# iDSL Digital Access and Cross-Connect System (DACS)

## *Administrator's Reference Guide*

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# About this guide

This guide describes configuring a Patton Electronics digital cross connect (DACS). This section describes the following:

- Who should use this guide (see “Audience”)
- How this document is organized (see “Structure”)
- Typographical conventions and terms used in this guide (see “Typographical conventions used in this document” on page 14)

## Audience

This guide is intended for the following users:

- System administrators
- Operators
- Installers
- Maintenance technicians

## Structure

This guide contains the following chapters:

- Chapter 1 describes configuring the Administration Page window
- Chapter 2 describes configuring the Home window
- Chapter 3 describes configuring the Import/Export window
- Chapter 4 describes configuring the Alarms window
- Chapter 5 describes configuring the DS0 Mapping window
- Chapter 6 describes configuring the Clocking window
- Chapter 7 describes configuring the iDSL Port Configuration window
- Chapter 8 describes configuring the Ethernet window
- Chapter 9 describes configuring the Filter IP window
- Chapter 10 describes configuring the ICMP window
- Chapter 11 describes configuring the IP window
- Chapter 12 describes configuring the TCP window
- Chapter 13 describes configuring the UDP window
- Chapter 14 describes configuring the RIP Version 2 window
- Chapter 15 describes configuring the SNMP window
- Chapter 16 describes configuring the System window

- Chapter 17 describes configuring the System Log window
- Chapter 18 describes configuring the T1/E1Link window
- Chapter 19 describes configuring the T1/E1 Assignment window
- Chapter 20 describes the contents of the About window
- Chapter 21 describes the contents of the License window
- Appendix A contains a table with the color code for the RJ-21X connector

## Typographical conventions used in this document

This section describes the typographical conventions and terms used in this guide.

### *General conventions*

The procedures described in this manual use the following text conventions:

Table 1. Text conventions

| Convention | Meaning |
|---|---|
| **Futura bold type** | **Indicates the names of menu bar options.** |
| ***Italicized Futura type*** | **Indicates the names of options on pull-down menus.** |
| **Futura type** | **Indicates the names of fields or windows.** |
| Garamond bold type | **Indicates the names of command buttons that execute an action.** |
| **< >** | **Angle brackets indicate function and keyboard keys, such as <SHIFT>, <CTRL>, <C>, and so on.** |
| **Are you ready?** | **All system messages and prompts appear in the `Courier` font as the system would display them.** |
| `% dir *.*` | **Bold Courier font indicates where the operator must type a response or command** |

## Mouse conventions

The following conventions are used when describing mouse actions:

Table 2. Mouse conventions

| Convention | Meaning |
|---|---|
| **Left mouse button** | **This button refers to the primary or left most mouse button (unless you have changed the default configuration).** |
| **Right mouse button** | **This button refers the secondary or right most mouse button (unless you have changed the default configuration)** |
| **Point** | **This word means to move the mouse in such a way that the tip of the pointing arrow on the screen ends up resting at the desired location.** |
| **Click** | **Means to quickly press and release the left or right mouse button (as instructed in the procedure). Make sure you do not move the mouse pointer while clicking a mouse button Double-click means to press and release the same mouse button two times quickly** |
| **Drag** | **This word means to point the arrow and then hold down the left or right mouse button (as instructed in the procedure) as you move the mouse to a new location. When you have moved the mouse pointer to the desired location, you can release the mouse button.** |

# Chapter 1 Introduction

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## Introduction

You may configure the digital cross connect (DACS) by using its internal HTTP/HTML Administration Pages. However, to enter into the HTTP/HTML pages, you must first define the LAN Address Technique, LAN IP Address, and LAN Subnet Mask for the DACS. If you have not done so, please refer to the Getting Started Guide that came with your DACS.

## Logging into the HTTP/HTML Administration Pages

To log into the HTTP/HTML Administration pages, you must enter the 4-octet Internet Protocol (IP) (for example, *http://your.server.ip.address*) address as the Universal Resource Locator (URL) into a World-Wide Web (WWW) browser. After you enter the IP address, the DACS will ask for your user name and password as shown in figure 1.

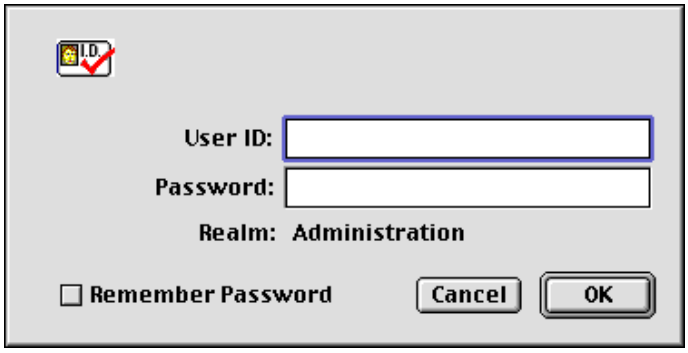


**Figure 1. DACS login window**

Your DACS will accept the following default administrative passwords:

- superuser—this password carries full permission to change and view any parameters in the DACS
- monitor—this password allows full viewing of any non-password oriented variables.

> **Note** For security reasons, we recommend that you change these passwords immediately after initial configuration.

## HTTP/HTML and SNMP Object Format

In this document, we shall describe the variables found on each of the internal HTTP/HTML pages. This description will include brief definitions of the Patton Enterprise MIB or SNMP MIB II object identifiers wherever applicable. The format of the variables will resemble figure 2.


**Figure 2. HTTP/HTML and SNMP object format**

## Saving HTTP/HTML Object Changes

Sometimes you will need to save changes that you have made in the HTTP/HTML pages. Do the following to make changes to read/write variables:

1. Select the appropriate **Modify** screen.
2. Make changes to the desired parameter.
3. Click on the **Submit Query** button.
4. Return to the **HOME** screen.
5. Click on the **Record Current Configuration** button.

> Note Make sure you follow steps 1 through 5 when modifying the HTTP/HTML pages. Otherwise, your changes will be lost when the DACS is power-cycled.

# Chapter 2 Home

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## Introduction

This chapter describes the **HOME** window—the first **Administration Page** that you see after logging into the DACS (see figure 3). From **HOME**, you can monitor current systems status, save any system configuration changes, or reset the system without power-cycling the DACS.

> Note Clicking on the **HOME** link in the **Configuration Menu** pane will return you to the **HOME** page from any other page.

The **HOME** window is divided into two *panes*: the **Configuration Menu** pane on the left-hand side and the configuration/information pane (see figure 3). The **Configuration Menu** contains the links to the various DACS subsystems, while the configuration/information pane is where you can view status and other information, or make changes to the system configuration. Unlike the Configuration Menu pane, which looks the same no matter which subsystem page you are viewing, the configuration/information pane contents will change as you move from one subsystem page to another.

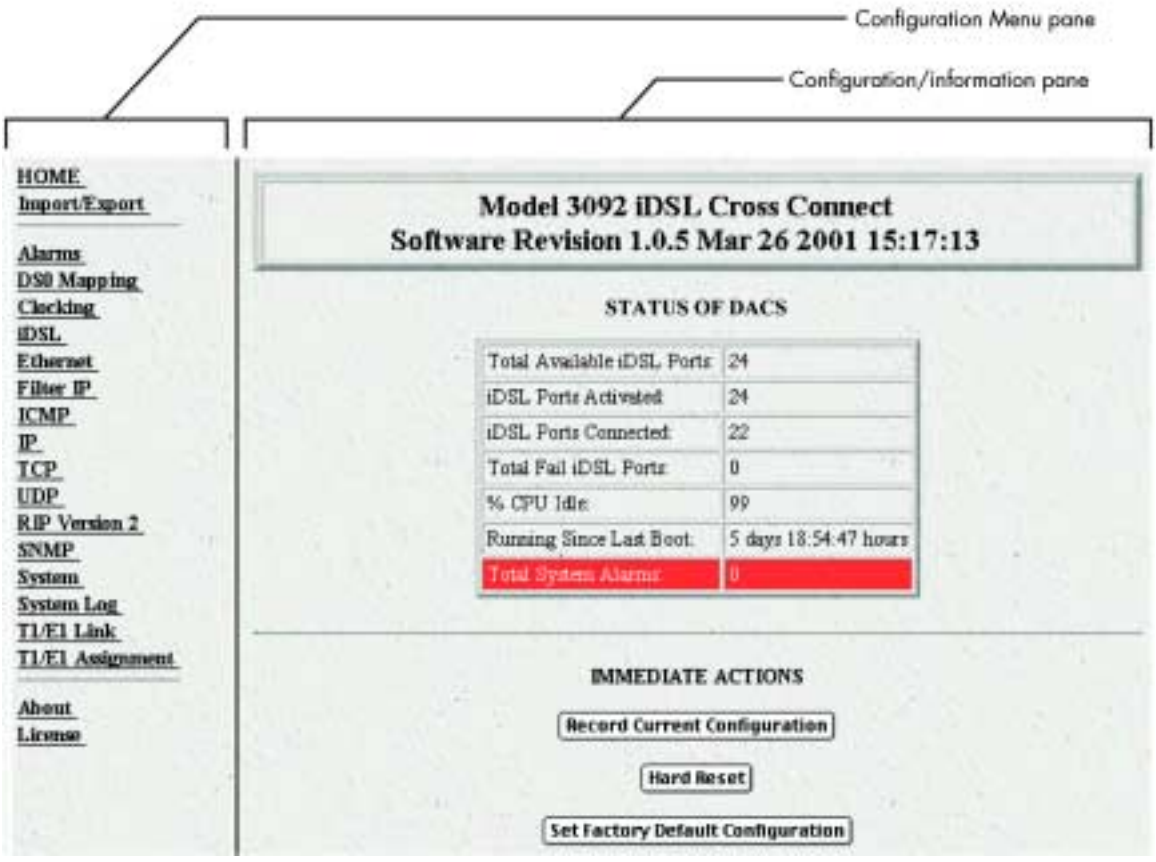


**Figure 3. HOME page**

## Operating Status Variables

There are seven system variables which describe the immediate operating status of the DACS. These variables are shown in figure 4 and are described in the following sections.

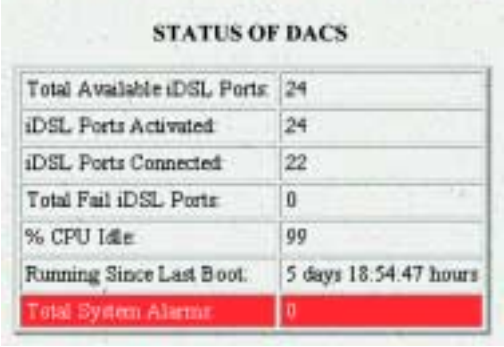


**Figure 4. STATUS menu**

### *Total Available iDSL Ports (noAvailUchipIdsl)*

Total available iDSL modems in the box.

### *iDSL Ports Activated (noActivUchipIdsl)*

Total activated iDSL modems in the box.

### *iDSL Ports Connected (noConnectUchipIdsl)*

Total connected iDSL modems in the box.

### *Total Fail iDSL Ports (noFailUchipIdsl)*

Total failure iDSL modems in the box.

### *% CPU Idle (boxIdleTime)*

This is an indication of the amount of system CPU power which is not being utilized by the Model 3092. The return value is a percentage of free CPU cycles since the last time the variable was read.

### *Running Since Last Boot (sysUpTime)*

The time (in hundredths of a second) since the DACS was last power-cycled.

### *Total System Alarms (alarmTotal)*

Total number of alarms currently active in the system.

## Immediate Actions

There are several immediate actions (see figure 5) in superuser mode which will cause the DACS to operate according to the descriptions in the following sections.

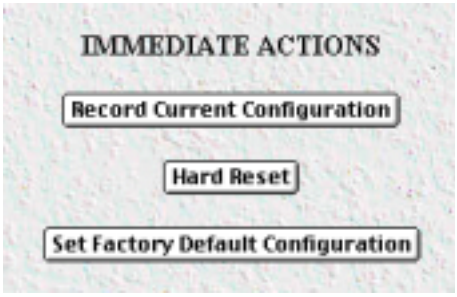


**Figure 5. Immediate Actions buttons**

### *Record Current Configuration (storeConfig(1))*

This feature saves the current configuration in permanent FLASH memory. In other words, configuration changes made in the subsystem web pages become permanent when you select **Record Current Configuration**.

1. Configuration changes in the DACS are made in the subsystem web pages by clicking **Submit Query**. This stores the configuration in volatile DRAM (Dynamic RAM) only. Since the **Submit Query** changes take immediate effect, the administrator can test different configuration parameters without needing to change the FLASH configuration at this moment.
2. Without clicking on **Record Current Configuration**, all configuration changes will be lost if the power is recycled. After doing the **Record Current Configuration** save, the current configuration of the DACS will not be lost with power cycling.

> Note The most important step after completing the configuration is to save it in permanent memory by clicking on **Record Current Configuration**.

### *Hard Reset (hardReset(2))*

This button causes the DACS to perform a cold restart. When you select **Hard Reset**, the DACS requests confirmation for the execution of this command. Then, the DACS will disconnect all current sessions, re-initialize the interfaces, and re-load configuration parameters from FLASH.

### *Set Factory Default Configuration (forceDefaultConfig(3))*

This button clears out the configuration in FLASH and loads the factory default parameters into FLASH memory. The factory default settings will not execute on the DACS until it is re-booted, for example by doing a **Hard Reset**.

> Note **Set Factory Default Configuration** will delete the DACS's Ethernet IP address and any other site specific settings made for your particular installation. You will have to re-enter the DACS's Ethernet IP address and netmask using the front panel control port in order to use the HTTP/HTML Management pages.

# Chapter 3 Import/Export

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## Introduction

The Import/Export function enables you to make a backup (or *export*) copy of your DACS's configuration parameters. By exporting the configurations, the saved files can quickly be loaded, or *imported*, into a replacement DACS—greatly speeding up the installation process should an DACS need replacing.

Note All actions for Import/Export require superuser access privileges.

To import or export a configuration, click on **Import/Export** under the **Configuration Menu** to display the **Import/Export** main window (see figure 6).


**Figure 6. Import/Export main window**

## Export Configuration

Note The exported configuration file is a text-format file. Do not try, however to edit the operating characteristics contained in the file.

Note The parameters that will be exported are the power-up settings as they are stored in flash memory and *may not* be the current operating parameters. To ensure that you export the most current parameters, go to **HOME**, then click on the **Record Current Configuration** button under **Immediate Actions**.

To export the flash configuration, click on the **Export Flash** link on the **Import/Export** main page. The DACS will display text configuration information resembling that shown in figure 7.

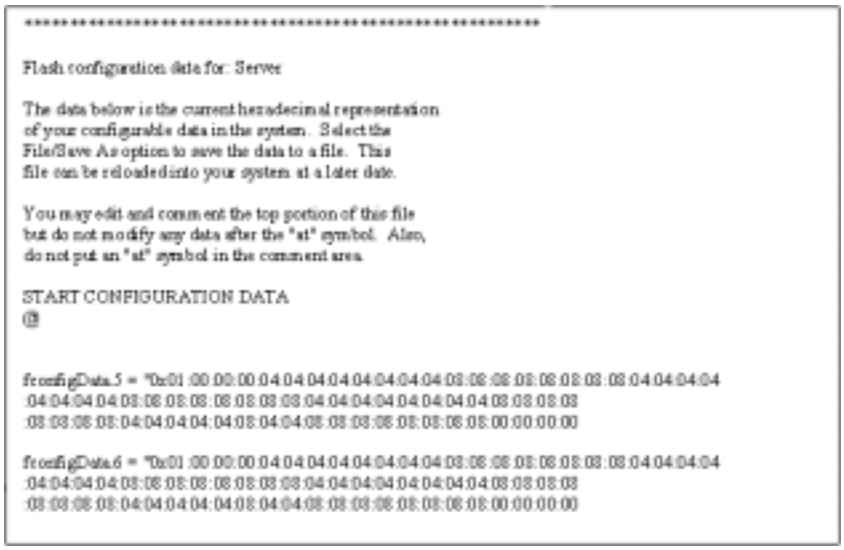


**Figure 7. Typical DACS flash memory configuration data**

To save the displayed data as a text file, select the **Save** option on your browser (see figure 8). For example, under Netscape, select **File** > **Save As**. A dialog box will display enabling you to save the contents of the export parameters to a text file. Select the location where you want the file stored, type a file name, and click **Save**.

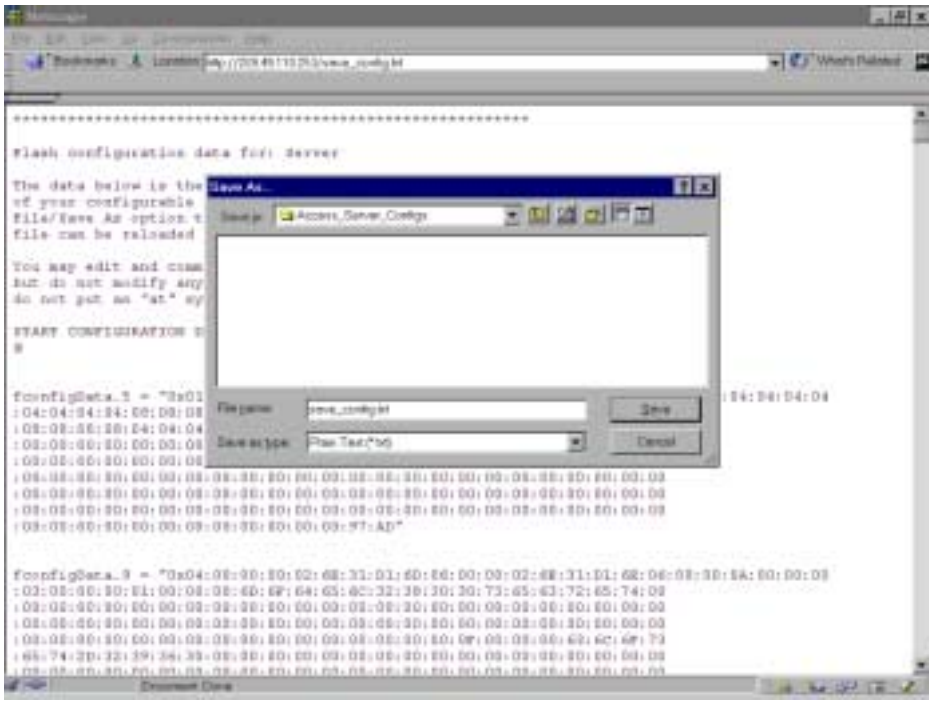

**Figure 8. Saving the DACS flash memory configuration data as a text file**

## Import Configuration

To import a configuration file into the DACS, type the complete path and filename for the configuration file you wish to load or click on the **Browse…** button to select the desired file, then click on the **Submit Query** button (see figure 6 on page 26).

Upon successfully importing the file, the DACS will display *Configuration Load Complete*, indicating that the new operating parameters have been loaded into flash memory.

Click on **HOME** under the **Configuration Menu**, then click on the **Hard Reset** button under **Immediate Actions**.

> Note *Do not* select **Record Current Configuration** after importing configuration parameters because the configuration is imported directly into non-volatile FLASH memory. Upon doing a Hard Reset the imported configuration is now the operational software is RAM.

# Chapter 4 Alarms

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## Introduction

The DACS has an extensive alarm reporting system which enables users to configure, monitor, and test major and minor alarms. The alarm system can be set to notify of equipment failures (for example, a power supply failure) or T1/E1 port malfunctions. There are 83 alarms that can be configured by the system administrator to generate alerts based on the condition of the DACS.

## Displaying the alarms window

Click on **Alarms** under the **Configuration Menu** to display the Alarm System main window (figure 9).

Note The system administrator can manually generate a specific alarm for testing purposes or clear the alarm counters from the main window.

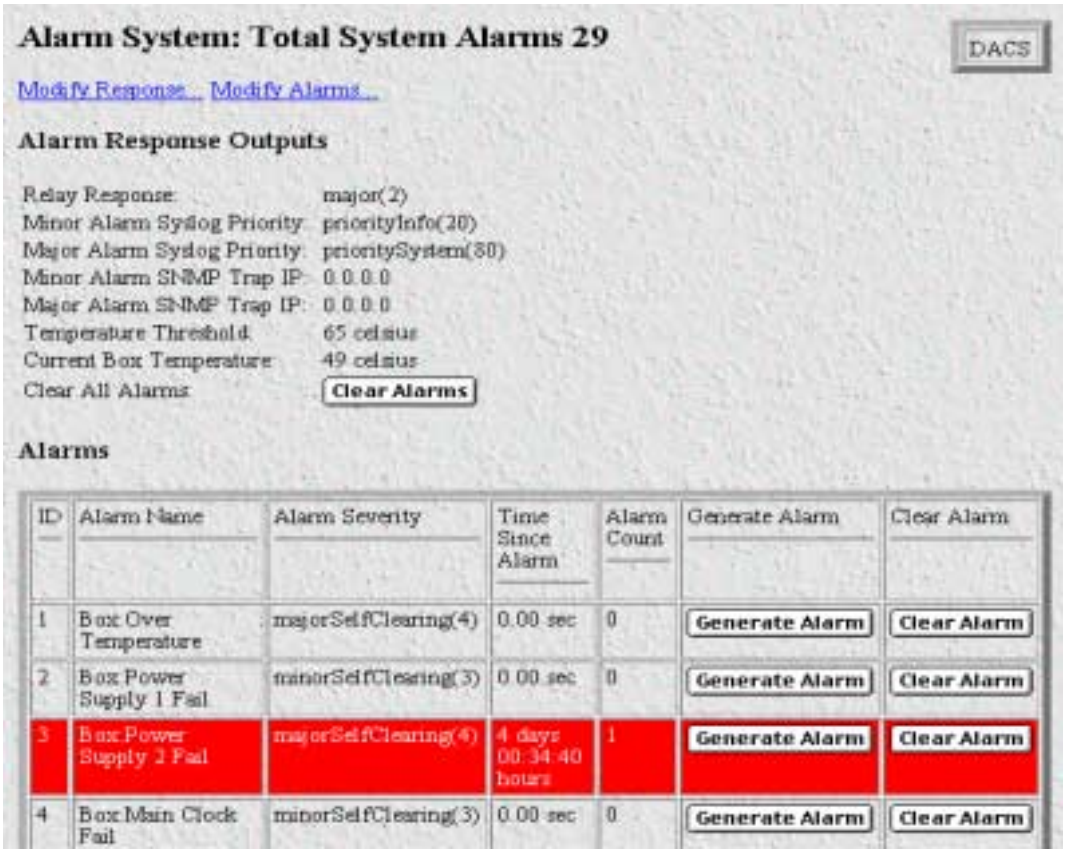


**Figure 9. Alarms main window**

The iDSL Multiplexer has four methods to notify an alarm condition:

1. Front panel LED—The front panel ALARM LED has three states that indicate the presence and severity of an alarm. The states are:
   - Off—No alarm present
   - Solid—Minor alarm
   - Flashing—Major alarm.

   Note The POWER LED will flash if a power supply failure alarm is present.

2. Administration web page indication—The Alarms window of the administration page uses red highlighting to indicate which items are in an alarm state (see figure 10).


**Figure 10. Sample alarm indication**

3. SYSLOG/SNMP—For external notification, the DACS can be configured to send a SYSLOG message or an SNMP TRAP to an external management host. To configure the alarm response for either SNMP Traps or SYSLOG messages, click on the **Alarm Response** link (go to "Alarm Parameters" on page 33).
4. Alarm Relay—Located on the rear of the chassis, the Alarm Relay is a 3-position terminal block. The Alarm Relay may be configured to indicate when a major alarm, a minor alarm or both major and minor alarms occur. It may also be disabled. The 3-position terminal block numbers its pins from 1 to 3 from left to right. When no alarms are indicated, pins 1 and 2 are normally closed and pins 2 and 3 are normally open. Upon the occurrence of an alarm—the type is configured as major, minor, or both—pins 1 and 2 are open and pins 2 and 3 are closed.

Besides enabling a user to view current alarm status, you may manually generate an alarm as a test and clear the alarm time and count variables. The Alarms main window also contains links to the following:

- Modify Response—for configuring how the Alarm Response Outputs for notifying administrators of an alarm (see "Alarm Parameters" on page 33)
- Modify Alarms—Clicking on this link takes you to a window where you can configure the importance or severity of each individual alarm. The severity of the alarm type may generate a minor, major, minor self-clearing, or major self-clearing alarm. Any alarm type may be disabled. ("Modify Alarms—Configuring alarm severity levels" on page 35)

## Alarm Response Outputs

Alarm Response Outputs display the current setting for handling alarm notification via the different Alarm Response Outputs. To change the Alarm Response Outputs parameters, refer to "Alarm Parameters" on page 33.

### Relay Response

The relay of the Alarm Port on the rear of the chassis will be activated when a major, minor, or both major and minor alarm is generated. The Alarm Port may also be disabled.

### Minor Alarm SYSLOG Priority (minSyslogPriority)

Sets the priority of the minor alarm SYSLOG message that will be generated upon the occurrence of a minor alarm.

### Major Alarm SYSLOG Priority (majorSyslogPriority)

Sets the priority of the major alarm SYSLOG message that will be generated upon the occurrence of a major alarm.

### Minor Alarm SNMP Trap IP [address] (minorTrapIp)

Displays the IP address of a SNMP management station for receiving the SNMP trap messages upon the occurrence of an active minor alarm. The SNMP trap messages are sent in UDP datagrams. When the IP address is set to 0.0.0.0, no trap messages will ever be sent.

### Major Alarm SNMP Trap IP [address] (majorTrapIp)

The same function as the Minor Alarm Trap IP except for only the occurrence of active major alarms.

### Temperature Threshold

An alarm will be generated when the box temperature exceeds this temperature value in degrees Celsius.

### Current Box Temperature

The internal temperature in the box in degrees Celsius.

### Clear All Alarms

Click on this button to clear all the alarms (that is, to reset all the alarms). This clearing action will, for all the alarms, reset the alarm, reset Time Since Alarm to 0.00 seconds, and reset the Alarm Count to 0 (zero).

## Alarms

This portion of the Alarms main window displays the alarm status table, where you can view current alarm status, manually generate an alarm as a test, and clear the alarm time and alarm count variables.

### Alarm ID

This number identifies the alarm item.

### Alarm Name

The alarm items are grouped into two categories: system and WAN trunk alarms. The system group category lists DACS temperature and power supply status. The WAN category monitors the T1/E1/PRI ports for yellow and red alarms.

### *Alarm Time*

The **Alarm Time** column displays the number of seconds the alarm has been activated.

### *Alarm Count*

The **Alarm Count** column indicates how many times the alarm has occurred and is useful for monitoring self-clearing alarms.

### *Generate Alarm*

For testing purposes, clicking the **Generate Alarm** button next to each alarm name will cause that alarm condition to be activated.

### *Clear Alarm*

Clicking the **Clear Alarm** button resets the alarm to a non-alarm condition.

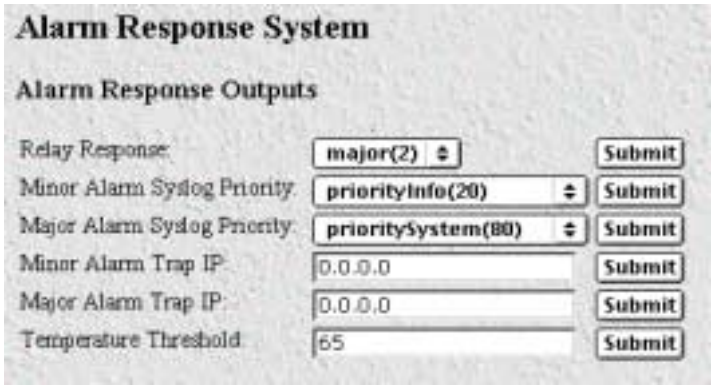


**Figure 11. Alarm Response System window**

## *Alarm Parameters*

The Alarm Status Table on the Alarm System main page displays the current alarm status. You may also manually generate an alarm as a test and clear the alarm, the alarm time and the alarm count variables.

- Alarm ID—The Alarm ID identifies the alarm numerically. E.g., Alarm ID #2 identifies the alarm named "Box: Power Supply I Failed."
- Alarm Name—The alarm items are grouped into three categories: Box, WAN, and iDSL alarms. The Box alarm group contains the alarms "Over Temperature" and "Power Supply Fail" for each of the two power supplies. The WAN alarm group includes yellow and red alarms. The iDSL alarm group has Line Down, Bit Error, and Hardware Failure alarms for each iDSL modem link.
- Alarm Severity—For each alarm, it shows whether the alarm is disabled or configured to generate a major, minor, major self-clearing, or minor self-clearing alarm.
- Time Since Alarm—Elapsed time since the alarm occurred.
- Alarm Count—The number of times this alarm has occurred since it has been cleared. It is also for monitoring self-clearing alarms.
- Generate Alarm—For testing a particular alarm, click on Generate Alarm. This activates the alarm as if the actual trigger event had occurred.

- Clear Alarm—Clearing the alarm resets the alarm, resets Time Since Alarm to 0.00 seconds and resets Alarm Count to 0 (zero).

### *Types of Alarms*

- Box Alarm Group
  - Box: Over Temperature—When the internal box temperature exceeds the temperature threshold under **Modify Response...**, an alarm will be generated.
  - Box: Power Supply I – II Fail—An alarm will be generated when a power supply fails.
- WAN Alarm Group
  - WAN 1 – 4: Yellow Alarm—When a WAN port sees a yellow alarm, the specific WAN alarm will be sent.
  - WAN 1 – 4: Red Alarm—When a WAN port sends a red alarm, the specific WAN alarm will be sent.
- iDSL Alarm Group
  - iDSL 1 – 24: Line Down—When an iDSL modem line is down, an alarm is generated.
  - iDSL 1 – 24: Bit Error—When the bit error for an iDSL modem connection exceeds a particular value, an alarm is generated.
  - iDSL 1 – 24: Hardware Failure—When an internal iDSL modem has a hardware failure, an alarm is generated.

## Modify Response—Configuring the alarm response system

The alarm response outputs refer to points of external notification. Note that the front panel Alarm LED and the web administration pages will always indicate an occurrence of an active alarm. To configure each alarm response output, click on **Modify Response**. The Alarm Response System page appears (see figure 11). Choose the alarm response output that you want to configure with the pull down menu. After configuring a specific alarm response output, remember to click on **Submit Query** before going to the next alarm response output; otherwise the change will not occur.

### *Relay Response*

The relay may be set to go active for minor alarms, major alarms, or both. It may also be disabled with the parameter "none."

### *Minor Alarm Syslog Priority & Major Alarm Syslog Priority*

When a minor/major alarm occurs, a message of the selected priority is sent to the Syslog engine. The Priority levels are priorityDisable(100), prioritySystem(80), priorityService(60), priorityOddity(40), priorityInfo(20), priorityDebug(10), and priorityVerbose(5). For more information on Syslog messages, refer to Chapter 17, "System Log".

### *Minor Alarm SNMP Trap IP [address] (minSyslogPriority)*

Upon the occurrence of a minor alarm, an SNMP Trap message is sent to a host system (or a management station). This parameter is the IP address of the host running the SNMP Trap daemon. When the IP address is set to 0.0.0.0 no SNMP Trap message will be sent.

### *Major Alarm SNMP Trap IP [address] (majorSyslogPriority)*

This parameter functions in the same manner as the Minor Alarm SNMP Trap IP [address] except it applies to major alarms. Upon the occurrence of a major alarm, an SNMP Trap message is sent to a host system (or a management station). This parameter is the IP address of the host running the SNMP Trap daemon. When the IP address is set to 0.0.0.0 no SNMP Trap message will be sent.

### *Temperature Threshold*

An alarm message is generated when the internal box temperature exceeds this threshold value (degrees Celsius). You can change the threshold temperature, but we recommend that you use the factory default.

## Modify Alarms—Configuring alarm severity levels

Clicking on **Modify Alarms** window (see figure 12) displays a table listing each individual alarm. From this page you can configure the severity for each alarm (such as major, minor, major self-clearing, and minor self-clearing). Each alarm can be disabled as appropriate for your application.


**Figure 12. Modify Alarms settings window**

There are 83 alarms that can be independently configured to generate alarm messages. Each alarm item can be set for one of the following severity levels:

- Ignore(0)—Do not generate an alarm.
- Minor(1)—Generate a minor alarm that will not reset until the administrator manually clears it.
- Major(2)—Generate a major alarm that will not reset until the administrator manually clears it.
- MinorSelfClearing(3)—Generate a minor alarm that automatically clears after a fixed period of time. If the alarm condition has not ceased, the alarm will be automatically cleared, but another alarm will be immediately generated. If the alarm condition has ceased, the alarm will be automatically cleared after the same fixed period of time.
- MajorSelfClearing(4)—Same as MinorSelfClearing(3) except that it is a Major alarm instead of Minor.

> **Note** For maximum application flexibility, the administrator shall choose which constitute major or minor alarm. Some examples of typical major and minor alarms include:
>
> - Box: Over Temperature—Major Alarm
> - iDSL 18: Bit Error—Minor Alarm
> - WAN 1: Red Alarm—MajorSelfClearing
> - WAN 1: Yellow Alarm—MinorSelfClearing

To set an alarm, click on the drop-down menu for the desired alarm item, choose the new setting followed by clicking on **Submit Query**.

# Chapter 5 DS0 Mapping

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## Introduction

One of the remote locations is the CPE's iDSL modem. The second remote location is typically connected through some WAN port's time slots. For communication between these remote locations they shall be connected together within the DACS. These connections are configured in the DS0 mapping window.

The following types of internal connections are available:

- Between an iDSL modem and time slots in a WAN port
- Between two iDSL modems
- Between time slots within the same or between different WAN ports

## Displaying the DS0 Mapping window

Do the following:

1. Click on **DS0 Mapping** under the **Configuration Menu**. The **DS0 Mapping Configuration** window displays (see figure 13).

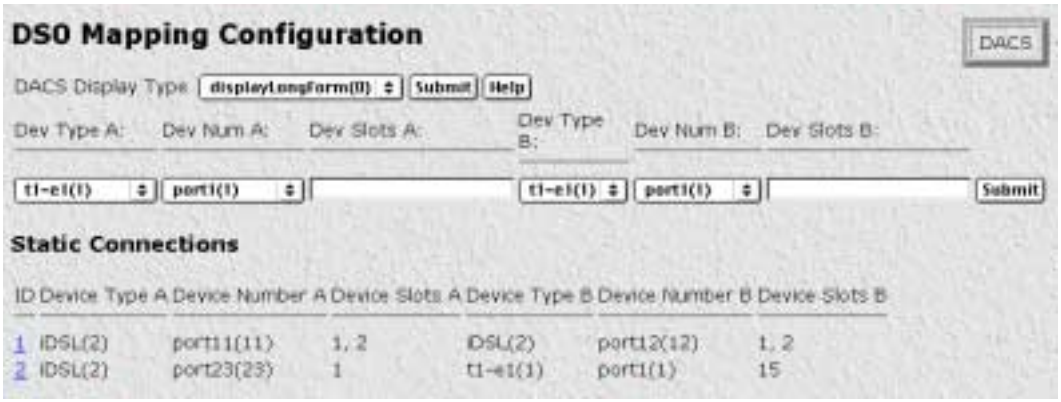


**Figure 13. DS0 Mapping Configuration window**

The following sections describe the contents of the **DS0 Mapping Configuration** window.

### *DACS Display Type*

You can configure or *map* the static connections by using the Long Format or the Command Line Format.

- displayLongForm(0)—This is the easiest to use by selecting the options from the pull-down menus.
- displayCliForm(1)—If you prefer the command line format, select displayCliForm(1) and click on the Submit Query button. Consult the following sections for the format of the command line.

### Help (DACS help information)

Clicking on the **Help** button displays the DACS Help Information window (see figure 14). The purpose of this window is to help the user learn how to add DS0 connections using the DACS HTML pages. This window define all of the parameters available within this web page. If you are using the Command Line Format to make connections, scroll down the window to the heading **Command Line Format**. The information contained in the Help window is also covered in this chapter.

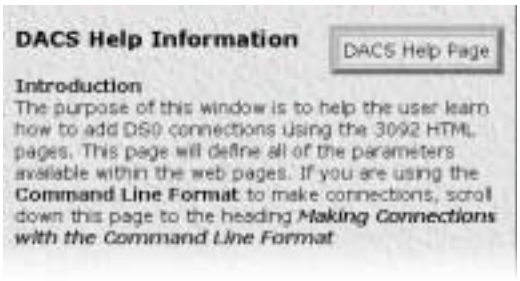


**Figure 14. Example DACS Help Information window**

### Static Connection

Pull Down Menus

Each pull down window signifies part of a connection. Each connection is made up of an "A" side and a "B" side. These names have been arbitrarily chosen and do not signify the direction that data will travel. All data will be bi-directional. There are three parameters that need to be defined for each connection, they are:

- Device Type
- Device Number
- Device Slots

#### ID

Then ID number identifies each mapping with a unique number. The number is automatically assigned sequentially when a static connection is entered. The ID number begins at "1."

#### Device Type

The Device Type specifies the physical interface that you will be connecting. Within the 3092 the user has the option of selecting either a T1/E1 WAN line or an iDSL modem. While the one side may be a T1/E1 WAN line and the other an iDSL modem, note that both sides of the connection can be T1/E1 or both sides can be iDSL. The two Device Types are t1-e1(1) and iDSL(2).

#### Device Number

The next step in creating a connection through the DACs is to select the port that you would like to use. This corresponds to the Port Number for the devices selected in the previous step. For example, if you would like to make a connection to iDSL Port 3 (referring to iDSL modem #3), then select "Port 3" in the "Device Number" field. Note that there are only four t1-e1 ports so you may not select t1-e1 ports 5 - 24. This will generate an error in the system. Since there are 24 iDSL modems within the 3092, you may choose any of the 24 ports.

### *Device Slots*

The "slots" input identifies the DS0 channels—each DS0 channel is 64 kbps—that you would like to connect. Each iDSL modem has up to 2 DS0 channels and 1 16 kbps channel. Each time slot in a T1 or E1 WAN port has 24 or 31 DS0 channels, respectively. When selecting the slots you must select the same number of slots on the "A" and "B" side of the connection. The slots are selected by entering a string that represents the slots. For the iDSL ports, the slots that are available are 1 and 2. (In certain 144Kbps setups you may also select slot 3.) For a WAN port configured as a T1, the available slots are numbered from 1 - 24. For a WAN port configured as an E1, the available slots are 1 - 31. The following notation should be used for entering the slots. Several examples are given below.

- dash: (-) 1 - 4
- comma: (,) 1,4,9
- combo: 1 - 2, 3,6 - 7

For example, to connect a T1 Port using timeslots 1,2, 5, 6, 7, and 15, you can input any of the following strings:

1,2, 5-7, 15

1 - 2, 5,6,7,15

1 - 2, 5 - 6, 7, 15

## *Configuration*

The user can make connections in the box using two different methods. The easiest way is by using the pull down windows provided. But the user can also add connection using the command line format by entering a text string. To input a static connection into the box using the text string. Use the following convention:

- DeviceA:PortA:SlotsA/DeviceB:PortB:SlotsB

  Device Options - The interface that you would like to select

  1) t1-e1

  2) iDSL

  Port Options - The Port Number (starting at 1) may be one of the four WAN ports or one of the 24 iDSL modems. To configure Slots (DS0 channels), choose the slots that you would like to use. The following notations are allowed:

  1) dash (-): 1 - 4

  2) comma (,): 1,4,9

  3) combination of dashes and commas: 1 - 2, 3,6 - 7

  Example #1: To connect a T1 line, (WAN) Port 1, timeslots 1 and 2 to an iDSL modem, Port 3 (modem #3), timeslots 1,2, input the following string:

  t1-e1:1:1 - 2/iDSL:3:1 – 2

  Example #2: To connect a T1 line, (WAN) Port 2, timeslots 4 – 6, to another T1 line, (WAN) Port 3, timeslots 8 – 10, input the following string:

  t1-e1:2:4 – 6/t1-e1:3:8-10

Example #3: To connect two iDSL modems together, such as iDSL modem #6, timeslots 1 – 2, to iDSL modem #20, timeslots 1 – 2, input the following string:

iDSL:6:1-2/iDSL:20:1-2

# Chapter 6 Clocking

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## Introduction

Click on **Clocking** in the Configuration Menu to display the **System Clocking Configuration** main window (see figure 15).

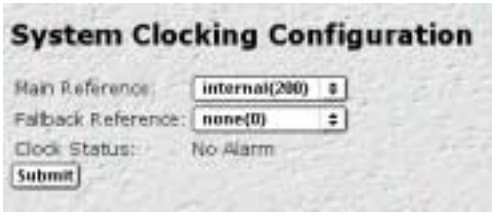


**Figure 15. System Clocking Configuration window**

The Clocking window is where the primary and secondary clocking sources that synchronize all DS0 channels are configured. The DACS uses a single clock source for all DS0 channels. You select the clock for the DS0 channels from the following clock sources:

- An internal oscillator
- Any of the WAN ports
- An external clock (accessed via the *Ext. Clock* 3-position terminal block located on the rear panel of the DACS."

The *Main Reference* setting determines the clock source if this source is operational. If the *Main Reference* clock source fails, the *Fallback Reference* becomes the clock source to synchronize all DS0 channels. The clock source is the system clock for the entire DACS.

## Configuring the System Clock Settings

The following sections describe configuring the clock settings.

### *Main Reference (daxClockMainRef)*

The *Main Reference* and *Fallback Reference* parameters have the same selections for system clock. Make sure you choose different clock sources for the Main Reference and Fallback Reference. The following settings are available:

- none(0)—No clock selection.
- wan-1(1)—WAN port #1 is the clock source
- wan-2(2)—WAN port #2 is the clock source
- wan-3(3)—WAN port #3 is the clock source
- wan-4(4)—WAN port #4 is the clock source
- wan-5(5)—N/A
- wan-6(6)—N/A
- wan-7(7)—N/A
- wan-8(8)—N/A

- netref-1(101)—N/A
- netref-2(102)—N/A
- internal(200)— The internal free-running oscillator is the clock source.
- external(300)—The external clock source connected to the 3-position terminal block on the rear of the 3092 Multiplexer is the clock source

### Fallback Reference (daxClockFallbackRef)

The fallback reference enables the configuration of a back-up clock reference should the main reference fail. The *Main Reference* and *Fallback Reference* parameters have the same selections for system clock. Make sure you choose different clock sources for the Main Reference and Fallback Reference. The fallback reference settings are the same as those described in section "Main Reference (daxClockMainRef)" on page 44.

### Clock Status (daxClockFailure)

The clock status indicates alarm conditions relating to the system clock. If there are no alarms, the Clocking page will indicate *No Alarm* (see figure 15 on page 44). If an alarm condition exists, an *Alarms Present* message will be displayed along with one of the following failure descriptions.

- no-failures(0)—No alarms present
- main-ref-fail(1)—The main clock reference has failed
- fallback-ref-fail(2)—The fall back clock reference has failed

# Chapter 7 iDSL Port Configuration

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## Introduction

The **iDSL** subsystem in the **Configuration Menu** shows the status of all 24 iDSL ports and displays their corresponding connection to either the WAN ports or to other iDSL ports. The information may be display-only fields or user-entry fields.

The first summary shows how many iDSL modems are available, have failed, are activated, and how many are connected.

The **iDSL Port Error Statistics** shows the **Current Near End Performance** displaying **Errored Seconds (ES), Severely Errored Seconds (SES), Unavailable Seconds (UAS), Current Seconds**, and **Valid 15 Minute Intervals**. For definitions of each of these parameters, see the descriptions later in this chapter. The **Current Near End Performance** statistics are for the current 15-minute interval.

By clicking on **History**, you will see the cumulative statistics for each of the 15-minute intervals. The most recent 15-minute interval is numbered "1." The maximum of 15-minute intervals is 96.

At **Port Identification Information**, you may name the iDSL port or clear a previous name.

## Displaying the iDSL Port Configuration window

Click on **iDSL** link under the **Configuration Menu** to display the **iDSL Port Configuration** window (Figure 16).

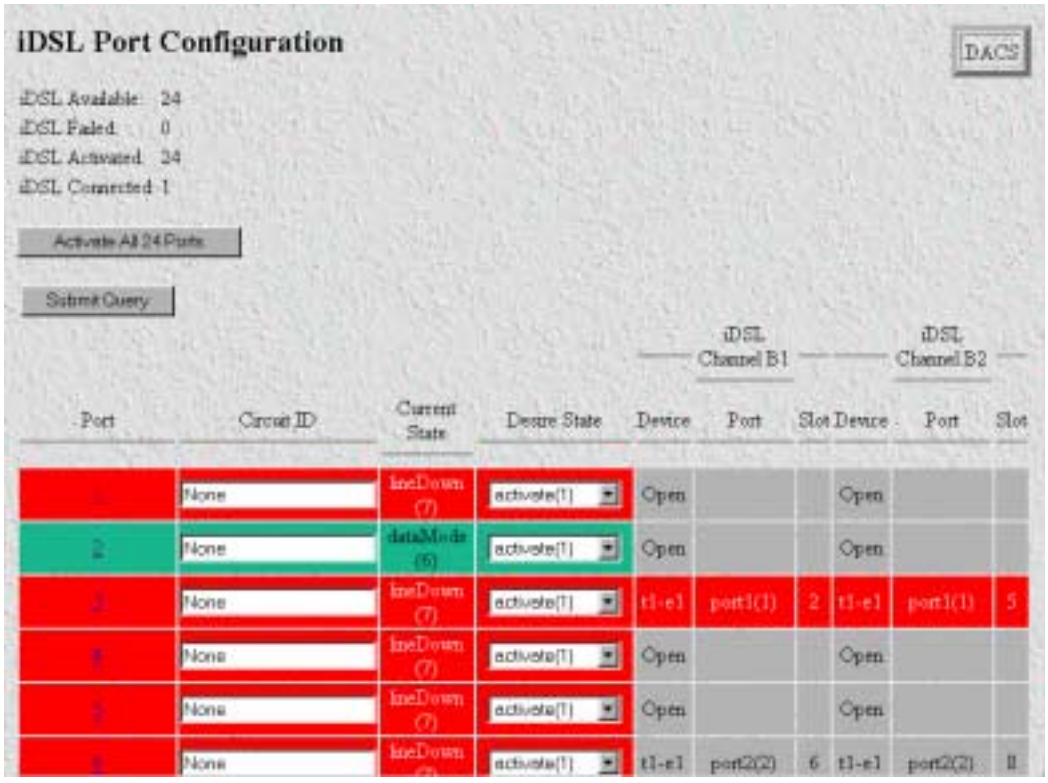


**Figure 16. iDSL Port Configuration window**

Figure 16 displays the iDSL main page which shows the status of all 24 iDSL ports and the corresponding connection either to a WAN port or another iDSL port.

The four parameters on the top of the page show summary statistics for the iDSL ports:

- **iDSL Available (noAvailUchipIdsl)**—The number of internal iDSL ports currently available to user. The sum of iDSL available and iDSL Failed equals 24, the number of iDSL ports (iDSL modems) in the 3092.
- **iDSL Failed (noFailUchipIdsl)**—The number of ports that have a hardware failure. To repeat, the sum of iDSL Available and iDSL Failed should be always 24.
- **iDSLActivated(noActivUchipsIdsl)**—The number of ports (internal iDSL modems) that are currently active and ready to connect to a remote CPE iDSL modem.
- **iDSL Connected (noConnectUchipIdsl)**—The number of ports that are currently connected to the CPE's remote iDSL modem. "Connected" means it is in Datamode and can pass data.
- The **Activate all 24 Ports** button will activate all 24 iDSL ports.
- The **Submit Query** button will submit any changes made in the **Circuit ID** column and the **Desire State** column for all 24 iDSL ports.

The table shows the characteristics for each of the 24 internal iDSL modems. By clicking on the **Port** number, you can examine other statistics and configure more parameters. (See "iDSL Port Information Page window"). For each port number, the table shows the user-defined **Circuit ID**, the **Current State** of the modem, the **Desired State** of the modem, and the internal connection of each B-channel.

- **Port (idslconfigID)** - identifies which of the 24 iDSL modems at which you are looking and also is a link to the **iDSL Port Information Page** which displays more options for that iDSL port.
- **Circuit ID (userIDidsl)** - is the user-defined field that allow the user to enter an ASCII Identification Name to represent the iDSL port. The name may include up to 40 ASCII characters.
- **Current State (currentstateIdsl)** - is a display only field which displays the current state of the iDSL Port. The different states are *deactivate, initializing, reset, hardware failure, local loop-back, remote loop-back, data mode,* and *line down*.
- **Desired State (userDesireIdsl)** - This is a user-defined field for the iDSL modem state which the user wants at the present time. The three states are *deactivate(0), activate(1),* and **re***set(2)*.

The **iDSL Channel B1** and **B2** columns show the internal connection of the iDSL port either to a WAN port or another iDSL port. **Device** shows which type of device to which the iDSL connects. **Port** shows which port of either the WAN ports or another iDSL modem port. **Slot** is which timeslot of the selected Port.

- **Device (daxIDSL1DeviceType)(daxIDSL2DeviceType)** selects the type of device to which the iDSL port channel is connected to. The three options are *open(0), t1-e1(1),* and *iDSL(2)*. *open(0)* indicates no internal connection has been made through the DACS, *t1-e1(1)* refers to the WAN ports, and *iDSL(2)* refers to another iDSL port.
- **Port (daxIDSL1DeviceNumber)(daxIDSL2DeviceNumber)** refers to a specific iDSL or WAN port. The iDSL ports are numbered from *port(1)* to *port(24)*, and the WAN ports are numbered from *port(1)* to *port(4)*.
- **Slot (daxIDSL1DeviceSlot)(daxIDSL2DeviceSlot)** designates the timeslot of either an iDSL port or a WAN port. For iDSL ports, the time slots are either 1, 2, or 3. For the WAN ports, the time slots are from 1–31 for E1 and from 1-24 for T1.

## iDSL Port Information Page window

Clicking on any port number in the **Port Configuration Table** shows port information for a single port (seeFigure 17).Thewindowisdividedinto**iDSLPortStatus**,**iDSLPortErrorStatistics**,and**PortIdentification Information** sections.


**Figure 17. iDSL Port Information Page window**

### *iDSL Port Status*

The iDSL port status section displays configuration and current status information for the specified port.

- *iDSL Port Current State (currentstaeIdsl)* - This is the same as **Current State** described above. Shows the current state of the iDSL modem. The different states are *deactivate*, *initializing*, *reset*, *hardware failure*, *local loop-back*, *remote loop-back*, *data mode*, and *line down*.
- **iDSL Port Connected Time (upTimerIdsl)** - The total time which the iDSL modem has been connected with the CPE's remote modem. This value is given in Time Ticks.

  The iDSL port connected time is a timer to count how long the iDSL post has been connected to the far-end unit.
- **iDSL Port Flap Counter (flapCounterIdsl)** - The total number of times which the iDSL modem circuit has flapped. One flap occurs after the iDSL modem circuit has gone down and back up. If this number

becomes high, it is indicating that something is affecting the circuit connection between the iDSL modem in the 3092 and the CPE's remote modem.

iDSL flap counter is a counter counting how many times the port has been connected to the far end unit.

- **Desired iDSL State (userDesireIdsl)** - The choice of the user for the internal iDSL modem. The choices are *deactivate(0)*, *activate(1),* and *reset(2)*.
- **Test Mode Select (testModeIdsl)** - Shows the user defined test mode. The options are *none(0), local-Loop(1), remoteLoop(2), lineLoop(3)* with a CRC error, and remote loop with a CRC error. These tests are helpful in locating where the problem may be occurring in an iDSL circuit.
- **Line Down Alarm Severity (lineDownServerityType)** - Configures the severity of the alarm when the modem line is down. The options are *ignore(0)* (generate no alarm)*, minor(1), major(2), minorSelfClear-ing(3),* and *major self-clearing(4)*.
- **Bit Error Alarm Severity (bitErrSeverityIdsl)** - Sets the severity of the alarm when the bit error rate (BER) exceeds the user configurable threshold.

The *Alarm Thresholds* are configured by the user to set the threshold of accumulated errors since the port was activated. When the threshold value is exceeded, an alarm will be generated if the severity level of the alarm is configured for a value other than *none(0)*.

- **ErroredSecondsAlarmThreshold(errSecThresholdIdsl)**-Sets the threshold of the number of errored sec-onds. When this value is exceeded, an alarm will be generated. This value is in seconds.
- **SeverelyErroredSecondsAlarmThreshold(sevErrSecThresholdIdsl)**-Sets the threshold of the number of Severely Errored Seconds. When this value is exceeded, an alarm will be generated. This value is in sec-onds.
- **UnavailableSecondsAlarmThreshold(unavilSecThresholdIdsl)**-Sets the threshold of the number of Unavailable seconds making the circuit connection unable to send data. When this value is exceeded, an alarm will be generated. This value is in seconds.

### *iDSL Port Error Statistics*

The **iDSL Port Error Statistics** shows the Current Near End Performance displaying Errored Seconds (ES), Severely Errored Seconds (SES), Unavailable Seconds (UAS), Current Seconds, and Valid 15 Minute Intervals. For definitions of each of these parameters, see the descriptions later in this chapter. The Current Near End Performance statistics are for the current 15-minute interval.

Figure 17 also shows the second half of the **iDSL Port Information Page**. The **History** link displays this data for the previous 15 minute intervals. The maximum number of 15 minute intervals is 96. The history will be dis-cussed in greater detail in the next section. The definition of these parameters follows.

- **CurrentSeconds(currentSecondIdsl)**-The number of seconds which have passed since the beginning of the current 15-minute interval.
- **15MinuteIntervalsSinceActivation(interval15minIdsl)**-The number of complete 15-minute intervals which have occurred since the port has been activated. It does not include the current 15-minute interval. The following four parameters are defined over one 15-minute interval. The maximum number of 15-minute intervals is 96 which covers a 24-hour period. This data can be used for monitoring the operation of a port within one 24-hour period.

- **Errored Seconds (ES) (errSecondIdsl)** - An errored second occurs when either (1) the CRC does not match the calculated CRC or (2) when the line is linked up but lacking synchronization. Whether 1 error up to 81 errors occur within a second, it will still be 1 errored second.
- **SeverelyErroredSeconds(SES)(sevErrSecondIdsl)**-AseverelyerroredsecondisdefinedforoneiDSLline as a second containing more than 82 CRC errors. The SES counter will not be incremented when the box is incrementing the **Unavailable Seconds** count.
- **Unavailable Seconds (UAS) (unavilSecondIdsl)** - Unavailable seconds is an indication of the amount of time that an iDSL port is activated but not available for data transmission. The UAS counter is incremented under the following criteria:

  **1.**The port must be activated.

  **2.**Once the port is activated and a link-up timer has expired, the UAS counter will be incremented if the ports loses sync or does not enter synchronization with the far end of the link.

  **3.**Once the port gains link status, the 3092 begins looking for ES and SES.

  **4.**Upon receiving 10 consecutive SES or a line down indication, the 3092 will begin reporting UAS. The 3092 will not increment ES or SES during the UAS count.

  **5.**The UAS count will stop when 10 consecutive seconds without an SES is detected.

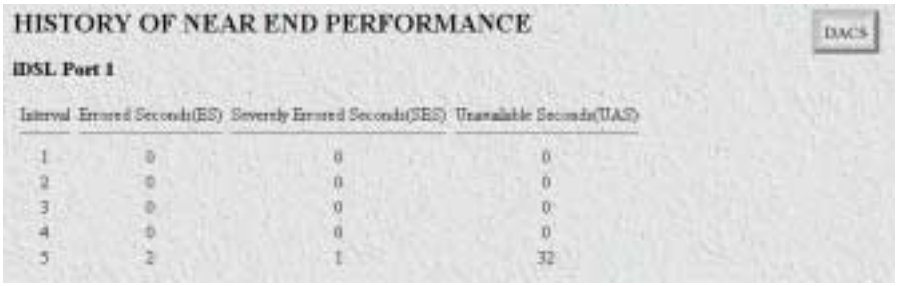


**Figure 18. History of Near End Performance window**

Clicking on the **History** link displays the **History of Near End Performance** window (see Figure 18), which displays the cumulative statistics for each of the 15-minute intervals. The most recent 15-minute interval is numbered *1*. The maximum of 15-minute intervals is *96*.

The **History** page collects and records the error history of the port. Interval 1 is the history of the most recent, completed 15-minute interval. The length of each interval is 15 minutes. and records how many ES, SES, and UAS have occurred in the 15 minute intervals. The maximum number of intervals is 96 which is one 24-hour time period. (15minutes* 96 = 24hours). The **History** page always records the last 24 hours error performance of the port. Information older than 24 hours will not be shown and will be erased. In the example page above, only 5 intervals of information are available, so the page will only show 5 intervals.

### *Port Identification Information*

The **Port Identification Information** is the same as the **Circuit ID** shown on the main page, it allows users to enter an ID to represent the iDSL port.

- **Circuit ID (userIDidsl)** - Circuit ID is the user-defined field that allow the user to enter an ASCII Identification Name to represent the iDSL port. The name may include up to 40 ASCII characters.

# Chapter 8 Ethernet

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## Introduction

The DACS provides management and statistical information in the **Ethernet** window (see figure 19). Most of the descriptions for these MIB variables are from RFC 1643. Detailed information regarding the SNMP MIB II variables may be downloaded from *RFC 1643, Definitions of Managed Objects for the Ethernet-like Interface Types*.

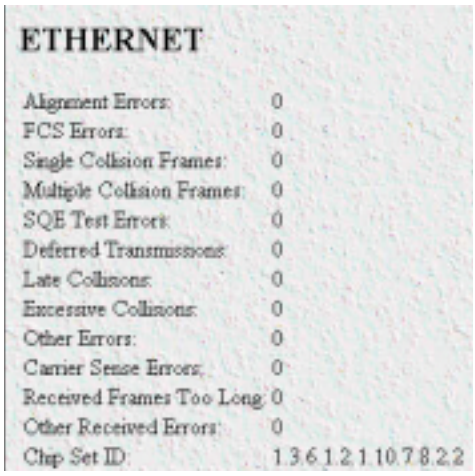


**Figure 19. Ethernet window**

Click on **Ethernet** under the **Configuration Menu** to monitor Ethernet statistics.

## Ethernet statistics

### *Alignment Errors (dot3StatsAlignmentErrors)*

A count of frames received that are not an integral number of octets in length and do not pass the FCS check. The count represented by an instance of this object is incremented when the alignmentError status is returned by the MAC service to the LLC (or other MAC user). Received frames for which multiple error conditions obtain are, according to the conventions of IEEE 802.3 Layer Management, counted exclusively according to the error status presented to the LLC.

### *FCS Errors (dot3StatsFCSErrors)*

A count of frames received that are an integral number of octets in length but do not pass the FCS check. The count represented by an instance of this object is incremented when the frameCheckError status is returned by the MAC service to the LLC (or other MAC user). Received frames for which multiple error conditions obtain are, according to the conventions of IEEE 802.3 Layer Management, counted exclusively according to the error status presented to the LLC."

### *Single Collision Frames (dot3StatsSingleCollision Frames)*

A count of successfully transmitted frames for which transmission is inhibited by exactly one collision. A frame that is counted by an instance of this object is also counted by the corresponding instance of either the

ifOutUcastPkts, ifOutMulticastPkts, or ifOutBroadcastPkts, and is not counted by the corresponding instance of the dot3StatsMultipleCollisionFrames object."

### *Multiple Collision Frames (dot3StatsMultipleCollisionFrames)*

The number of successfully transmitted frames for which transmission is inhibited by more than one collision. A frame that is counted by an instance of this object is also counted by the corresponding instance of either the ifOutUcastPkts, ifOutMulticastPkts, or ifOutBroadcastPkts, and is not counted by the corresponding instance of the dot3StatsSingleCollisionFrames object."

### *SQE Test Errors (dot3StatsSQETestErrors)*

A count of times that the SQE TEST ERROR message is generated by the PLS sublayer. The SQE TEST ERROR message is defined in section 7.2.2.2.4 of ANSI/IEEE 802.3-1985 and its generation is described in section 7.2.4.6 of the same document."

### *Deferred Transmissions (dot3StatsDeferredTransmissions)*

The number of times for which the first transmission attempt is delayed because the medium is busy. This number does not include frames involved in collisions.

### *Late Collisions (dot3StatsLateCollisions)*

The number of times that a collision is detected later than 512 bit-times into the transmission of a packet. Five hundred and twelve bit-times corresponds to 51.2 microseconds on a 10 Mbps system. A (late) collision included in a count of late collisions is also considered as a (generic) collision for purposes of other collision-related statistics.

### *Excessive Collisions (dot3StatsExcessiveCollisions)*

The number of frames in which transmission failed due to excessive collisions.

### *Other Errors (dot3StatsInternalMacTransmitErrors)*

The number of frames for which transmission fails due to an internal MAC sublayer transmit error. A frame is only counted if it is not counted by the corresponding instance of either the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object. The precise meaning of the count represented by an instance of this object is implementation-specific. In particular, an instance of this object may represent a count of transmission errors on a particular interface that are not otherwise counted.

### *Carrier Sense Errors (dot3StatsCarrierSenseErrors)*

The number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame. The is incremented at most once per transmission attempt, even if the carrier sense condition fluctuates during a transmission attempt."

### *Received Frames Too Long (dot3StatsFrameTooLongs)*

The number of frames received that exceed the maximum permitted frame size. The count is incremented when the frameTooLong status is returned by the MAC service to the LLC (or other MAC user). Received frames for which multiple error conditions obtain are, according to the conventions of IEEE 802.3 Layer Management, counted exclusively according to the error status presented to the LLC."

### *Other Received Errors (dot3StatsInternalMacReceiveErrors)*

The number of frames in which reception fails due to an internal MAC sublayer receive error. A frame is only counted if it is not counted by either the dot3StatsFrameTooLongs object, the dot3StatsAlignmentErrors object, or the dot3StatsFCSErrors object. The precise meaning of the count represented by an instance of this object is implementation-specific. In particular, an instance of this object may represent a count of receive errors on a particular interface that are not otherwise counted."

### *Chip Set ID (dot3StatsEtherChipSet)*

Identifies the chipset to implement the Ethernet interface. The chipset ID identifies the chipset which gathers the transmit and receive statistics and error indications.

# Chapter 9 Filter IP

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## Introduction

The DACS software provides an IP filtering system that enables you to set up security for the internal management system.

Each filter is a defined list of parameters based upon attributes in the IP, TCP, and UDP headers. There are two major steps to filter creation: first defining the filter, then applying it to a user connection. The same filter can be shared by several users.

The DACS enables 20 separate filters to be defined, of which up to 10 can be used during a single user connection. Since the IP connections in the 3092 are only for the superuser and the monitor user, these will be the only two users. The application of the filters is done on the Filter IP main web page.

Click on **Filter** IP under the **Configuration Menu** to display the **FIlter IP** main window (see figure 20).


**Figure 20. Filter IP main window**

## Defining a filter

This section gives a brief summary on defining a filter. For a complete discussion with filter examples, see the final section.

To define a new filter, select an ID number and a name, then click on the **Submit Query** button to submit the request. The ID number and name must not already exist in the IP FILTER list, and the number must be an integer between 1 and 20. To delete a filter, enter just the ID number without a name and click on the **Submit Query** button.

Note Block filters take priority, therefore any applied and matching block filters will drop the packet. Next, pass filters are examined, if PASS filters have been defined, then at least one of them must match or else the packet will be dropped. After the block and pass filters are examined, the WRAP filter, if it exists, will be applied.

After entering an ID number and name, click on the name of the filter to display the filter parameters window (see figure 21).


**Figure 21. Filter IP parameters window**

The configurable filter parameters are :

- Name (filterIpName)
- Direction (filterIpDirection)
- Action (filterIpAction)
- Source IP (filterIpSourceIp)
- Source IP Mask (filterIpSourceMask)
- Destination IP (filterIpDestinationIp)
- Destination Mask (filterIpDestinationMask)
- Source Port (FilterIpSourcePort)
- Action (filterIpSourcePortCmp)
- Destination Port (filterIpDestinationPort)
- Action (filterIpDestinationPortCmp)
- Protocol (filterIpProtocol)
- TCP Established (filterIpTcpEstablished)

Note Any changes to a filter take effect immediately upon clicking **Submit Query**. This can aid in troubleshooting a filter profile while the user is online.

The following sections provide detailed descriptions of the configurable filter IP parameters.

### Name (filterIpName)
This is the name of the filter

### Direction (filterIpDirection)
Specifies the direction of the filter (that is, whether it applies to data packets inbound or outbound from the DACS). The filter only applies to the *Superuser* and the *Monitor Users* through the Ethernet interface. (Since the iDSL modem and WAN connections function as a transparent pipe, neither of the two users can utilize these interfaces, only the Ethernet interface.) The following options are available:

- inactive(0)—Disables filter operation
- inbound(1)—Relates to packets coming into the DACS
- outbound(2)—Relates to packets leaving the DACS
- both(3)—Specifies both inbound and outbound operation

### Action (filterIpAction)
Specifies the action to effect the packet. The action decides whether to block or pass the packet. The following options are available:

- pass(0)—If pass is selected, checking will continue on to other filters until either a match occurs, a block occurs, or there are no more filters remaining to check.

  **Note** If there are any applied PASS filters, then at least one of them must match or the packet will be dropped.

- block(1)—If a filter has block set and the filter matches the block, the packet is discarded and no further processing is done.
- wrap(2)—All packets received on the specified link will be encapsulated in an extra IP header as defined in RFC2003. The destination IP address of the wrapper is given by the destination IP setting in the filter. The source IP address of the wrapper is the ethernet address of the DACS.

  All wrap filters are inbound only.

### Source IP (filterIpSourceIp)
This is the Source IP address in the IP header, it is used when comparing a packet's source address.

### Source IP Mask (filterIpSourceMask)
This is the  Source IP Mask (filterIpSourceMask) used when comparing a packet's source address. Bit positions that are set to 1 will be compared and 0's will be ignored. Thus, a setting of 0.0.0.0 will have the effect of disabling source IP address comparison.

### Destination IP (filterIpDestinationIp)
This is the destination IP address in the IP header used when comparing a packet's destination address.

### Destination Mask (filterIpDestinationMask)

This is the destination mask used when comparing a packet's destination address. Bit positions that are set to 1 will be compared and 0's will be ignored. Thus, a setting of 0.0.0.0 will have the effect of disabling destination IP address comparison.

### Source Port (FilterIpSourcePort)

Specifies the source port number (TCP or UDP) that the access server DACS compares. The source port Action (see Action (filterIpSourcePortCmp) next) action will determines how the source port is treated. whether the source port in the IP packet is not compared, equal, less than, or greater than the Source Port designated in the filter.

### Action (filterIpSourcePortCmp)

Specifies the Action (filterIpSourcePortCmp) that the DACS compares. The source port action determines whether the source port in the IP packet is not compared, equal, less than, or greater than the Source Port designated in the filter.

- noCompare(0) – No Comparison to the source port in the IP packet.
- equal(1)—The port in the source IP packet is the same
- lessThan(2)—The port in the source IP packet is less than
- greaterThan(3)—The port in the source IP packet is greater than

### Destination Port (filterIpDestinationPort)

Specifies the destination port number which the DACS compares. The destination action functions similarly to the Source Port and its Action defined above.

### Action (filterIpDestinationPortCmp)

Specifies the action (TCP or UDP) which the DACS compares. The destination action will determine how the destination port is treated.

- noCompare(0)—No Comparison to the destination port in the IP packet.
- equal(1)—The port in the destination IP packet Is the same
- lessThan(2)—The port in the destination IP packet is less than
- greaterThan(3)—The port in the destination IP packet is greater than

### Protocol (filterIpProtocol)

Specifies the IP Protocol number to use for filtering. Some examples of protocol numbers are 1 for ICMP; 6 for TCP; and 17 for UDP. A list of protocol numbers can be found in RFC 1340. A setting of 0 disables processing based on protocol number.

### TCP Established (filterIpTcpEstablished)

Specifies whether the filter should match only those packets which indicate in the TCP header flags that the connection is established. The following choices are available:

- anyPackets(0)—Applies the filter to all packets
- onlyEstablishedConnections(1)—Only applies the filter to established TCP connections

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## Introduction

When networking problems or undesirable conditions occur, the ICMP protocol is used for communicating control or error information plus testing. The statistics listed on the DACS ICMP window (see figure 22) comprise those contained in RFC 792—Internet Control Message Protocol (ICMP). Implementation of the ICMP group is mandatory for all TCP/IP networks. RFC 1312—ICMP Group of MIB-II Variables—provides the definitions of these variables. It is important to remember that any RFC can be superseded by a newer.

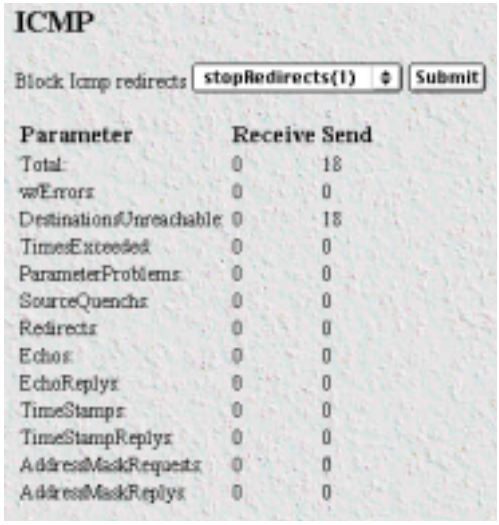


**Figure 22. ICMP window**

Click on ICMP under the Configuration Menu to monitor DACS ICMP statistics.

## Block ICMP redirects (boxBLockIcmpRedirects)

The two options for "Block ICMP Redirects" either allow the reception of ICMP Redirect messages [allowredirects(0)] or block the reception of ICMP Redirect messages [stopredirects(1)]. The recommended configuration is to block the ICMP redirect messages because in some instances they could alter the routing table with undesirable effects, which is considered a breach of security.

## ICMP Receive/Send Messages window

The ICMP window displays the ICMP message counters. ICMP messages are displayed in the window as columns comprising two types of messages:

- Messages received by the DACS (InMibVariable)
- Messages sent by the DACS (OutMibVariable)

The numbers following the parameters can be a good source of what is happening on the network to point out potential problems. Both gateways (routers) and hosts can send ICMP messages.

### *Total Received (icmpInMsgs)*

The total number of ICMP messages which the 3092 Multiplexer has received. Note that this counter includes all those counted by icmpInErrors (see "w/Errors (icmpInErrors, icmpOutErrors)" on page 67).

### Total Sent [imcpOutMsgs]
Similar to icmpInMsgs, Total Sent represents the total number of ICMP messages which the 3092 has attempted to send. This variable includes all ICMP messages counted by icmpOutErrors (see "wo/Errors [icmpOutErrors]").

### w/Errors (icmpInErrors, icmpOutErrors)
The number of ICMP messages which the Model 3092 received/sent but having ICMP-specific errors (for example, bad ICMP checksums, bad length, or non-routable errors).

### wo/Errors [icmpOutErrors]
The number of ICMP messages which the Model 3092 did not send due to problems discovered within ICMP such as a lack of buffers. It does not include errors discovered outside the ICMP layer like the inability of IP to route the resultant datagram.

### Destinations Unreachable (IcmpInDestUnreachs, IcmpOutDestUnreachs)
The number of ICMP destination unreachable messages received/sent. For instance, if the information in a gateway's routing table determines that the network specified in a packet is unreachable, the gateway will send back an ICMP message stating that the network is unreachable. The following conditions will send back an unreachable message:

- The network is unreachable
- The host is unreachable
- The protocol is not available to the network
- The port on the host is unavailable. a specified source route failed
- A packet must be fragmented (that is, broken up into two or more packets) but the packet was sent anyway with instructions not to be fragmented.

### Times Exceeded (icmpInTimeExcds, icmpOutTimeExcds)
The number of ICMP time exceeded messages received/sent. Each time a packet passes through a gateway, that gateway reduces the time-to-live (TTL) field by one. The default starting number is defined under the IP section. If the gateway processing a packet finds that the TTL field is zero it will discard the packet and send the ICMP time exceeded message. Time exceeded will also be incremented when a host which is reassembling a fragmented packet cannot complete the reassembly due to missing packets within its time limit. In this case, ICMP will discard the packet and send the time exceeded message.

### Parameter Problems (icmpInParmProbs, icmpOutParmProbs)
The number of ICMP parameter problem messages received/sent. If while processing a packet, a gateway or host finds a problem with one or more of the IP header parameters which prohibits further processing, the gateway or host will discard the packet and return an ICMP parameter problem message. One potential source of this problem may be with incorrect or invalid arguments in an option. ICMP sends the parameter problems message if the gateway or host has discarded the whole packet.

### Source Quenchs (icmpInSrcQuenchs, icmpOutSrcQuenchs)
The number of ICMP source quench messages received/sent. A gateway will discard packets if it cannot allocate the resources, such as buffer space, to process the packet. If a gateway discards the packet, it will send an

ICMP source quench message back to the sending device. A host may send this messages if packets arrive too fast to be processed or if there is network congestion. The source quench message is a request to reduce the rate at which the source is sending traffic. If the DACS receives a source quench, it will wait for acknowledgement of all outstanding packets before sending more packets to the remote destination. Then it will begin sending out packets at an increasing rate until the connection is restored to standard operating conditions.

### *Redirects (icmpInRedirects, icmpOutRedirects)*

The number of ICMP redirect messages received/sent. A gateway sends a redirect message to a host if the network gateways find a shorter route to the destination through another gateway.

### *Echos (icmpInEchos, icmpOutEchos)*

The number of ICMP echo request messages received/send. The ICMP echo is used whenever one uses the diagnostic tool ping. Ping is used to test connectivity with a remote host by sending regular ICMP echo request packets and then waiting for a reply. Received echos (icmpInEchos) will increment when the DACS is pinged.

### *Echo Replys (icmpInReps, icmpOutReps)*

The number of ICMP echo reply messages received/sent. An echo reply is a response to an echo request. Send echos (icmpOutEchos) will increment when the DACS sends an echo reply message in response to a ping.

### *Time Stamps (icmpInTimestamps, icmpInTimestamps)*

The number of ICMP time stamp messages received/sent. Time stamp and time stamp replies were originally designed into the ICMP facility to allow network clock synchronization. Subsequently, a new protocol—Network time protocol (NTP) has taken over this function. Normally, this number will be zero.

### *Time Stamp Replys (icmpInTimestampsReps) (icmpOutTimestampsReps)*

The number of ICMP timestamp reply messages received/sent. This message is part of a time stamp (see "Time Stamps (icmpInTimestamps, icmpInTimestamps)") request. Normally, this number will be zero.

### *Address Mask Requests (icmpInAddrMasks) (icmpOutAddrMasks)*

The number of ICMP address mask request messages received/sent. this message is generally used for diskless workstations which use this request at boot time to obtain their subnet mask. This number will increase if there are hosts on the network which broadcast these requests.

### *Address Mask Replys (icmpInAddrMasksReps) (icmpOutAddrMasksReps)*

The number of ICMP address mask reply messages received/sent. Normally, this number will be zero.

# Chapter 11 IP

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## Introduction

The IP (Internet Protocol) window lists IP statistics and parameters, and enables you to modify IP settings.

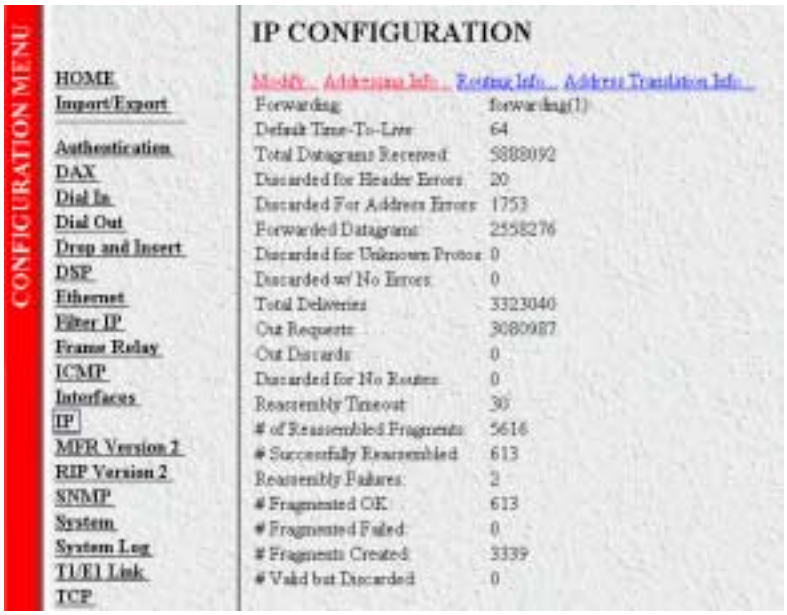


**Figure 23. IP main window**

Click on **IP** under the **Configuration Menu** to display the **IP** window.

## IP main window

All items described in this chapter are defined in *RFC 1213: Management Information Base for Network Management of TCP/IP-based internets: MIB-II*.

The IP main window contains basic IP configuration parameters and statistics, and it has the following links to windows that will enable you to modify IP parameters:

- Modify—This window is where you can modify forwarding and time-to-live settings (see "Modify" on page 74).
- Addressing Info—This window (see "Addressing Information" on page 75) displays IP addressing details for the default address for outgoing IP datagrams, the local or loopback address of the box and the IP address of the box as defined in Chapter 16, "System".
- Routing Info—This window displays routing information for routing IP datagrams (the IP address, subnet mask, next hop router, and interface for each network interface defined in the box) (see "Routing Information" on page 76).
- Address Translation Info—The IP address translation table contains the IP address to physical address equivalences (see "Address Translation Information" on page 81).

### Forwarding (ipForwarding)

The indication of whether this entity is acting as an IP gateway in respect to the forwarding of datagrams received by, but not addressed to, this entity. IP gateways forward datagrams, IP hosts do not (except those source-routed via the host).

> **Note** For some managed nodes, this object may take on only a subset of the values possible. Accordingly, it is appropriate for an agent to return a "badValue" response if a management station attempts to change this object to an inappropriate value.

The following conditions can be displayed:

- forwarding(1)—acting as a gateway and will forward IP datagrams to other gateways
- not-forwarding(2)—*not* acting as a gateway so it will discard IP datagrams destined for other gateways

### Default Time-To-Live (ipDefaultTTL)

The default value inserted into the time-to-live field of the IP header of datagrams originated at this entity, whenever a TTL value is not supplied by the transport layer protocol.

### Total Datagrams Received (ipInReceives)

The total number of input datagrams received from interfaces, including those received in error.

### Discarded for Header Errors (ipInHdrErrors)

The number of input datagrams discarded due to errors in their IP headers, including bad checksums, version number mismatch, other format errors, time-to-live exceeded, errors discovered in processing their IP options, and so on.

### Discarded for Address Errors (ipInAddrErrors)

The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity. This count includes invalid addresses (e.g., 0.0.0.0) and addresses of unsupported Classes (e.g., Class E). For entities which are not IP Gateways and therefore do not forward datagrams, this counter includes datagrams discarded because the destination address was not a local address.

### Forwarded Datagrams (ipForwDatagrams)

The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. In entities which do not act as IP Gateways, this counter will include only those packets which were source-routed via this entity, and the source-route option processing was successful.

### Discarded for Unknown Protos (ipInUnknownProtos)

The number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.

### Discarded w/No Errors (ipInDiscards)

The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (for example, due to lack of buffer space).

Note The Discarded w/No Errors counter does not include any datagrams discarded while awaiting re-assembly.

### *Total Deliveries (ipInDelivers)*
The total number of input datagrams successfully delivered to IP user-protocols (including ICMP).

### *Out Requests (ipOutRequests)*
The total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission.

Note The Out Requests counter does not include any datagrams counted in ipForwDatagrams.

### *Out Discards (ipOutDiscards)*
The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g., for lack of buffer space).

Note The Out Discards counter would include datagrams counted in ipForwDatagrams if any such packets met this (discretionary) discard criterion.

### *Discarded for No Routes (ipOutNoRoutes)*
The number of IP datagrams discarded because no route could be found to transmit them to their destination.

Note The Discarded for No Routes counter includes any packets counted in ipForwDatagrams which meet this "no-route" criterion. This includes any datagrams which a host cannot route because all of its default gateways are down.

### *Reassembly Timeout (ipReasmTimeout)*
The maximum number of seconds which received fragments are held while they are awaiting reassembly at this entity.

### *# of Reassembled Fragments (ipReasmReqds)*
The number of IP fragments received which needed to be reassembled at this entity.

### *# Successfully Reassembled (ipReasmOKs)*
The number of IP datagrams successfully reassembled.

### *Reassembly Failures (ipReasmFails)*
The number of failures detected by the IP reassembly algorithm (for whatever reason: timed out, errors, etc).

Note The Reassembly Failures value is not necessarily a count of discarded IP fragments since some algorithms (notably the algorithm in RFC 815) can lose track of the number of fragments by combining them as they are received.

### # Fragmented OK (ipFragOKs)
The number of IP datagrams that have been successfully fragmented at this entity.

### # Fragmented Failed (ipFragFails)
The number of IP datagrams that have been discarded because they required fragmenting at this entity, but were not fragmented because their *Don't Fragment* option was set.

### # Fragments Created (ipFragCreates)
The number of IP datagram fragments that have been generated at this entity.

### # Valid but Discarded (ipRoutingDiscards)
The number of routing entries which were chosen to be discarded even though they are valid. One possible reason for discarding such an entry could be to make more buffer space available for other routing entries.

## Modify
The Modify IP configuration window (see figure 24) is where you can change IP Forwarding and Default Time-to-Live parameters.

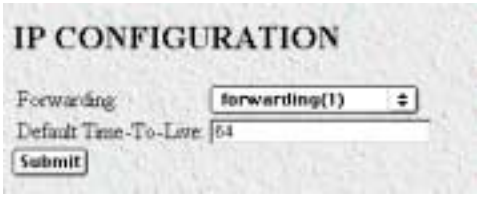


**Figure 24. IP configurations modification window**

### Forwarding (ipForwarding)
Determines whether this entity is acting as an IP gateway that will forward datagrams received by—but not addressed to—this entity. IP gateways forward datagrams, IP hosts do not (except those source-routed via the host).

> Note For some managed nodes, this object may take on only a subset of the values possible. Accordingly, it is appropriate for an agent to return a "badValue" response if a management station attempts to change this object to an inappropriate value.

The following options are available:

- forwarding(1)—acting as a gateway
- not-forwarding(2)—*not* acting as a gateway

### Default Time-To-Live (ipDefaultTTL)
The default value inserted into the **Time-To-Live** (TTL) field in the IP header of datagrams originating from this entity, whenever a TTL value is not already supplied by the transport layer protocol.

## Addressing Information

The IP addressing Information window (see figure 25) is where you can view the default address for outgoing IP datagrams, the local or loopback address of the box, and the IP address of the box as defined in Chapter 16, "System".


**Figure 25. IP addressing Information window**

Click on the Details link to display IP address Table entries for each defined network interface (see "IP addressing Information Details".

### *IP addressing Information Details*

This window (see figure 26) shows IP address Table entries for each defined network interface.

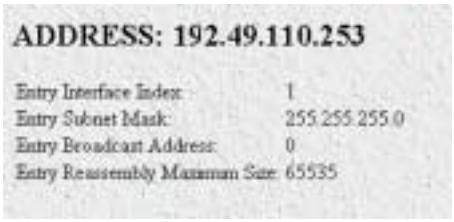


**Figure 26. IP addressing Details window**

***Entry Interface Index (ipAdEntIfIndex)***

The index value that identifies the interface to which this entry applies.

***Entry Subnet Mask (ipAdEntNetMask)***

The subnet mask associated with the IP address of this entry. The value of the mask is an IP address with all the network bits set to 1 and all the hosts bits set to 0.

***Entry Broadcast Address (ipAdEntBcastAddr)***

The value of the least-significant bit in the IP broadcast address used for sending datagrams on the interface associated with the IP address of this entry. For example, when the Internet standard all-ones broadcast address is used, the value will be 1. This value applies to both the subnet and network broadcast addresses used by the entity on this interface.

***Entry Reassembly Maximum Size (ipAdEntReasmMaxSize)***

The size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface.

## Routing Information

The IP Routing Information window (see figure 27) displays information required to route IP datagrams, including the IP address, subnet mask, next-hop router, and interface for each network interface defined in the DACS.

The IP Routing Information window also has a link to the O/S forwarding table where the forwarding parameters are displayed ("O/S forwarding table window" on page 78).


**Figure 27. IP Routing Information window**

### *Destination (ipRouteDest)*

The destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route. Multiple routes to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network management protocol in use.

To view or modify next-hop routing information for each destination, click on a destination link in the **Destination** column. For more information about modifying next-hop routing information settings, refer to "IP Routing Destination window" on page 80.

### Mask (ipRouteMask)

Indicates the mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. For those systems that do not support arbitrary subnet masks, an agent constructs the value of the ipRouteMask by determining whether the value of the corresponding ipRouteDest field belongs to a Class A, B, or C network, and then using the appropriate mask from table 3.

Table 3. Masks

| Mask | Network |
|---|---|
| **255.0.0.0** | **class-A** |
| **255.255.0.0** | **class-B** |
| **255.255.255.0** | **class-C** |

### Gateway (RouteGateway)

Specifies the IP address to which the packets should be forwarded.

### Cost (RouteCost)

This is the cost of the route as defined by RIP standards. Cost is sometimes considered to be number of hops. A cost of 16 is considered to be infinite. A cost can be given to user-entered routes so their preference in relation to learned routes can be calculated.

### Interface (ipRouteIfIndex)

The index value that identifies the local interface through which the next hop of this route should be reached. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.

### State (RouteState)

- invalid(1)—This setting deletes the route.
- active(2)—A valid route is in use.
- nopath(3)—No route is available to the specified gateway. The gateway is not known to local networks.
- agedout(4)—Invalid route (soon to be removed).
- costly(5)—A valid route, but not in use because of it's higher cost.

### Add a route:

This portion of the IP Routing Information window is where you can add a new route to the IP Routing Information table. Fill in the **Destination**, **Mask**, and **Gateway** information, then click **Add Route**.

### Advanced...

Enables a route to be attached to an interface. Packets to a network will be routed to that interface, allowing the gateway IP address to be dynamic.

## O/S forwarding table window

The O/S forwarding table window lists forwarding information for all routes.

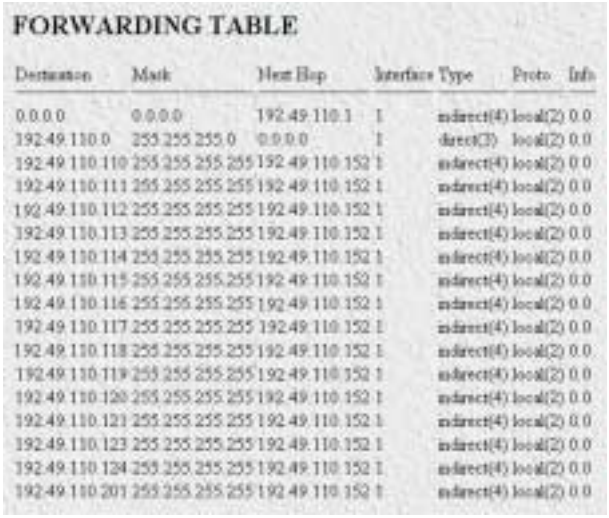


**Figure 28. IP Routing Forwarding Table**

### *Destination (ipRouteDest)*

The destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route. Multiple routes to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network management protocol in use.

### *Mask (ipRouteMask)*

Indicates the mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. For those systems that do not support arbitrary subnet masks, an agent constructs the value of the ipRouteMask by determining whether the value of the correspondent ipRouteDest field belongs to a Class A, B, or C network, and then using the appropriate mask from table 3 on page 77.

### *Next Hop (ipRouteNextHop)*

The IP address of the next hop of this route. (In the case of a route bound to an interface which is realized via a broadcast media, the value of this field is the agent's IP address on that interface.)

### *Interface (ipRouteIfIndex)*

The index value that identifies the local interface through which the next hop of this route should be reached. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.

### *Type (ipRouteType)*

One of the following route types:

- other(1)—none of the following
- invalid(2)—an invalidated route

- direct(3)—route to directly connected (sub-)network
- indirect(4)—route to a non-local host/network/sub-network

> **Note** The values direct(3) and indirect(4) refer to the notion of direct and indirect routing in the IP architecture. Setting this object to the value invalid(2) has the effect of invalidating the corresponding entry in the ipRouteTable object. That is, it effectively disassociates the destination identified with said entry from the route identified with said entry. It is an implementation-specific matter as to whether the agent removes an invalidated entry from the table. Accordingly, management stations must be prepared to receive tabular information from agents that corresponds to entries not currently in use. Proper interpretation of such entries requires examination of the relevant ipRouteType object.

### *Protocol (ipRouteProto)*

The routing mechanism via which this route was learned. Inclusion of values for gateway routing protocols is not intended to imply that hosts must support those protocols.

- unknown(0)
- local(1)—Added by the DACS to support an interface. For example, adding a route for a new dial-in user.
- user(2)—Added by an administrator on the IP Routing Information table or via SNMP management tools.
- dspf(3)—Not currently implemented.
- rip(4)—Learned via reception of RIP packet.
- icmp(5)—Learned via reception of ICMP packet.
- radius(6)—Provided in RADUIUS response packet.

### *Info (ipRouteInfo)*

A reference to MIB definitions specific to the particular routing protocol which is responsible for this route, as determined by the value specified in the route's ipRouteProto value. If this information is not present, its value should be set to the OBJECT IDENTIFIER { 0 0 }, which is a syntactically valid object identifier, and any conformant implementation of ASN.1 and BER must be able to generate and recognize this value.

## IP Routing Destination window

The IP Routing Destination window (see figure 29) shows next-hop routing information.


**Figure 29. Routing Destination window**

### *Route Destination (ipRouteDest)*

The destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route. Multiple routes to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network management protocol in use.

### *Mask (ipRouteMask)*

Indicates the mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. For those systems that do not support arbitrary subnet masks, an agent constructs the value of the ipRouteMask by determining whether the value of the corresponding ipRouteDest field belongs to a Class A, B, or C network, and then using the appropriate mask from table 3 on page 77.

### *Interface (ipRouteIfIndex)*

The index value which uniquely identifies the local interface through which the next hop of this route should be reached. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.

### *Protocol (ipRouteProto)*

The routing mechanism via which this route was learned. Inclusion of values for gateway routing protocols is not intended to imply that hosts must support those protocols.

- unknown(0)
- local(1)—Added by the DACS to support an interface. For example, adding a route for a new dial-in user.
- user(2)—Added by an administrator on the IP Routing Information table or via SNMP management tools.
- dspf(3)—Not currently implemented.
- rip(4)—Learned via reception of RIP packet.
- icmp(5)—Learned via reception of ICMP packet.
- radius(6)—Provided in RADUIUS response packet.

### Seconds Since Updated (ipRouteAge)
The number of seconds since this route was last updated or otherwise determined to be correct.

### Tag (RouteTag)
An identifier associated with the route. This can have different meanings depending on the protocol. For example, this gives the tag that was passed with a learned RIP route.

### Gateway (RouteGateway)
Specifies the IP address to which the packets should be forwarded.

### Cost (RouteCost)
This is the cost of the route as defined by RIP standards. Cost is sometimes considered to be number of hops. A cost of 16 is considered to be infinite. A cost can be given to user-entered routes so their preference in relation to learned routes can be calculated.

### State (RouteState)
Defines the state which a route may be in during its lifetime.

- invalid(1)—This setting deletes the route.
- active(2)—A valid route is in use.
- nopath(3)—No route is available to the specified gateway. The gateway is not known to local networks.
- agedout(4)—Invalid route (soon to be removed).
- costly(5)—A valid route, but not in use because of it's higher cost.

## Address Translation Information

The IP address translation table window (see figure 30) contain the IP address to physical address equivalences. Some interfaces do not use translation tables for determining address equivalences (for example, DDN-X.25 uses an algorithmic method)—if all interfaces are of this type, then the Address Translation table is empty (zero entries).

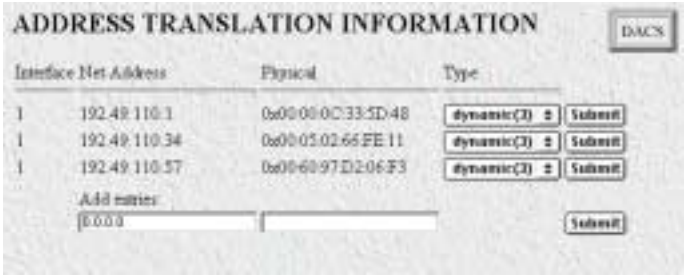


**Figure 30. Address Translation Information window**

### Interface (ipNetToMediaEntry)
Each entry contains one IP address to physical address equivalence.

### *Net Address (ipNetToMediaNetAddress)*
The IP address corresponding to the media-dependent physical address.

### *Physical (ipNetToMediaPhysAddress)*
The media-dependent physical address.

### *Type (ipNetToMediaType)*
The type of mapping. Setting this object to the value invalid(2) has the effect of invalidating the corresponding entry in the ipNetToMediaTable. That is, it effectively disassociates the interface identified with said entry from the mapping identified with said entry. It is an implementation-specific matter as to whether the agent removes an invalidated entry from the table. Accordingly, management stations must be prepared to receive tabular information from agents that corresponds to entries not currently in use. Proper interpretation of such entries requires examination of the relevant ipNetToMediaType object.

- other(1)—none of the following
- invalid(2)—an invalidated mapping
- dynamic(3)
- static(4)

# Chapter 12 TCP

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## Introduction

Transmission Control Protocol (TCP) is in the Transport layer of the OSI model and sits on top of IP. It is one of the more widely used protocols among the TCP/IP suite. The TCP subsystem web pages of the 3092 DACS provides management and statistical information on TCP. Detailed information regarding the SNMP MIB variables may be downloaded from RFC1213: Management Information Base for Network Management of TCP/IP-based internets: MIB-II.

Click on **TCP** under the **Configuration Menu** to display the **TCP** main window (see figure 31) to monitor TCP statistics.

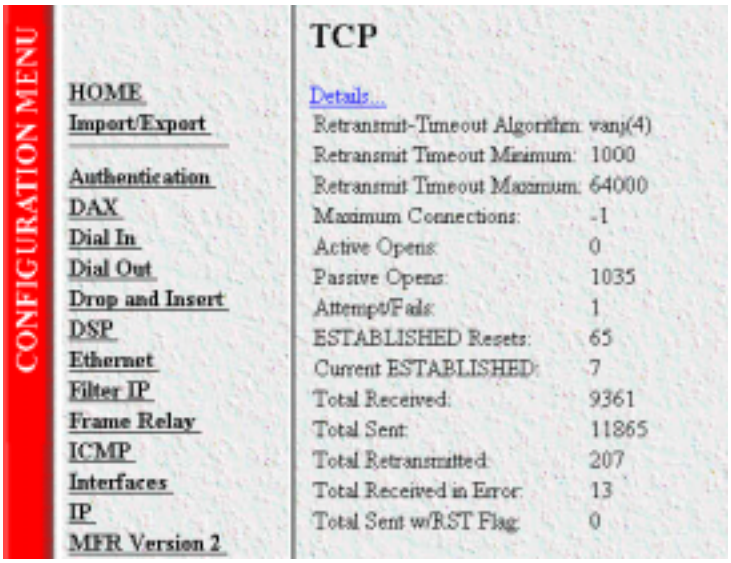


**Figure 31. TCP main window**

## TCP main window

### *Retransmit-Timeout Algorithm (tcpRtoAlgorithm)*

The algorithm that determines the timeout value used for retransmitting unacknowledged octets.

### *Retransmit-Timeout Minimum (tcpRtoMin)*

The minimum value permitted by a TCP implementation for the retransmission timeout, measured in milli-seconds. More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission timeout. In particular, when the timeout algorithm is rsre(3), an object of this type has the semantics of the LBOUND quantity described in RFC 793.

### *Retransmit-Timeout Maximum (tcpRtoMax)*

The maximum value permitted by a TCP implementation for the retransmission timeout, measured in milli-seconds. More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission timeout. In particular, when the timeout algorithm is rsre(3), an object of this type has the semantics of the UBOUND quantity described in RFC 793.

### Maximum Connections (tcpMaxConn)
The limit on the total number of TCP connections the entity can support. In entities where the maximum number of connections is dynamic, this object should contain the value -1.

### Active Opens (tcpActiveOpens)
The number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.

### Passive Opens (tcpPassiveOpens)
The number of times TCP connections have made a direct transition to the SYN-RCVD state from the LISTEN state.

### Attempt/Fails (tcpAttemptFails)
The number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.

### ESTABLISHED Resets (tcpEstabResets)
The number of times TCP connections have made a direct transition to the CLOSED state from either the ESTABLISHED state or the CLOSE-WAIT state.

### Current ESTABLISHED (tcpCurrEstab)
The number of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.

### Total Received (tcpInSegs)
The total number of segments received, including those received in error. This count includes segments received on currently established connections.

### Total Sent (tcpOutSegs)
The total number of segments sent, including those on current connections but excluding those containing only retransmitted octets.

### Total Retransmitted (tcpRetransSegs)
The total number of segments retransmitted—that is, the number of TCP segments transmitted containing one or more previously transmitted octets.

### Total Received in Error (tcpInErrs)
The total number of segments received in error (e.g., bad TCP checksums).

### Total Sent w/RST Flag (tcpOutRsts)
The number of TCP segments sent containing the RST flag.

## TCP (Details)

From this screen you can view port details for remote and local TCP connections (see figure 32).

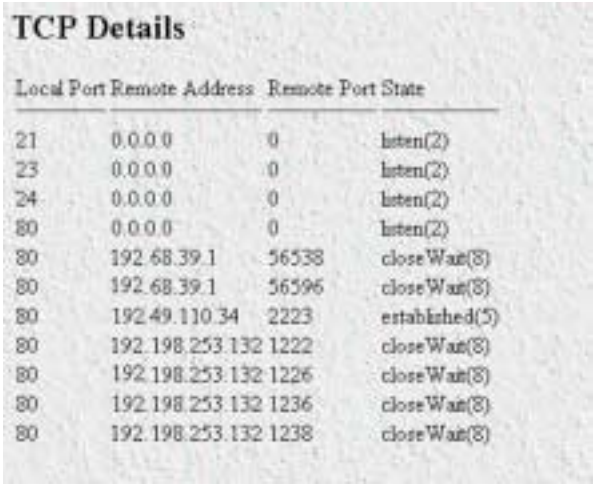


**Figure 32. TCP Details window**

### *Local Port (tcpConnLocalPort)*

The local port number for this TCP connection.

### *Remote Address (tcpConnRemAddress)*

The remote IP address for this TCP connection.

### *Remote Port (tcpConnRemPort)*

The remote port number for this TCP connection.

### *State (tcpConnState)*

The state of this TCP connection. The only value which may be set by a management station is deleteTCB(12). Accordingly, it is appropriate for an agent to return a 'badValue' response if a management station attempts to set this object to any other value.

If a management station sets this object to the value deleteTCB(12), Transmission Control Block, then this has the effect of deleting the TCB (as defined in RFC 793) of the corresponding connection on the managed node, resulting in immediate termination of the connection. As an implementation-specific option, a RST segment may be sent from the managed node to the other TCP endpoint (note however that RST segments are not sent reliably).

- closed(1)
- listen(2)
- synSent(3)
- synReceived(4)
- established(5)

- finWait1(6)
- finWait2(7)
- closeWait(8)
- lastAck(9)
- closing(10)
- timeWait(11)
- deleteTCB(12)

# Chapter 13 UDP

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## Introduction

User Datagram Protocol (UDP) is supported by the DACS. Detailed information regarding the SNMP management information base (MIB) variables can be found in *RFC1213: Management Information Base for Network Management of TCP/IP-based internets: MIB-II*.

To manage and collect statistics on UDP, click on **UDP** under the **Configuration Menu** to display the **UDP** window (see figure 33).

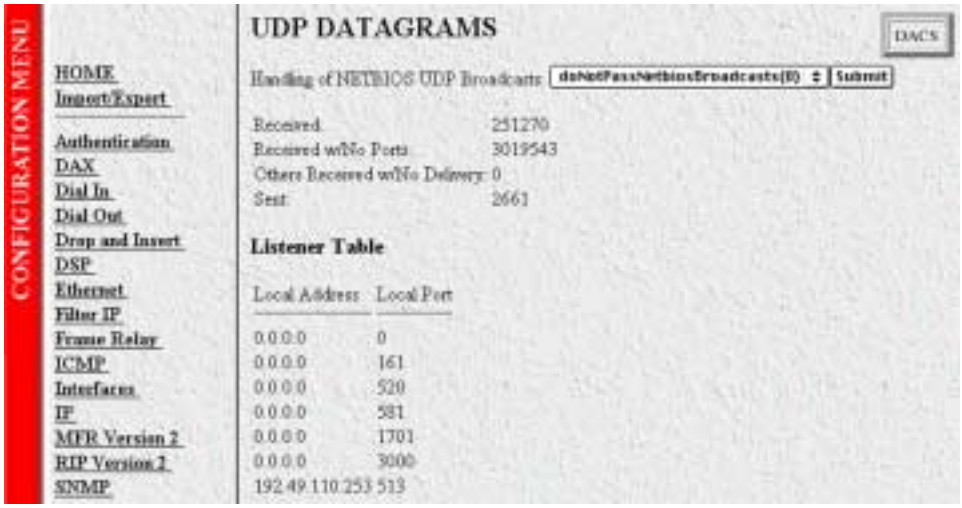


**Figure 33. UDP window**

### *Handling of NETBIOS UDP Broadcasts (boxNetbiosUdpBridging)*

Enables the passing of broadcast UDP packets with a port of 137 and 138 from other interfaces to the local LAN interface. Netbios uses these packets to communicate with WINS servers. A WINS server can work without this option enabled, but the remote PC will appear to be on the LAN. The following options are available:

- doNotPassNetbiosBroadcasts(0)
- passNetbiosBroadcasts(1)

### *Received (udpInDatagrams)*

The total number of UDP datagrams delivered to UDP users.

### *Received With No Ports (udpNoPorts)*

The total number of received UDP datagrams for which there was no application at the destination port.

### *Others Received with No Delivery (udpInErrors)*

The number of received UDP datagrams that could not be delivered for reasons other than the lack of an application at the destination port.

### *Sent (udpOutDatagrams)*

The total number of UDP datagrams sent from this entity.

### Listener Table (udpTable)
A table containing UDP listener information.

### Local Address (udpLocalAddress)
The local IP address for this UDP listener. In the case of a UDP listener that is willing to accept datagrams for any IP interface associated with the node, the value 0.0.0.0 is used.

### Local Port (udpLocalPort)
The local port number for this UDP listener.

# Chapter 14 RIP Version 2

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## Introduction

The **RIP Version 2** main window (see figure 34) describes routing information as defined by the Routing Information Protocol (RIP). All object identifiers described in this chapter comply with those contained in *RFC 1724: RIP Version 2 MIB Extension*.

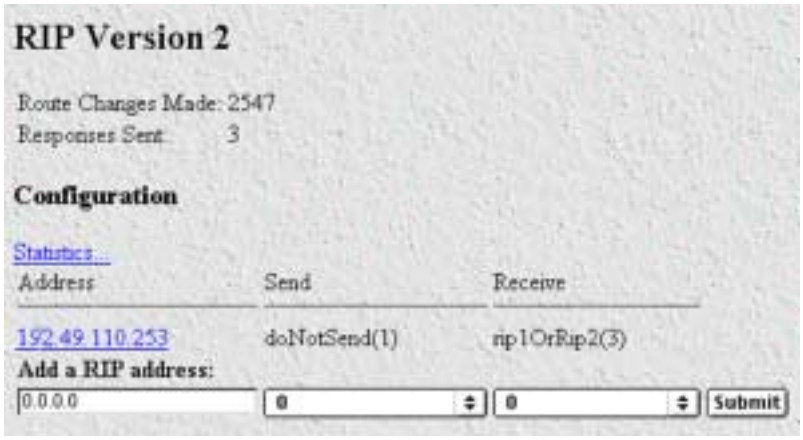


**Figure 34. RIP Version 2 window**

Click on **RIP Version 2** under the **Configuration Menu** to display the **RIP Version 2** main window.

## RIP Version 2 main window

The **RIP Version 2** window describes routing information as defined by the Routing Information Protocol (RIP). The window also contains the following links:

- **Statistic**s—Clicking on the **Statistics** link displays the **RIP Version 2 Status** window (see "RIP Version 2 (Statistics)" on page 97). In this window you can view each subnet IP address, Bad Packets, Bad Routes, Sent Updates, and Status.
- **Address** (xxx.xxx.xxx.xxx)— After adding a RIP address, click on the IP Address under the Address column to display the **RIP Version 2 Configuration** window. You can modify the configuration here. (see "RIP Version 2 (Statistics)" on page 97).

### *Route Changes Made (rip2GlobalRouteChanges)*

The number of route changes made to the IP Route Database by RIP. This does not include the refresh of a route's age.

### *Responses Sent (rip2GlobalQueries)*

The number of responses sent to RIP queries from other systems.

### *Adding a RIP address*

Do the following:

1. Enter the IP network address of the interface on the 3092 DACS that you want to enable RIP. This will be the LAN IP address, in other words, the IP address of the 3092. This is *not* the IP address of the device you want to direct RIP packets to.

2. Enter the protocol version to be used *for sending RIP packets*. The following choices are available:
   – *doNotSend (1)*
   – *ripVersion1 (2)*—ripVersion 1 implies sending RIP updates compliant with RFC 1058
   – *rip1Compatible (3)*—rip1Compatible implies broadcasting RIP-2 updates using RFC 1058 route subsumption rules
   – *ripVersion2 (4)*—ripVersion2 implies multicasting RIP-2 updates
3. Enter the protocol version to be used *for receiving RIP packets*. The following choices are available (note that rip2 and rip1OrRip2 implies reception of multicast packets.):
   – *rip1 (1)*—ripVersion 1 implies sending RIP updates compliant with RFC 1058
   – *rip2(2)*—rip1Compatible implies broadcasting RIP-2 updates using RFC 1058 route subsumption rules
   – *rip1OrRip2(3)*
   – *doNotReceive(4)*
4. Click on **Submit Query**.

> Note To delete the RIP Address, click on the IP Address under the column named **Address**. Select Status to be invalid(2) and click on **Submit Query**.

Further modifications can be made by clicking on the **Address** link of the specific subnet (see "RIP Version 2—Configuration").

## RIP Version 2—Configuration

The **RIP Version 2 Configuration** window (see figure 35), seen by clicking on the IP Address under the column named **Address**, displays the RIP IP Address followed by configurable parameters. The configurable parameters are **Domain, Authentication Type, Authentication Key, Send, Receive, Metric,** and **Status**.

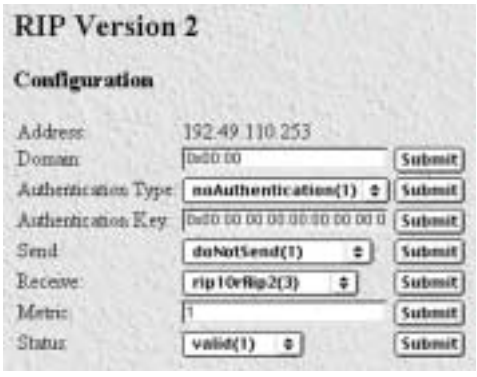


**Figure 35. RIP Version 2—Statistics Configuration window**

### *Address (rip2IfConfAddress)*

The IP Address of this system on the indicated subnet. For unnumbered interfaces, the value 0.0.0.N, where the least significant 24 bits (N) is the ifIndex for the IP Interface in network byte order.

### *Domain (rip2IfConfDomain)*
Value inserted into the **Routing Domain** field of all RIP packets sent on this interface.

### *Authentication Type (rip2IfConfAuthType)*
The type of Authentication used on this interface.

- noAuthentication (1)
- simplePassword (2)

### *Authentication Key (rip2IfConfAuthKey)*
This value is used as the Authentication Key whenever **Authentication Type (rip2IfConfAuthType)** has a value other than *noAuthentication(1)*. A modification of **Authentication Type** does not change the value of **Authentication Key**. If the Authentication Key string is shorter than 16 octets, it will be left justified, then padded to 16 octets with nulls (0x00) on the right.

Reading this object always results in an octet string of length zero. Authentication may not be bypassed by reading the MIB object.

### *Send (rip2IfConfSend)*
**Send** is what the router sends on this interface. ripVersion 1 implies sending RIP updates compliant with RFC 1058. There are four options, *doNotSend(1), ripVersion1(2), rip1Compatible(3),* and *ripVersion2(4)*. rip1Compatible implies broadcasting RIP-2 updates using RFC 1058 route subsumption rules. ripVersion2 implies multicasting RIP-2 updates. ripV1Demand indicates the use of Demand RIP on a WAN interface under RIP Version 1 rules. ripV2Demand indicates the use of Demand RIP on a WAN interface under Version 2 rules.

- doNotSend (1)
- ripVersion1 (2)
- rip1Compatible (3)—rip1Compatible implies broadcasting RIP-2 updates using RFC 1058 route subsumption rules
- ripVersion2 (4)—ripVersion2 implies multicasting RIP-2 updates

### *Receive (rip2IfConfReceive)*
This indicates which version of RIP updates are to be accepted. Note that *rip2* and *rip1OrRip2* implies reception of multicast packets.

- rip1 (1)
- rip2 (2)
- rip1OrRip2 (3)
- doNotRecieve (4)

### *Metric (rip2IfConfDefaultMetric)*
This variable indicates the metric that is to be used for the default route entry in RIP updates originated on this interface. A value of zero indicates that no default route should be originated; in this case, a default route via another router may be propagated.

### *Status (rip2IfConfStatus)*
Writing invalid has the effect of deleting this interface.

- valid (1)
- invalid (2)

## RIP Version 2 (Statistics)

By clicking on **Statistics** in the **RIP Version 2** main window, you enter the **RIP Version 2 Status** window (see figure 36)It displays routing and update information for each subnet address.

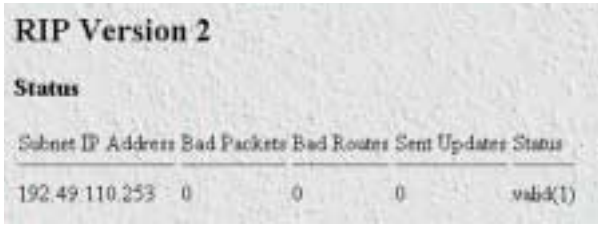


**Figure 36. RIP Version 2 details window**

### *Subnet IP Address (rip2IfStatAddress)*
The IP Address of this system on the indicated subnet. For unnumbered interfaces, the value 0.0.0.N, where the least significant 24 bits (N) is the ifIndex for the IP Interface in network byte order.

### *Bad Packets (rip2IfStatRcvBadPackets)*
The number of RIP response packets received by the RIP process which were subsequently discarded for any reason (e.g. a version 0 packet, or an unknown command type).

### *Bad Routes (rip2IfStatRcvBadRoutes)*
The number of routes, in valid RIP packets, which were ignored for any reason (e.g. unknown address family, or invalid metric).

### *Sent Updates (rip2IfStatSentUpdates)*
The number of triggered RIP updates actually sent on this interface. This explicitly does NOT include full updates sent containing new information.

### *Status (rip2IfStatStatus)*
Displays whether the Subnet IP Address is valid or invalid.

# Chapter 15 SNMP

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## Introduction

The DACS provides management and statistical information on SNMP. Detailed information on the SNMP MIB variables may be downloaded from the RFC. Click on **SNMP** under the **Configuration Menu** to display the SNMP window (see figure 37).


**Figure 37. SNMP window**

## SNMP window

The **SNMP** window displays incoming and outgoing SNMP statistics, and has links for downloading and displaying the following MIB documents:

- Corporate MIB
- Enterprise MIB
- Product MIB

## In

### *Packets (snmpInPkts)*

The total number of Messages delivered to the SNMP entity from the transport service. Typically this would be UDP since the SNMP engine sits on top of UDP

### *Bad Version (snmpInBadVersions)*

The total number of SNMP Messages that were delivered to the SNMP protocol entity and were for an unsupported SNMP version.

### Bad Community Names (snmpInBadCommunityNames)
The total number of SNMP Messages delivered to the SNMP protocol entity which used a SNMP community name not known to said entity.

### Bad Community Uses (snmpInBadCommunity)
The total number of SNMP messages delivered to the SNMP protocol entity which represented an SNMP operation which was not allowed by the SNMP community named in the message.

### ASN ParseErrors (snmpInASNParseErrs)
The total number of ASN.1 or BER errors encountered by the SNMP protocol entity when decoding received SNMP messages.

### Error Status "Too Big" (snmpInTooBigs)
The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is *tooBig*.

### No Such Names (snmpInNoSuchNames)
The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is *noSuchName*.

### Bad Values (snmpInBadValues)
The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is *badValue*.

### Error Status "Read Only" (snmpInReadOnlys)
The total number of valid SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is *readOnly*. It should be noted that it is a protocol error to generate an SNMP PDU which contains the readOnly value in the error-status field, as such this object is provided as a means of detecting incorrect implementations of the SNMP.

### Generated Errors (snmpInGenErrs)
The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is *genErr*.

### Get/Get Next Variables (snmpInTotalReqVars)
The total number of MIB objects that have been retrieved successfully by the SNMP protocol entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs.

### Set Variables (snmpInTotalSetVars)
The total number of MIB objects that have been altered successfully by the SNMP protocol entity as the result of receiving valid SNMP Set-Request PDUs.

### Get Requests (snmpInGetRequests)
The total number of SNMP Get-Request PDUs that have been accepted and processed by the SNMP protocol entity.

### Get Next Requests (snmpInGetNexts)
The total number of SNMP Get-Next PDUs that have been accepted and processed by the SNMP protocol entity.

### Set Requests (snmpInSetRequests)
The total number of SNMP Set-Request PDUs that have been accepted and processed by the SNMP protocol entity.

### Get Responses (snmpInGetResponses)
The total number of SNMP Get-Response PDUs that have been accepted and processed by the SNMP protocol entity.

### Traps (snmpInTraps)
The total number of SNMP Trap PDUs that have been accepted and processed by the SNMP protocol entity.

## Out

### Out Packets (snmpOutPkts)
The total number of SNMP messages that were passed from the SNMP protocol entity to the transport service.

### Error Status "Too Big" (snmpOutTooBigs)
The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is *tooBig*.

### No Such Names (snmpOutNoSuchNames)
The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status is *noSuchName*.

### Bad Values (snmpOutBadValues)
The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is *badValue*.

### Generated Errors (snmpOutGenErrs)
The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is *genErr*.

### Get Requests (snmpOutGetRequests)
The total number of SNMP Get-Request PDUs that have been generated by the SNMP protocol entity.

### Get Next Requests (snmpOutGetNexts)
The total number of SNMP Get-Next PDUs that have been generated by the SNMP protocol entity.

### Set Requests (snmpOutSetRequests)
The total number of SNMP Set-Request PDUs that have been generated by the SNMP protocol entity.

### Get Responses (snmpOutGetResponses)

The total number of SNMP Get-Response PDUs that have been generated by the SNMP protocol entity.

### Traps (snmpOutTraps)

The total number of SNMP Trap PDUs that have been generated by the SNMP protocol entity.

### Authentication Failure Traps (snmpEnableAuthenTraps)

This value indicates whether the SNMP agent process is permitted to generate authentication-failure traps. The variable is global. This means that by being disabled, all authentication-failure traps are disabled.

Note Note: It is strongly recommended that upon selecting either *enabled(1)* or *disabled(2)*, it be saved in non-volatile memory by clicking on **Record Current Configuration** under **Immediate Actions** on the Home page of the 3092 DACS. If the network management system is re-initialized (implying power cycling) while assuming the current configuration has been recorded, the current configuration will not be lost.

The two options for this variable are:

- enabled(1)
- disabled(2)

# Chapter 16 System

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## Introduction

The **System** main window (see figure 38) contains general setup information about the DACS. System parameters are Patton Enterprise MIB object identifiers, though some are contained in RFC *1213, Management Information Base for Network Management of TCP/IP-based internets: MIB-II*. Click on **System** under the **Configuration Menu** to display the **System** main window.

System Main Window - 1st Screen Half

**SYSTEM**

Modify...

**CPU**

% CPU Idle: 99
Time Slices Fully Utilized: 1514
Time Slices 90% Utilized: 67

**SNMP and HTTP**

Version: snmpv1(1)
Super User Password: No Access
User Password: monitor

**LAN IP**

How to Obtain Address: static(1)
Address: 192.49.110.136
Mask: 255.255.255.0

**Manufacturer**

Serial Number: 03/13/01
PCB Revision: 1
General Information:

**Message Blocks**

Packet Holding Message Blocks...
Total: 19590
Free: 19182
Total Time Waited: 0
Total Times Unavailable: 0

System Main Window - 2nd Screen Half

**Operating System Heap Memory**

Total Size: 13380608
Free: 8405504
Largest: 8398848

**Enclosure System**

Internal Temperature: 52 celsius
Highest Temperature: 56 celsius

**Installation**

Country: unitedStates(1)

**Other**

Total DRAM Detected: 14431584
System ID: 1.3.6.1.4.1.1768.1
Running Since Last Boot: 2 days 22:27:59 hours
System Manager: Unknown Contact
Box Name: DACS
Physical Location: Unknown Location
Background Image: enableGraphics(1)
Monitor Privilege: readonly(2)

**Figure 38. System main window (CPU, SNMP and HTTP, LAN IP, Manufacturer, and Message Blocks)**

## System main window

From this window you can view information for the CPU, SNMP and HTTP, LAN IP, Manufacturer, Message Blocks, Operating System Heap Memory, Enclosure System, Installation, and Other.

The main window also has the following links:

- **Modify**—click on this link to change SNMP and HTTP, LAN IP, Installation, and Other (see "System—Modify window" on page 112)
- **Packet Holding Message Blocks**—click on this link to view message block statistics (see "System—Packet Holding Message Blocks..." on page 115)

### CPU

This portion of the **System** main window contains information described in the following sections.

#### Percentage CPU Idle (boxidletime)

This indicates what percentage of the i960 CPU processing power is not being utilized (see figure 38 on page 107).

#### Time Slices Fully Utilized (boxCPUcritical)

This value represents a count of how many times the CPU was fully utilized expressed in 1/100th seconds (see figure 38 on page 107).

#### Time Slices 90% Utilized (boxCPUWarning)

This value represents a count of how many times the CPU approached full utilization expressed in 1/100th seconds (see figure 38 on page 107).

### SNMP and HTTP

This portion of the **System** main window provides information about the SNMP version and the HTTP accessibility.

#### Version (boxSnmpVersion)

This parameter indicates the SNMP version number supported by this unit (for example *snmpv1(1)* means SNMP version 1 is supported). Select **snmpv1(1)** only since SNMP2 is not currently supported.

#### Super User Password (boxSnmpMasterPassword)

This is the super user password for complete access and configurability of the DACS through SNMP and HTTP (see figure 38 on page 107).

#### User Password (boxSnmpMonitorPassword)

This displays the user monitoring password for read only access of certain selected information. Not all parameters shown using the superuser password are displayed under the user password. (see figure 38 on page 107).

### LAN IP

This portion of the System main window contains information described in the following sections.

***How to Obtain Address (boxIPAddressTechnique)***
This displays the current method for obtaining the LAN IP address (see figure 38 on page 107).

***Address(boxIPAddress)***
If the address technique in use above is static, then the value displayed in the **Address** field is the LAN IP address (see figure 38 on page 107).

***Mask(boxIPMask)***
If the address technique in use above is static, then the value displayed in the **Address** field is the LAN IP mask (see figure 38 on page 107).

## Manufacturer

This portion of the **System** main window contains manufacturing information described in the following sections.

***Serial Number (boxManufactureDatecode)***
The datecode of manufacture and serial number (see figure 38 on page 107).

***PCB Revision (boxManufacturePcbRevision)***
The revision of the printed circuit board (see figure 38 on page 107).

***General Information (boxManufactureGeneralInfo)***
A manufacturing notes area for additional information (see figure 38 on page 107).

## Message Blocks

This portion of the **System** main window contains information about the usage of message blocks. A message block is essentially memory available for creating or storing packets where a packet is usually an Ethernet frame. There are four types of message blocks, and each type represents a collection of buffers which are of the same size.

***Packet Holding Message Blocks...***
Provides buffer usage of DACS message blocks based upon message block sizes (see figure 38 on page 107).

***Total (boxMsgBlksConfigured)***
The total number of message blocks on the system (see figure 38 on page 107).

***Free (boxMsgBlksFree)***
The number of free message blocks available (see figure 38 on page 107).

***Total Time Waited (boxCountMsgBlkTaskWait)***
The total number of times that the proper size message block was not available to hold a packet, and the CPU task went to sleep while waiting for it. (see figure 38 on page 107).

***Total Times Unavailable (boxCountMsgBlkUnavailable)***
The total number of times that the proper size message block was not available to hold a packet, and the CPU task dumped the packet. The difference between **Total Time Waited** and **Total Times Unavailable** is whether the CPU task goes to sleep or simply dumps the packet to continue on. (see figure 38 on page 107).

## Operating System Heap Memory

This portion of the **System** main window contains information about the memory used by the CPU and its management tasks.

***Total Size (boxHeapSize)***
The size in octets of the operating system heap memory (see figure 38).

***Free (boxHeapFreeSpace)***
The amount of operating system heap memory in octets currently available (see figure 38).

***Largest (boxHeapLargestSpace)***
The largest contiguous memory block in octets in the memory heap (see figure 38).

## Enclosure System

This portion of the **System** main window contains information about the internal temperature of the DACS.

***Internal Temperature (boxTemperature)***
Displays the current temperature in celsius (centigrade) (see figure 38).

***Highest Temperature (boxMaxTemperature)***
The highest temperature registered in celsius (centigrade) since the DACS was last re-booted (see figure 38 on page 107).

## Installation

This portion of the **System** main window contains information described in this following section.

***Country (installCountry)***
Specifies the country that the DACS is installed in so it can be configured in accordance with local laws (see figure 38 on page 107).

## Other

This portion of the **System** main window contains information described in the following sections.

***Total DRAM Detected (boxDetectedMemory)***
The total number of bytes of DRAM detected by the CPU (see figure 38 on page 107).

***SystemID (sysObjectID)***
This SNMP variable defines the type of the DACS being managed as defined by specification RFC1213.MIB (see figure 38 on page 107).

***Running Since Last Boot (sysUpTime)***
This SNMP variable represents the time since the network management portion of the system was last re-initialized (see figure 38 on page 107).

***System Manager (sysContact)***
This SNMP variable represents the textual identification of the contact person for this managed node, which may include information on how to contact this person as defined by specification RFC1213.MIB (see figure 38 on page 107). The maximum length of this field is 256 octets.

***Box Name (sysName)***
This is "An administratively assigned name for this managed node. By convention, this is the node's fully-qualified domain name." (RFC1213.MIB) (see figure 38 on page 107).

***Physical Location (sysLocation)***
"The physical location of this node (e.g., *telephone closet, 3rd floor*)." (RFC1213.MIB) (see figure 38 on page 107).

***Web Settings (boxBackgroundFlag)***
The following options are available:

- disableGraphics(0)—When this option is selected, graphics on WWW pages will not be displayed. This results in faster page display times, but may make it more difficult to navigate WWW sites that rely heavily on graphics.
- enableGraphics(1)—When this option is selected, graphics on WWW pages are displayed.
- disableWeb(2)—When this option is selected, access to the WWW pages is denied for everyone.

***Monitor Privilege (boxMonitorPrivilege)***
Specifies the privileges given to the monitor user. Privileges can be removed or additional write access can be given beyond read-only access. The following options are available:

- none(0)—The monitor user can not log in.
- read-only(2)—This is the default setting. The monitor user can view but not change any parameters. Monitor can not view passwords.
- writeUser(18)—Not supported.
- writeUserlp(50)—The monitor user can change all parameters—except passwords— IP links.
- writeUserlpWan(114)—The monitor user can change all parameters—except passwords— IP, and T1/E1.
- writeUserlpWanSystem(242)—The monitor user can change all parameters—except passwords— IP, T1/E1, System, and System Log links.
- writeUserlpWanSystemUpload(498)—The monitor user can change all parameters—except passwords— IP, T1/E1, System, and System Log links. The monitor user can also load firmware updates into the DACS.

## System—Modify window

The **System—Modify** window (see figure 39) is where you can change SNMP and HTTP, LAN IP, Installation, and Other.


**Figure 39. System—Modify window**

### *SNMP and HTTP*

This portion of the **System—Modify** window provides information about the SNMP version and the HTTP accessibility.

#### *Version (boxSnmpVersion)*

This parameter selects the SNMP version number supported by this unit (see figure 39). Select *snmpv1(1)* only, SNMP2 is not currently supported.

#### *Super User Password (boxSnmpMasterPassword)*

This accesses the super user password for complete access and configurability of the DACS through SNMP and HTTP (see figure 39 on page 112).

#### *User Password (boxSnmpMonitorPassword)*

This accesses the user monitoring password for read only access of certain selected information. Not all parameters shown using the superuser password are displayed under the user password. (see figure 39 on page 112).

### *LAN IP*

This portion of the **System—Modify** window contains configurable information for the IP addressing of the Ethernet LAN port.

#### *Method to Obtain Address (boxIPAddressTechnique)*

This indicates how to obtain the LAN IP address (see figure 39 on page 112). The following options are available:

- disable(0)—Ethernet port is disabled (DACS T1 to T1 usage only)
- static(1)—LAN IP address is obtained from EIA-232 Control Port
- rarp (2)—Reverse Address Resolution Protocol—A protocol defined in RFC 903 which provides the reverse function of ARP. RARP maps a hardware address (MAC address) to an Internet address. It is used primarily by diskless nodes, when they first initialize, to find their Internet address.
- bootp(3)—The Bootstrap Protocol. A protocol described in RFCs 951 and 1084 and used for booting diskless workstations.
- dhcp(4)—Dynamic Host Configuration Protocol—A protocol introduced by Microsoft on their NT server with version 3.5 in late 1994. This protocol provides a means to dynamically allocate IP addresses to IBM PCs running on a Microsoft Windows local area network. The system administrator assigns a range of IP addresses to DHCP and each client PC on the LAN has its TCP/IP software configured to request an IP address from the DHCP server. The request and grant process uses a lease concept with a controllable time period. More information can be found in the Microsoft documentation on NT Server.

#### *Address (boxIPAddress)*

If the address technique above is static then this represents the LAN IP address.

#### *Mask (boxIPMask)*

If the address technique above is static then this represents the LAN IP mask.

### *Installation*

This portion of the **System—Modify** window contains information described in the following section.

#### *Country (installCountry)*

Specifies the country that the DACS is installed in so it can be configured in accordance with local laws. The following options are available:

- other(0)
- unitedStates(1)
- australia(2)
- canada(3)
- europeanUnion(4)

- france(5)
- germany(6)

### Other

This portion of the **System—Modify** window contains information described in the following sections.

#### System Manager (sysContact)

This SNMP variable represents the textual identification of the contact person for this managed node, together with information on how to contact this person as defined by specification RFC1213.MIB.

#### Box Name (sysName)

This is "An administratively assigned name for this managed node. By convention, this is the node's fully-qualified domain name." (RFC1213.MIB)

#### Physical Location (sysLocation)

"The physical location of this node (e.g., 'telephone closet, 3rd floor')." (RFC1213.MIB)

#### Web Settings (boxBackgroundFlag)

The following options are available:

- disableGraphics(0)—When this option is selected, graphics on WWW pages will not be displayed. This results in faster page display times, but may make it more difficult to navigate WWW sites that rely heavily on graphics.
- enableGraphics(1)—When this option is selected, graphics on WWW pages are displayed.
- disableWeb(2)—When this option is selected, access to the WWW pages is denied for everyone.

#### Monitor Privilege (boxMonitorPrivilege)

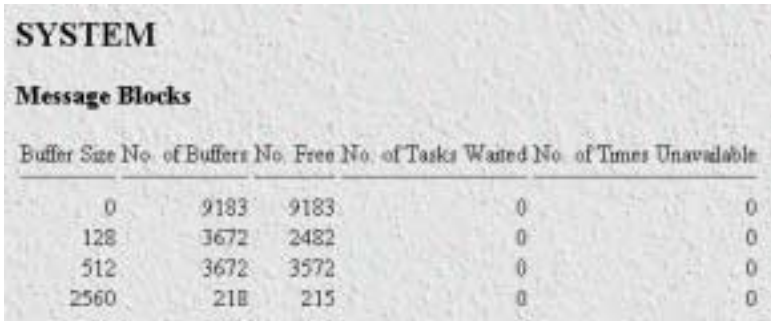
Specifies the privileges given to the monitor user. Privileges can be removed or additional write access can be given beyond read-only access. The following options are available:

- none(0)—The monitor user can not log in.
- read-only(2)—This is the default setting. The monitor user can view but not change any parameters. Monitor can not view passwords.
- writeUser(18)—The monitor user can change all parameters—except passwords— under authentication, drop-and-insert, and dial-in links.
- writeUserlp(50)—The monitor user can change all parameters—except passwords— under authentication, drop-and-insert, dial-in, and IP links.
- writeUserlpWan(114)—The monitor user can change all parameters—except passwords— under authentication, drop-and-insert, dial-in, IP, T1/E1, and Frame Relay links.
- writeUserlpWanSystem(242)—The monitor user can change all parameters—except passwords— under authentication, drop-and-insert, dial-in, IP, T1/E1, Frame Relay, System, and System Log links.

- writeUserIpWanSystemUpload(498)—The monitor user can change all parameters—except passwords—under authentication, drop-and-insert, dial-in, IP, T1/E1, Frame Relay, System, and System Log links. The monitor user can also load firmware updates into the DACS.

## System—Packet Holding Message Blocks...

The DACS system manages the i960 processor utilization by allocating message blocks for packet management. This **Message Blocks** window (see figure 40) indicates buffer usage of DACS message blocks based upon message block sizes.


SYSTEM

Message Blocks

| Buffer Size | No. of Buffers | No. Free | No. of Tasks Waited | No. of Times Unavailable |
|---|---|---|---|---|
| 0 | 9183 | 9183 | 0 | 0 |
| 128 | 3672 | 2482 | 0 | 0 |
| 512 | 3672 | 3572 | 0 | 0 |
| 2560 | 218 | 215 | 0 | 0 |

**Figure 40. Packet Holding Message Blocks window**

### *Buffer Size (boxbuffersize)*

The size in bytes of the buffer.

### *No. of Buffers (boxbuffercount)*

The total number of buffers this size.

### *No. Free (boxbuffersfree)*

The number of buffers this size which are currently free for use

### *No. of Tasks Waited (boxCountBufferTaskWait)*

The total number of times that the proper size message block was not available to hold a packet, and the CPU task went to sleep while waiting for it.

### *No. of Times Unavailable(boxCountBufferUnavailable)*

The total number of times that the proper size message block was not available to hold a packet, and the CPU task dumped the packet. The difference between **Total Time Waited** and **Total Times Unavailable** is whether the CPU task goes to sleep or simply dumps the packet to continue on.

# Chapter 17 System Log

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## Introduction

The **System Log** window (see figure 41) displays the results from the system-wide error reporting subsystem. The object parameters in the system log are all Patton Enterprise MIB object identifiers.

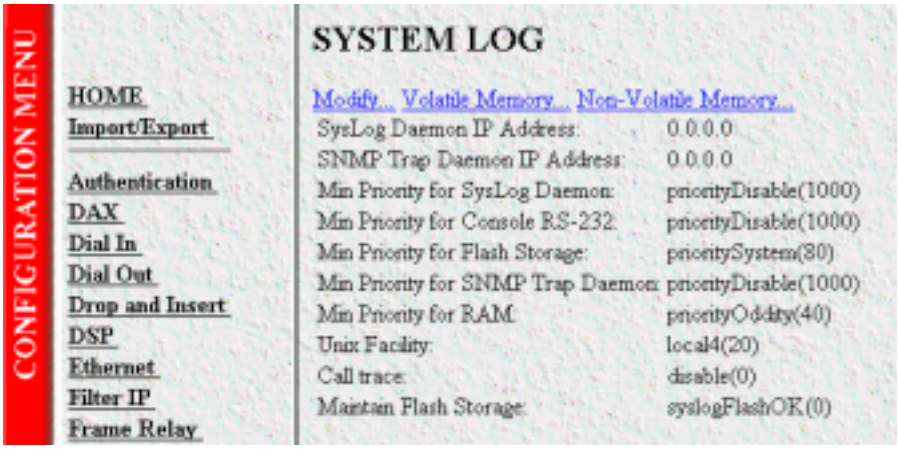



**Figure 41. System Log main window**

## System Log Main Window

Besides displaying the results from the system-wide error reporting utility, the **System Log** main window also contains links to the following:

- **Modify**—Clicking on this link displays syslog and SNMP trap daemon IP addresses, message priorities, and maintenance information in the flash memory (see "System Log—Modify" on page 119)
- **Volatile Memory**—Clicking on this link displays timestamp and stored system log message information ("System Log—Volatile Memory" on page 123)
- **Non-Volatile Memory**—Clicking on this link displays non-volatile RAM messages with the 100-ms time stamp (see "System Log—Non-Volatile Memory" on page 124)

Click on **System Log** under the **Configuration Menu** to display the System Log main window.

## System Log—Modify

The **System Log—Modify** window (see figure 42) displays **SysLog** and **SNMP Trap Daemon IP Address** locations, message priorities for the offered SysLog destinations, priority and maintenance information.


**Figure 42. System Log—Modify window**

### *Daemons*

This portion of the **System Log—Modify** window contains information about the SysLog Daemon and SNMP Trap Daemon IP Addresses.

#### *SysLog Daemon IP Address(syslogDaemonIP)*

The IP address of a host system which is running a syslog daemon. System messages with a priority greater than or equal to the configurable syslogDaemonPriority will be sent to this IP address (see section "Priority").

#### *SNMP Trap Daemon IP Address (syslogTrapIP)*

The IP address of a host system which is running a SNMP trap daemon. SNMP Trap messages with a priority greater than or equal to the configurable syslogTrapPriority will be sent to this IP address.

### *Priority*

This portion of the **System Log—Modify** window describes the configuration of the Message Priority for each of the SysLog destinations.

***Min Priority for SysLog Daemon (syslogDaemonPriority)***
System messages which have a priority equal to or greater than this setting will be sent to the syslog daemon defined by the SysLog Daemon IP Address (syslogDaemonIP).

- prioritySystem(80)
- priorityDisable(1000)

***Min Priority for Console RS-232 (syslogConsolePriority)***
System messages which have a priority equal to or greater than this setting will be sent directly to the RS-232 Config Port on the rear of the 3092. Messages will be sent regardless of the current operating state of the RS-232 configuration port. The lower the number next to the priority listed below, the more details system logging will provide. *priorityVerbose* will generate the most messages, while *priorityDisable* will turn off all messages.

- priorityVerbose(5)
- priorityDebug(10)
- priorityInfo(20)
- priorityOddity(40)
- priorityService(60)
- prioritySystem(80)
- priorityDisable(1000)

***Min Priority for Flash Storage (syslogFlashPriority)***
System messages which have a priority equal to or greater than this setting will be permanently stored in the Flash PROM. Due to being permanent memory, the Flash memory eventually becomes filled. When this occurs, the memory must be cleared before accepting more messages. Some maximum number of messages may be stored in the Flash PROM before this storage area must be cleared.

- prioritySystem(80)—Flash PROM will be used to store system-level messages.
- priorityDisable(1000)—No messages will be stored.

***Min Priority for SNMP Trap Daemon (syslogTrapPriority)***
System messages which have a priority equal to or greater than this setting will be sent to the SNMP Trap Daemon IP Address (syslogTrapIP). The lower the number next to the priority listed below, the more details system logging will provide. *priorityVerbose* will generate the most messages, while *priorityDisable* will turn off all messages.

- priorityVerbose(5)
- priorityDebug(10)
- priorityInfo(20)
- priorityOddity(40)
- priorityService(60)

- prioritySystem(80)
- priorityDisable(1000)

### *Min Priority for RAM (SyslogTablePriority)*

System messages which have a priority equal to or greater than this setting will appear in System Log—Volatile Memory. The lower the number next to the priority listed below, the more details system logging will provide. *priorityVerbose* will generate the most messages, while *priorityDisable* will turn off all messages.

- priorityVerbose(5)
- priorityDebug(10)
- priorityInfo(20)
- priorityOddity(40)
- priorityService(60)
- prioritySystem(80)
- priorityDisable(1000)

### *Unix Facility (syslogUnixFacility)*

This setting is used when syslog messages are sent to a Unix-type syslog daemon. In this case the message will include the facility and priority coding.

- disable(0)
- user(1)
- mail(2)
- daemon(3)
- auth(4)
- syslog(5)
- lpr(6)
- news(7)
- uucp(8)
- cron(9)
- authpriv(10)
- ftp(11)
- local0(16)
- local1(17)
- local2(18)
- local3(19)
- local4(20)

- local5(21)
- local6(22)
- local7(23)

#### *Call Trace (syslogCallTrace)*

Enabling this will activate the call tracing utility. This is a powerful debugging utility which will log every single function call and return. At the death of a box the call trace will be printed out and can be sent to tech support. This utility will take a large amount of CPU power.

- disable(0)—Disable function call tracing.
- enable(1)—Enable function call tracing.
- dump(2)—Display function call tracing on the computer monitor.

### Maintenance

This portion of the **System Log—Modify** window contains information described in the following section.

#### *Maintain Flash Storage (syslogFlashClear)*

Setting this variable to syslogFlashClear will cause the erasing of any system messages which have been saved in the Flash. On reading this variable will indicate if the syslog Flash is rejecting messages because it is full.

- syslogFlashOK(0)—Flash is accepting messages.
- syslogFlashFull(1)—Flash is rejecting messages because it is full. To empty the flash memory, see option *syslogFlashClear(2)*.
- syslogFlashClear(2)—Erase system messages stored in Flash. Be sure to return to the 3092's Home page and click on **Record Current Configuration** to store this change in permanent memory.

## System Log—Volatile Memory

The **System Log—Volatile Memory** window (see figure 43) displays timestamp and stored system log message information.

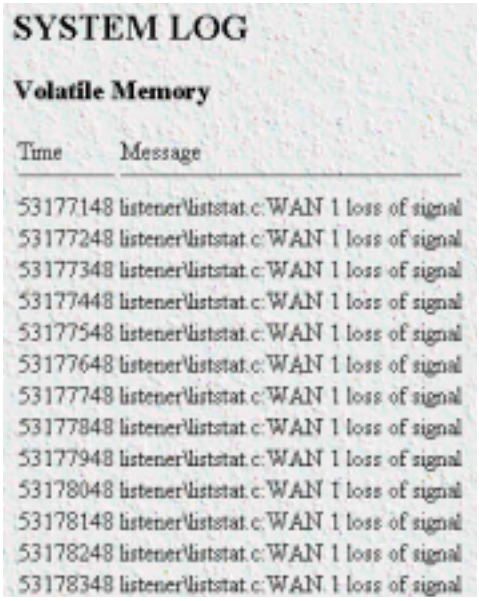



**Figure 43. System Log—Volatile Memory window**

### *Time (slTick)*

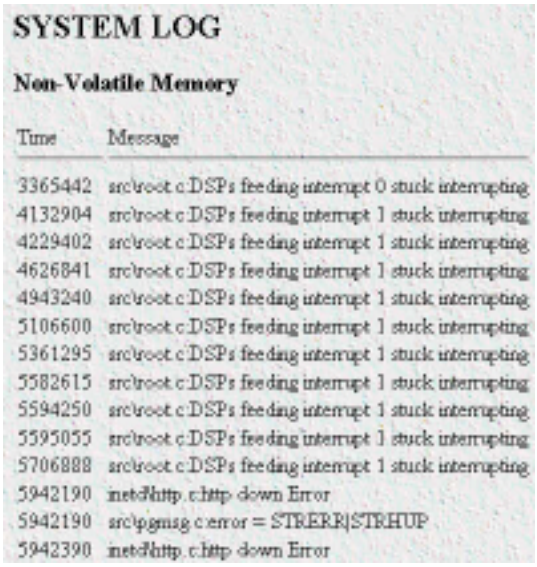
Time stamps are generated every 10 ms.

### *Message (slMessage)*

This is the message stored in RAM. If the 3092 DACS loses power, the messages in RAM will be lost.

## System Log—Non-Volatile Memory

The **System Log—Non-Volatile** window (see figure 44) displays the time stamp and the messages kept in the non-volatile Flash memory.


SYSTEM LOG

Non-Volatile Memory

| Time | Message |
|---|---|
| 3365442 | src\root c DSPs feeding interrupt 0 stuck interrupting |
| 4132904 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 4229402 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 4626841 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 4943240 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5106600 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5361295 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5582615 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5594250 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5595055 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5706888 | src\root c DSPs feeding interrupt 1 stuck interrupting |
| 5942190 | net\http.c http down Error |
| 5942190 | src\pgmsg c error = STRERR\|STRHUP |
| 5942390 | net\http.c http down Error |

**Figure 44. System Log—Non-Volatile Memory window**

### *Time (slfTick)*

Time stamps are generated every 10 ms.

### *Message (slfMessage)*

This is the message stored in Flash memory. If the 3092 DACS loses power, the messages will *not* be lost.

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Controlled Slip Seconds (dsx1FarEndCurrentCSSs) ....142
Line Errored Seconds (dsx1FarEndCurrentLESs) ....142
Path Code Violations (dsx1FarEndCurrentPCVs) ....142
Bursty Errored Seconds (dsx1FarEndCurrentBESs) ....142
Degraded Minutes (dsx1FarEndCurrentDMs) ....142
Far End Line Statistics—History ....142
Interval (dsx1FarEndIntervalNumber) ....143
Errored Seconds (dsx1FarEndIntervalESs) ....143
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Severely Errored Frame Seconds (dsx1FarEndIntervalSEFSs) ....143
Unavailable Seconds (dsx1FarEndIntervalUASs) ....143
Controlled Slip Seconds (dsx1FarEndIntervalCSSs) ....143
Line Errored Seconds (dsx1FarEndIntervalLESs) ....143
Path Code Violations (dsx1FarEndIntervalPCVs) ....143
Bursty Errored Seconds (dsx1FarEndIntervalBESs) ....143
Degraded Minutes (dsx1FarEndIntervalDMs) ....143
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Severly Errored Seconds (dsx1FarEndTotalSESs) ....144
Severely Errored Frame Seconds (dsx1FarEndTotalSEFSs) ....144
Unavailable Seconds (dsx1FarEndTotalUASs) ....144
Controlled Slip Seconds (dsx1FarEndTotalCSSs) ....144
Line Errored Seconds (dsx1FarEndTotalLESs) ....144
Path Code Violations (dsx1FarEndTotalPCVs) ....144
Bursty Errored Seconds (dsx1FarEndTotalBESs) ....145
Degraded Minutes (dsx1FarEndTotalDMs) ....145

## Introduction

The **T1/E1 Link Activity** window (see figure 45) shows the configuration of the T1/E1 Interface, and reports statistics on the quality of the T1/E1 connection. The statistics listed in this section comprise those contained in *RFC 1406—Definitions of Managed Objects for the DS1 and E1 Interface Types*.


**Figure 45. T1/E1 Link Activity main window**

Click on **T1/E1 Link** under the **Configuration Menu** to display the **T1/E1 Link Activity** main window.

The **T1/E1 Link Activity** main window contains the following items:

- Information that identifies the DS1 Interface on a managed device, indicates the type of DS1 line using the circuit, and shows the transmission vendor's circuit identifier (see figure 45). For more information about the objects in this window, refer to "T1/E1 Link Activity main window" on page 129.
- **Line Status**—This variable indicates interface line status. If any condition other than **No Alarms** exists, you can click on the **Alarms Present** link to view the **Line Status Alarms** window. For more information about these objects, refer to "Line Status (dsx1LineStatus)" on page 130.
- **Line Status—Configuration...** link—clicking on this link takes you to the page that displays the **WAN Circuit Configuration** window. This window contains general information about the DS1 interface, amount of time intervals passed, and kind of line coding). For more information about this page, refer to "Line Status—Configuration" on page 132.
- **Near End Line Statistics—Current...** link—clicking on this link takes you to the page that displays line statistics for the current 15-minute interval. For more information about this page, refer to "Near End Line Statistics—Current" on page 137.

- **Near End Line Statistics—History...** link—clicking on this link takes you to the page that displays line statistics for the previous 15-minute interval. For more information about this page, refer to "Near End Line Statistics—History" on page 138.
- **Near End Line Statistics—Totals...** link—clicking on this link takes you to the page that displays the total statistics of errors that occurred during the previous 24-hour period. For more information about this page, refer to "Near End Line Statistics—Totals" on page 140.
- **Far End Line Statistics—Current...** link—clicking on this link takes you to the page that displays far-end statistics for the current 15-minute interval. For more information about this page, refer to "Far End Line Statistics—Current" on page 141.
- **Far End Line Statistics—History...** link—clicking on this link takes you to the page that displays far-end statistics for the previous 15-minute interval. For more information about this page, refer to "Far End Line Statistics—History" on page 142.
- **Far End Line Statistics—Totals...** link—clicking on this link takes you to the page that displays the total far-end statistics of errors that occurred during the previous 24-hour period. For more information about this page, refer to "Far End Line Statistics—Totals" on page 144.

## T1/E1 Link Activity main window

The **T1/E1 Link Activity** window has three main sections that display the following T1/E1 parameters:

- **Line Status**—Shows the configuration of the T1/E1 Interface and service provided on each user time slot.
- **Near End Line Statistics**—Show error statistics collected from the near-end of the T1/E1 line.
- **Far End Line Statistics**—Show statistics collected from the far-end T1/E1 line. Far End Line Statistics can be used by devices that support the facility data link (FDL)

### *Link (dsx1LineIndex)*

This object identifies a DS1 Interface on a managed device. If there is an ifEntry directly associated with this DS1 interface, it must have the same value as ifIndex. Otherwise, the value exceeds ifNumber, and is assigned a unique identifier by following this rule: inside interfaces (equipment side) with even numbers and outside interfaces (network side) with odd numbers.

### *Type (dsx1LineType)*

This variable indicates the type of DS1 line using the circuit. The circuit type determines the bits-per-second rate that the circuit can carry and how it interprets error statistics. The values are as follows:

- dsx1ESF—Extended Superframe DS1
- dsx1D4—AT&T D4 format DS1
- dsx1E1—Based on CCITT/ITU G.704 without CRC
- dsx1E1-CRC—Based on CCITT/ITU G.704 with CRC

### *Circuit ID (dsx1CircuitIdentifier)*

This is the transmission vendor's circuit identifier. Knowing the circuit ID can be helpful during troubleshooting.

## Line Status (dsx1LineStatus)

This variable indicates interface line status. It contains loopback, failure, received alarm and transmitted alarm information. If any condition other than **No Alarms** exists, you can click on the **Alarms Present** link to view the **Line Status Alarms** window (see figure 46).


**Figure 46. Line Status Alarms window**

The alarms currently present on the line will be indicated by the **ACTIVE** label next to the alarm type.

### Failure States

The following failure states are reported in the dsx1LineStatus object. The items listed in this section comprise those contained in *RFC 1406—Definitions of Managed Objects for the DS1 and E1 Interface Types.*

#### Far End Alarm Failure

Far End Alarm failure is also known as a *Yellow Alarm* in the T1 case or *Distant Alarm* in the E1 case.

For D4 links, the Far End Alarm failure occurs when bit 6 of all channels has been zero for at least 335 ms. The alarm is cleared when bit 6 of at least one channel is non-zero for a period *T*, where *T* is usually less than 1 second and always less than 5 seconds. The Far End Alarm failure is not declared for D4 links when a Loss of Signal is detected.

For ESF links, the Far End Alarm failure is declared if the Yellow Alarm signal pattern occurs in at least 7 out of 10 contiguous 16-bit pattern intervals. The alarm is cleared when the Yellow Alarm signal pattern has not occurred for 10 contiguous 16-bit signal pattern intervals.

For E1 links, the Far End Alarm failure is declared when bit 3 of time-slot zero is received set to 1 on two consecutive occasions. The Far End Alarm failure is cleared when bit 3 of time-slot zero is received set to zero.

### *Alarm Indication Signal (AIS) Failure*

The Alarm Indication Signal failure is declared when an AIS defect is detected at the input and the AIS defect still exists after the Loss Of Frame failure (which is caused by the unframed nature of the *all-ones* signal) is declared. The AIS failure is cleared when the Loss Of Frame failure is cleared.

### *Loss Of Frame Failure*

For T1 links, the Loss Of Frame failure is declared when an OOF or LOS defect has persisted for $T$ seconds, where $2 \leq T \leq 10$. The Loss Of Frame failure is cleared when there have been no OOF or LOS defects during a period $T$ where $0 \leq T \leq 20$. Many systems will perform *hit integration* within the period $T$ before declaring or clearing the failure (for more information, see TR 62411 [16]).

For E1 links, the Loss Of Frame Failure is declared when an OOF defect is detected.

### *Loss Of Signal Failure*

For T1, the Loss Of Signal failure is declared upon observing 175 +/- 75 contiguous pulse positions with no pulses of either positive or negative polarity. The LOS failure is cleared upon observing an average pulse density of at least 12.5% over a period of 175 ±75 contiguous pulse positions, starting with the receipt of a pulse.

For E1 links, the Loss Of Signal failure is declared when greater than 10 consecutive zeroes are detected (see O.162 Section 3.4.4).

### *Loopback Pseudo-Failure*

The Loopback Pseudo-Failure is declared when the near end equipment has placed a loopback (of any kind) on the DS1. This allows a management entity to determine from one object whether the DS1 can be considered to be in service or not (from the point of view of the near end equipment).

### *TS16 Alarm Indication Signal Failure*

For E1 links, the TS16 Alarm Indication Signal failure is declared when time-slot 16 is received as all ones for all frames of two consecutive multiframes (see G.732 Section 4.2.6). This condition is never declared for T1.

### *Loss Of MultiFrame Failure*

The Loss Of MultiFrame failure is declared when two consecutive multiframe alignment signals (bits 4 through 7 of TS16 of frame 0) have been received with an error. The Loss Of Multiframe failure is cleared when the first correct multiframe alignment signal is received. The Loss Of Multiframe failure can only be declared for E1 links operating with G.732 [18] framing (sometimes called *Channel Associated Signalling* mode).

### *Far End Loss Of Multiframe Failure*

The Far End Loss Of Multiframe failure is declared when bit 2 of TS16 of frame 0 is received set to one on two consecutive occasions. The Far End Loss Of Multiframe failure is cleared when bit 2 of TS16 of frame 0 is received set to zero. The Far End Loss Of Multiframe failure can only be declared for E1 links operating in *Channel Associated Signalling* mode.

## Line Status—Configuration

Clicking on the **Line Status—Configuration** link in the T1/E1 Link Activity window displays the **WAN Circuit Configuration** window (see figure 47). This window contains general information about the DS1 interface, including the type of line (D4 Superframe or Extended Superframe), and kind of line coding (B8ZS or AMI). To modify the WAN circuit configuration, click on the **Modify...** link. For more information about modifying WAN circuit settings, refer to "WAN Circuit Configuration—Modify" on page 133.


**Figure 47. WAN Circuit Configuration window**

Note Click on the **Modify** link to change the settings of any of the following parameters (see "WAN Circuit Configuration—Modify" on page 133).

The **WAN Circuit Configuration** window also displays the amount of time that has passed and the number of intervals passed during which valid data was collected.

### *Time Elapsed (dsx1TimeElapsed)*

The number of seconds that have elapsed since the beginning of the current error-measurement period.

### *Valid Intervals (dsx1ValidIntervals)*

The number of previous intervals for which valid data was collected. The value will be 96 unless the interface was brought on-line within the last 24-hours, in which case the value will be the number of completed 15-minute intervals since the interface has been online. Statistics are collected for up to the last 24 hour period broken down into 96 individual 15-minute intervals.

## WAN Circuit Configuration—Modify

Clicking on the **Configuration** link in the **T1/E1 Link Activity** window displays the **WAN Circuit Configuration—Modify** window (see figure 48). From this window, you can change line interface settings, signalling settings, test settings, and change the T1/E1 pulse shapes.

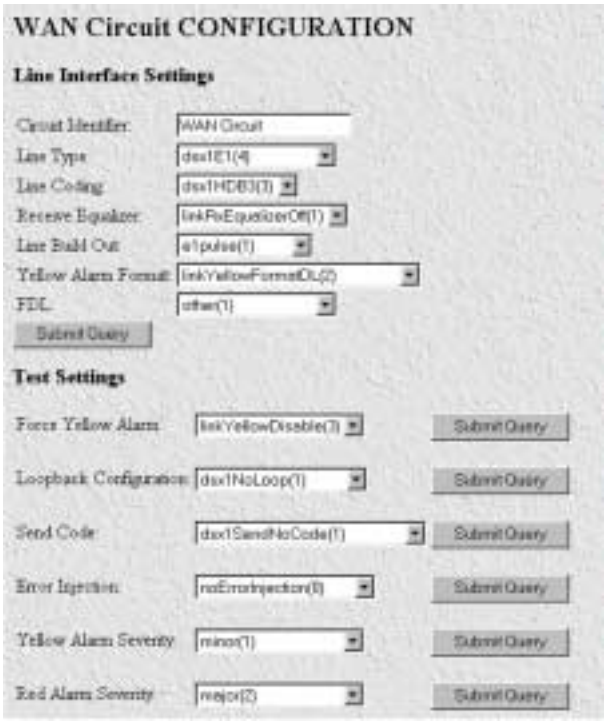



**Figure 48. WAN Circuit Configuration—Modify window**

### *Line Interface Settings*

This portion of the **WAN Circuit Configuration** window contains information described in the following sections.

#### *Circuit ID (dsx1CircuitIdentifier)*

This variable contains the transmission vendor's circuit identifier, for the purpose of facilitating troubleshooting.

#### *Line Type (dsx1LineType) Type (dsx1LineType)*

This variable indicates the type of DS1 Line implemented on this circuit. The type of circuit affects the number of bits per second that the circuit can reasonably carry, as well as the interpretation of the usage and error statistics. The values, in sequence, are:

- other(1) —Link is disabled
- dsx1ESF(2)—Extended Superframe DS1
- dsx1D4(3)—AT&T D4 format DS1

- dsx1E1(4)—Based on CCITT/ITU G.704 without CRC
- dsx1E1-CRC(5)—Based on CCITT/ITU G.704 with CRC

### *Line Coding (dsx1LineCoding)*

This variable describes the type of Zero Code Suppression used on the link, which in turn affects a number of its characteristics.

- dsx1JBZS(1)—Jammed Bit Zero Suppression, in which the AT&T specification of at least one pulse every 8 bit periods is literally implemented by forcing a pulse in bit 8 of each channel. Thus, only seven bits per channel, or 1.344 Mbps, is available for data. This feature is not currently implemented.
- dsx1B8ZS (2)—The use of a specified pattern of normal bits and bipolar violations which are used to replace a sequence of eight zero bits.
- dsx1HDB3(3)
- dsx1ZBTSI(4)—May use *dsx1ZBTSI*, or Zero Byte Time Slot Interchange. This feature is not currently implemented.
- dsx1AMI(5)—Refers to a mode wherein no zero code suppression is present and the line encoding does not solve the problem directly. In this application, the higher layer must provide data which meets or exceeds the pulse density requirements, such as inverting HDLC data.
- other(6)—This feature is not currently supported.

### *Receive Equalizer (linkRxEqualizer)*

This variable determines the equalization used on the received signal. Long haul signals should have the equalization set for more. Short haul signals require less equalization.

- linkRxEqualizerOff(1)
- linkRxEqualizerOn(2)

### *Line Build Out (linkLineBuildOut)*

This variable is used in T1 applications to adjust the T1 pulse shape at the cross connect point. Select the pulse strength needed to minimize distortion at the remote T1 receiver end. The default is *t1pulse0dB*, which should be adequate for most situations.

- triState(0)
- e1pulse(1)
- t1pulse0dB(2)—Strong pulse amplitude.
- t1pulse-7dB(3)—Medium pulse amplitude.
- t1pulse-15dB(4)—Weak pulse amplitude.

### *Yellow Alarm Format (linkYellowFormat)*

This variable identifies which standard will be used to transmit and identify the Yellow Alarm.

- link YellowFormatBit2(1)—Bit-2 equal zero in every channel
- YellowFormatDL(2)—FF00 pattern in the Data Link

- YellowFormatFrame12FS(3)—FS bit of frame 12

### *FDL (dsx1FDL)*

This describes which implementation of FDL is being used, if any. FDL applies only to T1 circuits.

- other(1)—Indicates that a protocol other than one following is used.
- dsx1Ansi-T1-403(2)—Refers to the FDL exchange recommended by ANSI.
- dsx1Att-54016(3)—Refers to ESF FDL exchanges.
- dsx1Fdl-none(4)—Indicates that the device does not use the FDL.

## Test Settings

This portion of the **WAN Circuit Configuration** window contains information described in the following sections.

### *Force Yellow Alarm (linkYellowForce)*

This variable identifies which standard will be used to transmit and identify the Yellow Alarm.

- linkYellowAuto—Do *not* force the transmission of a yellow alarm. But, yellow alarm may be automatically transmitted.
- linkYellowOn—Force the transmission of a yellow alarm even if the received signal is in frame.
- linkYellowDisable—Do NOT transmit a yellow alarm even if the received signal is out of frame.

### *Loopback Config (dsx1LoopbackConfig)*

This variable represents the loopback configuration of the DS1 interface. Agents supporting read/write access should return badValue in response to a requested loopback state that the interface does not support. The values mean:

- dsx1NoLoop—Not in the loopback state. A device that is not capable of performing a loopback on the interface shall always return this as it's value.
- dsx1PayloadLoop—The received signal at this interface is looped through the device. Typically the received signal is looped back for retransmission after it has passed through the device's framing function.
- dsx1LineLoop—The received signal at this interface does not go through the device (minimum penetration) but is looped back out.
- dsx1OtherLoop—Loopbacks that are not defined here.

### *Send Code (dsx1SendCode)*

This variable indicates what type of code is being sent across the DS1 interface by the device. The values mean:

- dsx1SendNoCode—Sending looped or normal data
- dsx1SendLineCode—Sending a request for a line loopback
- dsx1SendPayloadCode—Sending a request for a payload loopback
- dsx1SendResetCode—Sending a loopback termination request
- dsx1SendQRS—Sending a Quasi-Random Signal (QRS) test pattern

- dsx1Send511Pattern—Sending a 511 bit fixed test pattern
- dsx1Send3in24Pattern—Sending a fixed test pattern of 3 bits set in 24
- dsx1SendOtherTestPattern—Sending a test pattern other than those described by this object.

### *Error Injection (linkInjectError)*

Force an output error to see if the other end detects it

- noErrorInjection(0)
- injectCRCerrorBurst(1)
- injectLineErrorBurst(2)

### *Yellow Alarm Severity ()*

This reference is identical to the reference on the **Alarms** page in the **3092 Configuration Menu**. The configuration may be changed here or in the **Alarms** page.

- ignore(0)
- minor(1)
- major(2)
- minorSelfClearing(3)
- majorSelfClearing(4)\

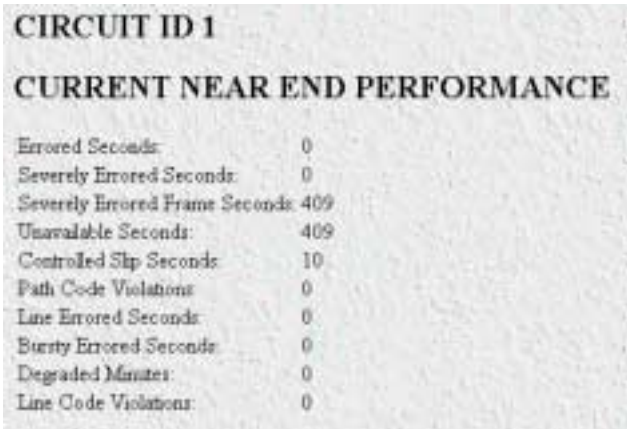
### *Red Alarm Severity ()*

This reference is identical to the reference on the **Alarms** page in the **3092 Configuration Menu**. The configuration may be changed here or in the **Alarms** page.

- ignore(0)
- minor(1)
- major(2)
- minorSelfClearing(3)
- majorSelfClearing(4)

## Near End Line Statistics—Current

Click on **Near End Line Statistics—Current** to display line statistics for the current 15-minute interval (see figure 49).


CIRCUIT ID 1

CURRENT NEAR END PERFORMANCE

| | |
|---|---|
| Errored Seconds: | 0 |
| Severely Errored Seconds: | 0 |
| Severely Errored Frame Seconds: | 409 |
| Unavailable Seconds: | 409 |
| Controlled Slip Seconds: | 10 |
| Path Code Violations: | 0 |
| Line Errored Seconds: | 0 |
| Bursty Errored Seconds: | 0 |
| Degraded Minutes: | 0 |
| Line Code Violations: | 0 |

**Figure 49. Current Near End Performance window**

### *Errored Seconds (dsx1CurrentESs)*
The number of errored seconds, encountered by a DS1 interface in the current 15-minute interval.

### *Severely Errored Seconds (dsx1CurrentSESs)*
The number of severely errored seconds encountered by a DS1 interface in the current 15-minute interval.

### *Severely Errored Frame Seconds (dsx1CurrentSEFSs)*
The number of severely errored framing seconds encountered by a DS1 interface in the current 15-minute interval.

### *Unavailable Seconds (dsx1CurrentUASs)*
The number of unavailable seconds encountered by a DS1 interface in the current 15-minute interval.

### *Controlled Slip Seconds (dsx1CurrentCSSs)*
The number of Controlled Slip Seconds encountered by a DS1 interface in the current 15-minute interval.

### *Path Code Violations (dsx1CurrentPCVs)*
The number of path coding violations encountered by a DS1 interface in the current 15-minute interval.

### *Line Errored Seconds (dsx1CurrentLESs)*
The number of line errored seconds encountered by a DS1 interface in the current 15-minute interval.

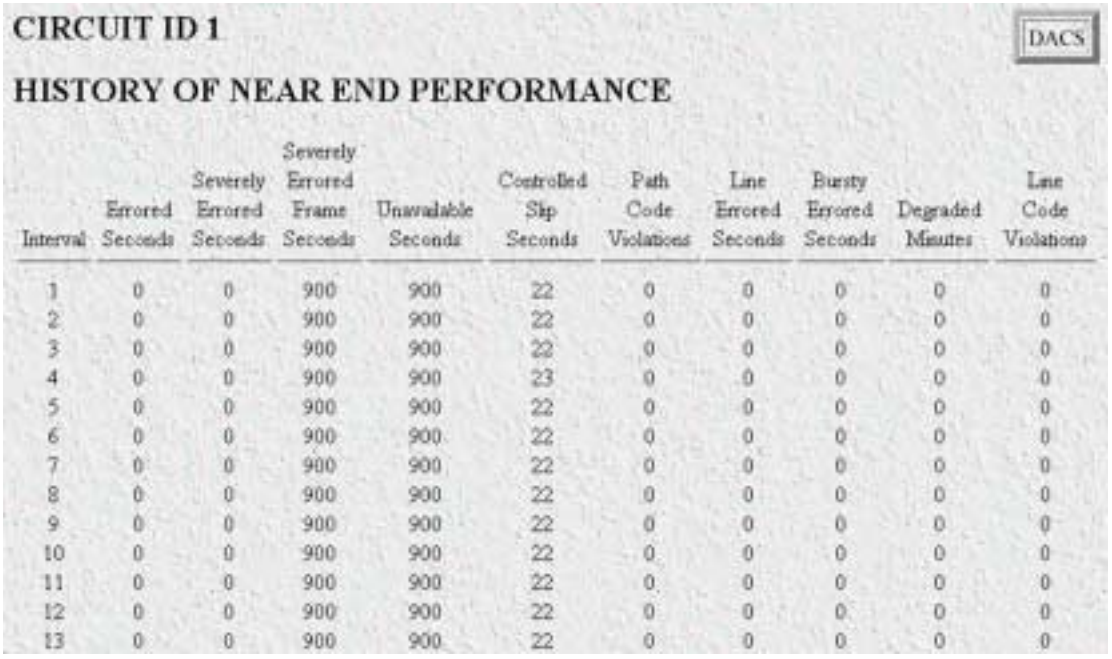
### *Bursty ErroredSeconds (dsx1CurrentBESs)*
The number of bursty errored seconds (BESs) encountered by a DS1 interface in the current 15-minute interval.

### *Degraded Minutes (dsx1CurrentDMs)*
The number of degraded minutes (DMs) encountered by a DS1 interface in the current 15-minute interval.

### *Line Code Violations (dsx1CurrentLCVs)*
The number of line code violations (LCVs) encountered by a DS1 interface in the current 15-minute interval.

## Near End Line Statistics—History

Click on **Near End Line Statistics—History** to display line statistics for prior completed 15-minute intervals within the last 24 hours (see figure 50). This does not include the current 15-minute interval.



CIRCUIT ID 1

DACS

HISTORY OF NEAR END PERFORMANCE

| Interval | Errored Seconds | Severely Errored Seconds | Severely Errored Frame Seconds | Unavailable Seconds | Controlled Slip Seconds | Path Code Violations | Line Errored Seconds | Bursty Errored Seconds | Degraded Minutes | Line Code Violations |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 900 | 900 | 23 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 900 | 900 | 22 | 0 | 0 | 0 | 0 | 0 |

**Figure 50. History of Near End Performance window**

### *Interval (dsx1IntervalNumber)*
A number between 1 and 96, where 1 is the most recently completed 15-minute interval and 96 is the least recently completed 15-minutes interval. When all 96 intervals are visible, then the 3092 has been operating (powered-on) for at least 24 hours. If less than 96 intervals are visible, then it has been less than 24 hours since the 3092 was powered up.

### *Errored Seconds (dsx1intervaless)*
The number of errored Seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Severely Errored Seconds (dsx1IntervalSESs)*
The number of severely errored seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Severely Errored Frame Seconds (dsx1IntervalSEFSs)*
The number of severely errored framing seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Unavailable Seconds (dsx1IntervalUASs)*
The number of unavailable seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Controlled Slip Seconds (dsx1IntervalCSSs)*
The number of controlled slip seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Path Code Violations (dsx1IntervalPCVs)*
The number of path coding violations encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Line Errored Seconds (dsx1IntervalLESs)*
The number of line errored seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Bursty ErroredSeconds (dsx1IntervalBESs)*
The number of bursty errored seconds (BESs) encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Degraded Minutes (dsx1IntervalDMs)*
The number of degraded minutes (DMs) encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Line Code Violations (dsx1IntervalLCVs)*
The number of line code violations (LCVs) encountered by a DS1 interface in the current 15-minute interval.

## Near End Line Statistics—Totals

Click on **Near End Line Statistics—Totals** to display the total statistics of errors that occurred during the previous 24-hour period, the previous 96 15-minute intervals (see figure 51).

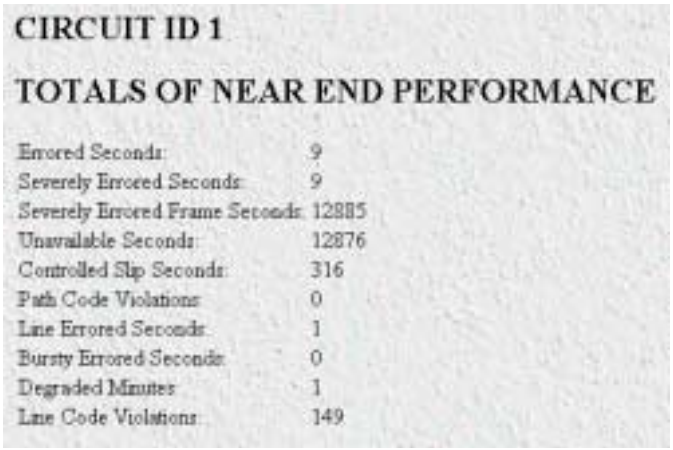



**Figure 51. Totals of Near End Performance window**

### *Errored Seconds (dsx1TotalESs)*
The number of errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Severely Errored Seconds (dsx1TotalSESs)*
The number of severely errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Severely Errored Frame Seconds (dsx1TotalSEFSs)*
The number of severely errored framing seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Unavailable Seconds (dsx1TotalUASs)*
The number of unavailable seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Controlled Slip Seconds (dsx1TotalCSSs)*
The number of controlled slip seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Path Code Violations (dsx1TotalPCVs)*
The number of path coding violations encountered by a DS1 interface in the previous 24-hour interval.

### *Line Errored Seconds (dsx1TotalLESs)*
The number of line errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Bursty ErroredSeconds (dsx1TotalBESs)*
The number of bursty errored seconds (BESs) encountered by a DS1 interface in the previous 24-hour interval.

### *Degraded Minutes (dsx1TotalDMs)*
The number of degraded minutes (DMs) encountered by a DS1 interface in the previous 24-hour interval.

### *Line Code Violations (dsx1TotalLCVs)*
The number of line code violations (LCVs) encountered by a DS1 interface in the current 15-minute interval.

## Far End Line Statistics—Current

Click on **Near End Line Statistics—Current** to display far-end statistics for the current 15-minute interval (see figure 52).

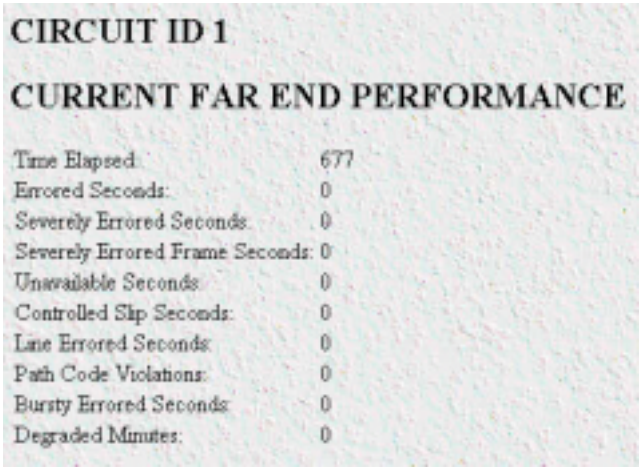



**Figure 52. Current Far End Performance window**

### *Time Elapsed (dsx1FarEndTimeElapsed)*
The number of seconds that have elapsed since the beginning of the far-end current error-measurement period.

### *Errored Seconds (dsx1FarEndCurrentESs)*
The number of  far-end errored seconds encountered by a DS1 interface in the current 15-minute interval.

### *Severely Errored Seconds (dsx1FarEnd CurrentSESs)*
The number of far-end severely errored seconds encountered by a DS1 interface in the current 15-minute interval.

### *Severely Errored Frame Seconds (dsx1FarEndCurrentSEFSs)*
The number of far-end severely errored framing seconds encountered by a DS1 interface in the current 15-minute interval.

### *Unavailable Seconds (dsx1FarEndCurrentUASs)*
The number of far-end unavailable seconds encountered by a DS1 interface in the current 15-minute interval.

### *Controlled Slip Seconds (dsx1FarEndCurrentCSSs)*
The number of far-end controlled slip seconds encountered by a DS1 interface in the current 15-minute interval.

### *Line Errored Seconds (dsx1FarEndCurrentLESs)*
The number of far-end line errored seconds encountered by a DS1 interface in the current 15-minute interval

### *Path Code Violations (dsx1FarEndCurrentPCVs)*
The number of far-end path coding violations reported via the far-end block error count encountered by a DS1 interface in the current 15-minute interval.

### *Bursty Errored Seconds (dsx1FarEndCurrentBESs)*
The number of far-end bursty errored seconds (BESs) encountered by a DS1 interface in the current 15-minute interval.

### *Degraded Minutes (dsx1FarEndCurrentDMs)*
The number of far-end degraded minutes (DMs) encountered by a DS1 interface in the current 15-minute interval.

## Far End Line Statistics—History

Click on **Far End Line Statistics—History** to display far-end statistics for previously completed 15-minute intervals (see figure 53).

CIRCUIT ID 1

DACS

HISTORY OF FAR END PERFORMANCE

| Interval | Errored Seconds | Severely Errored Seconds | Severely Errored Frame Seconds | Unavailable Seconds | Controlled Slip Seconds | Line Errored Seconds | Path Code Violations | Bursty Errored Seconds | Degraded Minutes |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Figure 53. History of Far End Performance window**

### *Interval (dsx1FarEndIntervalNumber)*
A number between 1 and 96, where 1 is the most recently completed 15-minute interval and 96 is the least recently completed 15-minutes interval (assuming that all 96 intervals are valid).

### *Errored Seconds (dsx1FarEndIntervalESs)*
The number of far-end errored seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Severely Errored Seconds (dsx1FarEndIntervalSESs)*
The number of far-end severely errored seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Severely Errored Frame Seconds (dsx1FarEndIntervalSEFSs)*
The number of far-end severely errored framing seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Unavailable Seconds (dsx1FarEndIntervalUASs)*
The number of far-end unavailable seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Controlled Slip Seconds (dsx1FarEndIntervalCSSs)*
The number of far-end controlled slip seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Line Errored Seconds (dsx1FarEndIntervalLESs)*
The number of far-end line errored seconds encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Path Code Violations (dsx1FarEndIntervalPCVs)*
The number of far-end path coding violations encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Bursty Errored Seconds (dsx1FarEndIntervalBESs)*
The number of far-end bursty errored seconds (BESs) encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

### *Degraded Minutes (dsx1FarEndIntervalDMs)*
The number of far-end degraded minutes (DMs) encountered by a DS1 interface in one of the previous 96, individual 15-minute, intervals.

## Far End Line Statistics—Totals

Click on **Far End Line Statistics—Totals** to display the total statistics of errors that occurred during the previous 24-hour period (see figure 54). This is the sum of the current 15-minute interval and all time prior intervals within the last 24 hours.

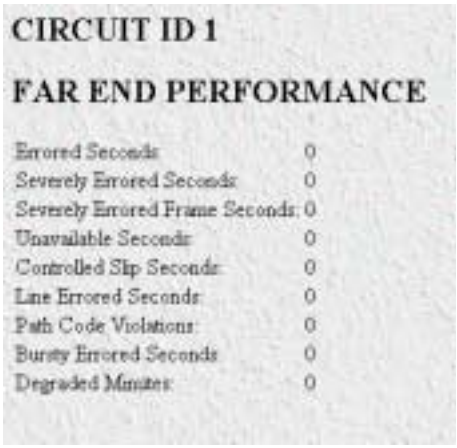



**Figure 54. Far End Performance window**

### *Errored Seconds (dsx1FarEndTotalESs)*
The number of far-end errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Severly Errored Seconds (dsx1FarEndTotalSESs)*
The number of far-end severely errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Severely Errored Frame Seconds (dsx1FarEndTotalSEFSs)*
The number of far-end severely errored framing seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Unavailable Seconds (dsx1FarEndTotalUASs)*
The number of far-end unavailable seconds encountered by a DS1 interface in the previous 24-hour in-24-hour interval.

### *Controlled Slip Seconds (dsx1FarEndTotalCSSs)*
The number of far-end controlled slip seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Line Errored Seconds (dsx1FarEndTotalLESs)*
The number of far-end line errored seconds encountered by a DS1 interface in the previous 24-hour interval.

### *Path Code Violations (dsx1FarEndTotalPCVs)*
The number of far-end path coding violations reported via the far-end block error count encountered by a DS1 interface in the previous 24-hour interval.

### *Bursty Errored Seconds (dsx1FarEndTotalBESs)*

The number of far-end bursty errored seconds (BESs) encountered by a DS1 interface in the previous 24-hour interval.

### *Degraded Minutes (dsx1FarEndTotalDMs)*

The number of far-end degraded minutes (DMs) encountered by a DS1 interface in the previous 24-hour interval.

# Chapter 19 T1 / E1 Assignment

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## Introduction

The T1/E1 Assignment subsystem displays the WAN Assignment Table giving the DS0 mapping connection for each time slot for all four WAN ports. At the top of the Web page are four hyperlinks showing the status of each WAN Port's Alarms. For example, the column for *WAN Port 1* shows to which type of device the WAN's time slot connects, the devices Port and Slot number. Whenever one iDSL port is mapped (i.e., connected) to another iDSL port, it will not appear on this page because no time slots of any WAN ports are used in the connection.

## Displaying the T1/E1 Assignment window

Click on **T1/E1 Assignment** link under the **Configuration Menu** to display the WAN Assignment Table window (figure 55).

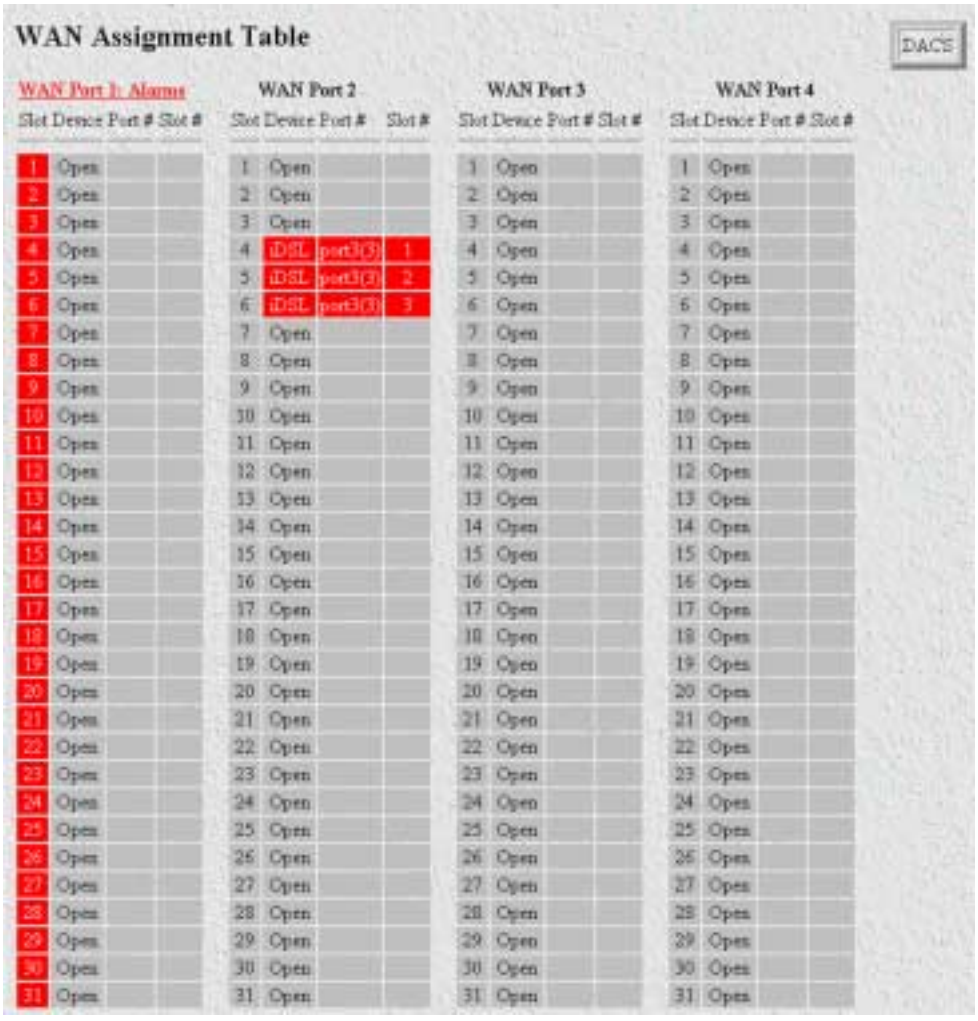


**Figure 55. WAN Assignment Table window**

The **WAN Assignment Table** window consists of four column groups, one for each WAN port. The top of each column group identifies the WAN port by name, e.g., WAN Port 1: Alarms. This is a hyperlink leading to the Line Status Alarms web page. The "Line Status Alarms" page gives the status of the T1/E1 WAN port. This is the same web page seen under the T1/E1 Link Activity page in the T1/E1 Link subsytem.

Under each WAN port column group are four columns named **Slot**, **Device**, **Port #**, and **Slot #**.

### Slot

**Slot** refers to the time slot in the T1/E1 port. Whether you have chosen T1 or E1, all 31 channels will be displayed although in T1, only those numbered 1–24 are applicable.

### Device

Device (*daxWAN0DeviceType*, *daxWAN1DeviceType*, *daxWAN2DeviceType*, *daxWAN3DeviceTyp*) refers to the device type to which the WAN slot connects. The device type options are:

- open(0)
- t1-e1(1)
- iDSL(2)

> **Note** There are four variables for Device Type where *daxWAN0DeviceType* applies to those in WAN Port 1. Similarly *daxWAN1DeviceType* applies to those in WAN Port 2. Likewise for the others.

### Port #

**Port #** (*daxWAN0DeviceNumber*, *daxWAN1DeviceNumber*, *daxWAN2DeviceNumber*, *daxWAN3DeviceNumber*) refers to the port number of the Device Type in the second sub-column. For Device Types of iDSL, the Device Number (Port #) may be from **port1(1)** to **port24(24)**. Since there are only four WAN ports, the Device Number (Port #) may be chosen from **port1(1)** to **port4(4)**.

### Slot #

**Slot #** (*daxWAN0DeviceSlot*, *daxWAN1DeviceSlot*, *daxWAN2DeviceSlot*, *daxWAN3DeviceSlot*) refer to the slot number (or time slot) of the Device. For iDSL Device Types, *Slot#* may be either *1*, *2*, or *3*. For t1-e1 Device Types, *Slot#* may vary from *1* to *31*.

# Chapter 20 About

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## Introduction

The **About** link displays Patton Electronics Company contact information (see "Patton Electronics Company contact information"). Click on **About** under the **Configuration Menu** to display the **About** main window (see figure 56).


**Figure 56. About window**

## Patton Electronics Company contact information

Patton Electronics Company
7622 Rickenbacker Drive
Gaithersburg, Maryland 20879
U.S.A.

Phone: +1 (301) 975-1000

Fax: +1 (301) 869-9293

E-mail: sales@patton.com
support@patton.com

WWW: www.patton.com

# Chapter 21 License

## Chapter contents


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## Introduction

The **License** link presents the End User License Agreement for the DACS software. Click on **License** under the **Configuration Menu** to display the **License** main window (see figure 57).

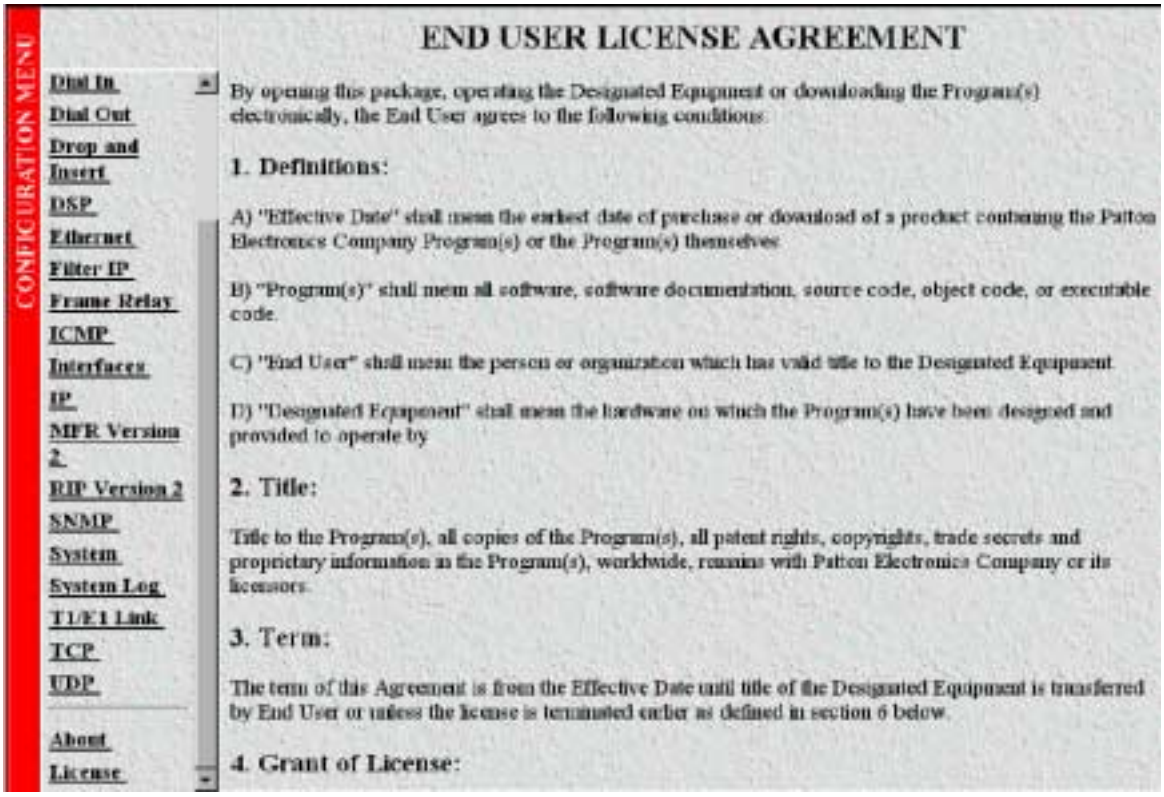


**Figure 57. License window**

By opening the DACS, operating the Designated Equipment or downloading the Program(s) electronically, the End User agrees to the conditions in the "End User License Agreement" below.

## End User License Agreement

By opening this package, operating the Designated Equipment or downloading the Program(s) electronically, the End User agrees to the following conditions:

### *1. Definitions:*

A) "Effective Date" shall mean the earliest date of purchase or download of a product containing the Patton Electronics Company Program(s) or the Program(s) themselves.

B) "Program(s)" shall mean all software, software documentation, source code, object code, or executable code.

C) "End User" shall mean the person or organization which has valid title to the Designated Equipment.

D) "Designated Equipment" shall mean the hardware on which the Program(s) have been designed and provided to operate by

### 2. Title:

Title to the Program(s), all copies of the Program(s), all patent rights, copyrights, trade secrets and proprietary information in the Program(s), worldwide, remains with Patton Electronics Company or its licensors.

### 3. Term:

The term of this Agreement is from the Effective Date until title of the Designated Equipment is transferred by End User or unless the license is terminated earlier as defined in "6. Termination:" below.

### 4. Grant of License:

A) During the term of this Agreement, Patton Electronics Company grants a personal, non-transferable, non-assignable and non-exclusive license to the End User to use the Program(s) only with the Designated Equipment at a site owned or leased by the End User.

B) The End User may copy licensed Program(s) as necessary for backup purposes only for use with the Designated Equipment that was first purchased or used or its temporary or permanent replacement.

C) The End User is prohibited from disassembling; decompiling, reverse-engineering or otherwise attempting to discover or disclose the Program(s), source code, methods or concepts embodied in the Program(s) or having the same done by another party.

D) Should End User transfer title of the Designated Equipment to a third party after entering into this license agreement, End User is obligated to inform the third party in writing that a separate End User License Agreement from Patton Electronics Company is required to operate the Designated Equipment.

### 5. Warranty:

The Program(s) are provided "as is" without warranty of any kind. Patton Electronics Company and its licensors disclaim all warranties, either express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose or non-infringement. In no event shall Patton Electronics Company or its licensors be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use the Program(s), even if Patton Electronics Company has been advised of the possibility of such damages. Because some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

If the Program(s) are acquired by or on behalf of a unit or agency of the United States Government, the Government agrees that such Program(s) are "commercial computer software" or "computer software documentation" and that, absent a written agreement to the contrary, the Government's rights with respect to such Program(s) are limited by the terms of this Agreement, pursuant to Federal Acquisition Regulations 12.212(a) and/or DEARS 227.7202-1(a) and/or sub-paragraphs (a) through (d) of the "Commercial Computer Software—Restricted Rights" clause at 48 C.F.R. 52.227-19 of the Federal Acquisition Regulations as applicable.

### 6. Termination:

A) The End User may terminate this agreement by returning the Designated Equipment and destroying all copies of the licensed Program(s).

B) Patton Electronics Company may terminate this Agreement should End User violate any of the provisions of "4. Grant of License:" above.

C) Upon termination for A or B above or the end of the Term, End User is required to destroy all copies of the licensed Program(s)

# Appendix A RJ-21X Wiring Color Chart

*Chapter contents*

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## Introduction

Table 4 contains the band-marked color codes for the RJ-21X connector. The Pair Number matches the port number on the DS0 Mapping Management page.

Table 4. Band Marked Color Code

| Wire/Color Code | Tip and Ring | Pair Number | 50 Pin Positions |
|---|---|---|---|
| White/Blue | Tip 1 | Pair 1 | 26 |
| Blue/White | Ring 1 | | 1 |
| White/Orange | Tip 2 | Pair 2 | 27 |
| Orange/White | Ring 2 | | 2 |
| White/Green | Tip 3 | Pair 3 | 28 |
| Green/White | Ring 3 | | 3 |
| White/Brown | Tip 4 | Pair 4 | 29 |
| Brown/White | Ring 4 | | 4 |
| White/Slate | Tip 5 | Pair 5 | 30 |
| Slate/White | Ring 5 | | 5 |
| Red/Blue | Tip 6 | Pair 6 | 31 |
| Blue/Red | Ring 6 | | 6 |
| Red/Orange | Tip 7 | Pair 7 | 32 |
| Orange/Red | Ring 7 | | 7 |
| Red/Green | Tip 8 | Pair 8 | 33 |
| Green/Red | Ring 8 | | 8 |
| Red/Brown | Tip 9 | Pair 9 | 34 |
| Brown/Red | Ring 9 | | 9 |
| Red/Slate | Tip 10 | Pair 10 | 35 |
| Slate/Red | Ring 10 | | 10 |
| Black/Blue | Tip 11 | Pair 11 | 36 |
| Blue/Black | Ring 11 | | 11 |
| Black/Orange | Tip 12 | Pair 12 | 37 |
| Orange/Black | Ring 12 | | 12 |
| Black/Green | Tip 13 | Pair 13 | 38 |
| Green/Black | Ring 13 | | 13 |
| Black/Brown | Tip 14 | Pair 14 | 39 |
| Brown/Black | Ring 14 | | 14 |
| Black/Slate | Tip 15 | Pair 15 | 40 |
| Slate/Black | Ring 15 | | 15 |
| Yellow/Blue | Tip 16 | Pair 16 | 41 |
| Blue/Yellow | Ring 16 | | 16 |
| Yellow/Orange | Tip 17 | Pair 17 | 42 |
| Orange/Yellow | Ring 17 | | 17 |

Table 4. Band Marked Color Code (Continued)

| Wire/Color Code | Tip and Ring | Pair Number | 50 Pin Positions |
|---|---|---|---|
| Yellow/Green | Tip 18 | Pair 18 | 43 |
| Green/Yellow | Ring 18 | | 18 |
| Yellow/Brown | Tip 19 | Pair 19 | 44 |
| Brown/Yellow | Ring 19 | | 19 |
| Yellow/Slate | Tip 20 | Pair 20 | 45 |
| Slate/Yellow | Ring 20 | | 20 |
| Violet/Blue | Tip 21 | Pair 21 | 46 |
| Blue/Violet | Ring 21 | | 21 |
| Violet/Orange | Tip 22 | Pair 22 | 47 |
| Orange/Violet | Ring 22 | | 22 |
| Violet/Green | Tip 23 | Pair 23 | 48 |
| Green/Violet | Ring 23 | | 23 |
| Violet/Brown | Tip 24 | Pair 24 | 49 |
| Brown/Violet | Ring 24 | | 24 |
| Violet/Slate | Not Used | Pair 25 (Not Used) | 50 |
| Slate/Violet | Not Used | | 25 |