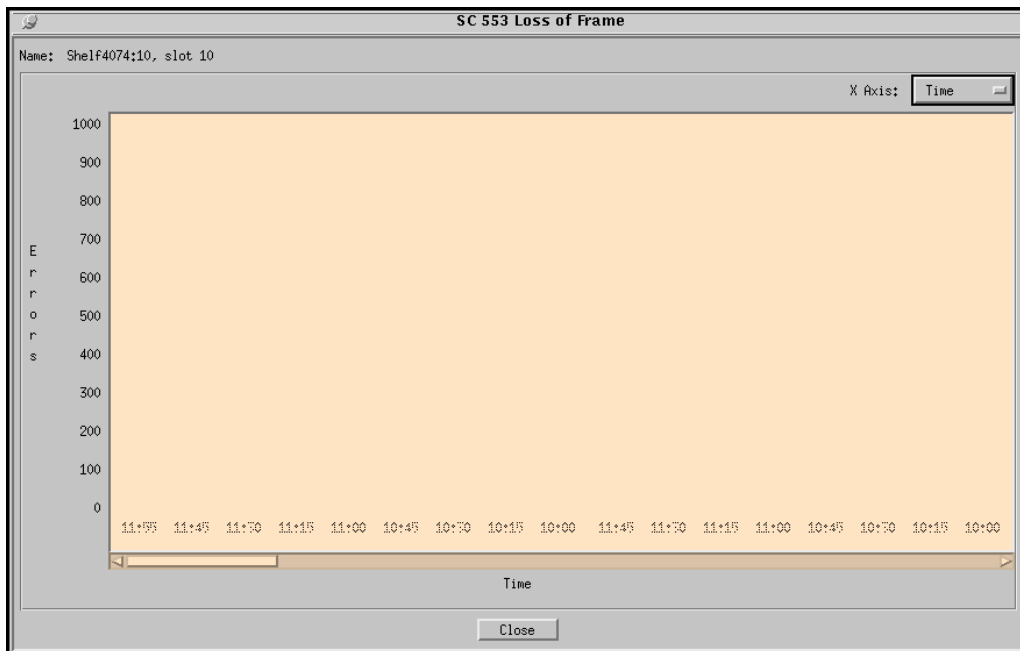


Figure 2-13 Loss of Frame Count Reports Display Screen

Time intervals are the X, horizontal, axis of the bar graph display. The X Axis button in the upper right corner of the window enables you to select how the display is labeled. You can select

- Time – each interval is identified by the time at which it was completed

- Interval – each interval is identified by a number, with 1 being the most recently completed

- Time & Interval – each interval is identified in both ways

The vertical axis of the bar graph displays the number of frame losses.

Click on the Close button to dismiss the window when done viewing it.

Errors Summary Display Screen

The Errors Summary window displays the number of occurrences for each of the seven types of error event during each 15-minute interval of the current 24 hours of operation. It also displays the total number of occurrences for each type of error event during the current 24 hours.

The main portion of the window displays the 15-minute values. The error events are listed on the Y, vertical, axis and the intervals are identified along the X, horizontal, axis. A slide bar below the display enables you to scroll horizontally through all the intervals, since the display is not wide enough to show them all at once. The X Axis button located on the right above the main display enables you to set the labelling of the X axis to be Time, Interval, or Time And Interval. Time labels indicate the end time of each 15-minute interval; Interval labels are 0 (current, uncompleted interval) through 96.

The 24 hour total values appear in the smaller panel in the lower portion of the window.

Click on the Close button to dismiss the window when done viewing it.

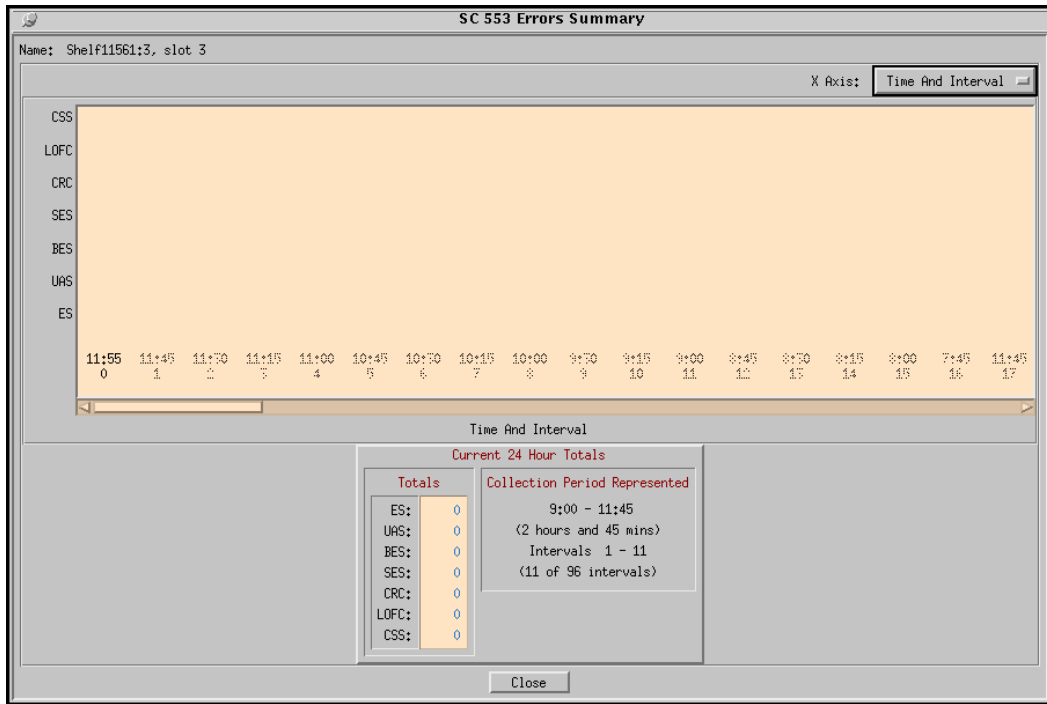


Figure 2-14 Errors Summary Reports Display Screen

Saving Reports Data to File

You can store statistics for later review and record keeping by selecting Save Error Data to File... from the File menu in the main Error Reports window. The function stores the most recent 24 hours of data, in a format similar to the appearance of the Error Reports Display screen.

The menu selection opens a dialog window in which you can specify the directory path and file name for storing the data. The application automatically appends the file type suffix .rpt to any file name that does not already have that suffix.

Current Interval Reports

You can launch the TEAM SC 553 Current 15 Minute Interval Error Report application from the HPOV Map Performance Menu or from the Front Panel display Select button menu. The purpose of the application is to display “snapshot” views of statistics accumulated by the DSU during the incomplete current interval.

The application acquires the statistics it displays on operator command, rather than automatically. The window provides three buttons for this purpose below the display area: Read Near End User, Read Near End Network, and Read Far End. The display shows only the most recently read information, not simultaneous near-end and far-end data.

The application displays statistics concerning seven types of error conditions divided into three sets of graph bars:

- Errored Seconds (ES), Severely Errored Seconds (SES), Bursty Errored Seconds (BES), and Unavailable Seconds (UAS) displayed against a selectable vertical scale that extends from 0 to 900, 450, or 225 seconds
- Controlled Slip Seconds (CSS) and Loss of Frame Count (LOFC) displayed against a selectable vertical scale that extends from 0 to 260, 130, or 65 events
- Cyclic Redundancy Checksum errors displayed against a selectable vertical scale that extends from 0 to 65000, 32500, or 16250 events

The Set Vertical Scale checkboxes at the top of the window enable you to select the seconds and events scales together:

900, 260, 65000

450, 130, 32500

225, 65, 16250.

Below the graph bars the window displays numeric counts of the error conditions.

When viewing this window, you should perform a new read every few minutes to get a sense how frequently error events are occurring. Remember that the statistics all reset to zero at the end of each 15-minute current interval.

When you are done viewing the Current Interval Error Report window, select Exit from the File menu to dismiss the application.

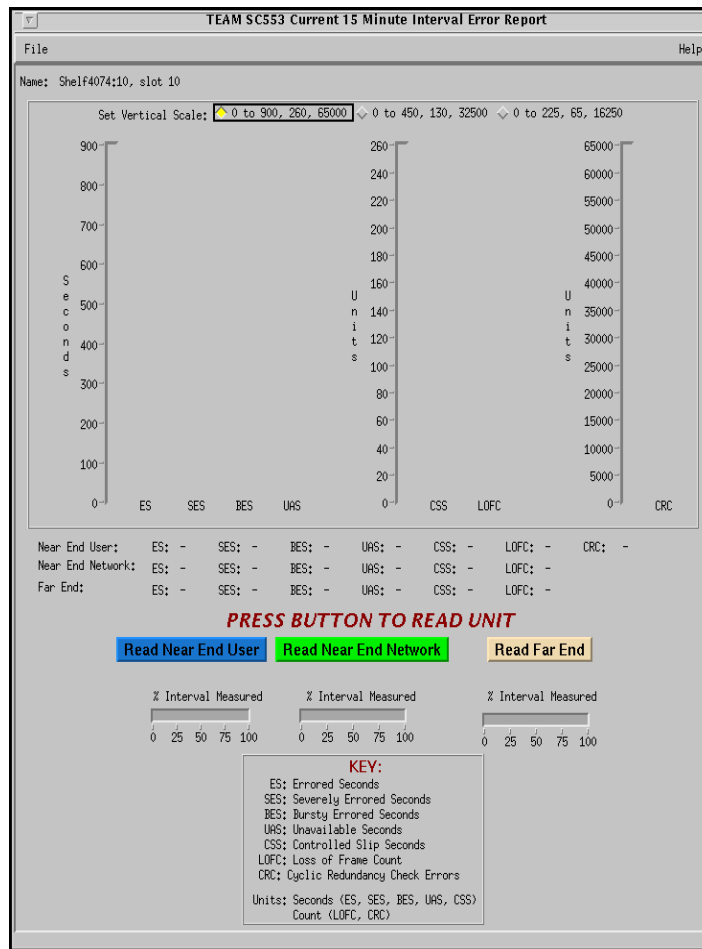


Figure 2-15 Current Interval Error Report Window

Configuration Functions

Configure

You can launch the TEAM SC 553 Configure application from the HPOV Map Configuration Menu or from the front panel menu.

When you launch the application, it initially displays the TEAM SC 553 Configuration window, which has a File menu and a Navigate menu in its menu bar.

The File menu contains the selections

- Refresh, which discards all unsaved changes and restores all options in the displayed configuration windows to the values they are assigned by the current operating configuration
- Save to Unit, which puts the new configuration into use by the unit
- Load Template, by which you can recall a stored configuration template that you can then save to the unit either with or without modifications
- Save to Template, by which you can store the current configuration on the workstation for future use as a template
- Compare to Template, by which you can identify differences between the configuration displayed on-screen and a selected template

- Exit, by which you can dismiss the window.

The Navigate menu enables you to access the read/write windows by which you can configure various aspects of DSU operation:

- CSU Options
- DSU Options
- Alarms Reported
- System Options

The TEAM SC 553 Configure application is fully described in *Chapter 3, Configuration*.

Maintenance

You can launch the TEAM SC 553 Maintenance application from the HPOV Map Configuration Menu or from the front panel menu.

The application displays one read/write window by which you can control some aspects of operation that fall outside the scope of the Configure function. The TEAM SC 553 Maintenance application is fully described in *Chapter 4, Maintenance*.

Diagnostics

You can launch the TEAM SC 553 Diagnostics application from the HPOV Map Fault Menu or from the Front Panel display Select button menu.

The application displays one read/write window by which you can control a variety of test functions on a selected DSU. The TEAM SC 553 Diagnostics application is fully described in *Chapter 5, Diagnostics*.

Miscellaneous Functions

Information

You can launch the TEAM SC 553 Information window by clicking on the GDC logo in a Front Panel display.

Information displays one read-only window that contains the name of the application, software revision level information, and copyright information. The File menu in the menu bar contains only the selection Exit, by which you can dismiss the window.

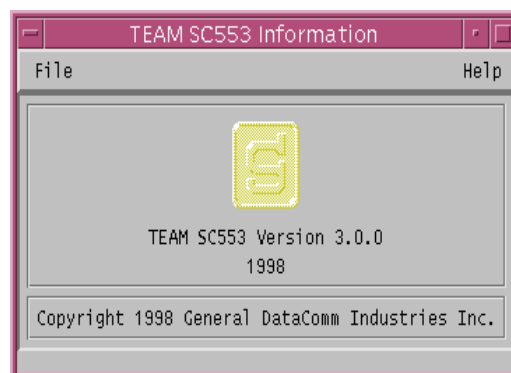


Figure 2-16 TEAM SC 553 Information Window

Front Panel Poll Rate

You can open the Front Panel Poll Rate window (See *Figure 2-17*) from the shelf submap Misc Menu. The setting you select in this window determines the initial polling rate for Front Panel displays each time they are opened.

The rate selection is a global function. It selects initial polling rate for all front panel displays linked to a TEAM Core application, regardless of which individual application you access it from.

There are four selections, each accompanied by a checkbox:

- Slow
- Normal
- Fast
- Demand Poll Only

Click on the checkbox for the desired polling rate. The precise polling frequency resulting from a setting of Slow, Normal, or Fast depends on a number of factors. The higher the rate, the more communication and processor capacity is devoted to maintaining the display.

The polling rate for an individual front panel display can be changed for the duration of a session by means of the Auto Poll selection in the Select button menu. Changes you make with that menu selection are not retained when the display is closed.

The File menu in the menu bar contains the selections Save to File, by which you put a setting into effect, and Exit, by which you dismiss the window.

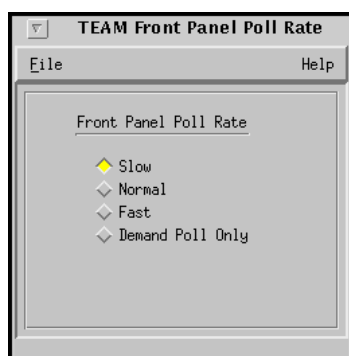


Figure 2-17 Front Panel Poll Rate Window

Note Pad

You can launch the Note Pad application from the shelf submap Misc Menu. The application opens a shell tool on the workstation running the TEAM software. You can use the shell tool to run a text editor, mail tool, or any other software that resides on the workstation. The Note Pad application provides this access for keeping records on the system.

3 Configuration

Introduction

The TEAM SC 553 Configuration application enables you to set all the options in an SC 553 DSU through a convenient group of configuration windows.

To Start TEAM SC 553 Configuration

You can start the TEAM SC 553 Configuration application by either of two methods:

- Select a DSU symbol on the submap in OpenView, then select the Configuration option from the Configuration menu.
- Click on the Select button of the Front Panel display, then click on Configuration and select Configuration from the resulting menu.

Templates

You can store configuration settings as templates on the workstation that runs the TEAM SC 553 application. A template stores a configuration for the unit options, and you can store as many templates as you need.

To load configuration settings from a template into the DSU you must perform the following steps:

1. Select Load Template from the File menu and select the template from the resulting dialog window. The application retrieves the configuration settings of the selected template.
2. Select Save to Unit from the File menu. The application makes the template configuration settings the current operating configuration for the unit.

Configuration Procedure

The following steps describe how to use the configuration application, and illustrate the functions of the Main Configuration window menus.

1. Access the Main Configuration window, either from the submap or from the Front Panel display. The application reads the current Main configuration from the unit when you open the Main window.

You can select to base your configuration changes on either the current configuration or a stored configuration template. In either case, the unit continues to operate using its unchanged current configuration.

The **Refresh** selection on the Main window **File menu** causes the application to read the current configuration from the unit. All changes to all configuration windows that have not previously been saved to the unit or to a template are lost when you select Refresh.

2. To edit the current configuration of the unit, proceed directly to the Navigate menu as described below.

To edit a template, select **Load Template** from the File menu and select a template from the resulting list.

3. Click on the **Navigate button** to display a menu of the configuration windows, and select the one in which you intend to make changes.
4. Make changes as needed in the configuration window. When you click on the input field for an option, a window opens to display all the values the field can be set to. Click the mouse on the value you select. When you change the value or setting of an option, the application displays the option name and the new value in white, rather than black, type. They remain white until you either save the changes to the unit or a template by means of the Main window File menu, or restore the option to its last stored value or setting.

You can discard changes to a configuration window and return all its fields to their stored values in two ways:

- Click on the **Reset button** to discard changes while keeping the window open
- Click on the **Cancel button** to discard changes and close the window.

You can close a configuration window without losing changes by clicking on either the **OK button** or the **pushpin icon**, which is located in the upper left corner of the window.

You can keep multiple configuration windows open on-screen and move between them by clicking the mouse on the one in which you intend to operate. The Main Configuration window remains on-screen throughout the configuration process.

5. When you have accessed all the configuration windows that you need to and made all of your changes, click on the **File menu button** of the Main Configuration window. From that menu you can select **Save to Unit** to save the new configuration in the unit, or select **Save to Template** to save it as a template in the workstation.
6. When you select Save to Unit, the changed configuration becomes the current configuration for the DSU you are configuring.
7. When you select Save to Template, a window appears containing a list of existing templates and a field for entering a new template name. You can select an existing template to be overwritten with the new configuration, or enter a name to create a new template. A stored template is available to be loaded by the application and then saved, with or without further modification, to any unit of the same type.

Configuration Option Values

When you click the mouse on the entry field for a configuration item, a window opens containing all the values that are permitted for that configuration item. Hold down the mouse button until the highlight is on the value you intend to configure, then release the button. The newly selected value appears in the entry field for the configuration item.

Main Configuration Window

The Main Configuration window has two pull down menus, File and Navigate, that are the means by which you carry out the actual process of configuring the selected unit. From the **Navigate menu** you select the individual configuration windows in which you make changes. The **File menu** commands the storage and retrieval of configuration settings. The functions available in the Navigate and File menus can also be invoked by clicking selections in the on-screen tool bar. The contents of the two menus appear below.

Menu Buttons	Menu Selections	Further Selections
File	Refresh	
	Save to Unit	
	Load Template	dialog window
	Save to Template	dialog window
	Compare Template	dialog window
	Exit	
	Navigate	CSU Options...
DSU Options...		
Alarms Reported...		
System Options...		
All Screens...		

The Main Configuration window title bar displays the application name, TEAM SC 553 Configuration. The main body of the window contains items arranged under the headings Operation, Software and Hardware that identify the selected unit and provide information about its operations.

The button below the main tool bar, marked with two triangles, toggles display of the window's information panel. Clicking on that button when the full Configuration window is displayed causes the information panel to disappear so that the window consists of just the title, menu, and tool bars. Clicking the button while the window is in its reduced condition restores the full Configuration window.



Figure 3-1 Main Configuration Window

Main Configuration Window Display

The Main Configuration window displays the following read-only items:

Name: name assigned to the selected DSU

Operation

Slot State: Active or Inactive

Operational Status: Online

Software

Serial Number: serial number of the selected unit

Active Firmware Rev: revision level of the operating code the selected unit is currently using

Standby Firmware Rev: revision level of operating code stored by the selected unit but not currently in use

Boot Code Rev: revision level of the boot-up operating code in the selected unit

MIB Version: revision level of the Management Information Base files in the selected unit

Hardware

Cascade Interface: Installed or Not Installed

DTE Interface Type: V.35 or EIA 530

Shelf Type: SpectraComm 5000 or SpectraComm 2000

Shelf Power: power (in Watts) available in the shelf and number of slots supported

The TEAM SC 553 application relies on the SC 553 DSU to indicate when a configuration problem has caused an SNMP set error.

DSU Options

The TEAM SC 553 DSU Options window lets you define channel interface characteristics for the unit and assign the DS0s that carry channel data on the T1 line.

Figure 3-2 TEAM SC 553 DSU Options Window

Buttons

OK – dismisses the window while retaining the changes you have made. The changes are not stored permanently until you perform a Save to Unit or Save to Template at the Main Configuration window.

Reset – replaces the information in the fields with the most recently read information from the unit. Note that this button does not initiate a read of information from the unit.

Cancel – dismisses the window and cancels unsaved changes.

Options

Service State

Port State – determines whether or not the DTE interface is in use.

Options:

In Service specifies that the DTE interface is in use.

Out of Service specifies that the DTE interface is not in use, the SC 553 is being used as a CSU.

EIA Control

Data – determines whether or not the unit inverts transmit and/or receive data.

Options:

Tx Norm, Rx Norm inverts neither transmit nor receive data. Default setting.

Tx Norm, Rx Invert inverts only receive data.

Tx Invert, Rx Norm inverts only transmit data.

Tx Invert, Rx Invert inverts both transmit and receive data.

Set Timing – determines whether or not the unit inverts transmit and/or receive timing.

Options:

Tx Norm, Rx Norm inverts neither transmit nor receive timing. Default setting.

Tx Norm, Rx Invert inverts only receive timing.

Tx Invert, Rx Norm inverts only transmit timing.

Tx Invert, Rx Invert inverts both transmit and receive timing.

Tx Auto, Rx Norm unit determines automatically whether to invert transmit timing, receive timing is normal.

Tx Auto, Rx Invert unit determines automatically whether to invert transmit timing, receive timing is inverted.

Operating Tx Timing – displays the Transmit Timing options currently in effect.

Split Timing – determines whether or not the unit can use External Clock from the DTE to time channel Transmit Data while using Receive Timing at the network interface to transmit data on the T1 line.

Options:

Disabled inhibits external timing buffer for the unit. Default setting.

Enabled allows external timing buffer for the unit.

Constant CTS – determines whether or not the unit maintains a constant Clear To Send output to its DTE.

Options:

Disabled inhibits constant CTS. Default setting.

Enabled allows constant CTS.

Constant DCD – determines whether or not the unit maintains a constant Data Carrier Detect output to its DTE.

Options:

Disabled inhibits constant DCD. Default setting.

Enabled allows constant DCD.

Constant DSR – determines whether or not the unit maintains a constant Data Set Ready output to its DTE.

Options:

Disabled inhibits constant DSR. Default setting.

Enabled allows constant DSR.

Test Leads Control – determines whether or not DTE interface leads can initiate Remote Digital Loopback (RDL) and Channel Local Loopback (AL).

Options:

Disabled inhibits external loopback control. Default setting.

Enabled allows external loopback control.

Diagnostics

RDL Response – determines whether or not the unit accepts in-band polynomial commands that initiate and terminate remote digital loopbacks.

Options:

PN 127 permits the unit to accept PN 127 commands that initiate and terminate digital loopbacks. Default Setting.

Disable prevents the unit from accepting in-band polynomial commands that initiate and terminate digital loopbacks.

RDL Auto Timeout – determines whether or not the unit terminates remote digital loopbacks automatically.

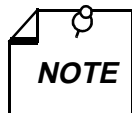
Options:

Disabled permits Remote Digital Loopbacks to remain in effect until terminated manually. Default Setting.

10 Minutes limits the duration of a Remote Digital Loopback to 10 minutes.

DS0 Allocation

Remember that the DS0 bundle you assign for channel data must start from a lower DS0 number and extend to a higher DS0 number. The DS0 bundle cannot wrap around from the highest numbered DS0 of one frame to DS0 #1 of the next frame. For example, on a T1 frame that uses consecutive DS0 allocation, a configuration with Starting DS0 = 20 and Number of DS0s = 5 is illegal because the DS0 bundle would have to wrap from DS0 #24 of one frame to DS0 #1 of the next. On the other hand, a starting of DS0 = 5 and an ending of DS0 = 20 is legal.



Changing line type or number of DS0s brings down the WAN connection. Always configure the remote first, then the local DSU.

Routing – selects which T1 interface the data from the DTE interface is directed to. Only Network Port is valid when the cascade interface is not installed.

Options:

To Network Port

To Cascade Port

Allocation Scheme – lets you define the DS0 allocation scheme of the unit.

Options:

Consecutive indicates that the DS0 bundles are allocated to channels in a consecutive fashion beginning with the starting DS0. Default setting.

Alternate indicates that the DS0 bundles are allocated to channels in an alternate fashion beginning with the starting DS0. The unused DS0s are forced to marks. When alternate is selected each channel requires twice the number of DS0s that supports its data rate.

DS0 Format -selects the DS0 base rate. This option combined with Number of DS0s determines the bandwidth of the channel.

Options:

N x 64 defines the DS0 as clear channel, in which all 8 bits of the DS0 are used for channel data. Default setting.

N x 56 defines the DS0 as non-clear, in which bits 1-7 are used for channel data and the 8th bit is either unused (forced to marks) or used to pass signaling information.

Starting DS0 – selects the beginning DS0 for the bundle of DS0s that carry channel data.

Options:

1 (Default setting) to *24*

Number of DS0s – selects how many DS0s carry channel data. This option combined with DS0 format determines the bandwidth of the channel.

Options:

1(Default setting) to *24*

Aggregate Rate – read-only display that shows the rate that results from the selected DS0 Format and Number of DS0s.

Remote Management

Remote Management Path – selects the type of inband Diagnostics Communication Channel (DCC) in use.

Options:

None – no DCC being used for the channel. Default setting.

Embedded – DCC embedded in the secondary channel (bit 8) of the DS0 bundle that carries the channel

DCC DS0 – DCC carried by an additional DS0 appended to the DS0 bundle that carries the channel

Network FDL – DCC carried in the Facilities Data Link channel provided by ESF framing

Routing Backup

Mode – selects whether or not the DSU is to perform automatic rerouting.

Options:

Disable – no automatic rerouting. Default setting.

Enable – automatic rerouting

CSU Options

The TEAM SC 553 CSU Options window (*Figure 3-3*) lets you define the network and cascade interfaces of the selected unit. The cascade portion of this configuration screen is grayed out if the selected unit does not have the optional cascade interface installed.



Changing line type or number of DS0s brings down the WAN connection. Always configure the remote first, then the local DSU.

Figure 3-3 TEAM SC 553 CSU Options Window

Buttons

OK – dismisses the window while retaining the changes you have made. The changes are not stored permanently until you perform a Save to Unit or Save to Template at the Main Configuration window.

Reset – replaces the information in the fields with the most recently read information from the unit. Note that this button does not initiate a read of information from the unit.

Cancel – dismisses the window and cancels unsaved changes.

Network/Cascade Options

Port State – appears only in the Cascade column, determines whether or not the cascade port is active.

Options:

In Service – cascade port active. Default setting when the cascade is present.

Out of Service – cascade port inactive

Set Frame Type – sets the framing format.

Options:

ESF – Extended Superframe Format. Default setting.

D4 – D4 Superframe

Auto – unit adapts to ESF or D4 according to which is being received

Unframed

Operating Frame Type – read-only field that displays the line type and framing format detected.

ESF Mode – appears only in the Network column, when ESF is selected in the Set Frame Type field (or in effect due to Auto framing) this option must be set to match the type of Facilities Data Link maintenance messages supported by the service provider.

Options:

None – no FDL. Default setting.

ANSI T1.403 – Scheduled Performance Report Messages (PRMs) and Unscheduled Messages

TR 54016 – Telemetry Asynchronous Block Serial (TABS) protocol

Line Code – sets the line code.

Options:

B8ZS (Bipolar with eight zero substitution, with bipolar violations). Default setting.

AMI (Alternate Mark Inversion, with no bipolar violations)

Ones Density – appears only in the Network column, sets the technique the unit uses to ensure that its transmit signal contains an adequate proportion of digital ones (minimum pulse density) when the Network Line Code option is set to AMI. This option is not available for the cascade interface.

Options:

Disable – no minimum pulse density maintained. Default setting.

$8(N+1)$ – minimum of N ‘ones’ per $8(N+1)$ bits, where N = 1 to 24. Results in 12% average ones density.

1 in 8 – minimum of 1 ‘one’ per 8 bits. Pulse density violations are enforced but enforcement is not indicated.

Interface Type – sets the type of signal that the unit transmits and receives through T1 interface.

Options:

DS1 – for connection to a Telco network; Line Buildout field is valid when DS1 is selected. Default setting.

DSX1 – for short haul connection to another on-site device; Pre-Equalization field is valid when DSX1 is selected

Set Line Buildout – sets the Line Buildout (attenuation) value when DS1 is selected as the Interface Type.

Options:

0 dB – no attenuation. Default setting.

-7.5 dB

-15 dB

-22.5 dB

Auto – provides attenuation based on the signal being received from the network

Operating Line Buildout – read-only field that displays the Line Buildout value currently in effect.

Pre-Equalization – sets pre-equalization when DSX1 is selected as the Interface Type. Should be set to match line length between the unit and the device it is connected to, thereby ensuring that a satisfactory signal reaches the device.

Options:

None – no pre-equalization

0 – 130 ft (Default setting)

130 – 260 ft

260 – 390 ft

390 – 530 ft

530 – 655 ft

Inband Loopback Type – allows or prohibits the unit from accepting a formatted in-band loopback code from another unit. The code initiates either Payload Loopback or Line Loopback.

Options:

None – prevents unit from accepting in-band loopback code. Default setting.

Payload Loop – unit enters Payload Loopback in response to in-band loopback code

Line Loop – unit enters Line Loopback in response to in-band loopback code

AIS Loopdown – sets the amount of time (in seconds) that the unit must receive a continuous Alarm Indication Signal before terminating a remotely-initiated loopback.

Options:

Disable – AIS cannot terminate remote loopback. Default setting.

5 – 60 seconds

Timing Options

Transmit Clock Source – selects the timing source for transmissions at the network interface.

Options:

Receive – timing derived from the incoming T1 signal at the network interface. Default setting.

External/DTE – timing supplied at the channel interface

Internal – timing from the internal clock of the unit

Station – timing from an RS422 signal at the auxiliary port of the unit

Cascade – timing derived from the incoming T1 signal at the cascade interface

Fallback Clock Source – selects transmit timing source the unit is to use if its primary timing source is lost.

Options:

Network Receive – timing from the incoming signal at the network interface

Internal – timing from the internal clock of the unit. Default setting.

Alarms Reported

The TEAM SC 553 Alarms Reported window (*Figure 3-4*) lets you designate the alarms that are to be masked (not reported) or unmasked (reported).

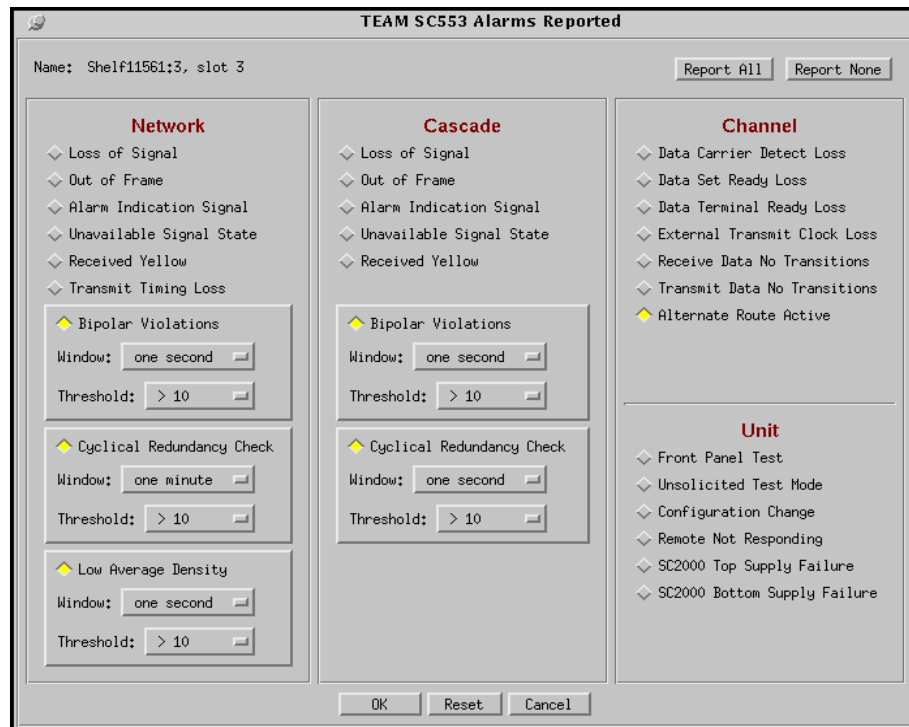


Figure 3-4 TEAM SC 553 Alarms Reported Window

Buttons

OK – dismisses the window while retaining the changes you have made. The changes are not stored permanently until you perform a Save to Unit or Save to Template at the Main Configuration window.

Reset – replaces the information in the fields with the most recently read information from the unit. Note that this button does not initiate a read of information from the unit.

Cancel – dismisses the window and cancels unsaved changes.

Report All – unmask all unit alarms.

Report None – mask all unit alarms.

Options

Network and Cascade Alarms

Loss of Signal – occurs when the unit detects an absence of T1 signal. Absence of signal for a time equivalent to 175 bits (± 75) is considered no signal.

Out of Frame – occurs when the unit misses two out of four framing bits in the signal it is receiving. The count for this alarm increments by one each time framing is lost, regardless of the number of frames affected.

Alarm Indication Signal – occurs when the unit receives an AIS.

Unavailable Signal State – occurs in response to 10 consecutive severely errored seconds. The state is considered cleared when the unit has processed 10 consecutive seconds of data without a severely errored second.

Received Yellow – occurs when a remote failure is detected.

Tx Timing Loss – occurs when the unit loses its source of Network Transmitter Timing. There is not a corresponding alarm for the cascade interface.

Bipolar Violation – lets you mask or unmask Bipolar Violation alarms. A Bipolar Violation occurs when the signal the unit receives does not alternate between signal levels as required for Alternate Mark Inversion (AMI) or Bipolar with 8 Zero Substitution (B8ZS) data encoding.

If you unmask this alarm field, you must designate a window and a threshold. Window and threshold settings are described below.

CRC Errors – lets you mask or unmask CRC error alarms. A CRC error occurs when ESF framing is in use and the CRC-6 code calculated for a frame at the receiving unit does not match the CRC-6 code calculated by the unit that transmitted the frame. The unit performs CRC checking on every ESF frame to detect errors in the DS1 signal.

If you unmask this alarm field, you must designate a window and a threshold. Window and threshold settings are described below.

Low Average Density – occurs when 8(N+1)Restrict is the configured selection for Ones Density and the unit has to insert ones in the signal it transmits toward the network. The unit inserts ones when the transmit signal would otherwise contain fewer ones than the Ones Density option requires. There is not a corresponding alarm for the cascade interface.

If you unmask this alarm field, you must designate a window and a threshold. Window and threshold settings are described below.

Window and Threshold settings – Bipolar Violation, CRC Errors, and Low Average Density each, when unmasked, require you to designate a window and a threshold. The window defines a time period and the threshold sets an event count. The alarm is generated when the threshold count is exceeded within the limits of the window. For example, a window of Last One Minute and a threshold of >100 specify that more than 100 alarm events must be detected within the one minute window before an alarm is generated.

Window Options:

Report All – alarm is generated on every individual occurrence

Last One Second – alarm generated when threshold value exceeded within one second

Last One Minute – alarm generated when threshold value exceeded within one minute

Last One Hour – alarm generated when threshold value exceeded within one hour

Report When – alarm generated when threshold value exceeded regardless of time

Threshold Options:

>10 – alarm generated when count exceeds 10

>100 – alarm generated when count exceeds 100

>1,000 – alarm generated when count exceeds 1,000

>10,000 – alarm generated when count exceeds 10,000

Channel Alarms

Data Carrier Detect Loss – occurs when the unit cannot recover data from the incoming signal at the network interface

Data Set Ready Loss – occurs when the unit is not outputting DSR to the DTE

Data Terminal Ready Loss – occurs when the unit is not receiving the DTR signal from its DTE

External Transmit Clock Loss – occurs when the unit has lost External Transmit Timing from its DTE; occurs only when unit is configured for External Timing

Receive Data No Transitions – occurs when RD being output to the DTE by the DSU consists of all ones or all zeros

Transmit Data No Transitions – occurs when TD coming to the DSU from the DTE consists of all ones or all zeros

Alternate Route Active – occurs when the DSU reroutes the network signal

Unit Alarms

Front Panel Test – occurs when a test is commanded by means of the front panel

Unsolicited Test Mode – occurs each time the unit is commanded into a test mode by any means other than SNMP or its front panel switches

Configuration Change – occurs when there is a change to the configuration of the unit.

Remote Not Responding – occurs when the DSU loses communication with a dedicated remote.

SC2000 Top Supply Failure – occurs only when DSU installed in an SC 2000 shelf detects failure of a shelf power supply installed in the upper position.

SC2000 Bottom Supply Failure – occurs only when DSU installed in an SC 2000 shelf detects failure of a shelf power supply installed in the lower position.

System Options

The System Options configuration window contains two configuration options.



Figure 3-5 System Options Configuration Window

Front Panel Switches – permits you to disable the switches on the DSU front panel to prevent inadvertent service interruptions.

Options:

Enable – switches active. Default Setting.

Inhibit – switches disabled

Response Timeout – determines how long the application waits for a response from the DSU before declaring a No Response alarm.

Options:

2 Seconds

4 Seconds

6 Seconds

8 Seconds. Default Setting.

4 Maintenance

Introduction

The TEAM SC 553 Maintenance application provides a group of functions for controlling the operation of an SC 553 DSU.

To Start TEAM SC 553 Maintenance

You can start the TEAM SC 553 Maintenance application by either of two methods:

- Select a DSU symbol on the submap in OpenView, then select the Maintenance option from the Configuration menu.
- Click on the Select button of the Front Panel display, then click on Configuration and select Maintenance from the resulting menu.

Maintenance Window Buttons

The Maintenance window provides the following three buttons.

Reset Statistics – causes the unit to reset the counts of all near-end user statistics to zero for all intervals.

Reset to Factory Defaults – causes all options in the unit to return to their factory default settings. When you click on this button the application displays a warning “Executing reset to factory defaults will disrupt communications to the unit. Do you want to continue?” Click on OK to complete the reset, or Cancel not to perform the reset.

Perform Soft Reset – causes the unit to perform a reset and resume operation using its current configuration. When you click on this button the application displays a warning “Executing soft reset will disrupt communications to the unit. Do you want to continue?” Click on OK to complete the reset, or Cancel not to perform the reset.



Figure 4-1 Maintenance Window

5 Diagnostics

Overview

The Fault menu provides access to the TEAM SC 553 Diagnostic screen, which provides the command and results display functions for all tests you can perform on the DSU by means of the TEAM application. The diagnostics window displays the results of the most recent test until you begin another one. There is also a Diagnostics History screen, accessible from the main Diagnostic window, that displays results of all tests performed during the current session.

The tests you can perform from the Diagnostics window divide into three categories: T1, DS0, and Channel. When using the diagnostic functions you should have the *SC 553 DSU Installation and Operation Manual* available as a reference.

Diagnostics Window

The Diagnostics window has File, Navigate, and Help in its menu bar. The File menu has two selections: Status Poll, which enables you to set the window's refresh rate in five second increments from once every 35 seconds (default) to once every 5 seconds, and Exit, which dismisses the application. The only selection in the Navigate menu is History, which causes the application to display the Diagnostics History window containing the results of all tests performed during the current session.

Below the Name field that identifies the selected SC 553 DSU the Diagnostics window consists of six panels: three for test selection, one for command functions, and two for display functions.

The test selection panels:

T1 Tests – contains the selections for commanding tests that involve an entire T1 line connected either to the DSU network interface or to the optional cascade interface

DS0 Tests – contains the selections for commanding tests that involve one selected DS0 in the T1 line at the network or cascade interface. By selecting a DS0 that is otherwise not in use, you can perform DS0 testing without interrupting or interfering with data traffic through the DSU.

Channel Tests – contains the selections for commanding tests on the DTE interface side of the DSU

The command function panel contains one input field and four buttons:

Test Time (input field) – selects how long a test is to run. The selections are 30 seconds, 1 through 10 minutes in 1-minute increments, 15 through 30 minutes in 5-minute increments, or Infinite.

Reset Bit Errors (button) – resets the Self Test error count to zero

Insert Single Bit Error (button) – causes the pattern generator to transmit an error during Self Test. Enables you to verify the diagnostic data path by observing that the error is detected.

Start Test (button)

Stop Test (button)

The display panels:

Data path panel – diagram of the route data follows during the selected test; there are two different layouts for this panel, depending on whether or not the selected DSU is equipped with the optional cascade interface

Indicator panel – three fields:

Test Status – Idle or Running

Time Remaining – countdown gauge shows remaining percentage of the selected test time

Test Results

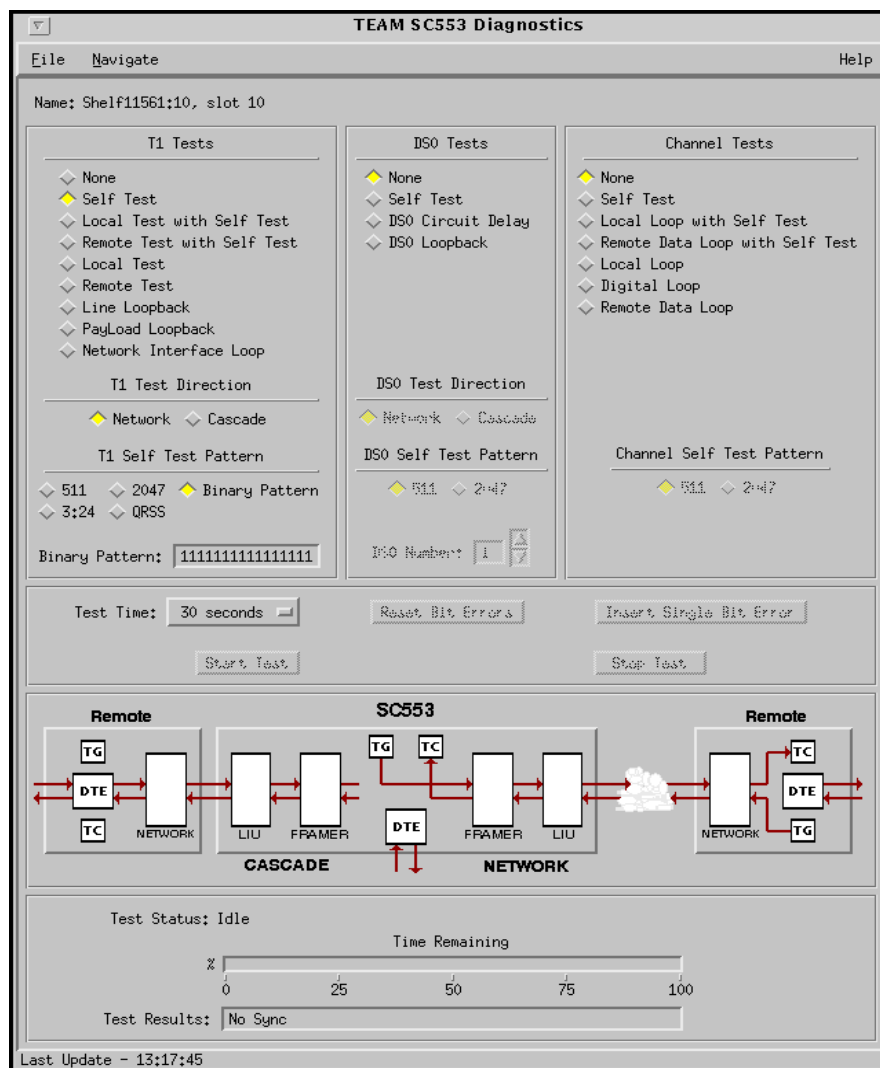
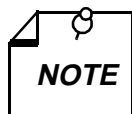


Figure 5-1 TEAM SC 553 Diagnostics Window
(shown with the cascade version of the data path panel)



The TEAM SC 553 application polls the DSU at least once every 35 seconds while the Diagnostics window is open. The poll rate is selectable in five second increments up to once every 5 seconds. In order to reduce unnecessary LAN traffic, the Diagnostics window should be closed when it is not in use.

T1 Tests

T1 tests employ the full capacity of the 24 DS0s connected to the DSU's DS1 network interface or its optional DSX1 cascade interface. The T1 Tests panel of the Diagnostics window presents a list of eight tests from which to select, and a selection between running the chosen test at the network interface or at the cascade interface. The cascade selection is grayed out if the optional cascade interface is not installed in the DSU selected to be tested.

Three of the T1 tests employ the T1-level Self Test generator/checker in the DSU. There are five selectable patterns (including programmable Binary Pattern) for T1-level Self Test.

You select a test to run by clicking on the check box to the left of its name. You can de-select all T1 tests by clicking the box next to None; that box is also selected automatically when you select a DS0 or Channel Test.

Five of the T1 tests, each involving DSU transmit data looped back as receive data, are commanded entirely at the local DSU:

- Local Test with Self Test
- Remote Test with Self Test
- Local Test
- Remote Test
- Network Interface Test

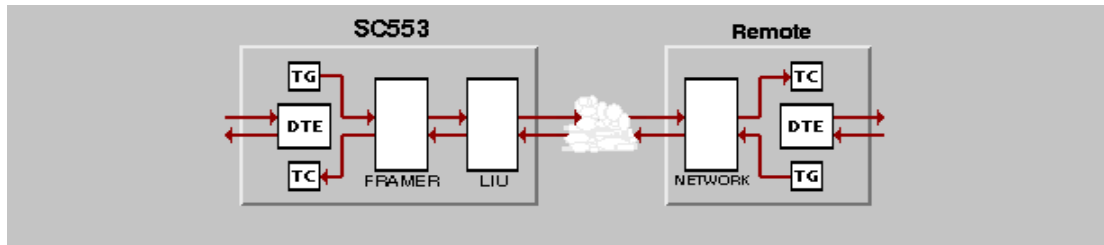
The remaining three T1 tests each require that action be taken at the remote DSU, either by an operator at that location or by SNMP control of the remote DSU:

- Self Test
- Line Loopback
- Payload Loopback

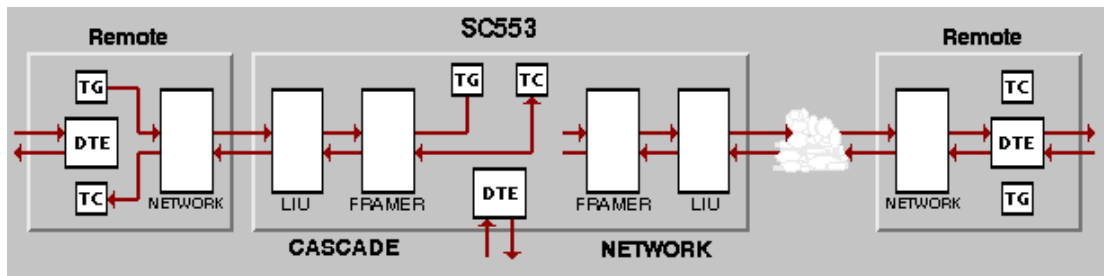
Instructions for performing the T1 tests appear after the following descriptions. Each of the descriptions is accompanied by two illustrations, labeled Network and Cascade, showing data paths that are displayed on-screen for the two types of T1 tests. Remember that the cascade interface style of data path diagram appears for all tests performed on a DSU that has the cascade interface installed.

- **Self Test** - turns on the T1-level test pattern generator and checker in the DSU. Use of this test requires coordination with the remote device, either to establish a loopback or to activate a test pattern generator and checker (using the same pattern) for an end-to-end test.

Network:

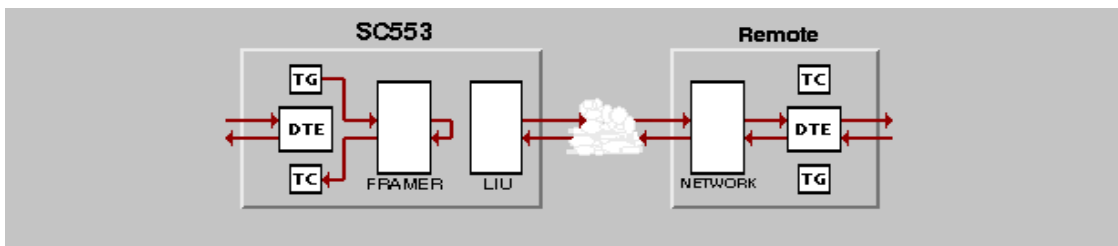


Cascade:

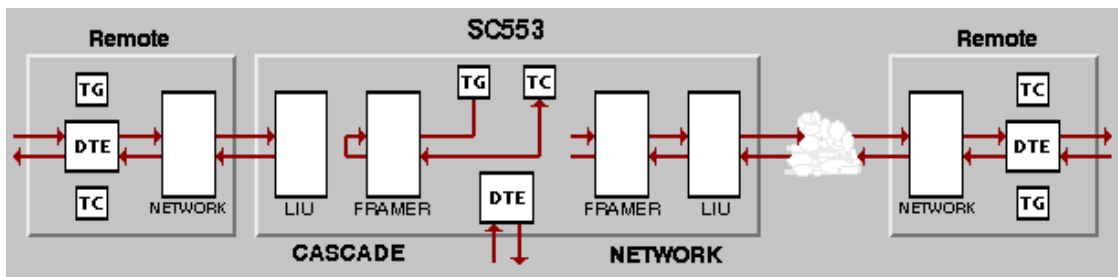


- Local Test with Self Test** - turns on the T1-level test pattern generator and checker and transmits the pattern through the local unit. The unit transmits the test data over the T1 link, but does not accept incoming data at any interface during the test.

Network:

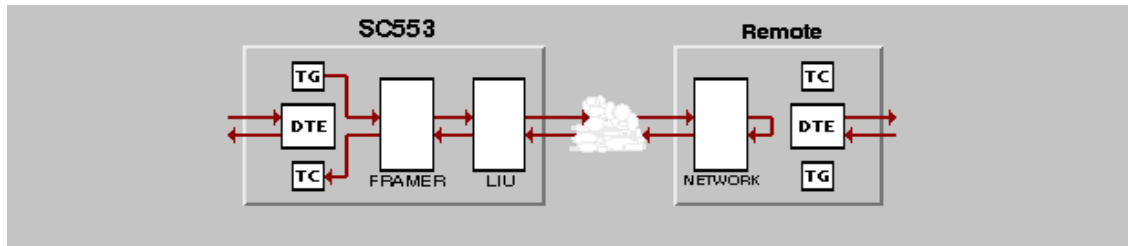


Cascade:

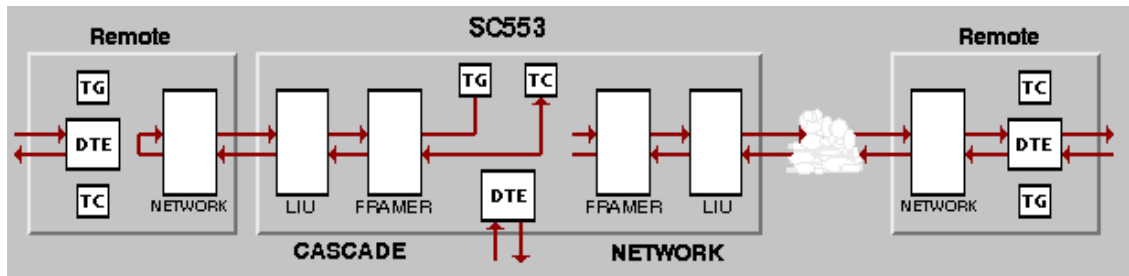


- Remote Loop with Self Test** - commands the local DSU to send a loopback command to the remote DSU, then turns on the T1-level test pattern generator and checker and transmits the pattern through the loop. Evaluates local and remote units, and the T1 line. The remote DSU does either a line loopback or a Payload Loop depending on its configuration.

Network:

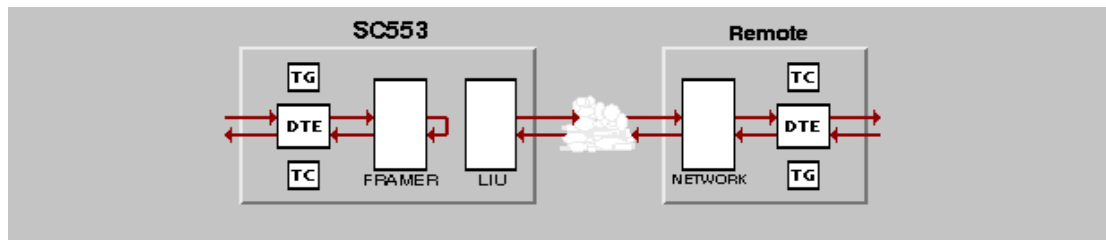


Cascade:

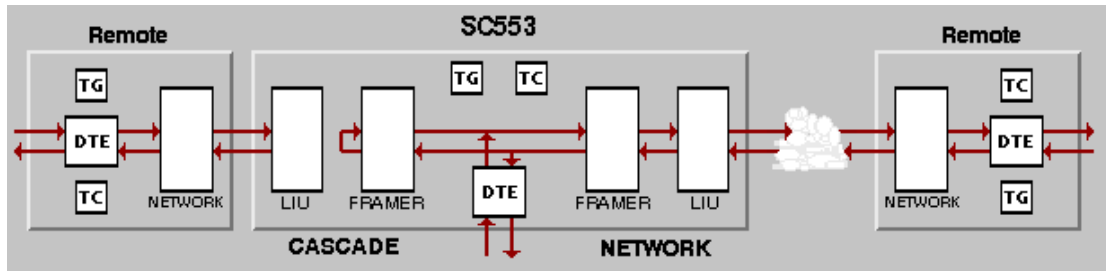


- Local Test** - commands the DSU to loop back the full T1 at the network or cascade interface. Test pattern generation and checking must be performed by equipment connected to the DSU, either at the front panel jacks or at the DTE interface.

Network:

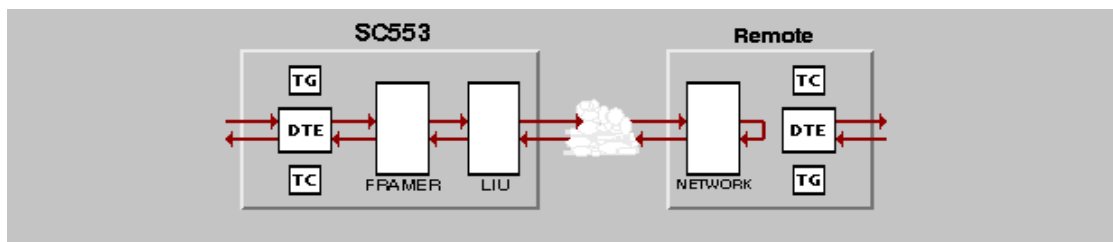


Cascade:

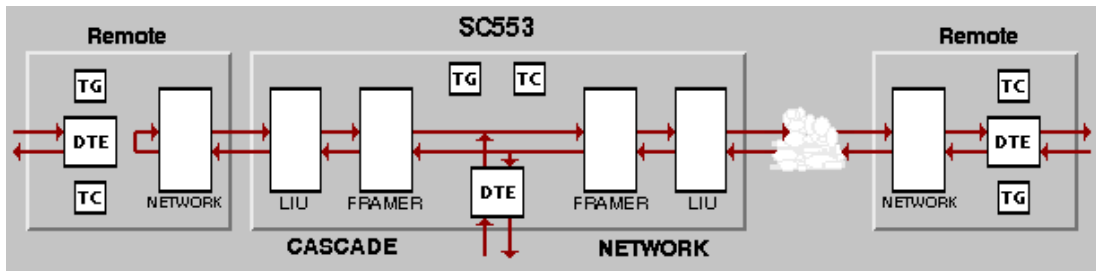


- Remote Test** - commands the local DSU to send a loopback command to the remote device. The remote device does either a line loopback or a Payload Loop depending on its configuration. Test pattern generation and checking must be performed by equipment connected to the local DSU, either at the front panel jacks or at the DTE interface.

Network:

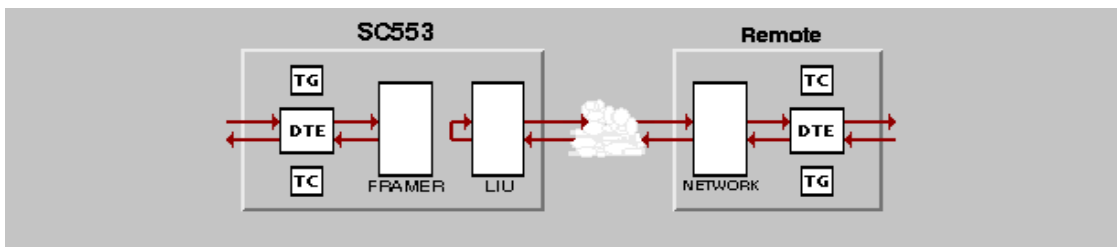


Cascade:

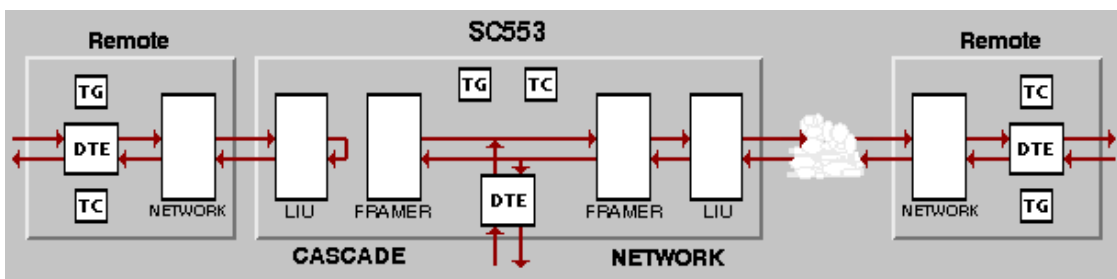


- **Line Loopback** - commands the DSU to loop the received T1 signal back to the remote at the network or cascade interface. The remote site is responsible for test pattern generation and checking.

Network:

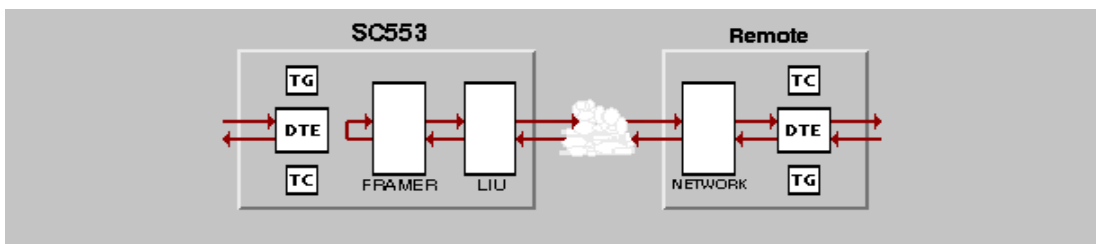


Cascade:

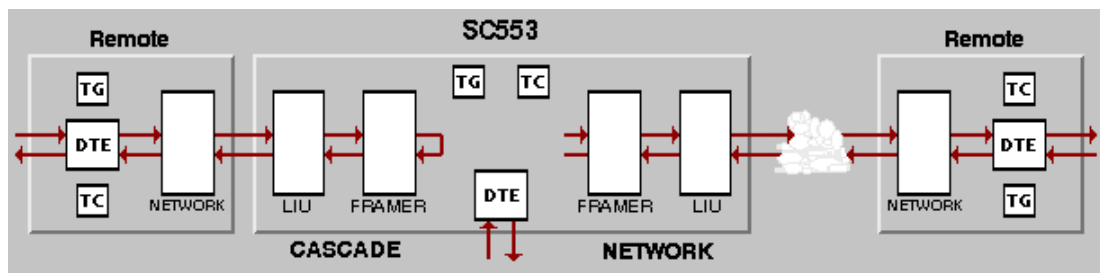


- **Payload** - commands the DSU to loop the received T1 signal back to the remote at the channel interface. The remote site is responsible for test pattern generation and checking. Payload loopback tests everything on the network or cascade side up to and including the unit. It generates Framing and corrects Bipolar Violations.

Network:

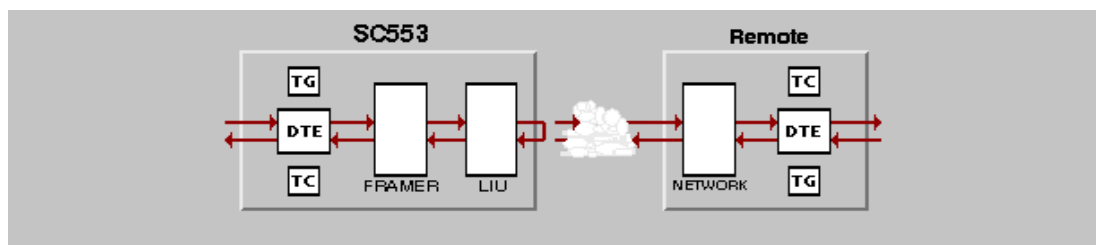


Cascade:

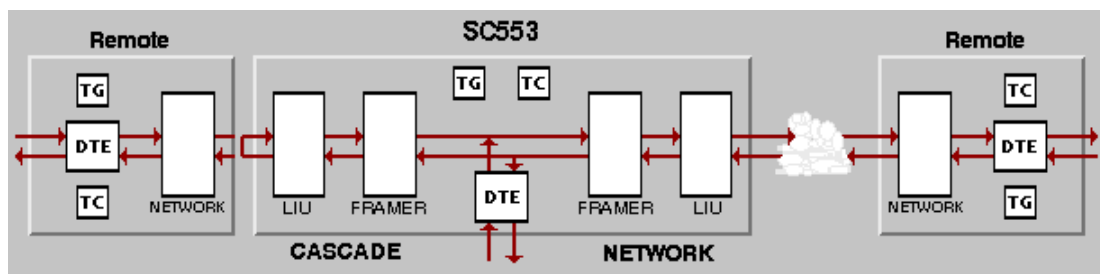


- NI Loop** - commands the local DSU to send a loopback command to the Smart Jack (or equivalent network terminating device) that connects it to the T1 network. The jack responds by looping the T1 signal back to the DSU. Test pattern generation and checking must be performed by equipment connected to the local DSU, either at the front panel jacks or at the DTE interface.

Network:



Cascade:



T1 Test Instructions

Perform the following steps to carry out a T1 test:

- If you are going to perform Self Test, Line Loopback, or Payload Loopback, make the necessary arrangements concerning the remote device. Arrangements may involve contacting remote-site personnel or SNMP control of the remote device. Actions you need to arrange can be loopback initiation (for use with Self Test) or test signal generation and checking (as part of an end-to-end Self Test, or in conjunction with a Line or Payload Loopback).
- Select the test you intend to perform by clicking on the check box to the left of its name and, if it is applicable, by selecting either Network or Cascade.

If the selected test is not one that involves Self Test, go to step 4.

- Select the Self Test Pattern by clicking on the check box to the left of its name.

If you select Binary Pattern, click in the Binary Pattern input field and type the sequence of 1's and 0's you intend to use. The pattern is 16 bits long. If you enter fewer than 16 characters, the application pads the pattern with 1's.

4. Click on the Test Time input field and select how long you intend the test to run.
5. Click on the Start Test button. The data path display panel exhibits the path for the test you have selected, the Test Status field changes from Idle to Running, and the Time Remaining gauge begins to display its countdown.

If you are running a Self Test, the Reset Bit Errors and Insert Single Bit Error buttons are available while the test runs. The reset button returns the error count to zero. The insert button generates an error in the pattern in order to confirm transmission and reception. The Stop Test button is available during any test.

6. Upon completion of the selected Test Time the application displays results in the Test Results window.

DS0 Tests

If the data link between units does not employ the full capacity of the T1 line, DS0 Tests permit you to check the reliability of the link without interrupting data. To do that, take care to specify as the DS0 to be tested one that is not being used by the data link.

The DS0 Tests panel of the Diagnostics window presents a list of three tests from which to select, and a selection between running the chosen test at the network interface or at the cascade interface. The cascade selection is grayed out if the optional cascade interface is not installed in the DSU selected to be tested.

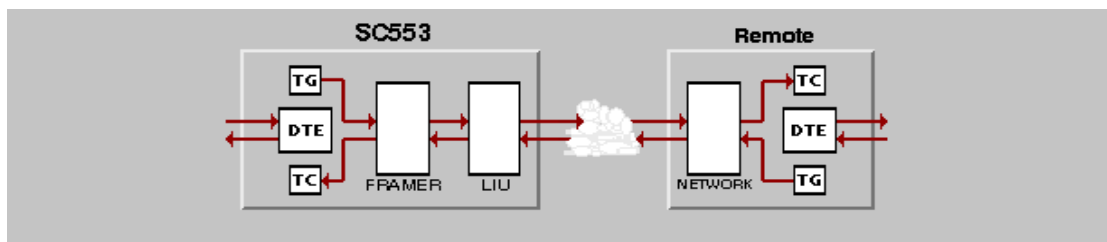
You select a test to run by clicking on the check box to the left of its name. You can de-select all DS0 Tests by clicking the box next to None; that box is also selected automatically when you select a T1 or Channel Test.

DS0 Loopback is commanded entirely at the local DSU. Use of Self Test or DS0 Circuit Delay requires that action be taken at the remote DSU, either by an operator at that location or by SNMP control of the remote DSU. There are two selectable patterns for DS0-level Self Test.

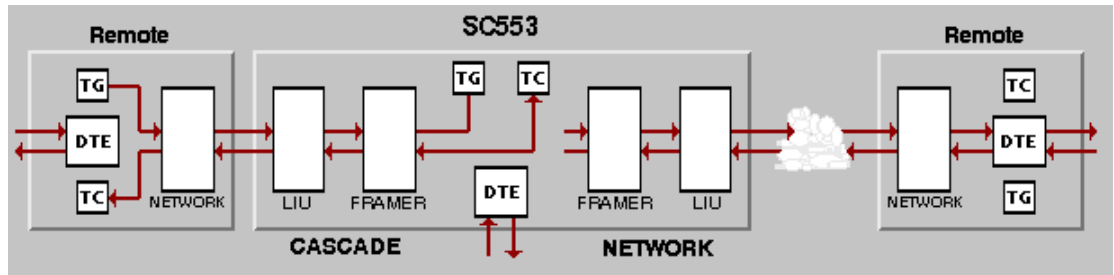
Instructions for performing the DS0 tests appear after the following descriptions. Each of the descriptions is accompanied by two illustrations, labeled Network and Cascade, showing data paths that are displayed on-screen for the two types of DS0 tests. Remember that the cascade interface style of data path diagram appears for all tests performed on a DSU that has the cascade interface installed.

- **Self Test** - commands the local DSU to generate a DS0-level test pattern and transmit it to the remote, and also to turn on its DS0-level test pattern checker. Can be used in an end-to-end test to evaluate the local and remote DSUs, and the T1 link. The remote must be independently commanded to turn on DS0-level test pattern generation and checking. Each DSU checks the test pattern transmitted to it by the other.

Network:

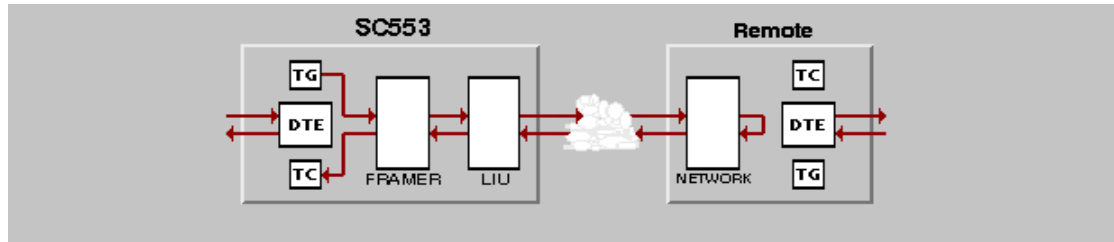


Cascade:

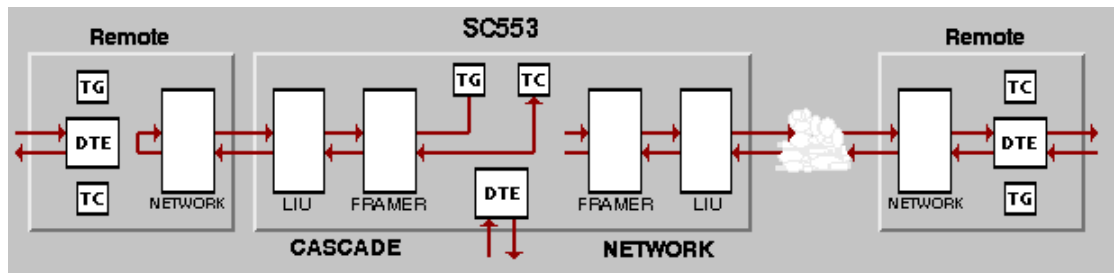


- DS0 Circuit Delay** – computes, for a selected channel, round-trip transmission delay of an internally-generated message from the local unit to the remote unit and back to the local. The delay includes variables like circuit distance, transmission path, etc. Hence, no figures of acceptable delay are presented here. The result is an indication of network response time and throughput that can be compared to results of the same test repeated under similar conditions at other times. Initiating the Circuit Delay test does not command the required DS0 loopback at the remote unit; it has to be commanded at that unit, either by an operator at the remote site or by SNMP control.

Network

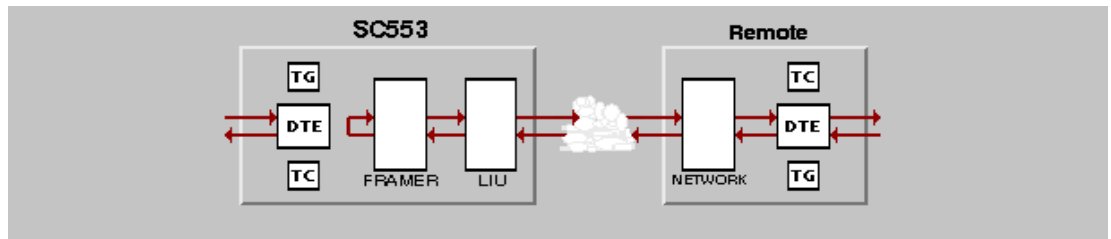


Cascade:

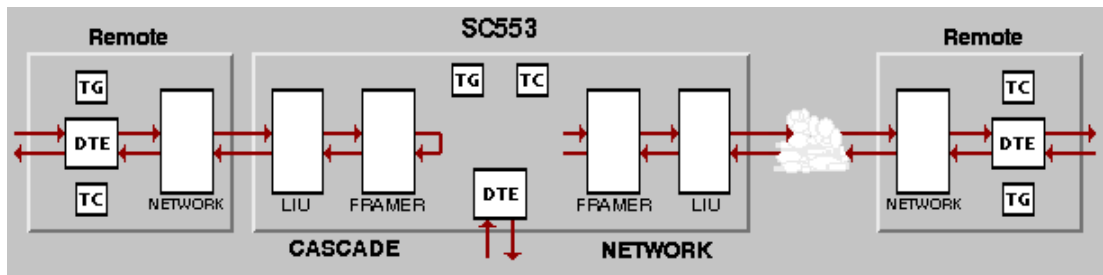


- Loopback** – loops one DS0 of channel data back toward the network interface.

Network



Cascade:



DS0 Test Instructions

Perform the following steps to carry out a DS0 Test:

1. Use the arrow buttons next to the DS0 Number input field to select the DS0 you intend to use for testing. If possible, select a DS0 that is not in use for channel data, so that tests can be performed with no interference to data traffic.
2. Select the test you intend to perform by clicking on the check box to the left of its name and, if it is applicable, by selecting either Network or Cascade.

If the selected test is DS0 Loopback, go to step 5.

3. If you are going to perform Self Test or Circuit Delay test, make the necessary arrangements with the remote site. Arrangements may involve contacting remote-site personnel or SNMP control of the remote DSU. Actions you need to arrange can be loopback initiation for either a Self Test or a Circuit Delay test, or test signal generation and checking for an end-to-end Self Test. Make sure the same DS0 is selected at both sites.
4. Select the Self Test Pattern by clicking on the check box to the left of its name.
5. Click on the Test Time input field and select how long you intend the test to run.
6. Click on the Start Test button. The data path display panel exhibits the path for the test you have selected, the Test Status field changes from Idle to Running. For a Self Test or DS0 Loopback the Time Remaining gauge begins to display its countdown.

If you are running a Self Test, the Reset Bit Errors and Insert Single Bit Error buttons are available while the test runs. The reset button returns the error count to zero. The insert button generates an error in the pattern in order to confirm transmission and reception. The Stop Test button is available during any test.

7. Upon completion of the selected Test Time the application displays results in the Test Results window.

Channel Tests

Channel Tests interrupt the data link between units, since they employ all of the DS0s that are assigned to carry channel data. The Channel Tests panel of the Diagnostics window presents a list of six tests from which to select, three of which involve the use of the channel-level Self Test generator/checker in the DSU. There are two selectable patterns for channel-level Self Test.

You select a test to run by clicking on the check box to the left of its name. You can de-select all Channel Tests by clicking the box next to None; that box is also selected automatically when you select a T1 or DS0 Test.

Four of the Channel Tests, each involving DSU transmit data looped back as receive data, are commanded entirely at the local DSU:

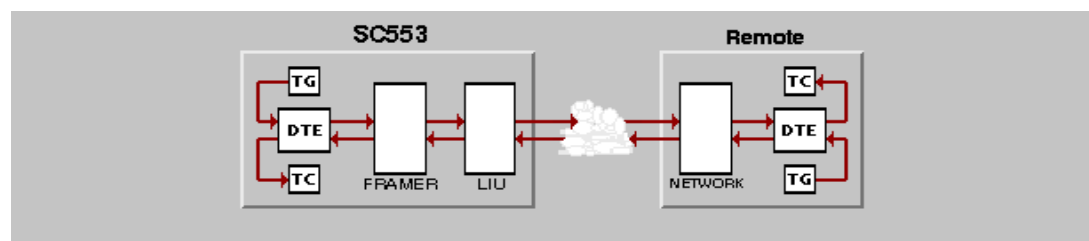
- Local Loop with Self Test
- Remote Data Loop with Self Test
- Local Loop
- Remote Data Loop

The remaining two Channel Tests each require that action be taken at the remote DSU, either by an operator at that location or by SNMP control of the remote DSU:

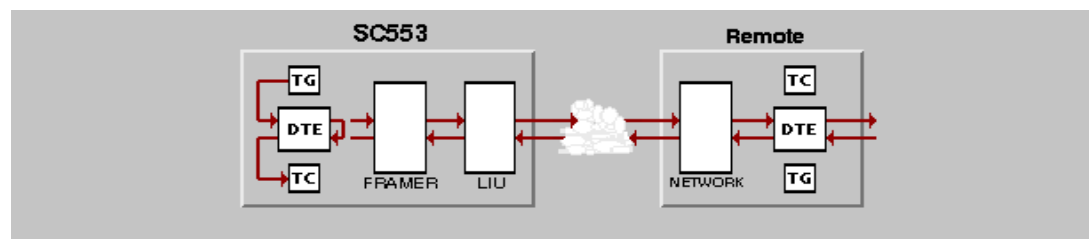
- Self Test
- Digital Loop

Instructions for performing the Channel Tests follow the descriptions that appear below. The illustration that accompanies each description is the data path for the test, as displayed on-screen.

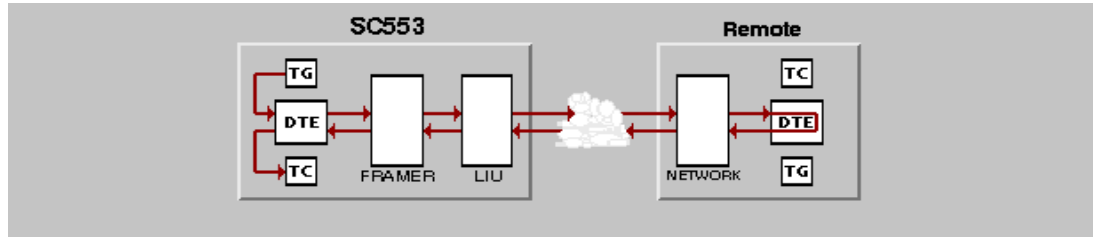
- **Self Test** - commands the local DSU to generate a channel-level test pattern and transmit it to the remote, and also to turn on its channel-level test pattern checker. Can be used in an end-to-end test to evaluate the local and remote DSUs, and the T1 link. The remote must be independently commanded to turn on channel-level test pattern generation and checking. Each DSU checks the test pattern transmitted to it by the other.



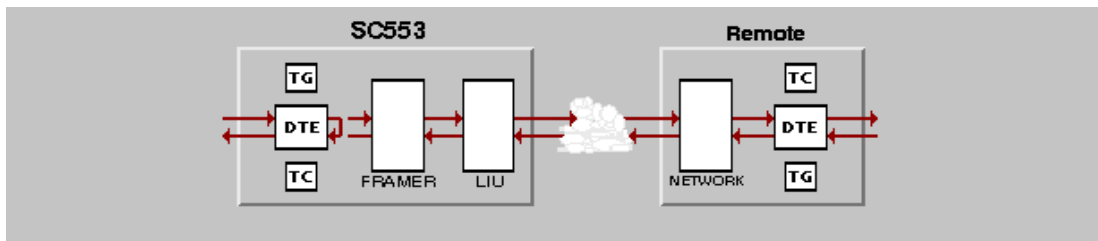
- **Local Loop with Self Test** – commands the DSU to turn on its channel-level test pattern generator and checker and to loop data back at the channel interface. Local Loopback with Self Test checks the channel interface circuitry isolated from both the DTE and the rest of the DSU. During this test the DSU clamps channel data transmitted to the T1 link.



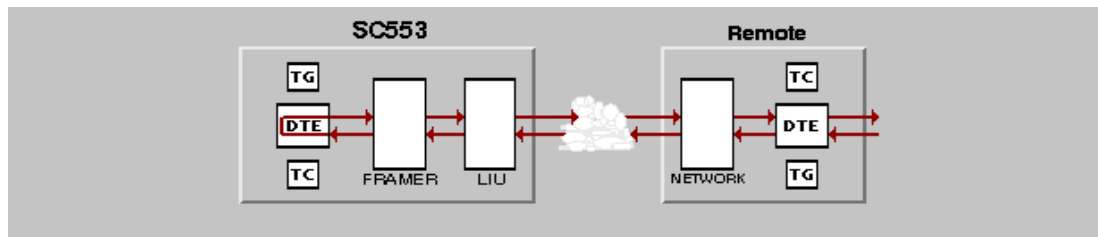
- Remote Data Loop with Self Test** – commands the DSU to transmit an in-band code that puts the remote DSU in Digital Loopback. The local DSU then turns on its channel-level test pattern generator and checker, and transmits its test pattern to the remote DSU which loops it back. The local DSU checks for errors in the test pattern it receives back. Evaluates local and remote units, and the T1 line.



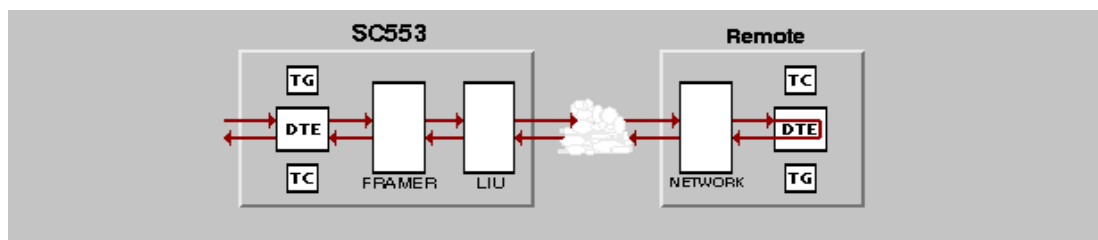
- Local Loop** – loops channel data that the local unit receives from its DTE back toward the DTE at the channel interface. Local Loop checks everything up to the channel interface. During this test the unit clamps channel data transmitted to the T1 link.



- Digital Loop** – loops channel data that the local unit receives from the network back toward the network at the channel interface.



- Remote Data Loop** – causes the local DSU to transmit an in-band code that commands a Digital loopback at the remote DSU. In order for a DSU to have its Digital Loopback controlled by in-band codes, it must have Respond to RDL enabled in its Channel Configuration screen.



Channel Test Instructions

Perform the following steps to carry out a Channel Test:

1. If you are going to perform Self Test or Digital Loop, make the necessary arrangements with the remote site. Arrangements may involve contacting remote-site personnel or SNMP control of the remote DSU. Actions you need to arrange can be loopback initiation (for use with Self Test) or test signal generation and checking (as part of an end-to-end Self Test, or in conjunction with Digital Loop).
2. Select the test you intend to perform by clicking on the check box to the left of its name.
If the selected test is not one that involves Self Test, go to step 4.
3. Select the Self Test Pattern by clicking on the check box to the left of its name.
4. Click on the Test Time input field and select how long you intend the test to run.
5. Click on the Start Test button. The data path display panel exhibits the path for the test you have selected, the Test Status field changes from Idle to Running, and the Time Remaining gauge begins to display its countdown.

If you are running a Self Test, the Reset Bit Errors and Insert Single Bit Error buttons are available while the test runs. The reset button returns the error count to zero. The insert button generates an error in the pattern in order to confirm transmission and reception. The Stop Test button is available during any test.

6. Upon completion of the selected Test Time the application displays results in the Test Results window.

Diagnostics History

You can view a record of tests performed during the current diagnostic session by selecting History from the Navigate menu in the Diagnostics window. The record appears as a listing in the Diagnostics History window (see *Figure 5-2*).

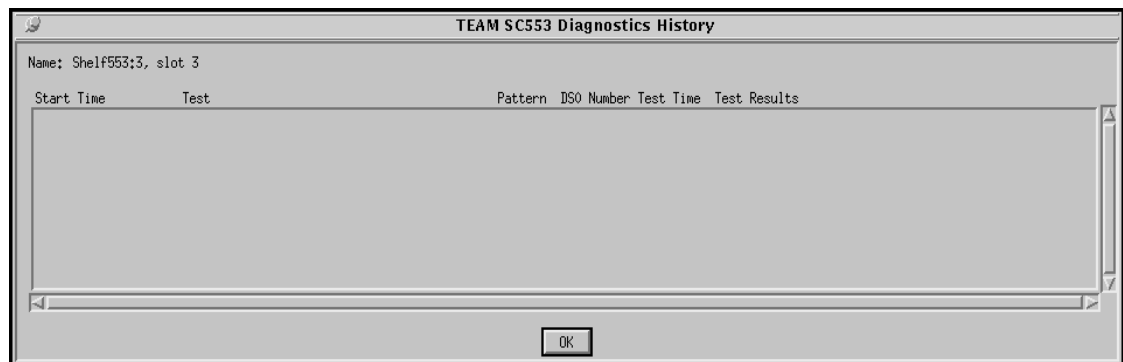


Figure 5-2 Diagnostics History

The Diagnostics History displays information in five columns:

Start Time – date and time test began

Test – name of the test

Pattern – test pattern used for the test; shows a dash (-) when internally generated pattern is not used

DS0 Number – identifies DS0 used for testing, valid only for DS0 tests

Test Time – duration of the test

Test Results – “Idle: *n* Errors” for a completed test with test pattern; “Not in loop [STOPPED]” for a completed loop test without test pattern

Test Results – displays “OK” for successfully completed loopback test without self test; appropriate combination of “*n* Bit Errors”, “No Sync”, “Bit Over Range” for self tests; “Remote Data did not loop” with or without further information for a failed Remote Loop test; *n* milliseconds or “Delay Over Range” for Circuit Delay test

To close the Diagnostics History window, click on either the OK button or the pushpin icon in the upper left corner of the window. During an on-going diagnostic session you can close and re-open the Diagnostics History window without loss of display data.

The application clears the Diagnostics History when you exit from the Diagnostics window.

Index

Alarm Detail Window	2-7	Maintenance	4-1
Alarms Reported	3-12	Map Window Menu Bar	2-1
Alarms	2-6	Miscellaneous Functions	2-24
Bursty Errored Seconds Display Screen	2-16	Network Options	3-10
Cascade Options	3-10	Note Pad	2-25
Channel Tests	5-11	Operations	2-1
Instructions	5-13	Performance Functions	2-5
Common Window Features	2-5	Real Time Statistics Window	2-6
Configuration	3-1	Reports	2-10
Alarms Reported Window	3-13	SC 553 DSU	1-1
CSU Options Window	3-9	SC 553 Front Panel	2-2
DSU Options Window	3-5	SCM Card	1-1
Main Window	3-4	Severely Errored Seconds Display Screen	2-15
System Options Window	3-15	SpectraComm Manager Card	1-1
Configuration Functions	2-23	Statistics Polling	2-5
Configuration Option Values	3-2	Status Window	2-9
Configuration Procedure	3-1	System Options	3-15
Configuration Templates	3-1	T1 Tests	5-3
Controlled Slip Seconds Display Screen	2-19	Instructions	5-7
CRC Errors Display Screen	2-18	Timing Options	3-12
CSU Options	3-9	Unavailable Seconds Display Screen	2-17
Current Interval Error Reports	2-22		
Window	2-23		
Diagnostics	5-1		
Diagnostics History	5-13		
Diagnostics Window	5-1		
DS0 Tests	5-8		
Instructions	5-10		
DSU Options	3-5		
Error Reports Totals Screen	2-13		
Error Reports Window	2-10		
Errored Seconds Display Screen	2-14		
Errors Summary Display Screen	2-21		
Front Panel Poll Rate	2-25		
Information Window	2-24		
Loss of Frame Count Display Screen	2-20		
Main Configuration Window	3-2		
Display	3-4		



General DataComm