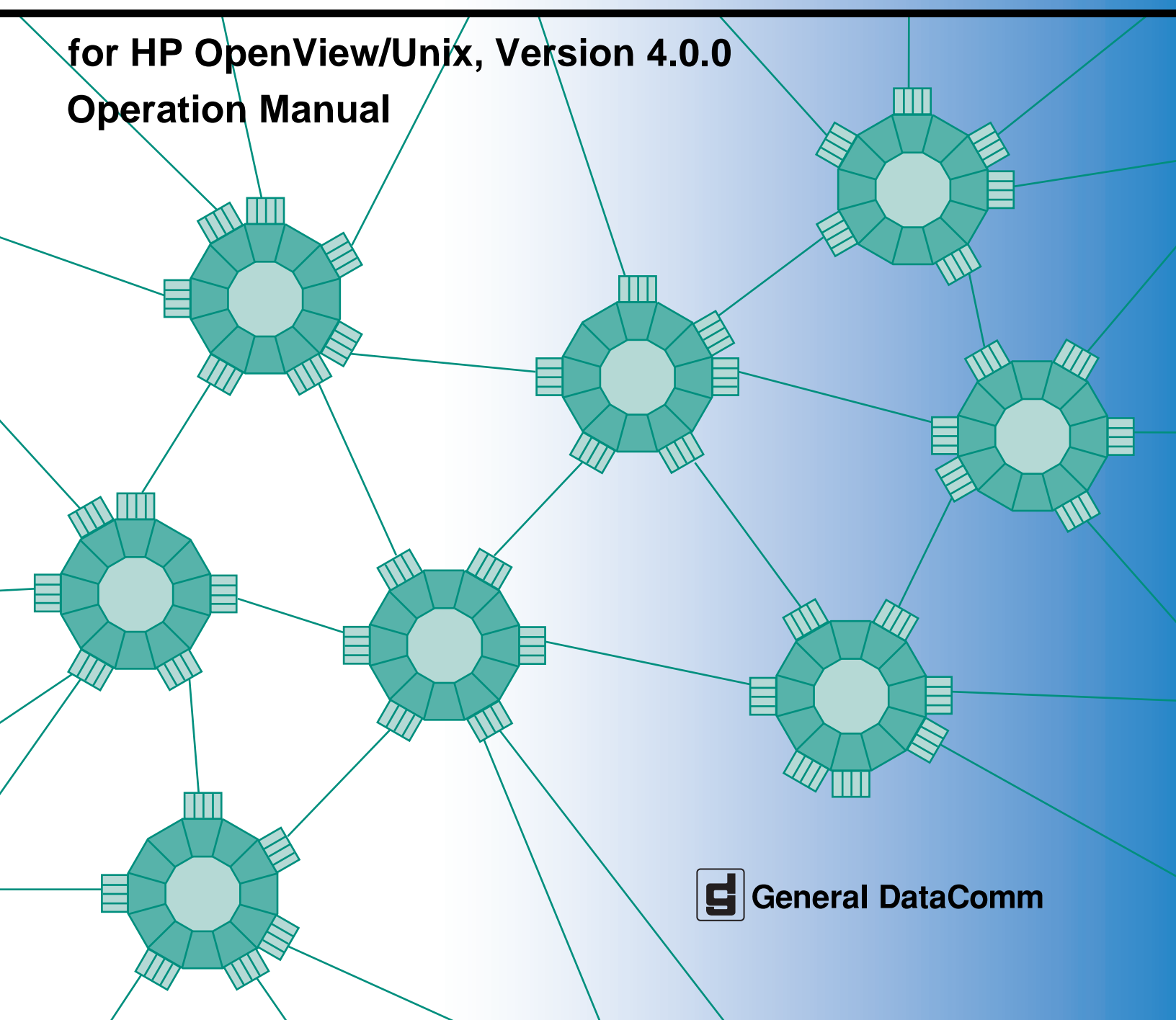


# **TEAM<sup>®</sup> 5520**

**for HP OpenView/Unix, Version 4.0.0  
Operation Manual**





058R727-V400  
Issue 1  
July 2001

# ***TEAM<sup>®</sup> 5520***

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Operation Manual**

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## Documentation

### Revision History

Issue Number	Date	Description of Change
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### Related Publications

\* For publications numbers, **REV** is the hardware manual revision (for example, -000, -001, etc.). **VREF** (if listed) is the software revision (for example, -V120 would read: Version 1.2) and corresponds to the most current revision. In addition to the hardware and software manuals, always read the software Release Notes supplied with your product.

Publication Name	Publication Number*
TEAM Core Operation Manual	058R720-VREF
TEAM 5001 Operation Manual	058R726-VREF
TEAM Software Server Configuration	058R723-VREF
SpectraComm 5520 Data Set Emulator Installation & Operation	076R108-000
TEAM 521A Operation	076R154-VREF

# Preface

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## Scope

This manual describes how to install and operate the GDC TEAM 5520 software application. The information contained in this manual has been carefully checked and is believed to be entirely reliable. However, as General DataComm improves the reliability, function, and design of their products, it is possible that information may not be current. Contact General DataComm if you require updated information for this or any other General DataComm product.

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## Manual Organization

The online (web-based) manual uses active areas which allow you to navigate through portions of the manual by clicking on any *blue* text.

This manual is divided into the following chapters:

- Chapter 1, Introduction*
- Chapter 2, Operations*
- Chapter 3, Configuration*
- Chapter 4, Maintenance*
- Chapter 5, Diagnostics*
- Chapter 6, NMS 520*
- Chapter 7, NMS 510*

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# Chapter 1: Introduction

---

## Overview

This manual describes the General DataComm TEAM 5520 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 5520 Unix Application, which runs on either a Sun workstation or an HP platform, is 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 5520 Data Set Emulator (DSE) cards, which are part of a SpectraComm 5000 (SC 5000) system.

The TEAM 5520 applications allow you to:

- Configure SC 5520 DSEs
- Configure NMS 510/520 DSUs, SC 521A DSUs, SC 521A/S DSUs installed as remote units communicating with the SC 5520 DSE
- Monitor the operation of the above DSEs and DSUs via a display of the unit's Front Panel status LED indicators, and through detailed Alarms and DTE Interface status displays.
- Diagnose suspected problems using local and remote loops (with or without an internally generated test pattern).

---

**Note** For information on SC 5520 operation with the NMS DSUs, refer to Chapter 6, NMS 520 and to Chapter 7, NMS 510. For information on SC 5520 operation with the SC 521A or the SC521A/S, refer to the TEAM 521A manual and its related release notes.

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### SC 5000 System Overview

SC 5000 hardware consists of three types of components: a Data Set Emulator (DSE), a Line Terminating Unit (LTU), and a SpectraComm Manager Card (SCM), described below.

#### Data Set Emulator (DSE)

The DSE performs DTE interface functions in a manner that emulates the operation of a traditional data set directly connected to a telephone line. For example, the SC 5520 DSE appears to its DTE and to its remote DSU to be a DATAPHONE Digital Service (DDS) DSU. Rather than being connected directly to a Telco line, however, the SC 5520 DSE transmits and receives data through a data highway incorporated in the backplane of the SpectraComm shelf. The data highway links the DSE to an LTU.

#### Line Terminating Unit (LTU)

The LTU performs network interface and channel grooming functions for a group of DSEs. An SC 5001 LTU connects to a T1 line and an SC 5002 LTU connects to a E1 line. Each transmits the combined data traffic of its group of DSEs to a Telco switching site. A T1 line provides 24 DS0s for that purpose; an E1 line provides 30 DS0s for data, with two others used for network signaling and framing. On the line, data for each DSE occupies one or more DS0s. Telco switching equipment routes the DS0s to their individual remote destinations. In this way a single connection between an SC 5000 site and a Telco switching site can support connections with multiple remote sites, up to 24 with a T1 line or up to 30 with an E1 line depending on how many DS0s each DSE requires. As a DDS device, an SC 5520 DSE can employ one DS0. Each type of LTU is managed by its own TEAM application.

#### SpectraComm Manager (SCM)

The SCM acts as the SNMP agent through which TEAM management applications communicate with SC 5000 components. 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 SC 5000 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.

### SC 5520 DSE

An SC 5520 DSE performs the DTE interface functions of a DDS DSU. It can transmit to and receive from other DDS-compatible equipment. It can support remote management of GDC NMS 520, NMS 510, SC 521A and SC521A/S.

## TEAM 5520 Applications

The applications that make up the TEAM 5520 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 Shelf Map window when an SC 5520 DSE is selected in the window
- From the Select button on the SC 5520 Front Panel display

SC 5520 Front Panel displays current status information on the SC 5520 DSE 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 5520 manager. Front Panel is a selection on the Performance menu in the Shelf Map window menu bar. You can also launch the Front Panel display from that window by double clicking on the shelf icon of the DSE you need to work with.

The following TEAM 5520 applications appear on both the Map window and Select button menus:

- Performance:
  - Alarm Detail – furnishes detailed information about alarm state changes
  - DTE Status – displays information on the status of signals in the DTE interface
- Configuration:
  - Configure – enables you to configure a selected SC 5520 DSE
  - Maintenance – enables you to set device specific attributes that are not set as configuration options
- Fault:
  - Diagnose – enables you to run diagnostic tests on a selected SC 5520 DSE

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

Information – displays revision level information on the TEAM SC 5520 software; can also be accessed by clicking on the GDC logo in the Front Panel display.

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.



# Chapter 2: Operations

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## Overview

The TEAM 5520 controller application consists of a group of smaller applications, each devoted to a specific aspect of controlling or monitoring the SC 5520 Data Set Emulator. There are two means of access to the TEAM 5520 applications: the shelf map menu bar, and the Front Panel window Select button menus. This chapter describes both.

There are two applications in the Performance category: Alarms displays alarm information in a read-only window; DTE Status displays the status of signals in the DTE interface. This chapter fully describes both applications.

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

The Diagnostic application supports a read/write window by which you can command the test functions of the DSE and view test results. This chapter describes how to access the Diagnostic application. Instructions for using the application appear in a subsequent chapter.

Three items appear on the Shelf Map menu bar as Misc (miscellaneous): Information, which displays version and copyright information on the TEAM 5520 application software; Front Panel Poll Rate, which affects the Front Panel display; and Note Pad. This chapter describes all three. None of these three items appear in the Front Panel Select button menu. Information can be accessed from the Front Panel by clicking the mouse on the GDC logo in that display.

## Map Window Menu Bar Access

The table on the following page illustrates how the TEAM 5520 application functions are arranged on the menu bar at the top of the Shelf Map window. The table shows only the menu selections for the TEAM 5520 applications. The map window menus include selections in addition to those that apply to TEAM 5520 because the window also provides access to other applications.

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

Menu Bar	Menu Selections
Performance	Front Panel
	Alarm Detail...
	DTE Status...
Configuration	Configure...
	Maintenance...
Fault	Diagnose...
Misc	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 the Misc category.

## Common Window Features

Each TEAM 5520 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 5520 application running in the window; for example TEAM 5520 Main Configuration or TEAM 5520 Diagnostics
- Menu bar – contains the File and Help menus. File menu contains the Exit command, used to dismiss the window as well as commands specific to 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 5520 the application is currently connected to by displaying the user-configured shelf name, followed by the DSE slot number, and the user-configured device name.

Descriptions in this manual of the individual TEAM 5520 applications identify window features that are specific to the applications, such as selections in the Menu bar and menus, and buttons.



## SC 5520 DSE Front Panel

The SC 5520 Front Panel display window, show below, provides a graphical interface to a selected SC 5520 DSE. From the Shelf Map window you can launch a Front Panel two ways:

- select the unit you intend to work with, then select Front Panel from the Performance menu in the Shelf Map window menu bar
- double click the mouse on the slot icon for the unit you intend to work with.

The application responds by displaying a window that depicts the front panel of the SC 5520 DSE unit. The LEDs shown in the display reflect the states of the actual indicators on the physical unit:



INS – In Service

ON – Power On

SD – Send Data indicates when lit that the DSE is transmitting data

RD – Receive Data indicates when lit that the DSE is receiving data from the remote DSU

RS – Request To Send indicates when lit that the DTE has data to transmit

CO – Carrier On indicates when lit that the DSE is receiving a signal

TMG – Timing is lit when the DSE is designated as the 8 kHz clock source for its shelf

RSP – NMS Response

TM – Test Mode, is lit red while the DSE performs a diagnostic test

ALM – Alarm, indicates by its color, which matches that of the SC 5520 Shelf submap icon for the unit, that the DSE has detected an alarm condition.

ST – Self Test is lit while the internal test pattern generator/checker is active.

LT – Local Test is lit while the DSE is in the Local Loopback test condition.

RL – Remote Loop is lit while the DSE is performing a remote loopback test with the remote DSU.

DL – Digital Loop is lit while the DSE is performing a digital loopback to direct data back to the remote DSU.

The Front Panel screen displays the current operating speed of the DSE.

The application polls the DSE to keep the states of the LEDs in the Front Panel display current. The time of the most recent poll appears at the bottom of the Front Panel display, to the left of the Help button. 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 5520 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	Second Level Selections
Performance	Alarm Detail...
	DTE Status...
Configuration	Configure...
	Maintenance...
Fault	Diagnose...
Demand Poll	
Auto Poll (*)	15 seconds
	30 seconds
	60 seconds
	Disable
Exit	* Displays Off or poll interval

The two Poll selections in the Select button menu determine when the application collects new information from the DSE 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.

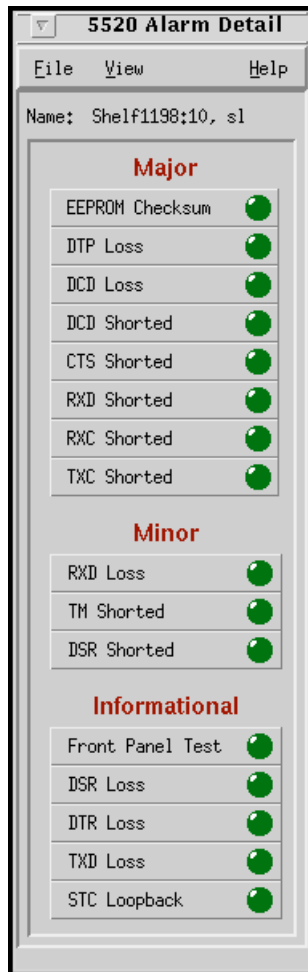
The menu selection Exit dismisses the Front Panel window when you click on it.

## Alarms Application

You can launch the TEAM 5520 Alarm application from the Shelf Map Performance Menu or from the front panel menu. The application displays the read-only Alarm Detail window for the selected DSE (See [Figure 2-1](#)).

The TEAM 5520 application gets alarm indications from the DSE in two ways:

- By receiving traps that the SCM sends automatically in response to alarm conditions at the DSE
- By polling the SCM for changes in alarm conditions at the DSE.



The Alarm Detail window displays alarms grouped into three categories:

- Major
- Minor
- Informational

**Figure 2-1** Alarm Detail Window

### Major Alarms

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

DTP Loss – indicates loss of power at the DTE

DCD Loss – indicates loss of incoming signal

DCD Shorted – indicates Data Carrier Detect is shorted to ground or to another output

CTS Shorted – indicates Clear To Send is shorted to ground or to another output

RXD Shorted – indicates Receive Data is shorted to ground or to another output

RXC Shorted – indicates Receive Clock is shorted to ground or to another output

TXC Shorted – indicates Transmit Clock is shorted to ground or to another output

### Minor Alarms

RXD Loss – indicates loss of Receive Data

TM Shorted – indicates Test Mode signal is shorted to ground or to another output

DSR Shorted – indicates Data Set Ready is shorted to ground or to another output

### Informational Alarms

Front Panel Test – indicates the DSE has been commanded into a test by means of its front panel switches

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

DTR Loss – indicates the DSE is not receiving Data Terminal Ready from the DTE

TXD Loss – indicates loss of Transmit Data

STC Loopback – indicates the DSE has been commanded into a test by the Telco Serving Test Center (STC)

### Alarm Detail Window Menus

The Alarm Detail window has a File menu and a View menu in its menu bar.

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

The View menu consists of three selections: Major, Minor, and Informational, each with a check box beside it. To remove an alarm category from the window display, click on its check box so that it is unchecked. Clicking a box so that it is checked restores the corresponding category to the display.

## DTE Status Application

You can launch the TEAM 5520 DTE Status application from the Shelf Map Performance Menu or from the front panel menu. The application displays the read-only Status window for the selected DSE (See [Figure 2-2](#)). The window displays indicators for the states of the EIA signals at the DTE interface. Dark green indicates Off, light green indicates On, and light green with a superimposed two-headed arrow indicates transitions.

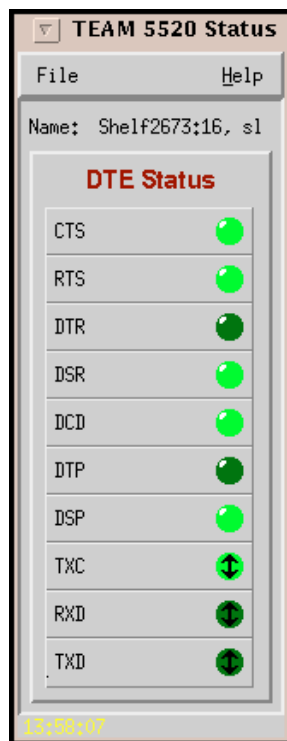
### Status Window Menu

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 2-2** DTE Status Window

## Configuration Application

You can launch the TEAM 5520 Configuration application from the Shelf Map Configuration Menu or from the front panel menu.

When you launch the application, it initially displays the read-only TEAM 5520 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 DSE
- Load Template, by which you can recall a stored configuration template that you can then save to the DSE 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 DSE operation:

- System Options
- Network Options
- DTE Options
- Diagnostic Options
- Alarms Reported
- Add Remotes

The TEAM 5520 Configuration application is fully described in *Chapter 3, Configuration*.

## Maintenance Application

You can launch the TEAM 5520 Maintenance application from the Shelf Map Configuration Menu or from the front panel menu.

The application displays one read/write window by which you can control some aspects of DSE operation that fall outside the scope of the Configure application. The TEAM 5520 Maintenance application is fully described in *Chapter 4, Maintenance*.

## Diagnostics

You can launch the TEAM 5520 Diagnostics application from the Shelf 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 the DSE. The TEAM 5520 Diagnostics application is fully described in *Chapter 5, Diagnostics*.

## Miscellaneous Functions

### Information

You can launch the TEAM 5520 Information window from the Shelf Map Misc menu or by double clicking on the GDC logo in the Front Panel display.

Information displays a 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.

### Note Pad

You can launch the Note Pad application from the Shelf Map Misc Menu. The application opens a text editor for keeping records on the system.

### Front Panel Poll Rate

You can open the Front Panel Poll Rate window (See [Figure 2-3](#)) from the Shelf Map 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

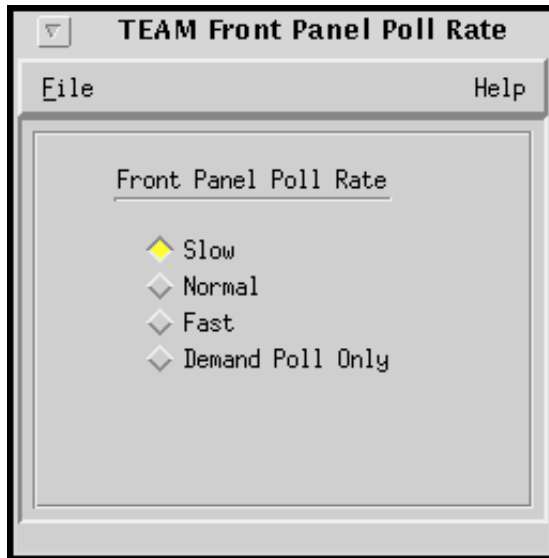
Demand Poll Only

### Front Panel Poll Rate Procedure

To set the desired polling rate, first click on the appropriate checkbox and then select Save to File from the File menu. The precise polling frequency that results 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.

To dismiss the window, select Exit from the File menu.



**Figure 2-3** Front Panel Poll Rate Window



# Chapter 3: Configuration

---

## Configuration Overview

The TEAM 5520 Configuration application enables you to set all the options in the SC 5520 Data Set Emulator through a convenient group of configuration windows.

You can start the TEAM 5520 Configuration application by either of two methods:

- Select a DSE symbol on the Shelf Map, then select the Configure option from the Configuration menu.
- Click on the Select button of the Front Panel display, then click on Configuration and select Configure from the resulting menu.

## Templates

You can store configuration settings as templates on the workstation that runs the TEAM 5520 application. A template stores a configuration for the DSE options, and you can store as many templates as you need.

To load configuration settings from a template into the DSE 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 DSE.

## 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 Shelf Map or from the Front Panel display. The application reads the current Main configuration from the DSE 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 DSE 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 DSE. All changes to all configuration windows that have not previously been saved to a profile or a template are lost when you select Refresh.

2. To edit the current configuration of the DSE, 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 DSE 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 the **OK** button.

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 DSE, or select **Save to Template** to save it as a template in the workstation.
6. When you select Save to Unit, the changed configuration for the DSE becomes the current configuration.
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 SC 5520 DSE.

### Configuration Option Values

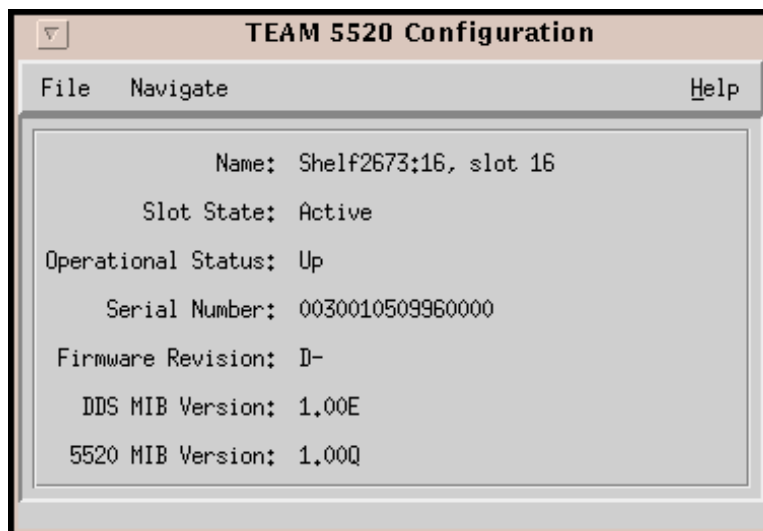
When you click the mouse on the entry field for a configuration item, a window opens containing all the values that are permitted for that configuration item. Hold down the mouse button until the highlight is on the value you intend to configure, then release the button. The newly selected value appears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

## Main Configuration Window

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

- Name: displays shelf and slot identification for the DSE
- Slot State: displays Active or Inactive
- Operational Status: displays Up or Down
- Serial Number: displays the serial number of the DSE
- Firmware Revision: displays the revision level of the DSE operating code
- DDS MIB Version: displays the revision level of the MIB files that enable SNMP control
- 5520 MIB Version: displays the revision level of the MIB files that enable SNMP control

The TEAM 5520 application relies on the SCM and SC 5520 DSE to indicate when a configuration problem has caused an SNMP set error.



**Figure 3-1** Main Configuration Window

## Main Configuration Menus

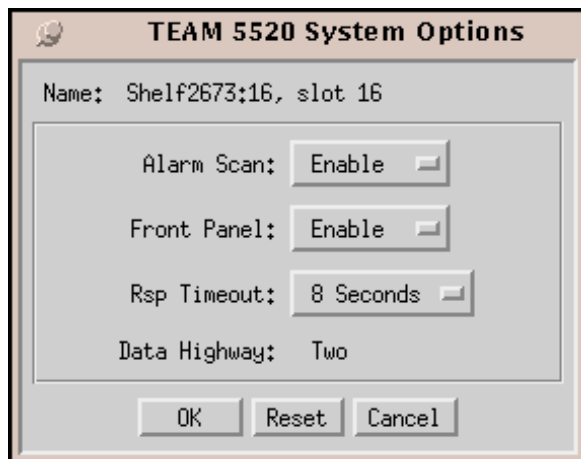
The Main Configuration window title bar displays the application name, TEAM 5520 Configuration. The main body of the window contains read-only items that identify the DSE and provide information about its operations.

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 DSE. 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 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 to Template	dialog window
	Exit	
	Navigate	System Options...
Network Options...		
DTE Options...		
Diagnostic Options...		
Alarms Reported...		
Add Remotes...		
All Screens...		

## System Options

The System Options configuration window contains three configuration options and one read-only display field.



**Figure 3-2** System Options Configuration Window

**Alarm Scan** – permits you to enable or inhibit (disable) the alarm scan.

Options:

*Enable*

*Inhibit*

**Front Panel** – permits you to disable the switches on the front panel of the DSE as protection against any inadvertent interruption of its operation.

Options:

*Enable* – DSE front panel switches are operational.

*Inhibit* – DSE front panel switches are disabled.

**Rsp Timeout** – selects the length of time the SCM waits for a response from the unit before it declares a No Response condition.

Options:

*2, 4, 6, 8 seconds*

**Data Highway** – read only field that identifies the backplane data highway the DSE is using to exchange data with its LTU. The selection is made by the Shelf Configuration application that is part of the TEAM Core software.

Options:

*One*

*Two*

*Three*

*Four*

### Network Interface

The Network Interface configuration window contains two groups of options grouped under the headings Network Parameters and Circuit Parameters.

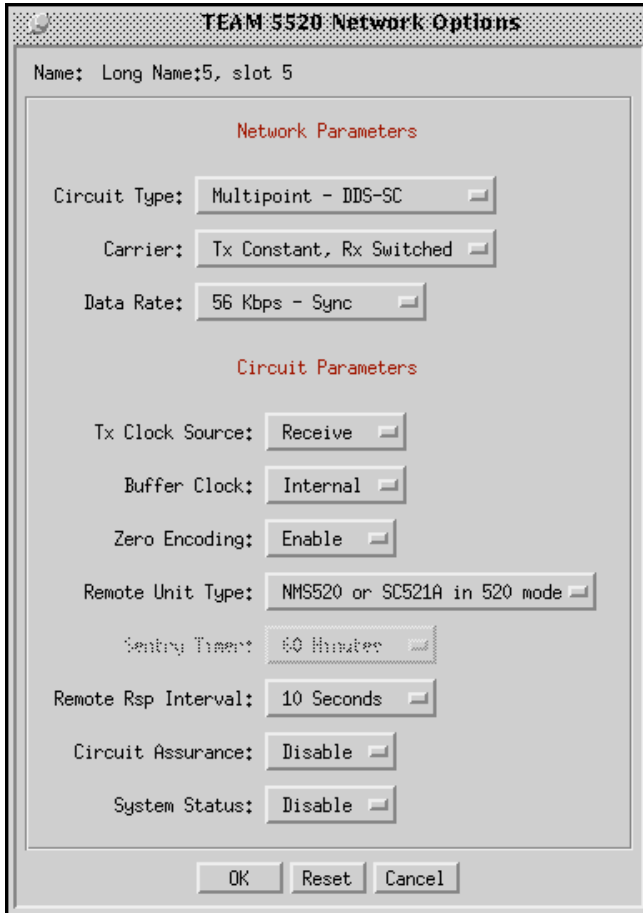


Figure 3-3 Network Options Configuration Window

### Network Parameters

**Circuit Type** – selects the type of circuit over which the DSE communicates with its remote unit(s).

Options:

*Pt to Pt - Clear Channel* – specifies a point-to-point 64 kbps circuit; when this is selected the Data Rate option is forced to this value and cannot be changed

*Pt to Pt - DDS-I* – specifies a point-to-point DDS-I circuit at any Data Rate up to 56 kbps

*Pt to Pt - DDS-SC* – specifies a point-to-point DDS-SC circuit at any Data Rate up to 56 kbps

*Multipoint - DDS-I* – specifies a multi-point DDS-I circuit at any Data Rate up to 56 kbps

*Multipoint - DDS-SC* – specifies a multi-point DDS-SC circuit at any Data Rate up to 56 kbps

**Carrier** – selects the combination of transmit and receive carrier modes (constant/switched) to be used by the DSE.

Options:

*Tx Constant, Rx Constant* – for use on a point-to-point circuit

*Tx Constant, Rx Switched* – for use when the DSE is the master unit on a multi-point circuit

*Tx Switched, Rx Constant* – for use when the DSE is a remote unit on a multi-point circuit

*Tx Switched, Rx Switched* – for use when required by specialized applications

**Data Rate** – selects the data rate and mode (synchronous/asynchronous) to be used by the DSE.

Options:

*2.4 Kbps - Async*

*2.4 Kbps - Sync*

*4.8 Kbps - Async*

*4.8 Kbps - Sync*

*9.6 Kbps - Async*

*9.6 Kbps - Sync*

*19.2 Kbps - Async*

*19.2 Kbps - Sync*

*56 Kbps - Sync*

*64 Kbps - Sync* – this value is displayed when the Data Rate option is forced by selection of Pt to Pt - Clear Channel in the Circuit Type option

### Circuit Parameters

**Tx Clock Source** – selects the source of transmit timing for the DSE.

Options:

*Receive* – selects transmit timing based on receive data timing

*Internal* – selects transmit timing provided by the DSE internal clock

*External* – selects transmit timing provided by the DTE; the Buffer Clock option is forced to External and cannot be changed when this is selected

**Buffer Clock** – selects the source of timing for the buffer between the DSE and its DTE.

Options:

*Internal* – selects timing provided by the DSE internal clock

*External* – selects timing provided by the DTE; when External is selected for Tx Clock Source this selection is forced and cannot be changed

**Zero Encoding** – selects Zero Encoding. This feature can be used in point-to-point 56 kbps DDS-SC applications to enable the DTE to transmit all spaces (zeros) without violating the ones density requirements of DDS. Zero Encoding is a GDC proprietary feature, and can only be used when communicating with a compatible GDC DSU. The feature must be enabled at both units.

Options:

*Enable* – DSE prevents the all space condition at the expense of reduced secondary channel bandwidth

*Disable* – DSE does not prevent the all space condition

**Remote Unit Type** – specifies the type of remote DSU (NMS 520 or NMS 510) with which the DSE is to be used. This option is only available to be set when the Circuit Type option in the Network Options configuration window is selected as Multipoint and no remote units have yet been added by the Add Remote application. In all other circumstances the function of this option is overridden and the option is grayed out.

Options:

*NMS 520 or SC521A in 520 mode* – when the remote DSUs are specified to be NMS 520 or SC521A units in 520 mode, the options Sentry Timer and Rmt Rsp Interval are available for configuration.

*NMS 510 or SC521A in 510 mode* – when the remote DSUs are specified to be NMS 510 or SC521A units in 510 mode the options Sentry Timer and Rmt Rsp Interval are grayed out.



**Sentry Timer** – selects the minimum time interval permitted between alarm reports from a remote NMS 520 DSU in a point-to-point link. This option is grayed out when a multipoint Circuit Type is selected.

Options:

*5 Minutes to 125 Minutes* – in five minute increments

**Rmt Rsp Interval** – selects the minimum time interval permitted between alarm reports from a remote NMS 520 DSU in a multi-point link. This option is grayed out when a point-to-point Circuit Type is selected.

---

**Note** *All remote units on a multi-point link must be set for the same Remote Response Interval value.*

---

Options:

*Disable*

*10 Seconds to 120 Seconds* – in ten second increments

**Circuit Assurance** – when this option is enabled the DSE clamps Clear To Send when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code.

Options:

*Disable*

*Enable*

**System Status** – when this option is enabled the DSE clamps Data Set Ready when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code.

Options:

*Disable*

*Enable*

## DTE Options

The DTE Options configuration window contains three groups of options under the headings Interface Parameters, Control Parameters, and Async Parameters.



Figure 3-4 DTE Interface Configuration Window

### Interface Parameters

**Interface Type** – specifies the DTE port type.

Options:

*RS232* – EIA/TIA-232-E interface

*V.35* – ITU-T V.35 interface

*Auto* – the DSE automatically senses the interface type being used by the DTE

**Interface Adapter** – read-only field displays whether or not the DSE has a Data Rate Adapter (DRA) card installed.

Options:

*None*

*Installed*

### Control Parameters

**AAS** – selects whether or not the DSE provides Automatic Anti-Streaming protection, and the time limit it enforces when the feature is enabled. This option is only valid and available to be configured when the Circuit Type option in the Network Options configuration window is set to Multipoint.

Options:

*Disable*

*5 Seconds*

*10 Seconds*

*30 Seconds*

*45 Seconds*

**Constant DSR** – selects the DSE to output a constant or switched Data Set Ready signal to its DTE.

Options:

*Disable – switched DSR signal controlled by DTR*

*Enable – constant DSR signal*

**CTS Delay** – selects the delay (if any) between the DSE receiving Request To Send from the DTE and returning Clear To Send to the DTE. This option is forced to CTS On and grayed out when Constant Tx Carrier is selected in the Carrier option of the Network Options window.

Options:

*CTS ON* – no delay; grayed out when a multi-point link is selected as the Circuit Type

*Fixed 3 Char* – equivalent to three character times

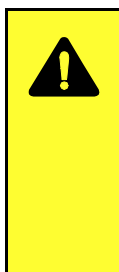
*0 msec*

*30 msec*

*60 msec*

*90 msec*

**HDLC Invert** – selects whether or not the DSE uses inverted channel data from the DTE. Data inversion is used primarily with DDS-SC 56 kbps circuits, to enhance data quality in a network that does not provide B8ZS coding.



### CAUTION

*When changing the setting of this option, set only this option and save the change to the unit. Do not combine it with any other configuration changes.*

*The option must be set the same at both ends of the link.*

*You must make changes at the remote DSU first, before you change the option setting at the DSE.*

*Changing the option at the remote causes loss of communication between the remote and master units until you change the option setting at the master.*

Options:

*Disable* – normal data

*Enable* – inverted data

### Async Parameters

The Async Parameters options are grayed out when a synchronous Data Rate is selected in the Network Interface configuration.

**Character Size** – selects the number of bits per asynchronous character, including start and stop bits.

Options:

*11 Bits*

*10 Bits*

*9 Bits*

*8 Bits*

**Over Speed** – selects the percentage above its configured normal operating rate at which the DSE can accommodate receive data. It performs the over speed compensation by shaving stop bits.

Options:

*1%*

*2.3%*

**Suppression** – determines what actions the DSE takes concerning transmit and receive End of Text (EOT).

Options:

*Disable* – the DSE does not insert EOT at the end of transmissions, and does not delete it from the end of received signals

*Rx EOT* – the DSE deletes EOT from the end of received signals; it does not insert EOT at the end of transmissions

*Tx EOT* – the DSE inserts EOT at the end of transmissions; it does not delete it from the end of received signals

*Rx + Tx EOT* – the DSE inserts EOT at the end of transmissions, and deletes it from the end of received signals

**Rate Adaption** – specifies the DTE interface operating rate when it is below that of the DDS circuit. This option is only valid when the Data Rate option in the Network Options window is selected for 2.4 Kbps - Async; it is grayed out when any other rate is selected.

Options:

*Disable*

*1200*

*600*

*1800 to 2400*

## Diagnostic Options

The Diagnostic Options configuration window contains two groups of options under the headings DTE Equipment and Network Parameters.

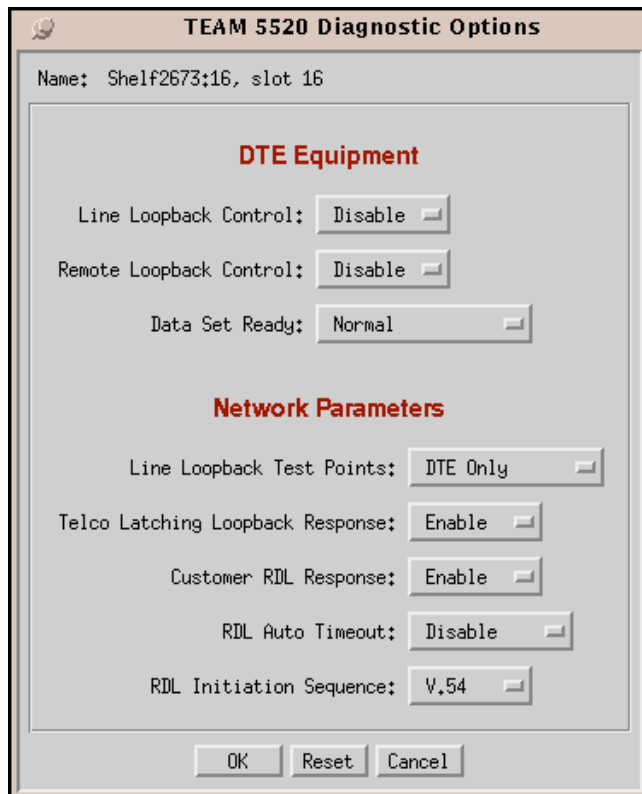


Figure 3-5 Diagnostic Options Configuration Window

### DTE Equipment

**Line Loopback Control** – selects whether or not the DTE can command the DSE into a Line Loopback (local) test by means of a signal at the interface port on EIA pin 18.

Options:

*Enable*

*Disable*

**Remote Loopback Control** – selects whether or not the DTE can command the DSE into a Remote Loopback test by means of a signal at the interface port on EIA pin 21.

Options:

*Enable*

*Disable*

**Data Set Ready** – selects how the DSE controls the DSR output to the DTE during local loopback (LT) test modes.

Options:

*Off During LT Test*

*Normal* – DSR operates in the same way that it is optioned to function during data mode operations

### Network Parameters

**Line Loopback Test Points** – selects whether a Line Loopback command causes the DSE only to loop transmit data back to the DTE, or also to loop receive data back to the network.

Options:

*Network & DTE* – Line Loopback command causes DSE to loop data in both directions

*DTE Only* – Line Loopback command causes DSE to loop data back to DTE only

**Telco Latching Loopback Response** – selects whether or not the DSE accepts the latching-type DSU Loopback command code from a Telco Serving Test Center (STC). The latching-type command code places the unit into the test condition, which continues until a second command code is sent by the STC.

The DSE always accepts the non-latching DSU loopback command code, which places the unit in the test condition only as long as the code continues to be received.

Options:

*Enable* – DSE accepts latching-type DSU Loopback command code

*Disable* – DSE does not accept latching-type DSU Loopback command code

**Customer RDL Response** – selects whether or not the DSE accepts a remote loopback command from its remote DSU.

Options:

*Enable* – the DSE accepts the remote loopback command selected by the RDL Initiation Sequence option

*Disable* – the DSE does not accept a remote loopback command

**RDL Auto Timeout** – selects whether or not the DSE ends remote digital loop automatically based on a timeout. This option is grayed out when Customer RDL Response is set to Disable.

Options:

*10 Minutes* – DSE terminates remote digital loop after ten minutes without need for further operator action. You can end the test manually before the timeout.

*Disable* – remote digital loop continues until terminated by operator action.

**RDL initiation Sequence** – selects the remote loopback command the DSE accepts from its remote DSU. This option is grayed out when Customer RDL Response is set to Disable.

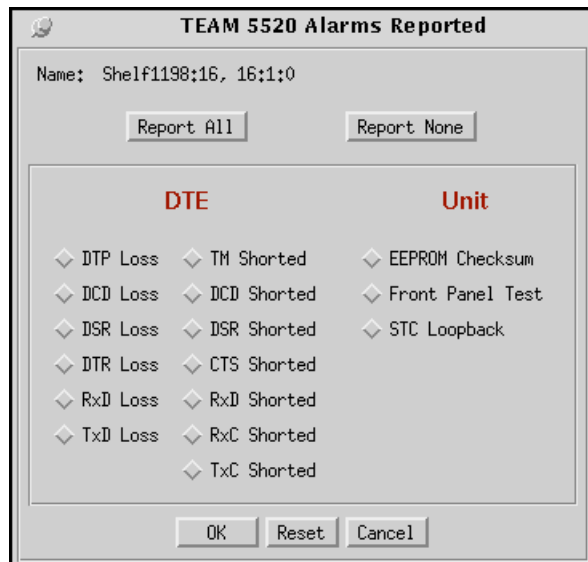
Options:

*V.54*

*PN 127*

## Alarms Reported

The Alarms Reported configuration window ([Figure 3-6](#)) lets you configure which alarm conditions are to be reported for the DSE and which are not.



**Figure 3-6** Alarms Reported Configuration Window

### Buttons and Option Selection

Each of the alarm options in the Alarms Reported configuration window has a small selection field located to its left. You can select or de-select individual alarm options by simply clicking the mouse button on the appropriate selection fields. When an option is selected for its alarm to be reported, its selection field is highlighted. The selection fields next to alarm options that are not to be reported are not highlighted.

The Alarms Reported configuration window has two buttons positioned above the option fields: Report All and Report None:

- Click on Report All to highlight all the alarm option selection fields.
- Click on Report None to remove the highlight from all the alarm option selection fields.

After clicking Report All or Report None you can then change the state of individual fields as needed.

### Alarm Options – DTE

*DTP Loss* – alarm indicating loss of Data Terminal Power

*DCD Loss* – alarm indicating loss of Data Carrier Detect

*DSR Loss* – alarm indicating loss of Data Set Ready

*DTR Loss* – alarm indicating loss of Data Terminal Ready

*RxD Loss* – alarm indicating no receive data from the remote DSU

*TxD Loss* – alarm indicating no transmit data from the DTE

## Configuration

*TM Shorted* – alarm indicating a short circuit on the Test Mode interface lead

*DCD Shorted* – alarm indicating a short circuit on the Data Carrier Detect interface lead

*DSR Shorted* – alarm indicating a short circuit on the Data Set Ready interface lead

*CTS Shorted* – alarm indicating a short circuit on the Clear To Send interface lead

*RxD Shorted* – alarm indicating a short circuit on the Receive Data interface lead

*RxC Shorted* – alarm indicating a short circuit on the Receive Timing interface lead

*TxC Shorted* – alarm indicating a short circuit on the Transmit Timing interface lead

### Alarm Options – Unit

*EEPROM Checksum* – Configuration Checksum error alarm

*Front Panel Test* – alarm indicating the DSE has been commanded into a test mode by means of its front panel switches

*STC Loopback* – alarm indicating the DSE has been commanded into a test mode by the Telco Serving Test Center (STC)

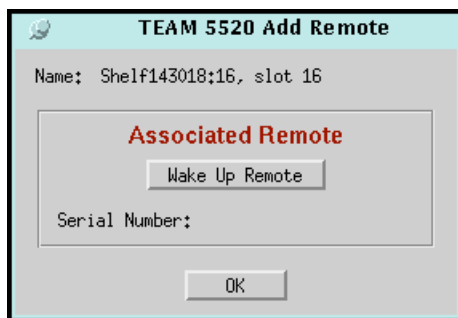


## Associated Remote

**Note** *If you have an Add Remote window open when you change the setting of the Circuit Type option, the application automatically closes the Add Remote window.*

### Add Remote, Point-to-Point Circuit

The window is shown in [Figure 3-7](#) as it appears when the DSE is configured for use in a point-to-point circuit.



**Figure 3-7** Add Remote Window (Point-to-Point Circuit)

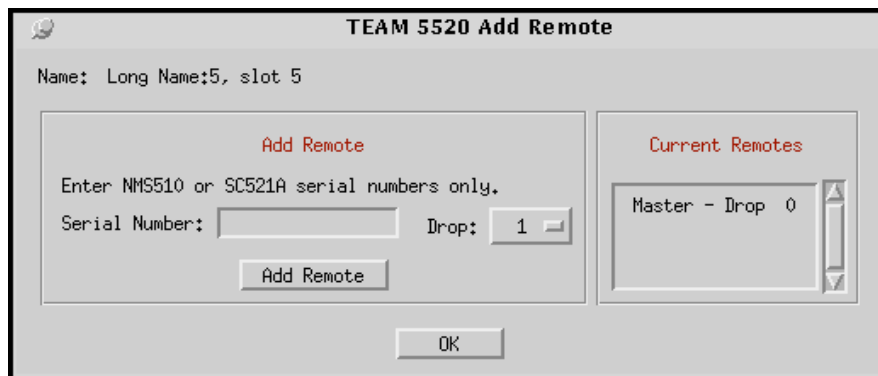
Perform the following procedure to add the remote DSU in a point-to-point circuit:

1. Select Add Remote from Main Configuration window Navigate menu. The Add Remote window appears. The Serial Number field is blank when the window first appears.
2. Click on the Wake Up Remote button. This commands the TEAM 5520 application to create the software structures that it requires in order to command and monitor the remote DSU in conjunction with the DSE. The application indicates success by displaying the serial number of the associated remote DSU.
3. Click OK to dismiss the window.

## Add Remote, Multi-Point Circuit

The window is shown in [Figure 3-8](#) as it appears when the DSE is configured for use in a multi-point circuit. The window is divided into two panels labeled Add Remote and Current Remotes. The Add Remote panel contains the two fields and the button by which you perform the process of adding remote units. The Current Remotes panel is a display of units currently on the circuit, identified by their drop numbers.

In this window the Serial Number field is an entry field for you to specify the serial number of the unit you are adding, rather than a display field. A message appears above the Serial Number field, reminding you that all remotes must be of the same type (all NMS 510 DSUs or all NMS 520 DSUs). The Remote Unit Type option in the Network Options window determines which message is displayed before there are any remotes added. If you change the setting of that option, you cannot add a remote until the change is saved to the unit.



**Figure 3-8** Add Remote Window (Multi-Point Circuit)

Perform the following procedure to add a remote DSU in a multi-point circuit:

1. Select Add Remote from Main Configuration window Navigate menu. The Add Remote window appears. The Serial Number field is blank when the window first appears.
2. Enter the 16-digit serial number of the remote you are adding.
3. Click on the Drop entry field and from the resulting menu select the drop number you are assigning to unit.
4. Click on the Add Remote button. This commands the TEAM 5520 application to create the software structures that it requires in order to command and monitor the remote DSU in conjunction with the DSE. The application indicates success by adding an entry for the new drop number to the list displayed under Current Remotes.
5. Click OK to dismiss the window.

# Chapter 4: Maintenance

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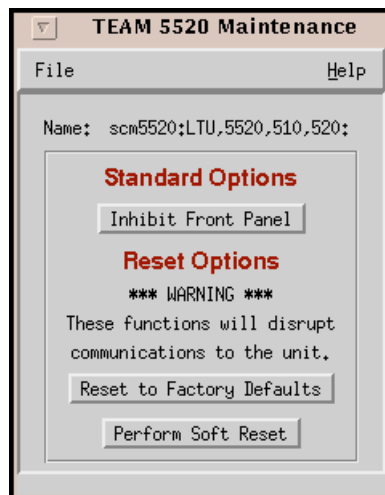
## Maintenance Overview

The TEAM 5520 Maintenance application provides a group of functions for controlling the operation of an SC 5520 Data Set Emulator.

You can start the TEAM 5520 Maintenance application by either of two methods:

- Select a DSE symbol on the Shelf Map, 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.

The window title bar displays the application name, TEAM 5520 Maintenance. The Name field displays the shelf and slot identification for the DSE. See [Figure 4-1](#).



**Figure 4-1** Maintenance Window

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### Maintenance Window Buttons

The Maintenance window provides the following three buttons.

**Front Panel** – permits you to enable or disable the hardware switches on the front panel of the SC 5520 DSE. The label on the button appears as either Inhibit Front Panel or Enable Front Panel, and it toggles between the two displays each time you click on the button. The button displays Inhibit Front Panel when the switches are enabled, and it displays Enable Front Panel when they are disabled.

**Reset to Factory Defaults** – causes all options in the DSE to return to their factory default settings. When you click on this button the application displays a warning “Resetting to factory defaults will disrupt communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.

**Soft Reset** – causes the DSE to perform a reset and resume operation using its current configuration. When you click on this button the application displays a warning “Performing a soft reset will disrupt communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.

# Chapter 5: Diagnostics

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## Overview

The TEAM 5520 Diagnostics application enables you to perform a variety of tests on the SC 5520 DSE. Tests can involve just the local unit (the DSE), or the local unit, the remote DSU, and the telephone lines that connect them. You can start the application by either of two methods:

- Select a DSE symbol on the Shelf Map, then select Diagnostics from the Fault menu.
- Click on the Select button of the Front Panel display, then click on Fault and select Diagnostics from the resulting menu.

## Diagnostics Window

Beneath the menu bar and the Name field the Diagnostics window (See [Figure 5-1](#)) is divided into three areas:

- Selection panel – contains buttons and check boxes for selecting, starting, and stopping test functions
- Graphic panel – depicts the path followed by test data during the current test
- Time and results panel – contains an input field for specifying the duration of a test that employs the DSE test pattern generator; displays Time Remaining and Test Results

The Diagnostics window menu bar contains File and Navigate. The File menu has only the Exit selection by which you dismiss the window. The Navigate menu also has a single selection: History, by which you can access a display of test results (see [Figure 5-7](#)) accumulated during the current diagnostic session.

## Diagnostic Tests

The Diagnostics window provides three Tests, and three Test Patterns you can select for those tests that employ the DSE test pattern generator. The panel also includes two buttons, Start Test and Stop Test. The following Tests are available:

Test	Description
Line Loop without Pattern	DSE initiates a local loopback, through which the DTE or external test equipment connected to the DTE interface can direct a test pattern. Must be ended by means of the Stop Test button.
Line Loop with Pattern	DSE initiates a local loopback and activates its own test pattern generator/checker.
Data Loop	DSE loops data it receives from the remote DSU back to the remote DSU. Must be ended by means of the Stop Test button.
Remote Loop without Pattern (see note)	DSE commands the remote DSU to initiate a digital loopback. A test pattern from the local DTE or from external test equipment connected to the local DTE interface can then be directed through the resulting test path. Must be ended by means of the Stop Test button. The remote DSU must recognize PN127 or V.54 loopback code.
Remote Loop with Pattern (see note)	DSE commands the remote DSU into digital loopback and activates its own test pattern generator/checker. The remote DSU must recognize PN127 or V.54 loopback code.

### Test Patterns

Each Test and Pattern is accompanied by a check box by which you can select it with a mouse click. The Pattern check boxes are grayed out when the selected Test cannot be combined with an internal test pattern. Line Loop and Remote Loop tests can be performed with or without a test pattern.

The three Test Patterns are:

511  
2047  
15 bit

---

**Note** *Remote Loop without Pattern and Remote Loop with Pattern are only available with non-managed remotes and only for point-to-point remotes.*

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**Note** *In order to function, all Diagnostics procedures for the SC 5520 DSE require the unit to have data highway bandwidth allocated to it on the shelf backplane, and to be receiving shelf timing.*

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**Note** *If the remote unit is an NMS 520 or NMS 510, the Remote Loop test is not available. The TEAM Diagnostics window will display the Remote Loop Test selection will appear grayed-out.*

---

## Diagnostic Test Procedure

Perform the following steps to select and carry out a test procedure on the selected DSE.

1. Click on the check box next to the selected test: Line Loop, Remote Loop, or Data Loop.
2. If you have selected Line Loop or Remote Loop you can perform the test either with an internally generated test pattern, or with externally generated and checked data. Under the Pattern heading, click on 511, 2047, 15 Bit, or None (for external data). No Pattern selection is required for Data Loop.
3. If you are using an internally generated test pattern select, in the Test Time field, how long the test is to run before ending automatically.
4. Click on the Start Test button. While the test runs, the graphic panel illustrates the data path employed by the test. If you are using an internally generated test pattern, the Time Remaining field counts down from 100 to 0 percent.

During a test that employs an internally generated test pattern the Test Results field displays Running: followed by the number of errors detected; it displays In Loop when external data is in use.

5. If you are using an internally generated test pattern, the test ends automatically at the end of the specified Test Time. For any other test, click on the Stop Test button to end the procedure. The Stop Test button can also stop a test with test pattern prior to the Test Time limit that would end it automatically.

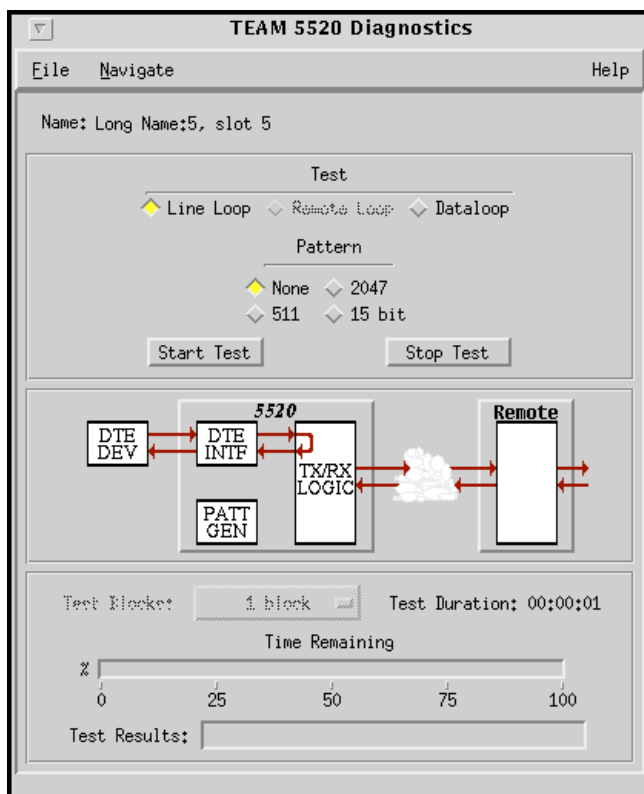


Figure 5-1 Diagnostics Window

## Line Loop Test

The Line Loop test (See [Figure 5-2](#)) lets you isolate problems in the operation of the DSE and the DTE interface.

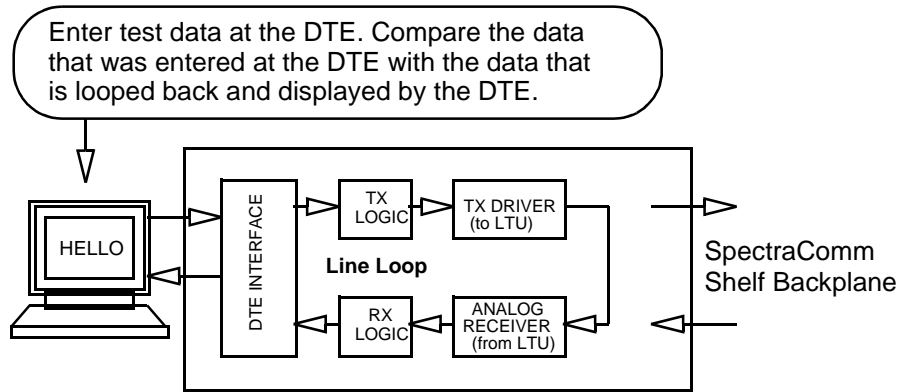


Figure 5-2 Line Loop Test

## Line Loop with Test Pattern

Because the pattern generator and checker are internal to the DSE, the DTE interface is not part of the Line Loop test path when you select a test pattern. The use of an internally generated test pattern enables the display of detected errors in the Test Results field.

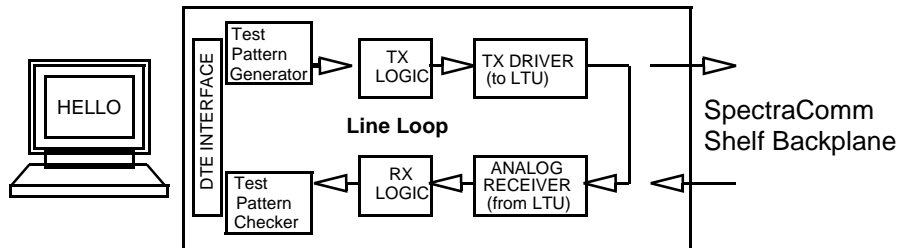
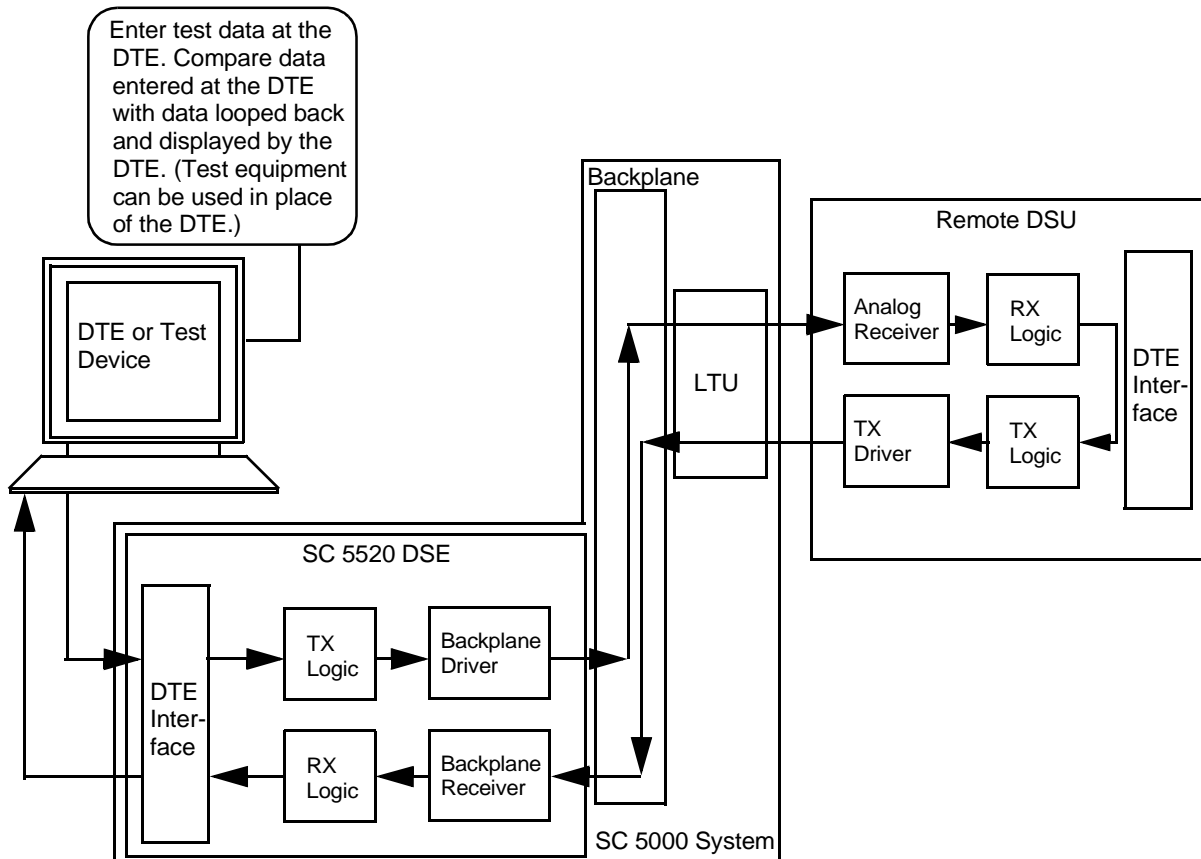


Figure 5-3 Line Loop with Self-Test



## Remote Loop Test

In this test the DSE sends a remote loop command to the remote DSU, which must recognize PN127 or V.54 loopback code. In response, the remote DSU couples its receive data to its transmitter input for transmission back to the DSE at the local end (See [Figure 5-4](#)). This test is only available for unmanaged point-to-point remotes.

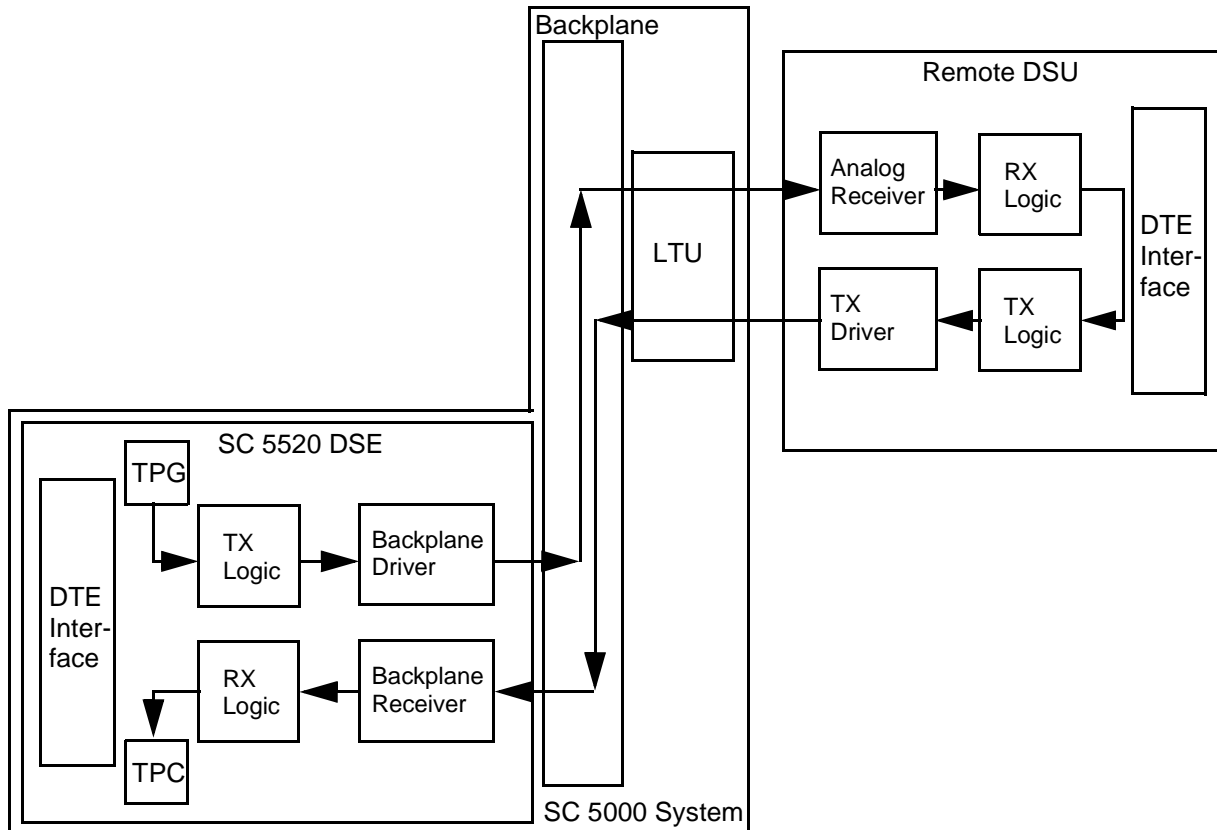


**Figure 5-4** Remote Loop

### Remote Loop with Test Pattern

In this test the local DSE sends a Remote Loop command to the remote DSU, then generates a test pattern that it transmits over the network to the remote DSU. The remote DSU loops the received pattern to its transmitter and sends it back to the DSE for analysis (See [Figure 5-5](#)). This test checks the DSE, the remote DSU, and the link.

The use of an internally generated test pattern enables the display of detected errors in the Test Results field.

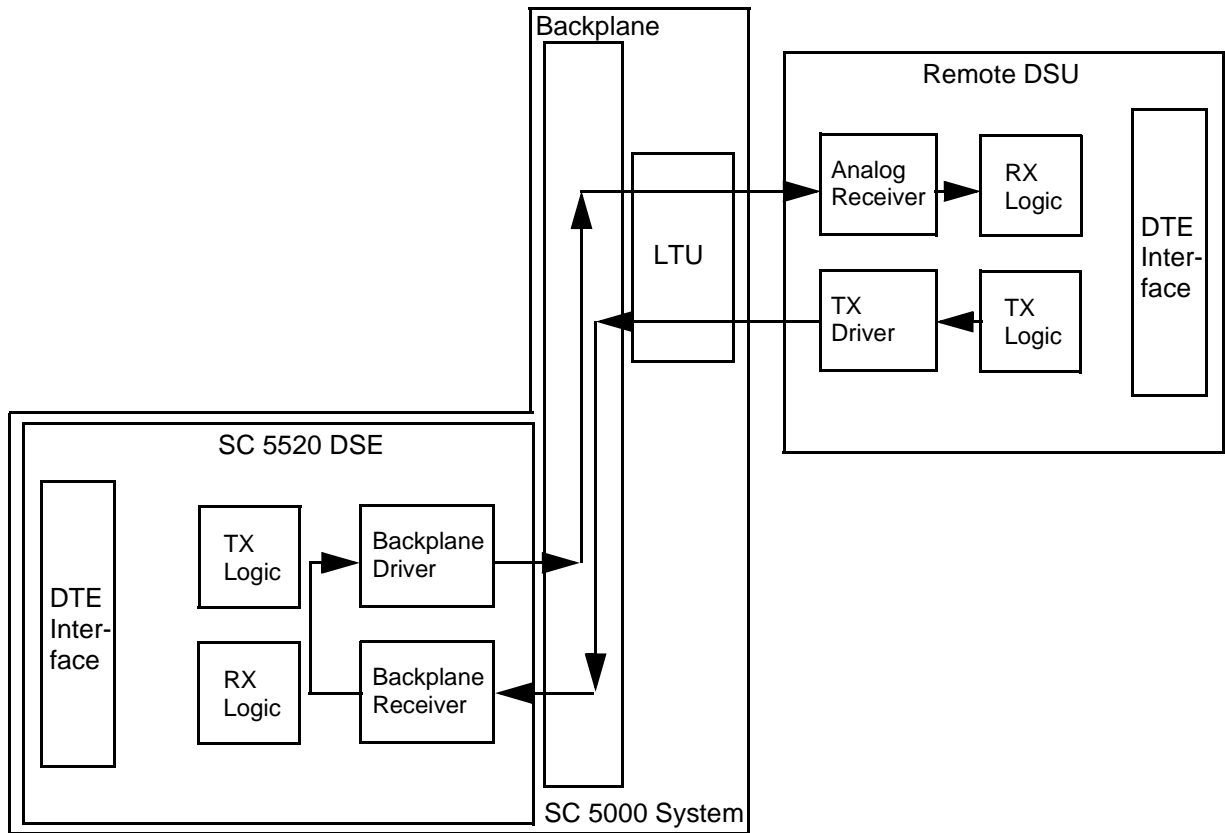


TPG – Test Pattern Generator  
 TPC – Test Pattern Checker

**Figure 5-5** Remote Loop with Test Pattern

## Data Loop Test

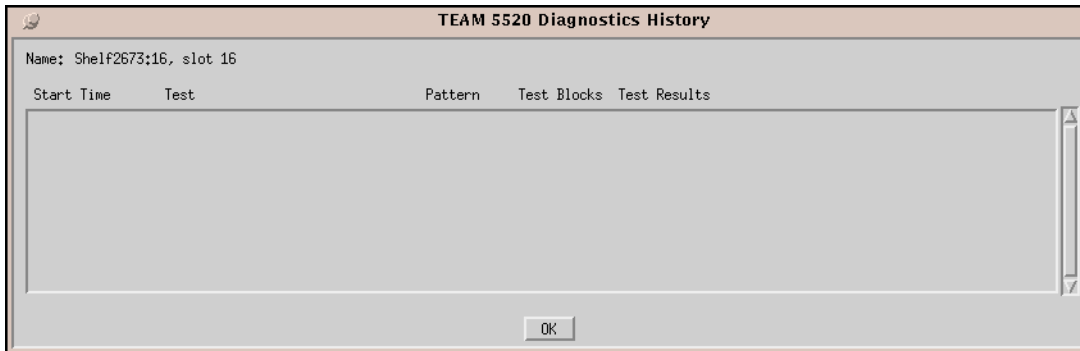
In Data Loopback (See [Figure 5-6](#)) local receive data is coupled to the transmitter input so that the remote unit can perform a loopback test without commanding Remote Loopback. The remote DSU site is responsible for test pattern generation and checking in this test.



**Figure 5-6** Data Loop

## 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 5-7](#)).



**Figure 5-7** 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; N/A when internally generated pattern is not used

Test Blocks – number of data blocks sent during the test, applies only to tests with test pattern

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 STOPPED” for any test with test pattern that was ended by the Stop Test button

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.

# Chapter 6: NMS 520

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## Overview

The SC 5520 Data Set Emulator is a central site unit that can operate in conjunction with an NMS 520 Data Service Unit (DSU) located at a remote site. The TEAM 5520 software supports a full range of functions for the remote NMS 520 DSU, as it does for the SC 5520 DSE. This chapter describes the NMS 520 functionality of the software and provides instructions for its use.

## Access to the NMS 520 Functions

Access to the NMS 520 functions takes place through the icon for the SC 5520 DSE that is linked to the NMS 520 DSU that you intend to work with.

1. Display the shelf map. Any DSE that **does not** have an associated remote is identified by a box around its icon symbol. Each DSE that has an associated remote is identified by an icon symbol without a box.
2. Double click on the icon symbol of the DSE that is linked to the DSU you intend to work with. The application responds by opening an Element submap that displays icons for the DSE and the DSU with a connecting line to indicate that together they form a link.
3. From this submap you can either click once on the DSU icon to select it and then access the functions through the menu bar of the submap window, or double click on the DSU icon to open the NMS 520 Front Panel display window. From the Front Panel display you can access NMS 520 functions through Select button menus.

## Master/Remote Communications

Management communications take place on the secondary channel when the link between the master SpectraComm 5520 DSE and the remote NMS 520 DSU is configured to be DDS II with secondary channel.

When the link is configured for DDS I or for clear channel the management communications occupy the same channel that carries user data. When that is the case, each management communication has the effect of briefly interrupting or causing errors in the user data. Error correcting protocols and requests for retransmission protect user data against corruption, but the effect does slightly reduce throughput.

---

*Note* Reduction in throughput caused by management communications is most noticeable when the Front Panel display or the Alarm Detail window is open with Auto Poll enabled. The faster the scan rate setting selected for Auto Poll, the greater the effect on user data.

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## Submap Window Menu Bar Access

The table on the following page illustrates how the NMS 520 functions of the TEAM 5520 application are arranged on the menu bar at the top of the HPOV link submap window. The table shows only the menu selections for the NMS 520 functions. The submap window menus include other selections as well because the window is accessible to other applications.

You must click on the DSU icon to select it before you open the menu you intend to use.

Menu Bar	Menu Selections
Performance	Front Panel...
	Alarms...
	DTE Status...
	Line Statistics...
Configuration	Maintenance...
	Configure...
Fault	Diagnose...
Misc	Front Panel Poll Rate...
	Note Pad

The Performance menu Front Panel selection opens the Front Panel display window, which also provides access to menus through its Select button. All the menu selections shown above appear in the Select button menus except Front Panel and the Misc category.

## NMS 520 DSU Front Panel

The NMS 520 Front Panel display window (See [Figure 6-1](#) and [Figure 6-2](#)) provides a graphical interface to a remote NMS 520 DSU. You can launch a Front Panel in either of two ways:

- select the NMS 520 icon in the submap window, then select Front Panel from the Performance menu for the window
- display the shelf sub-map that includes the unit you intend to work with, then double click the mouse on the slot icon for the unit.

The application responds by displaying a window that depicts the front panel of the selected NMS 520 DSU unit. There are two NMS 520 DSU Front Panel displays, one for the model with Intelligent Front Panel (IFP) and one for the model without IFP.

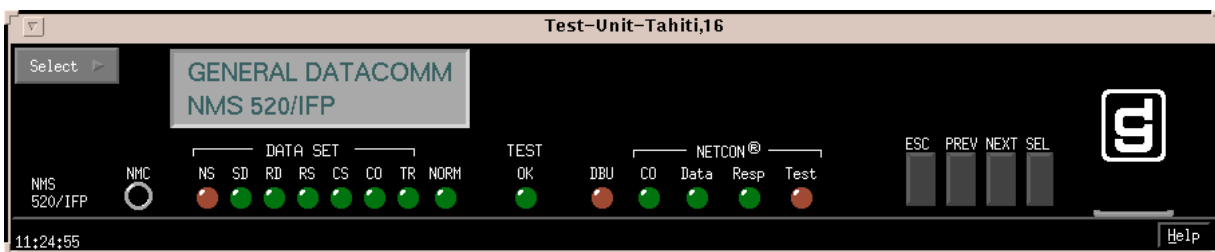


Figure 6-1 NMS 520 IFP DSU Front Panel

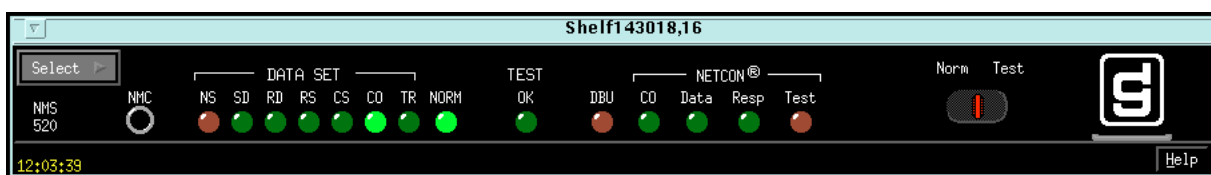


Figure 6-2 NMS 520 Non-IFP DSU Front Panel

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

NS – No Signal indicates when lit that there is no signal at the network interface of the remote DSU

SD – Send Data indicates when lit that the DSU is transmitting data

RD – Receive Data indicates when lit that the DSU is receiving data

RS – Request to Send indicates when lit that the DTE has data to transmit

CS – Clear to Send indicates when lit that the DSU is prepared to transmit data

CO – Carrier On indicates when lit that the DSU is receiving a carrier signal at its network interface

TR – Terminal Ready indicates when lit that the DTE is powered on

NORM – DSU mode indication, when lit indicates DSU in normal mode; when off indicates DSU in diagnostic mode

TEST/OK – indicates when lit that the DSU is receiving valid test data

DBU – not a valid indicator in the TEAM application environment

NETCON CO – not a valid indicator in the TEAM application environment

NETCON DATA – not a valid indicator in the TEAM application environment

NETCON RESP – not a valid indicator in the TEAM application environment

NETCON TEST – not a valid indicator in the TEAM application environment

The application polls the DSU 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 on the Front Panel displays provides access to menus for the rest of the NMS 520 functions of the TEAM 5520 application. The following table shows the arrangement of the Select button menus. It differs somewhat from the arrangement on the submap window menu bar.

Select Menu Items	Second Level Selections
Performance	Alarms...
	DTE Status...
	Line Statistics...
Configuration	Configure...
	Maintenance...
Fault	Diagnose...
Demand Poll	
Auto Poll	15 seconds
	30 seconds
	60 seconds
	Disable
Exit	

The two Poll selections in the Select button menu determine when the application collects new information from the DSE 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 menu selection Exit dismisses the Front Panel window when you click on it.

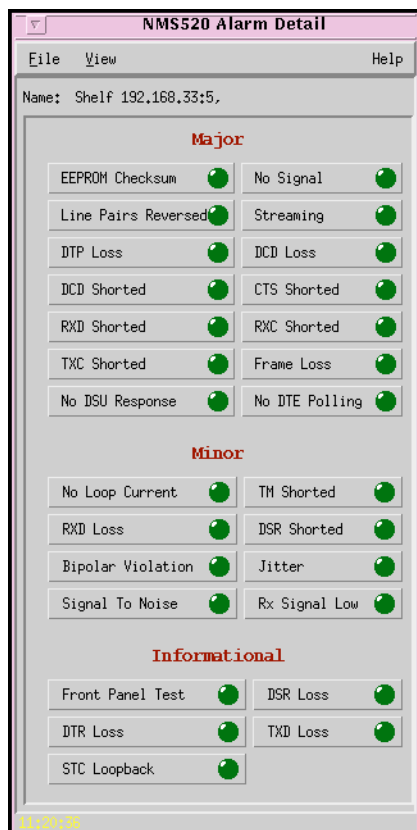


## Performance Functions

### Alarms

You can launch the NMS 520 Alarm Detail application from the Element submap Performance Menu or from the front panel menu. The application displays the read-only Alarm Detail window for the selected DSU (See [Figure 6-3](#)).

The TEAM 5520 application polls the DSU for changes in alarm conditions.



**Figure 6-3** Alarm Detail Window

The Alarm Detail window displays alarms grouped into three categories:

- Major
- Minor
- Informational

#### Major Alarms

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

No Signal – indicates the DSU is not receiving incoming signal

Line Pairs Reversed – indicates wires connected incorrectly at the network interface

Streaming – indicates constant RTS condition

DTP Loss – indicates loss of power at the DTE

DCD Loss – indicates loss of incoming data

DCD Shorted – indicates a short circuit in the DCD interface lead

CTS Shorted – indicates a short circuit in the CTS interface lead

RXD Shorted – indicates a short circuit in the RXD interface lead

RXC Shorted – indicates a short circuit in the RXC interface lead

TXC Shorted – indicates a short circuit in the TXC interface lead

Frame Loss – indicates the DSU has missed at least two out of four framing bits in the incoming signal

No DSU Response – indicates the remote DSU does not respond to polling by the master unit (valid only in DDS I operation)

No DTE Polling – indicates the DTE connected to the remote DSU does not respond to polling by the master unit (valid only in DDS I operation)

### Minor Alarms

No Loop Current – indicates absence of dc current at the network interface

TM Shorted – indicates a short circuit in the TM interface lead

RXD Loss – occurs when a unit that is configured for constant RX carrier experiences one minute without transitions in the Receive Data

DSR Shorted – indicates a short circuit in the DSR interface lead

Bipolar Violation – indicates failure of consecutive ones to alternate states in the signal being received

Jitter – indicates excessive jitter (phase shift) in the signal being received

Signal To Noise – indicates unacceptable signal-to-noise ratio in the signal being received

Rx Signal Low – indicates low signal level being received at the network interface

### Informational Alarms

Front Panel Test – indicates the DSU has been commanded into a test by means of its front panel switches

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

DTR Loss – indicates the DSU is not receiving Data Terminal Ready from the DTE

TXD Loss – occurs when a unit that is configured for constant TX carrier experiences one minute without transitions in the Transmit Data

STC Loopback – indicates the DSU has been commanded into a test by the Telco Serving Test Center (STC)

### Alarm Detail Window Menus

The Alarm Detail window has a File menu and a View menu in its menu bar.

The File menu contains 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 Alarm Detail window displays a static snapshot of conditions as they were at the last poll, either when the window was launched or a subsequent Demand Poll.

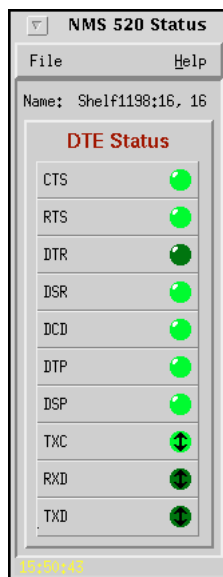
The time of the most recent poll appears in the bottom left corner of the window. The time is displayed in white when Auto Poll is enabled, and in yellow when it is disabled.

The View menu consists of three selections: Major, Minor, and Informational, each with a check box beside it. To remove an alarm category from the window display, click on its check box so that it is unchecked. Clicking a box so that it is checked restores the corresponding category to the display.

### DTE Status

You can launch the NMS 520 DTE Status application from the Element submap Performance Menu or from the front panel menu. The application displays the read-only DTE Status window for the selected DSU (See [Figure 6-4](#)). The window displays indicators for the states of the EIA signals at the DTE interface. Dark green indicates Off, light green indicates On, and light green with a superimposed two-headed arrow indicates transitions.

### 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 6-4** DTE Status Window

## Line Statistics

You can launch the Line Statistics application from the submap Performance Menu or from the front panel menu. As shown in [Figure 6-5](#), the application displays eight categories of line performance statistics accumulated by the unit over the most recent 15 minutes. The statistics are displayed on 15 lines, each representing one minute of the displayed interval.

### Line Statistics Window Menus

The Line Statistics window has a File menu that consists of Refresh and Exit selections. The Refresh selection causes the window to display the latest available data. The window is not a dynamic display, so you should use the Refresh selection occasionally when you keep the window open for long periods. The Exit selection dismisses the Line Statistics window.

Minute Interval	Status	Transmit Level	Receive Level	Signal To Noise Ratio	Signal Quality	Phase Jitter	BPV Count	Frame Loss Count
1	Normal	0 dB	2 dB	63	Good	0%	0	0
2	Normal	0 dB	2 dB	63	Good	0%	0	0
3	Normal	0 dB	2 dB	63	Good	0%	0	0
4	Normal	0 dB	2 dB	63	Good	0%	0	0
5	Normal	0 dB	2 dB	63	Good	0%	0	0
6	Normal	0 dB	2 dB	63	Good	0%	0	0
7	Normal	0 dB	2 dB	63	Good	0%	0	0
8	Normal	0 dB	2 dB	63	Good	0%	0	0
9	Normal	0 dB	2 dB	63	Good	0%	0	0
10	Normal	0 dB	2 dB	63	Good	0%	0	0
11	Normal	0 dB	2 dB	63	Good	0%	0	0
12	Normal	0 dB	2 dB	63	Good	0%	0	0
13	Normal	0 dB	2 dB	63	Good	0%	0	0
14	Normal	0 dB	2 dB	63	Good	0%	0	0
15	Normal	0 dB	2 dB	63	Good	0%	0	0

Figure 6-5 Line Statistics Window

## Configuration Functions – Configure

You can launch the NMS 520 Configuration function from the Element submap Configuration Menu or from the front panel menu. When you launch the window, it initially displays the read-only NMS 520 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 DSU
- Load Template, by which you can recall a stored configuration template that you can then save to the DSU 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 four read/write windows by which you can configure various aspects of DSU operation:

- System Options
- Network Options
- DTE Options
- Alarms Reported

## 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 DSU. 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 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 to Template	dialog window
	Exit	
Navigate	System Options...	
	Network Options...	
	DTE Options...	
	Alarms Reported...	
	All Screens...	

The Main Configuration window title bar displays the function name, NMS 520 Configuration. The main body of the window contains read-only items that identify the DSU and provide information about its operations.

### Main Configuration Window Read-Only Display

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

- Name: shelf and slot identification for the master DSE followed by the slot:line:drop address of the DSU
- Serial Number: displays the serial number of the DSU
- Firmware Revision: displays the revision level of the DSU operating code
- DDS Version: displays the revision level of the MIB files that enable SNMP control
- NMS 520 MIB Version: displays the revision level of the MIB files that enable SNMP control

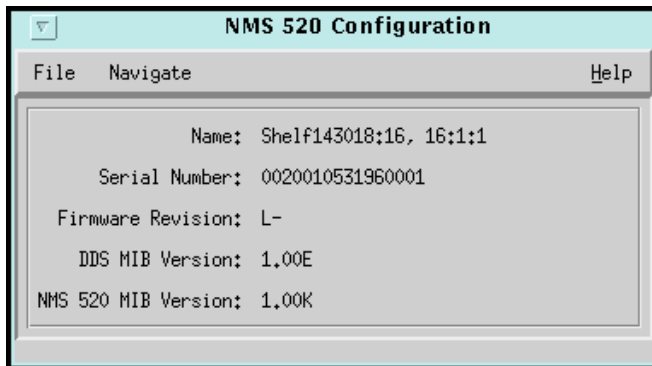


Figure 6-6 Main Configuration Window

### System Options

The NMS 520 System Options configuration window contains three options.

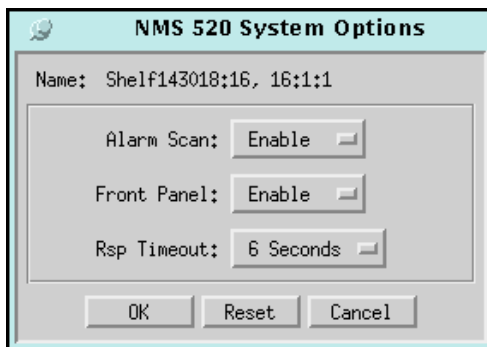


Figure 6-7 NMS 520 System Option Configuration Window

**Alarm Scan** – permits you to enable or inhibit (disable) the DSU alarm scan

Options:

*Enable*

*Disable*

**Front Panel** – permits you to disable the test switches on the front panel of a non-IFP DSU as protection against any inadvertent interruption of its operation. This option is not valid when configuring an NMS 520 IFP DSU.

Options:

*Enable* – DSU front panel test switches are operational

*Disable* – DSU front panel test switches are disabled

**Rsp Timeout** – selects the length of time the SCM waits for a response from the DSU before it declares a No Response condition.

Options:

2, 4, 6, 8 seconds

## NMS 520 Network Options

The NMS 520 Network Options configuration window ([Figure 6-8](#)) appears when you select Network Options from the Main Configuration window Navigate menu. The window contains two panels labeled Network Parameters and Circuit Parameters.

**NMS 520 Network Options**

Name: Shelf143018:16, 16:1:1

**Network Parameters**

Line Type: DDS-I

Carrier: Tx Switched, Rx Switched

Data Rate: 9.6 Kbps - Sync

**Circuit Parameters**

Tx Clock Source: Receive

Buffer Clock: Internal

Zero Encoding: Enable

Entry Time: 60 Minutes

Remote Rsp Interval: 10 Seconds

Alarm Hysteresis: 10 Seconds

Circuit Assurance: Disable

System Status: Disable

OK Reset Cancel

**Figure 6-8** NMS 520 Network Options Configuration Window

## Network Parameters

**Line Type** – read-only field displays the type of service to which the DSU is connected

Options:

*Clear Channel*

*DDS-I*

*DDS-SC*

**Carrier** – selects the combination of transmit and receive carrier modes (constant/switched) to be used by the DSU

Options:

*Tx Constant, Rx Constant* – for use on a point-to-point circuit

*Tx Constant, Rx Switched* – for use when the DSU is the master unit on a multi-point circuit

*Tx Switched, Rx Constant* – for use when the DSU is a remote unit on a multi-point circuit

*Tx Switched, Rx Switched* – for use when required by specialized applications

**Data Rate** – read-only field displays the data rate and mode (synchronous/asynchronous) in use by the DSU

Options:

*2.4 Kbps - Async*

*2.4 Kbps - Sync*

*4.8 Kbps - Async*

*4.8 Kbps - Sync*

*9.6 Kbps - Async*

*9.6 Kbps - Sync*

*19.2 Kbps - Async*

*19.2 Kbps - Sync*

*56 Kbps - Sync*

*64 Kbps - Sync*

## Circuit Parameters

**Tx Clock Source** – this option is forced to Receive and grayed out

**Buffer Clock** – selects the source of timing for the buffer between the DSU and its DTE

Options:

*Internal* – selects timing provided by the DSU internal clock

*External* – selects timing provided by the DTE; when External is selected for Tx Clock Source this selection is forced and cannot be changed



**Zero Encoding** – selects Zero Encoding. This feature can be used in point-to-point 56 kbps DDS-SC applications to enable the DTE to transmit all spaces (zeros) without violating the ones density requirements of DDS. The feature must be enabled at both units.

Options:

*Enable* – DSU prevents the all space condition at the expense of reduced secondary channel bandwidth

*Disable* – DSU does not prevent the all space condition

**Sentry Timer** – selects the minimum time interval permitted between alarm reports in a point-to-point link. This option is grayed out when a multipoint Circuit Type is selected.

Options:

*Disable*

*5 Minutes to 125 Minutes* – in five minute increments

**Rmt Rsp Interval** – selects the minimum time interval permitted between alarm reports in a multipoint link. This option is grayed out when a point-to-point Circuit Type is selected.

Options:

*Disable*

*10 Seconds to 120 Seconds* – in ten second increments

**Alarm Hysteresis** – selects the minimum time an alarm condition must persist in order to be reported

Options:

*10 Seconds to 120 Seconds* – in ten second increments

**Circuit Assurance** – when this option is enabled the DSU clamps Clear To Send when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code

Options:

*Disable*

*Enable*

**System Status** – when this option is enabled the DSU clamps Data Set Ready when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code

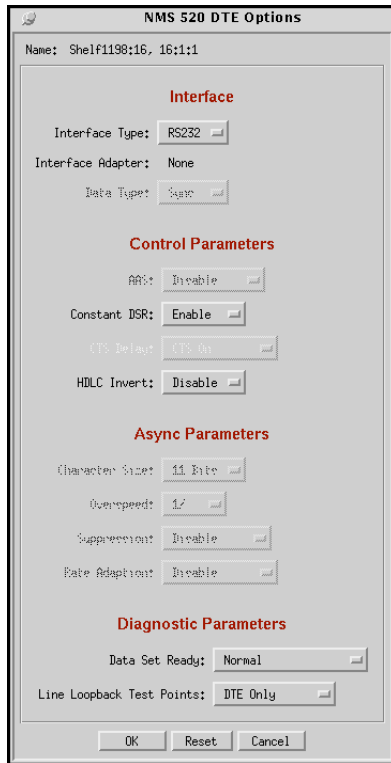
Options:

*Disable*

*Enable*

## DTE Options

The NMS 520 DTE Options configuration window contains four groups of options under the headings Interface, Control Parameters, Async Parameters, and Diagnostic Parameters.



**Figure 6-9** DTE Option Configuration Window

### Interface

**Interface Type** – specifies the DTE port type

Options:

*RS232* – EIA/TIA-232-E interface

*V.35* – ITU-T V.35 interface

*Auto* – the DSU automatically senses the interface type being used by the DTE

**Interface Adapter** – read-only field displays whether or not the DSU has a Data Rate Adapter (DRA) card installed

Options:

*None*

*Installed*

### Control Parameters

**AAS** – selects whether or not the DSU provides Automatic Anti-Streaming protection, and the time limit it enforces when the feature is enabled

Options:

*Disable*

*5 Seconds*

*10 Seconds*

*30 Seconds*

*45 Seconds*

**Constant DSR** – selects the DSU to output either a constant or a switched Data Set Ready signal to its DTE.

Options:

*Disable* – switched DSR signal controlled by DTR

*Enable* – constant DSR signal

**CTS Delay** – selects the delay (if any) between the DSU receiving Request To Send from the DTE and returning Clear To Send to the DTE.

Options:

*CTS ON* – no delay; grayed out when Tx Constant is selected in the Carrier option of the Network Options configuration window

*Fixed 3 Char* – equivalent to three character times

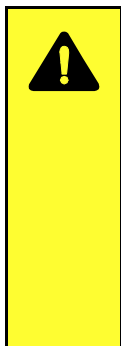
*0 msec*

*30 msec*

*60 msec*

*90 msec*

**HDLC Invert** – selects whether or not the DSU uses inverted channel data from the DTE. Data inversion is used primarily with DDS-SC 56 kbps circuits, to enhance data quality in a network that does not provide B8ZS coding.



#### CAUTION

*You must consider the following factors when you change the setting of this option:*

*When changing the setting of this option, set only this option and save the change to the unit. Do not combine it with any other configuration changes.*

*The option must be set the same at both ends of the link.*

*You must make changes at the remote DSU first, before you change the option setting at the DSE.*

*Changing the option at the remote causes loss of communication between the remote and master units until you change the option setting at the master.*

Options:

*Disable* – normal data

*Enable* – inverted data

### Async Parameters

The Async Parameters options are grayed out when a synchronous Data Rate is selected in the Network Interface configuration.

**Character Size** – selects the number of bits per asynchronous character, including start and stop bits

Options:

*11 Bits*

*10 Bits*

*9 Bits*

*8 Bits*

**Over Speed** – selects the percentage above its configured normal operating rate at which the DSU can accommodate receive data. It performs the over speed compensation by shaving stop bits.

Options:

*1%*

*2.3%*

**Suppression** – determines what actions the DSU takes concerning transmit and receive End of Text (EOT)

Options:

*Disable* – the DSU does not insert EOT at the end of transmissions, and does not delete it from the end of received signals

*Rx EOT* – the DSU deletes EOT from the end of received signals; it does not insert EOT at the end of transmissions

*Tx EOT* – the DSU inserts EOT at the end of transmissions; it does not delete it from the end of received signals

*Rx + Tx EOT* – the DSU inserts EOT at the end of transmissions, and deletes it from the end of received signals

**Rate Adaption** – selects the speed relationship between the DTE interface and the DDS circuit

Options:

*Disable*

*1200*

*600*

*1800 to 2400*

## Diagnostic Parameters

**Data Set Ready** – selects how the DSU controls the DSR output to the DTE during test modes

Options:

*Off During Test*

*Normal* – DSR operates in the same way that it is optioned to function during data mode operations

**Line Loopback Test Points** – selects whether a Line Loopback command causes the DSU only to loop transmit data back to the DTE, or also to loop receive data back to the network

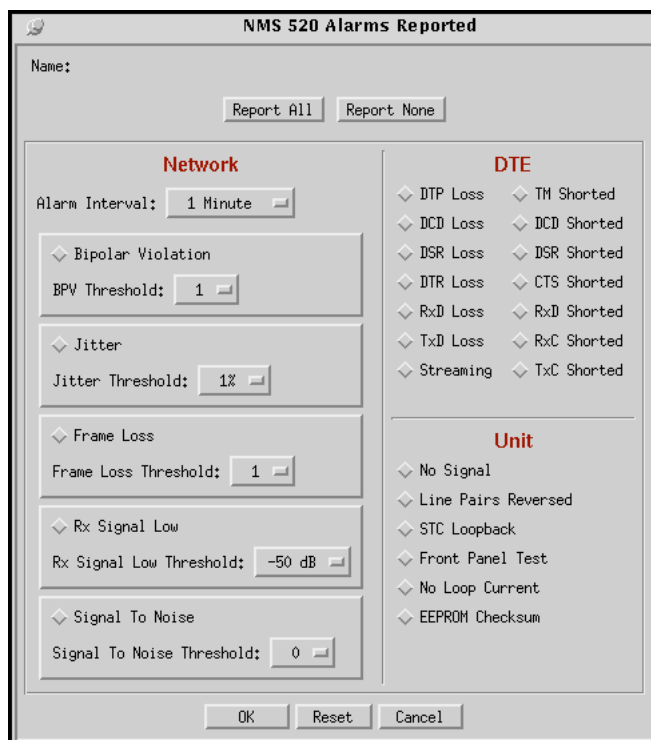
Options:

*Network & DTE* – Line Loopback command causes DSU to loop data in both directions

*DTE Only* – Line Loopback command causes DSU to loop data back to DTE only

## Alarms Reported

The NMS 520 Alarms Reported configuration window ([Figure 6-10](#)) lets you configure which alarm conditions are to be reported for the DSU and which are not. The window contains three panels labeled Network, DTE, and Unit as shown below.



**Figure 6-10** Alarms Reported Configuration Window

## Buttons and Option Selection

Each of the alarm options in the Alarms Reported configuration window has a small selection field located to its left. You can select or de-select individual alarm options by simply clicking the mouse button on the appropriate selection fields. When an option is selected for its alarm to be reported, its selection field is highlighted. The selection fields next to alarm options that are not to be reported are not highlighted.

The Alarms Reported configuration window has two buttons positioned above the option fields: Report All and Report None:

- Click on Report All to highlight all the alarm option selection fields.
- Click on Report None to remove the highlight from all the alarm option selection fields.

After clicking Report All or Report None you can then change the state of individual fields as needed.

## Alarms Reported Buttons

**Report All** – unmask all alarms.

**Report None** – mask all alarms.

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

**OK** – saves your changes and closes the window.

**Cancel** – cancels your changes and closes the window.

## Network Alarms

Each Network alarm, when unmasked, requires you to specify a threshold against which it is evaluated.

**Alarm Interval** - determines the time span for threshold evaluation.

Options:

*1 min, 5 min, 10 min, 15 min*

**Bipolar Violation** - lets you mask or unmask Bipolar Violation alarms. A network Bipolar Violation occurs when the signal the unit receives at its network interface does not alternate between signal levels as required for Alternate Mark Inversion (AMI) or Bipolar with 8 Zero Substitution (B8ZS) data encoding. The alarm occurs when the number of BPVs in the received signal during one Alarm Interval exceeds the selected threshold.

Options:

*1, 2, 5, 10, 20, 40, 60, 80, 99*

**Jitter** - lets you mask or unmask Jitter alarms. The alarm occurs when the percent of jitter in the received signal remains above the selected threshold for at least one Alarm Interval.

Options:

*1%, 2%, 5%, 10%, 20%, 40%, 60%, 80%, 99%*

**Frame Loss** - lets you mask or unmask Frame Loss alarms. The alarm occurs when the number of lost frames in the received signal during one Alarm Interval exceeds the selected threshold.

Options:

*1, 2, 5, 10, 20, 40, 60, 80, 99*

**Rx Signal Low** - lets you mask or unmask Rx Signal Low alarms. The alarm occurs when the strength of the received signal remains below the selected threshold for at least one Alarm Interval.

Options:

*6 dB, 0 dB, -5 dB, -10 dB, -20 dB, -30 dB, -40 dB, -50 dB*

**Signal to Noise** - lets you mask or unmask Signal to Noise Ratio alarms. The alarm occurs when the ratio of signal to noise in the received signal remains poorer than the selected threshold for at least one Alarm Interval.

Options:

*0, 5, 10, 15, 20, 25, 30, 40, 50*

## DTE

*DTP Loss* – alarm indicating loss of Data Terminal Power

*DCD Loss* – alarm indicating loss of Data Carrier Detect

*DSR Loss* – alarm indicating loss of Data Set Ready

*DTR Loss* – alarm indicating loss of Data Terminal Ready

*RxD Loss* – alarm indicating no receive data from the remote DSU

*TxD Loss* – alarm indicating no transmit data from the DTE

*TM Shorted* – alarm indicating a short circuit on the Test Mode interface lead

*Streaming* – alarm indicating a streaming condition at the DTE interface

*DCD Shorted* – alarm indicating a short circuit on the Data Carrier Detect interface lead

*DSR Shorted* – alarm indicating a short circuit on the Data Set Ready interface lead

*CTS Shorted* – alarm indicating a short circuit on the Clear To Send interface lead

*RxD Shorted* – alarm indicating a short circuit on the Receive Data interface lead

*RxC Shorted* – alarm indicating a short circuit on the Receive Timing interface lead

*TxC Shorted* – alarm indicating a short circuit on the Transmit Timing interface lead

## Unit

*No Signal* – alarm indicating there is no signal at the DSU network interface

*Line Pairs Reversed* – alarm indicating the transmit and receive line pairs are reversed

*STC Loopback* – alarm indicating the DSU has been commanded into a test mode by the Telco Serving Test Center (STC)

*Front Panel Test* – alarm indicating the DSU has been commanded into a test mode by means of its front panel switches (valid only for non-IFP NMS 520 DSU)

*No Loop Current* – alarm indicating that network sealing current is inadequate or absent

*EEPROM Checksum* – Configuration Checksum error alarm

## Configuration Functions – Maintenance

You can launch the NMS 520 Maintenance function from the Element submap Configuration Menu or from the front panel menu. The application displays one read/write window by which you can control some aspects of DSU operation that fall outside the scope of Configuration. See [Figure 6-11](#).

The window title bar displays the function name, NMS 520 Maintenance. The Name field displays the shelf name and the slot number of the master DSE followed by the slot:line:drop address of the DSU. The File menu contains only the selection Exit, by which you can dismiss the window.

### Maintenance Window Buttons

The Maintenance window provides the following three buttons.

**Front Panel** – permits you to enable or disable the hardware test switches on the front panel of a non-IFP DSU. The label on the button appears as either Inhibit Front Panel or Enable Front Panel, and it toggles between the two displays each time you click on the button. The button displays Inhibit Front Panel when the switches are enabled, and it displays Enable Front Panel when they are disabled. This button is not valid when you are working with an NMS 520 IFP DSU.

**Reset to Factory Defaults** – causes all options in the DSU to return to their factory default settings. When you click on this button the application displays a warning “Resetting to factory defaults will terminate communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.

**Soft Reset** – causes the DSU to perform a reset and resume operation using its current configuration. When you click on this button the application displays a warning “Performing a soft reset will disrupt communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.

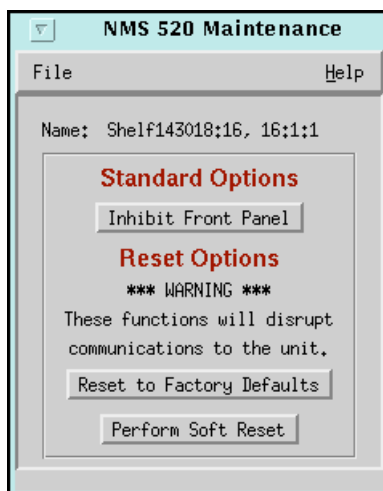


Figure 6-11 Maintenance Window



## Diagnostics

You can launch the NMS 520 Diagnostics function from the submap Fault menu or from the front panel menu.

The application displays one read/write window by which you can control a variety of test functions on the DSU.

### Diagnostics Window

Beneath the menu bar and the Name field the Diagnostics window (See [Figure 6-12](#)) is divided into three areas:

- Selection panel – contains buttons and check boxes for selecting, starting, and stopping test functions
- Graphic panel – depicts the path followed by test data during the current test
- Time and results panel – contains an input field for specifying the duration of a test that employs the DSU test pattern generator; displays Time Remaining and Test Results

The Diagnostics window menu bar contains File and Navigate. The File menu has only the Exit selection by which you dismiss the window. The Navigate menu also has a single selection: History, by which you can access a display of test results (see [Figure 6-13](#)) accumulated during the current diagnostic session.

### Tests

The Diagnostics window selection panel lists three Tests to choose from, and two Patterns you can select for those tests that employ the DSU test pattern generator. The panel also includes an input field for the User Defined test pattern, and two buttons: Start Test and Stop Test.

The following Tests are available:

Line Loop (performed only with test pattern)

End To End (performed only with test pattern)

Dataloop (can be performed with or without test pattern)

Delay Test

The Patterns are:

511 bit

2047 bit

15 bit

Each Test and Pattern is accompanied by a check box on which you can click to select it. The Pattern check boxes are grayed out when the selected Test cannot be combined with an internal test pattern.

## Diagnostic Test Procedure

Perform the following steps to select and carry out a test procedure on the DSU.

1. Click on the check box next to the selected test. If you are running the Delay Test, go to Step 4.
2. Under the Pattern heading, click on your selected pattern. The Dataloop test also supports the selection None (for external data).
3. If you are using an internally generated test pattern select, in the Test Time field, how long the test is to run before ending automatically.
4. Click on the Start Test button. While the test runs, the graphic panel illustrates the data path employed by the test. If you are using an internally generated test pattern, the Time Remaining field counts down from 100 to 0 percent.

During a test that employs an internally generated test pattern the Test Results field displays the number of errors detected; it displays In Loop when external data is in use.

5. If you are using an internally generated test pattern, the test ends automatically at the end of the specified Test Time. For any other test, click on the Stop Test button to end the procedure. The Stop Test button can also stop a test with test pattern prior to the Test Time limit that would end it automatically.

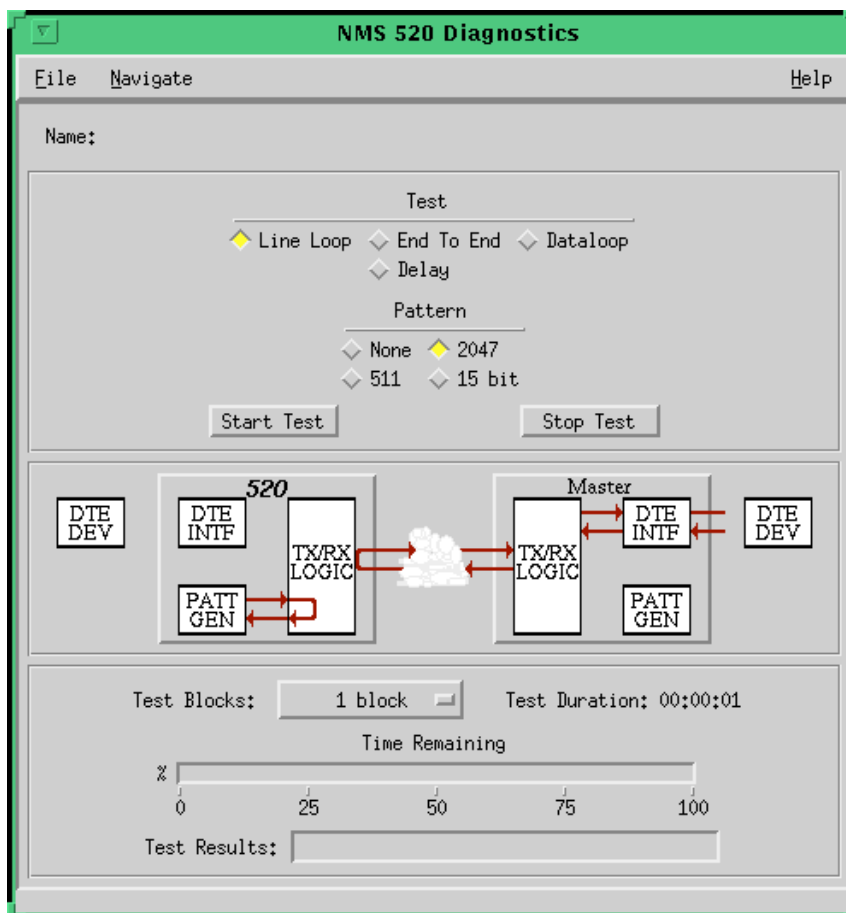


Figure 6-12 NMS 520 Diagnostics Window

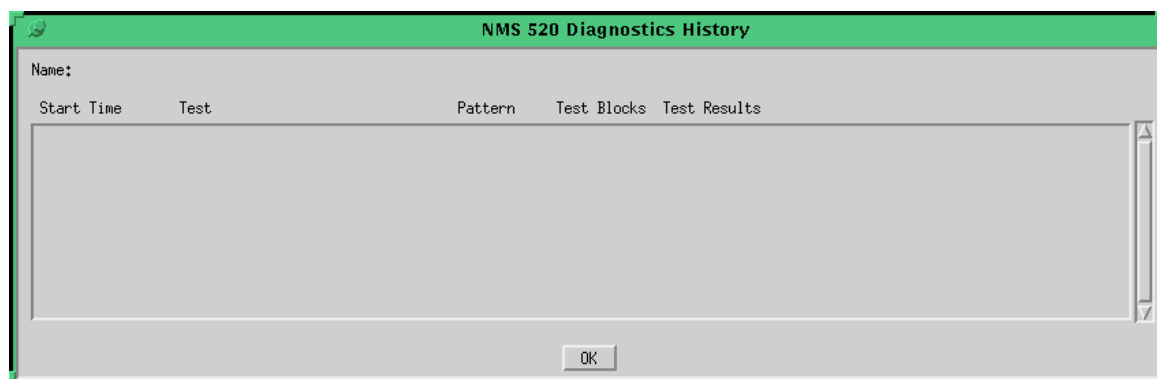
## Diagnostics Table

The table below briefly describes the available tests.

Test	Description
Line Loop (with Pattern)	DSU initiates a loopback at its network interface and activates its test pattern generator/checker
End To End (with Pattern)	DSU activates its test pattern generator/checker and transmits the pattern on its link to the DSE. DSU checks for errors in the signal it receives, which is generated by the DSE.
Dataloop (without Pattern)	DSE transmits a command on the link that causes the DSU to loop data back to the DSE; DTE or external test equipment at the DSE is responsible for generating and checking a test pattern.
Dataloop (with Pattern)	DSE transmits the loopback command to the DSU, and activates its test pattern generator/checker to transmit the pattern and check for errors in the signal it receives back.
Delay Test	DSU transmits and receives a test signal, which is looped back by the DSE; the DSU measures the round trip time (delay).

## 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 6-13](#)).



**Figure 6-13** Diagnostics History

The Diagnostics History window displays information in five columns:

Start Time – date and time test began

Test – name of the test

Pattern – test pattern used for the test; N/A when internally generated pattern is not used

Test Blocks – number of data blocks sent during the test, applies only to tests with test pattern

Test Results – “Idle: *n/n* Bit/Block Errors” for a completed test with test pattern; “Not in loop [STOPPED]” for a completed loop test without test pattern; “TEST STOPPED” for any test with test pattern that was ended by the Stop Test button; “*n* ms.” for 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.

## Miscellaneous Functions

### Front Panel Poll Rate

You can open the Front Panel Poll Rate window (See [Figure 6-14](#)) from the Shelf Map 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

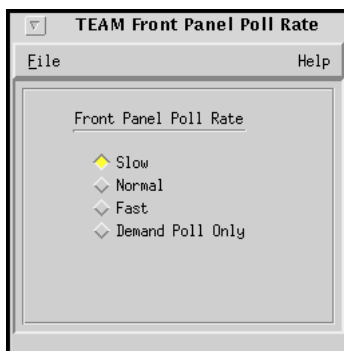
Demand Poll Only

The File menu in the menu bar contains two selections: Save to File and Exit.

To set the desired polling rate, first click on the appropriate checkbox and then select Save to File from the File menu. The precise polling frequency that results 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.

To dismiss the window, select Exit from the File menu.



**Figure 6-14** Front Panel Poll Rate Window

## Note Pad

You can launch the Note Pad application from the Shelf Map 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.



## Overview

The SC 5520 Data Set Emulator is a central site unit that can operate in conjunction with an NMS 510 Data Service Unit (DSU) located at a remote site. The TEAM 5520 software supports a full range of functions for the remote NMS 510 DSU, as it does for the SC 5520 DSE. This chapter describes the NMS 510 functionality of the software and provides instructions for its use.

## Access to the NMS 510 Functions

Access to the NMS 510 functions takes place through the icon for the SC 5520 DSE that is linked to the NMS 510 DSU that you intend to work with.

1. Display the shelf map. Any DSE that **does not** have an associated remote is identified by a box around its icon symbol. Each DSE that has an associated remote is identified by an icon symbol without a box.
2. Double click on the icon symbol of the DSE that is linked to the DSU you intend to work with. The application responds by opening an Element submap that displays icons for the DSE and the DSU with a connecting line to indicate that together they form a link.
3. From this submap you can either click once on the DSU icon to select it and then access the functions through the menu bar of the submap window, or double click on the DSU icon to open the NMS 510 Front Panel display window. From the Front Panel display you can access NMS 510 functions through Select button menus.

## Master/Remote Communications

Management communications take place on the secondary channel when the link between the master SpectraComm 5520 DSE and the remote NMS 510 DSU is configured to be DDS II with secondary channel.

When the link is configured for DDS I or for clear channel the management communications occupy the same channel that carries user data. When that is the case, each management communication has the effect of briefly interrupting or causing errors in the user data. Error correcting protocols and requests for retransmission protect user data against corruption, but the effect does slightly reduce throughput.

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**Note** *Reduction in throughput caused by management communications is most noticeable when the Front Panel display or the Alarm Detail window is open with Auto Poll enabled. The faster the scan rate setting selected for Auto Poll, the greater the effect on user data.*

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## Submap Window Menu Bar Access

The table on the following page illustrates how the NMS 510 functions of the TEAM 5520 application are arranged on the menu bar at the top of the Element submap window. The table shows only the menu selections for the NMS 510 functions. The submap window menus include other selections as well because the window is accessible to other applications.

You must click on the DSU icon to select it before you open the menu you intend to use.

Menu Bar	Menu Selections
Performance	Front Panel...
	Alarms...
	DTE Status...
Configuration	Maintenance...
	Configure...
Fault	Diagnose...
Misc	Front Panel Poll Rate...
	Note Pad

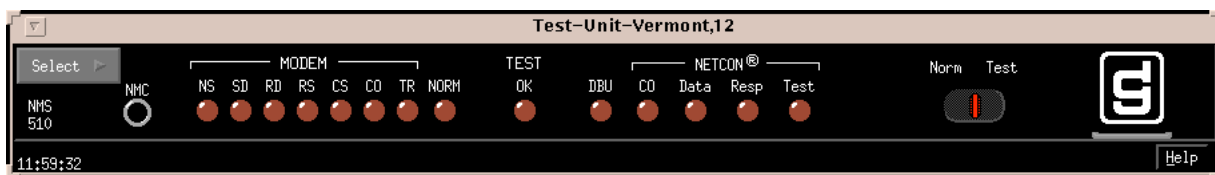
The Performance menu Front Panel selection opens the Front Panel display window, which also provides access to menus through its Select button. All the menu selections shown above appear in the Select button menus except Front Panel and the Misc category.

## NMS 510 DSU Front Panel

The NMS 510 Front Panel display window (See [Figure 7-1](#)) provides a graphical interface to a remote NMS 510 DSU. You can launch a Front Panel in either of two ways:

- select the NMS 510 icon in the Element submap window, then select Front Panel from the Performance menu for the window
- display the shelf sub-map that includes the unit you intend to work with, then double click the mouse on the icon for the unit.

The application responds by displaying a window that depicts an NMS 510 DSU. The application employs the same display regardless of whether or not the selected DSU is equipped with an Intelligent Front Panel (IFP).



**Figure 7-1** NMS 510 DSU Front Panel



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

NS – No Signal indicates when lit that there is no signal at the network interface of the remote DSU

SD – Send Data indicates when lit that the DSU is transmitting data

RD – Receive Data indicates when lit that the DSU is receiving data

RS – Request to Send indicates when lit that the DTE has data to transmit

CS – Clear to Send indicates when lit that the DSU is prepared to transmit data

CO – Carrier On indicates when lit that the DSU is receiving a carrier signal at its network interface

TR – Terminal Ready indicates when lit that the DTE is powered on

NORM – DSU mode indication, when lit indicates DSU in normal mode; when off indicates DSU in diagnostic mode

TEST/OK – indicates when lit that the DSU is receiving valid test data

DBU – not a valid indicator in the TEAM application environment

NETCON CO – not a valid indicator in the TEAM application environment

NETCON DATA – not a valid indicator in the TEAM application environment

NETCON RESP – not a valid indicator in the TEAM application environment

NETCON TEST – not a valid indicator in the TEAM application environment

The application polls the DSU 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 on the Front Panel displays provides access to menus for the rest of the NMS 510 functions of the TEAM 5520 application. The following table shows the arrangement of the Select button menus. It differs somewhat from the arrangement on the Element submap window menu bar.

Select Menu Items	Second Level Selections
Performance	Alarms...
	DTE Status...
Configuration	Configure...
	Maintenance...
Fault	Diagnose...
Demand Poll	
Auto Poll	15 seconds
	30 seconds
	60 seconds
	Disable
Exit	

The two Poll selections in the Select button menu determine when the application collects new information from the DSU 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.

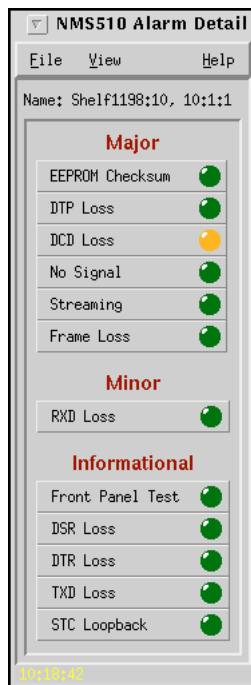
The menu selection Exit dismisses the Front Panel window when you click on it.

## Performance Functions

### Alarms

You can launch the NMS 510 Alarm Detail application from the Element submap Performance Menu or from the front panel menu. The application displays the read-only Alarms Detail window for the selected DSU (See [Figure 7-2](#)).

The TEAM 5520 application polls the DSU for changes in alarm conditions.



The Alarm Detail window displays alarms grouped into three categories:

- Major
- Minor
- Informational

**Figure 7-2** Alarm Detail Window

## Major Alarms

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

DTP Loss – indicates loss of power at the DTE

DCD Loss – indicates loss of incoming data

No Signal – indicates the DSU is not receiving incoming signal

Streaming – indicates constant RTS condition

Frame Loss – indicates the DSU has missed at least two out of four framing bits in the incoming signal

## Minor Alarm

RXD Loss – occurs when a unit that is configured for constant RX carrier experiences one minute without transitions in the Receive Data

## Informational Alarms

Front Panel Test – indicates the DSU has been commanded into a test by means of its front panel switches

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

DTR Loss – indicates the DSU is not receiving Data Terminal Ready from the DTE

TXD Loss – occurs when a unit that is configured for constant TX carrier experiences one minute without transitions in the Transmit Data

STC Loopback – indicates the DSU has been commanded into a test by the Telco Serving Test Center (STC)

## Alarm Detail Window Menus

The Alarm Detail window has a File menu and a View menu in its menu bar.

The File menu contains 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 Alarm Detail window displays a static snapshot of conditions 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.

The View menu consists of three selections: Major, Minor, and Informational, each with a check box beside it. To remove an alarm category from the window display, click on its check box so that it is unchecked. Clicking a box so that it is checked restores the corresponding category to the display.

## DTE Status

You can launch the NMS 510 DTE Status application from the Element submap Performance Menu or from the front panel menu. The application displays the read-only DTE Status window for the selected DSU (See [Figure 7-3](#)). The window displays indicators for the states of the EIA signals at the DTE interface. Dark green indicates Off, light green indicates On, and light green with a superimposed two-headed arrow indicates transitions.

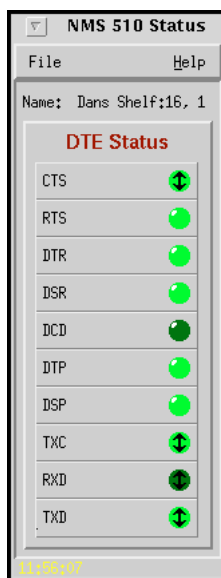
### Status Window Menu

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 7-3** DTE Status Window

## Configuration Functions – Configure

You can launch the NMS 510 Configuration function from the Element submap Configuration Menu or from the front panel menu. When you launch the window, it initially displays the read-only NMS 510 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 DSU

- Load Template, by which you can recall a stored configuration template that you can then save to the DSU 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 four read/write windows by which you can configure various aspects of DSU operation:

- System Options
- Network Options
- DTE Options
- Alarms Reported

## 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 DSU. 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 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 to Template	dialog window
Navigate	System Options...	
	Network Options...	
	DTE Options...	
	Alarms Reported...	
	All Screens...	

The Main Configuration window title bar displays the function name, NMS 510 Configuration. The main body of the window contains read-only items that identify the DSU and provide information about its operations.

## Main Configuration Window Read-Only Display

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

Name:	shelf and slot identification for the master DSE followed by the slot:line:drop address of the DSU
Serial Number:	displays the serial number of the DSU
Firmware Revision:	displays the revision level of the DSU operating code
DDS Version:	displays the revision level of the MIB files that enable SNMP control
NMS 510 MIB Version:	displays the revision level of the MIB files that enable SNMP control

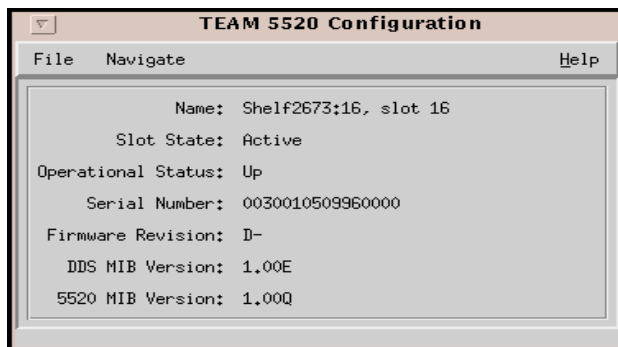


Figure 7-4 Main Configuration Window

## System Options

The NMS 510 System Options configuration window contains three options.

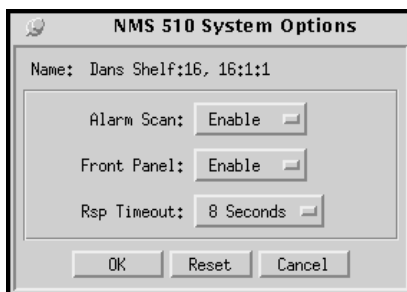


Figure 7-5 NMS 510 System Options Configuration Window

**Alarm Scan** – permits you to enable or disable the DSU alarm scan

Options:

*Enable*

*Disable*

**Front Panel** – permits you to disable the test switches on the front panel of the DSU as protection against any inadvertent interruption of its operation.

Options:

*Enable* – DSU front panel test switches are operational

*Disable* – DSU front panel test switches are disabled

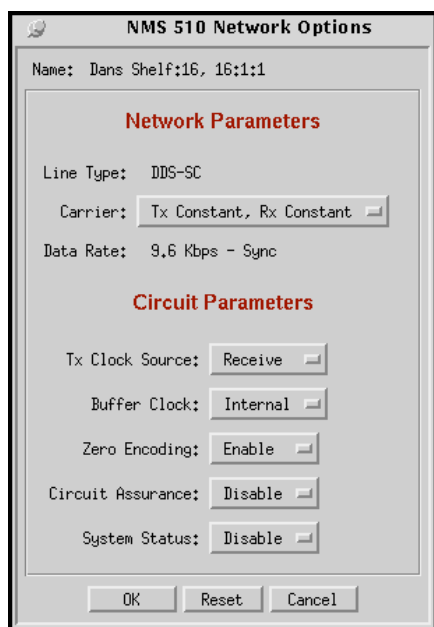
**Rsp Timeout** – selects the length of time the SCM waits for a response from the DSU before it declares a No Response condition.

Options:

2, 4, 6, 8 seconds

## NMS 510 Network Options

The NMS 510 Network Options configuration window ([Figure 7-6](#)) appears when you select Network Options from the Main Configuration window Navigate menu. The window contains two panels labeled Network Parameters and Circuit Parameters.



**Figure 7-6** NMS 510 Network Options Configuration Window

### Network Parameters

**Line Type** – read-only field displays the type of service to which the DSU is connected

Options:

*Clear Channel*

*DDS-I*

*DDS-SC*

**Carrier** – selects the combination of transmit and receive carrier modes (constant/switched) to be used by the DSU

Options:

*Tx Constant, Rx Constant* – for use on a point-to-point circuit

*Tx Constant, Rx Switched* – for use when the DSU is the master unit on a multi-point circuit

*Tx Switched, Rx Constant* – for use when the DSU is a remote unit on a multi-point circuit

*Tx Switched, Rx Switched* – for use when required by specialized applications

**Data Rate** – read-only field displays the data rate and mode (synchronous/asynchronous) in use by the DSU

Options:

*2.4 Kbps - Async*

*2.4 Kbps - Sync*

*4.8 Kbps - Async*

*4.8 Kbps - Sync*

*9.6 Kbps - Async*

*9.6 Kbps - Sync*

*19.2 Kbps - Async*

*19.2 Kbps - Sync*

*56 Kbps - Sync*

*64 Kbps - Sync*

## Circuit Parameters

**Tx Clock Source** – this option is forced to Receive and grayed out

**Buffer Clock** – selects the source of timing for the buffer between the DSU and its DTE

Options:

*Internal* – selects timing provided by the DSU internal clock

*External* – selects timing provided by the DTE; when External is selected for Tx Clock Source this selection is forced and cannot be changed

**Zero Encoding** – selects Zero Encoding. This feature can be used in point-to-point 56 kbps DDS-SC applications to enable the DTE to transmit all spaces (zeros) without violating the ones density requirements of DDS. The feature must be enabled at both units.

Options:

*Enable* – DSU prevents the all space condition at the expense of reduced secondary channel bandwidth

*Disable* – DSU does not prevent the all space condition



**Circuit Assurance** – when this option is enabled the DSU clamps Clear To Send when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code

Options:

*Disable*

*Enable*

**System Status** – when this option is enabled the DSU clamps Data Set Ready when it detects any of the following conditions: Idle, Out of Service, No Signal, Abnormal Station Code, or Inactive Channel Code

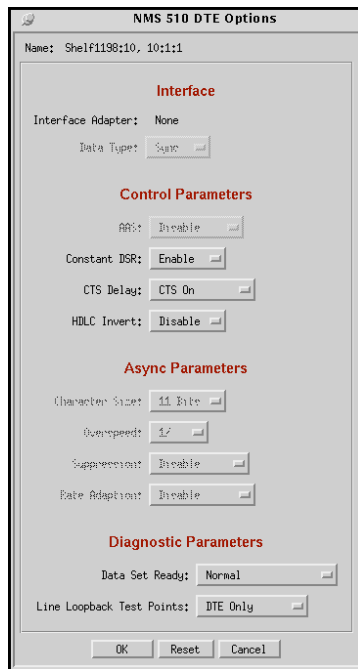
Options:

*Disable*

*Enable*

## DTE Options

The NMS 510 DTE Options configuration window contains four groups of options under the headings Interface, Control Parameters, Async Parameters, and Diagnostic Parameters.



**Figure 7-7** DTE Options Configuration Window

## Interface

**Interface Adapter** – read-only field displays whether or not the DSU has a Data Rate Adapter (DRA) card installed

Options:

*None*

*Installed*

## Control Parameters

**AAS** – selects whether or not the DSU provides Automatic Anti-Streaming protection, and the time limit it enforces when the feature is enabled

Options:

*Disable*

*5 Seconds*

*10 Seconds*

*30 Seconds*

*45 Seconds*

**Constant DSR** – selects the DSU to output either a constant or a switched Data Set Ready signal to its DTE.

Options:

*Disable* – switched DSR signal controlled by DTR

*Enable* – constant DSR signal

**CTS Delay** – selects the delay (if any) between the DSU receiving Request To Send from the DTE and returning Clear To Send to the DTE. This option is forced to CTS On and grayed out when Constant Tx Carrier is selected in the Carrier option of the Network Options window.

Options:

*CTS ON* – no delay; grayed out when Tx Constant is selected in the Carrier option of the Network Options configuration window

*Fixed 3 Char* – equivalent to three character times

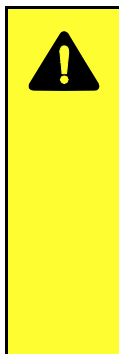
*0 msec*

*30 msec*

*60 msec*

*90 msec*

**HDLC Invert** – selects whether or not the DSU uses inverted channel data from the DTE. Data inversion is used primarily with DDS-SC 56 kbps circuits, to enhance data quality in a network that does not provide B8ZS coding.

**CAUTION**

*You must consider the following factors when you change the setting of this option:*

*When changing the setting of this option, set only this option and save the change to the unit. Do not combine it with any other configuration changes.*

*The option must be set the same at both ends of the link.*

*You must make changes at the remote DSU first, before you change the option setting at the DSE.*

*Changing the option at the remote causes loss of communication between the remote and master units until you change the option setting at the master.*

Options:

*Disable* – normal data

*Enable* – inverted data

**Async Parameters**

The Async Parameters options are grayed out when a synchronous Data Rate is selected in the Network Interface configuration.

**Character Size** – selects the number of bits per asynchronous character, including start and stop bits

Options:

*11 Bits*

*10 Bits*

*9 Bits*

*8 Bits*

**Over Speed** – selects the percentage above its configured normal operating rate at which the DSU can accommodate receive data. It performs the over speed compensation by shaving stop bits.

Options:

*1%*

*2.3%*

**Suppression** – determines what actions the DSU takes concerning transmit and receive End of Text (EOT)

Options:

*Disable* – the DSU does not insert EOT at the end of transmissions, and does not delete it from the end of received signals

*Rx EOT* – the DSU deletes EOT from the end of received signals; it does not insert EOT at the end of transmissions

*Tx EOT* – the DSU inserts EOT at the end of transmissions; it does not delete it from the end of received signals

*Rx + Tx EOT* – the DSU inserts EOT at the end of transmissions, and deletes it from the end of received signals

**Rate Adaption** – specifies the DTE interface operating rate when it is below that of the DDS circuit. This option is only valid when the Data Rate option in the Network Options window is selected for 2.4 Kbps - Async; it is grayed out when any other rate is selected.

Options:

*Disable*

*1200*

*600*

*1800 to 2400*

### Diagnostic Parameters

**Data Set Ready** – selects how the DSU controls the DSR output to the DTE during local loopback (LL) test modes

Options:

*Off During LL Test*

*Normal* – DSR operates in the same way that it is optioned to function during data mode operations

**Line Loopback Test Points** – selects whether a Line Loopback command causes the DSU only to loop transmit data back to the DTE, or also to loop receive data back to the network

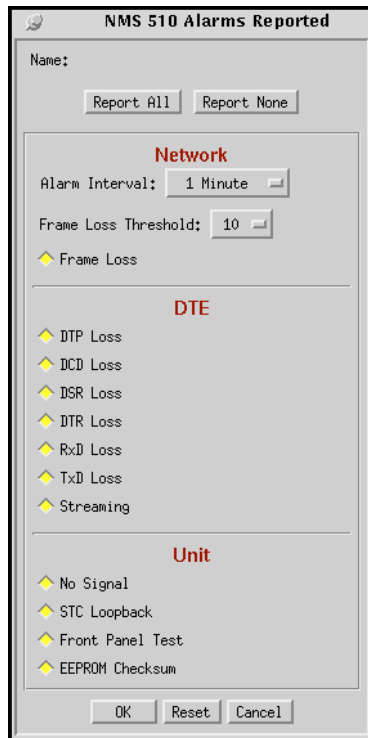
Options:

*Network & DTE* – Line Loopback command causes DSU to loop data in both directions

*DTE Only* – Line Loopback command causes DSU to loop data back to DTE only

## Alarms Reported

The NMS 510 Alarms Reported configuration window ([Figure 7-8](#)) lets you configure which alarm conditions are to be reported for the DSU and which are not. The window contains three panels labeled Network, DTE, and Unit as shown below.



**Figure 7-8** Alarms Reported Configuration Window

### Buttons and Option Selection

Each of the alarm options in the Alarms Reported configuration window has a small selection field located to its left. You can select or de-select individual alarm options by simply clicking the mouse button on the appropriate selection fields. When an option is selected for its alarm to be reported, its selection field is highlighted. The selection fields next to alarm options that are not to be reported are not highlighted.

The Alarms Reported configuration window has two buttons positioned above the option fields: Report All and Report None:

- Click on Report All to highlight all the alarm option selection fields.
- Click on Report None to remove the highlight from all the alarm option selection fields.

After clicking Report All or Report None you can then change the state of individual fields as needed.

### Alarms Reported Buttons

**Report All** – unmask all alarms.

**Report None** – mask all alarms.

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

**OK** – saves your changes and closes the window.

**Cancel** – cancels your changes and closes the window.

### Network

Frame Loss is the one Network alarm. When it is unmasked you must specify a threshold for evaluating the alarm condition.

**Alarm Interval** - determines the time span for threshold evaluation.

Options:

*1 min, 5 min, 10 min, 15 min*

**Frame Loss** - lets you mask or unmask Frame Loss alarms. The alarm occurs when the number of lost frames in the received signal during one Alarm Interval exceeds the selected threshold.

Options:

*1, 2, 5, 10, 20, 40, 60, 80, 99*

### DTE

*DTP Loss* – alarm indicating loss of Data Terminal Power

*DCD Loss* – alarm indicating loss of Data Carrier Detect

*DSR Loss* – alarm indicating loss of Data Set Ready

*DTR Loss* – alarm indicating loss of Data Terminal Ready

*RXD Loss* – alarm indicating no receive data from the remote DSU

*TXD Loss* – alarm indicating no transmit data from the DTE

*Streaming* – alarm indicating a streaming condition at the DTE interface

### Unit

*No Signal* – alarm indicating there is no signal at the DSU network interface

*STC Loopback* – alarm indicating the DSU has been commanded into a test mode by the Telco Serving Test Center (STC)

*Front Panel Test* – alarm indicating the DSU has been commanded into a test mode by means of its front panel switches

*EEPROM Checksum* – Configuration Checksum error alarm

## Configuration Functions – Maintenance

You can launch the NMS 510 Maintenance function from the Element submap Configuration Menu or from the front panel menu. The application displays one read/write window by which you can control some aspects of DSU operation that fall outside the scope of Configuration. See *Figure 7-9*.

The window title bar displays the function name, NMS 510 Maintenance. The Name field displays the shelf name and the slot number of the master DSE followed by the slot:line:drop address of the DSU. The File menu contains only the selection Exit, by which you can dismiss the window.

### Maintenance Window Buttons

The Maintenance window provides the following three buttons.

**Front Panel** – permits you to enable or disable the hardware test switches on the front panel of the DSU. The label on the button appears as either Inhibit Front Panel or Enable Front Panel, and it toggles between the two displays each time you click on the button. The button displays Inhibit Front Panel when the switches are enabled, and it displays Enable Front Panel when they are disabled.

**Reset to Factory Defaults** – causes all options in the DSU to return to their factory default settings. When you click on this button the application displays a warning “Resetting to factory defaults will terminate communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.

**Soft Reset** – causes the DSU to perform a reset and resume operation using its current configuration. When you click on this button the application displays a warning “Performing a soft reset will disrupt communications to the unit. Do you want to continue?” Click on the OK button in the warning window to complete the reset, or click on the Cancel button to cancel the reset.



**Figure 7-9** Maintenance Window

## Diagnostics

You can launch the NMS 510 Diagnostics function from the Element submap Fault menu or from the front panel menu.

The application displays one read/write window by which you can control a variety of test functions on the DSU.

### Diagnostics Window

Beneath the menu bar and the Name field the Diagnostics window (*See Figure 7-10*) is divided into three areas:

- Selection panel – contains buttons and check boxes for selecting, starting, and stopping test functions
- Graphic panel – depicts the path followed by test data during the current test
- Time and results panel – contains an input field for specifying the duration of a test that employs the DSU test pattern generator; displays Time Remaining and Test Results

The Diagnostics window menu bar contains File and Navigate. The File menu has only the Exit selection by which you dismiss the window. The Navigate menu also has a single selection: History, by which you can access a display of test results (*see Figure 7-11*) accumulated during the current diagnostic session.

### Tests

The Diagnostics window selection panel lists three Tests to choose from, and two Patterns you can select for those tests that employ the DSU test pattern generator. The panel also includes an input field for the User Defined test pattern, and two buttons: Start Test and Stop Test.

The following Tests are available:

Line Loop (performed only with test pattern)

End To End (performed only with test pattern)

Dataloop (can be performed with or without test pattern)

Delay Test

The Patterns are:

511 bit

2047 bit

15 bit

Each Test and Pattern is accompanied by a check box on which you can click to select it. The Pattern check boxes are grayed out when the selected Test cannot be combined with an internal test pattern.



## Diagnostic Test Procedure

Perform the following steps to select and carry out a test procedure on the DSU.

1. Click on the check box next to the selected test. If you are running the Delay Test, go to Step 4.
2. Under the Pattern heading, click on your selected pattern. The Dataloop test also supports the selection None (for external data).
3. If you are using an internally generated test pattern select, in the Test Time field, how long the test is to run before ending automatically.
4. Click on the Start Test button. While the test runs, the graphic panel illustrates the data path employed by the test. If you are using an internally generated test pattern, the Time Remaining field counts down from 100 to 0 percent.

During a test that employs an internally generated test pattern the Test Results field displays the number of errors detected; it displays In Loop when external data is in use.

5. If you are using an internally generated test pattern, the test ends automatically at the end of the specified Test Time. For any other test, click on the Stop Test button to end the procedure. The Stop Test button can also stop a test with test pattern prior to the Test Time limit that would end it automatically.

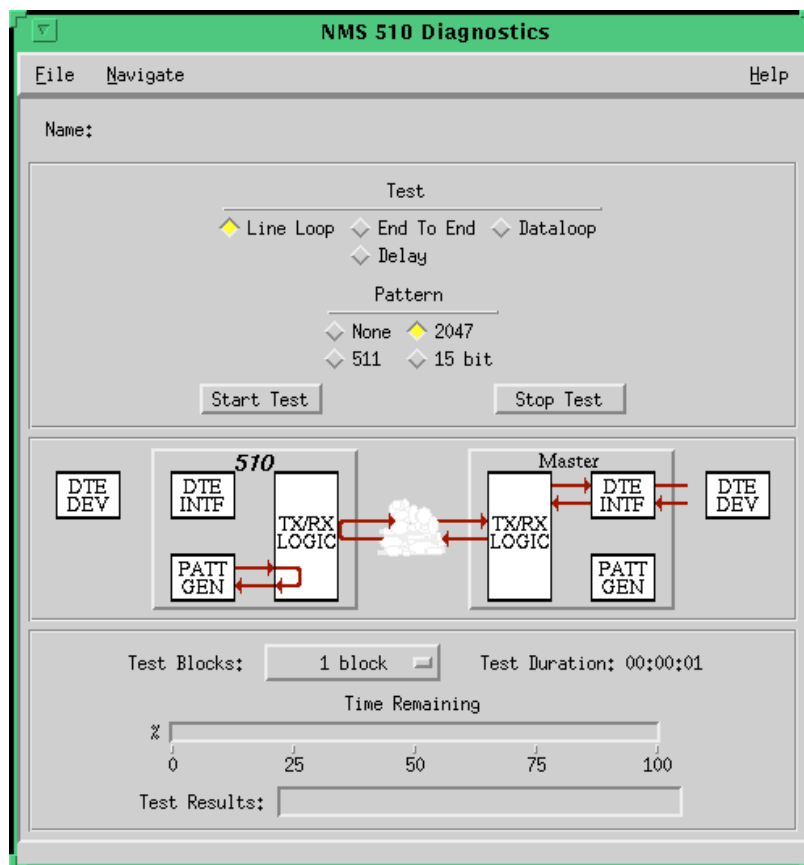


Figure 7-10 NMS 510 Diagnostics Window

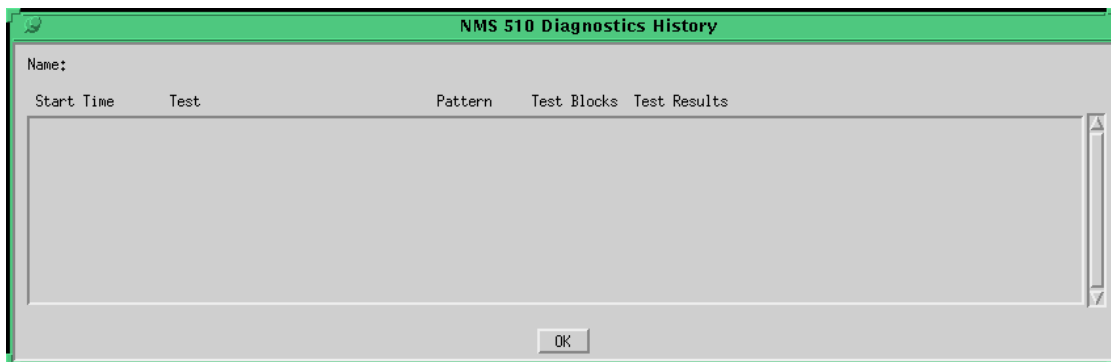
## Diagnostics Table

The table below briefly describes the available tests.

Test	Description
Line Loop (with Pattern)	DSU initiates a loopback at its network interface and activates its test pattern generator/checker
End To End (with Pattern)	DSU activates its test pattern generator/checker and transmits the pattern on its link to the DSE. DSU checks for errors in the signal it receives, which is generated by the DSE.
Dataloop (without Pattern)	DSE transmits a command on the link that causes the DSU to loop data back to the DSE; DTE or external test equipment at the DSE is responsible for generating and checking a test pattern.
Dataloop (with Pattern)	DSE transmits the loopback command to the DSU, and activates its test pattern generator/checker to transmit the pattern and check for errors in the signal it receives back.
Delay Test	DSU transmits and receives a test signal, which is looped back by the DSE; the DSU measures the round trip time (delay).

## 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 7-11](#)).



**Figure 7-11** Diagnostics History

The Diagnostics History window displays information in five columns:

Start Time – date and time test began

Test – name of the test

Pattern – test pattern used for the test; N/A when internally generated pattern is not used

Test Blocks – number of data blocks sent during the test, applies only to tests with test pattern

Test Results – “Idle: *n/n* Bit/Block Errors” for a completed test with test pattern; “Not in loop [STOPPED]” for a completed loop test without test pattern; “TEST STOPPED” for any test with test pattern that was ended by the Stop Test button; “*n* ms.” for 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.

## Miscellaneous Functions

### Front Panel Poll Rate

You can open the Front Panel Poll Rate window (See [Figure 7-12](#)) from the Shelf Map 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

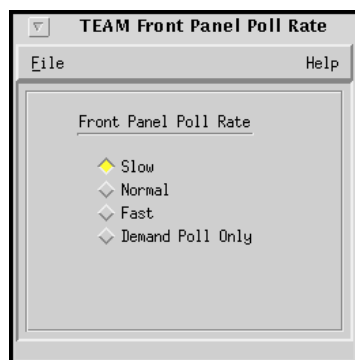
Demand Poll Only

The File menu in the menu bar contains two selections: Save to File and Exit.

To set the desired polling rate, first click on the appropriate checkbox and then select Save to File from the File menu. The precise polling frequency that results 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.

To dismiss the window, select Exit from the File menu.



**Figure 7-12** Front Panel Poll Rate Window

## Note Pad

You can launch the Note Pad application from the Shelf Map 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.

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