ADTRAN

ADVISION v 3.1
User Manual

Part Number 1950025L1

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ADTRAN Year 2000 (Y2K) Readiness Disclosure

ADTRAN has established a Year 2000 program to ensure that our products will correctly function in the new millennium. ADTRAN warrants that all products meet Year 2000 specifications regardless of model or revision. Information about ADTRAN's Year 2000 compliance program is available at the following:

Product Matrix   www.adtran.com/y2kfax.html

E-mail   year2000@adtran.com

Faxback Document Line   (256) 963-8200
Y2K plans and product certifications are listed in the Product Matrix (see above).

Y2K Project Line   (256) 963-2200

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Chapter 1   Introduction

ADVISION

ADTRAN's ADVISION™ is a comprehensive network management application that provides the tools necessary to control, configure, and monitor ADTRAN data communication products that can be managed using Simple Network Management Protocol (SNMP). Integration into Hewlett-Packard's (HP) OpenView™ Network Node Manager for UNIX™ platform ensures compatibility with industry standards and eliminates the need for proprietary management systems. With ADVISION, a single management station controls and configures networks that include DDS, Switched 56, ISDN, Frame Relay, and T1. In addition, ADVISION limits use of the system resources on the management platform to those needed during active management.

ADVISION GUI

ADVISION's device-specific graphical user interface (GUI) displays animated graphical representations of devices, both front and rear views (see Figure 1-1), to assist with field installations or diagnostics.
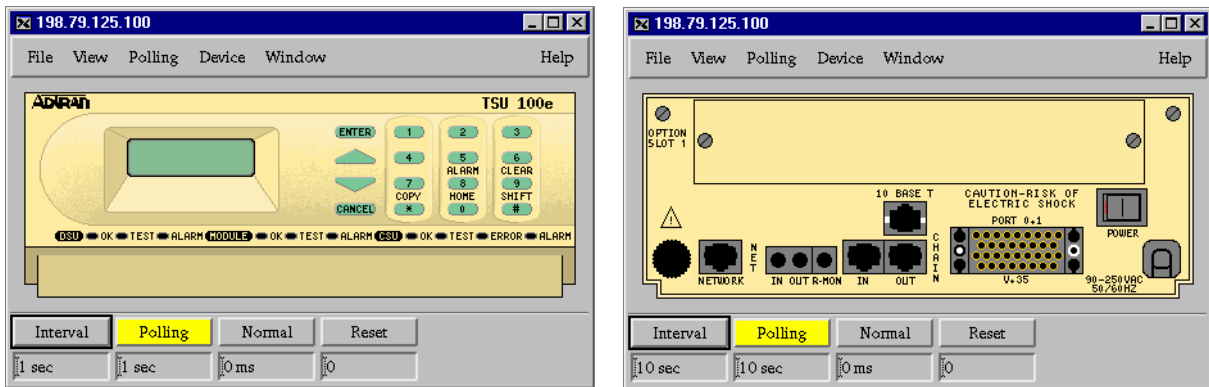
Figure 1-1. Front and Rear Graphical Representations of a TSU 100e

Activating the application GUI requires a simple point-and-click of a mouse. Once activated, a network manager has complete access to all features supported by the ADTRAN SNMP devices. The GUI contains device-specific symbols on the submaps, displays animated product images that reflect device options and indicators, and provides a set of product-specific dialogs boxes for monitoring, configuring, and testing ADTRAN SNMP devices.

ADVISION also provides Management Information Bases (MIBs) to use with the HP OpenView MIB Browser and Event Browser. Included MIB trap definitions describe formatting for device-specific alarms and events.

ADVISION Features

A summary of ADVISION's features follows:

- Easy-to-use SNMP application with graphical user interface (GUI)
- Integration into HP OpenView's UNIX platform (see Chapter 3)
- Automatic device discovery
- Comprehensive trap and alarm processing
- Color-coded, device-specific symbols indicate network status
- View, modify, save, and apply device configuration
- Complete diagnostic control
- Detailed status information
- Performance graphs
- Online help

HP OPENVIEW

By coupling ADVISION with HP OpenView, OpenView's maps become more informative.

Maps/Submaps

A map contains related objects, symbols, and submaps that provide a graphical and hierarchical representation of a network. Submaps can contain additional submaps (child submaps), child submaps can have additional submaps, and so on. While you can create multiple maps, you may only view one map at a time.

HP OpenView Features

HP OpenView provides the following features:

- **Symbols to place on submaps.** ADVISION allows OpenView to automatically discover ADTRAN devices and place them into the appropriate OpenView submap using ADTRAN-specific symbols, instead of generic symbols (see Figure 1-2).
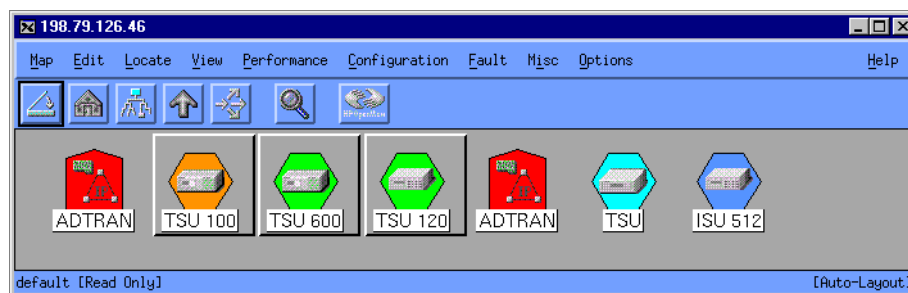
Figure 1-2. HP OpenView Submap Showing Different ADTRAN-Specific Symbols

- **Auto-discovery of ADTRAN devices, customized to display installed options.** You can also manually add SNMP-proxied ADTRAN devices to these maps.

- **Visual indication of ADTRAN device status derived from traps and polling, propagated and integrated with HP OpenView IP status throughout the map.** ADVISION interprets traps received by OpenView, and sets the color of the corresponding symbol to the severity level color of any error condition, allowing a network manager to quickly determine the status of a particular device (see Table 1-1).

- **Ability to launch the ADVISION GUI by clicking on the appropriate ADTRAN symbol from the HP OpenView submap.**

Table 1-1. Color Definitions for Device Status

Color	Meaning
Cyan	Warning
Red	Critical
Orange	Major
Yellow	Minor
Green	Normal
Blue	Unknown device

Chapter 2   Installing and Using ADVISION

OVERVIEW

This chapter provides information on installing ADVISION (including system requirements and the packing list) and using ADVISION (including security information). In addition, this chapter discusses the registration process.

SYSTEM REQUIREMENTS

To run ADVISION, your system must meet the following requirements:

- HP 9000 UNIX workstation with HP-UX 10.20 or 11, SUN workstation (Super Sparc or later) with Solaris 2.5.1, 2.6 or 2.7
- HP OpenView Network Node Manager 4.11, 5.X or 6.X
- 256 pseudo-color display
- CD-ROM drive
- 10 megabytes (MB) memory per GUI session
- 40 MB free disk space

PACKING LIST

The ADVISION package contains the following items:

- ADVISION installation CD
- ADVISION Quick Start Guide/Software License Agreement
- ADVISION User Manual (included in PDF format on the CD)

If something is missing from your shipment, contact ADTRAN Technical Support (see inside the back cover).

INSTALLING ADVISION

The installation program does the following during the installation procedure:

- Transfers all files into the installation directory tree
- Links ADVISION files to the appropriate HP OpenView directories
- Registers the ADVISION database server with HP OpenView for start-up via `ovstart`
- Registers other ADVISION fields and applications
- Updates `/etc/server` to define the ADVISION database server socket address as 7966

The ADVISION installation program requires that all HP OpenView environment variables be defined.

> ◇ **NOTE** *If you are reinstalling ADVISION, run* $OV_BIN/ovstop advdb *before proceeding with the installation.*

Installation

To install ADVISION, follow these steps:

UNIX Installation Procedure	
Step	**Action**
1	Log in as root.
2	Mount the CD-ROM, specifying the appropriate device filename and mount directory. For example, /usr/sbin/mount /dev/dsk/c0t2d0/cdrom
3	Change the directory to the mounted CD-ROM directory.
4	Execute the following: ./INSTALL_CD.SH
	a Enter the path to the tar file depot (CD-ROM mount directory).
	b Confirm the target Operating System for the installation (default is determined via uname).
	c Enter the ADVISION installation directory (/opt/advision is assumed).
◇ **NOTE**	*If the ADVISION installation directory already exists, the system issues an installation error. Disregard the error and continue the installation.*
5	Define the ADVISION environment variable ADVISION_INSTALL, as follows:
	a If running sh or ksh, add the following to your login script (.profile or .login): . /opt/advision/bin/adv.envvars.sh
	b If running csh, add the following to your csh resource file (.cshrc): source /opt/advision/bin/adv.envvars.csh
◇ **NOTE**	*If you have selected another location for the ADVISION installation directory, modify this script to reflect your installation directory.*
6	To start the ADVISION database server, execute the following: $OV_BIN/ovstart advdb

UNIX Installation Procedure *(Continued)*	
Step	**Action**
7	Installation is now complete. Dismount the CD-ROM and log off as `root`.
8	Execute `ovw` to start the ADVISION processes `advstat` and `advdisc`.

> **NOTE**
>
> *To view formatted traps in HP OpenView, load MIBS for ADTRAN devices into HP OpenView. Device MIBs are located in the following directory:*
>
> `/var/opt/OV/share/snmp_mibs/Vendor/Adtran`

Uninstall Process

To remove the ADVISION installation, as root and with OV environment variables defined, execute the following from the command line:

`/opt/advision/UNINSTALL.SH`

REGISTRATION

Registration defines ADVISION processes to OpenView. This definition occurs on installation. Registration involves four processes.

1. The first process involves the ADVISION database server. One copy of this database server runs per HP OpenView installation. The database server starts when HP OpenView starts.

   The following three processes start with each window session of HP OpenView.

2. ADVISION Discover
3. ADVISION Status (maintains ADTRAN objects' map color status)
4. ADVISION GUI

The four process names follow:

1. database - advdb
2. discover - advdisc
3. status - advstat
4. GUI - advision

LOGIN

The login security feature allows you to control user access to ADVISION. Once activated, the current user name and privileges are displayed in the Login dialog box, followed by the data entry region.

Login Privilege Levels

The four privilege (security) levels include *Provision*, *ReadWrite*, *ReadOnly*, and *None*.

Provision

Provides complete ReadWrite capabilities, plus the ability to make provisioning changes for ADTRAN Carrier products.

ReadWrite

Allows users to view current status, configuration, and provisioning data for all devices, to modify configuration parameters for ADTRAN Enterprise products, and to initiate tests on all devices.

ReadOnly

Allows users to view current status, configuration, and provisioning data for all devices.

None

User has no access to ADVISION.

Login Dialog Box

The Login dialog box is the interface used to login to ADVISION (see Figure 2-1).

Figure 2-1. Login Dialog Box

Instructions for Activating the Login Dialog Box	
Step	**Action**
1	Ensure that you are in the **Device Viewer** and that the network administrator has activated ADVISION's security feature. (If this option is grayed out, it has not been activated yet.)
2	From the **File** menu, select **Login**.

Instructions for Changing User Accounts using the Login Dialog Box	
Step	**Action**
1	Open the **Login** dialog box (see the previous Step/Action table on page 2-4).
2	Enter the user name and password, and then click **Done**. (Standard system login names and passwords are defined in `/etc/passwd`.)

Login Privilege File

The privilege (permission) levels are defined in the following authorization file: `${ADVISION_INSTALL}/auth`

If this file is not present on a system, all users are granted Provision privileges. If the file is present, users not included in the file are denied access to ADVISION. Entries in the file have the following format:

```
<username> <Provision|ReadWrite|ReadOnly|None>
```

User names and passwords must be defined for standard login on the UNIX system (see the following sample file):

```
#
#      Sample ${ADVISION_INSTALL}/auth file
#
#      Username          Permissions
#      ---------         ----------
       john              None
       paul              ReadOnly
       george            ReadWrite
       ringo             Provision
```

NOTE *Comment lines begin with pound signs (#) in the first column.*

Using this file, the site administrator grants or denies access privileges on a per-user basis. When installed, the authorization file should have Read permission for all users and Write permission for the administrator's account.

USING ADVISION

To start the ADVISION GUI, select one of the following three methods:

1. From the OpenView map, single-click the left mouse button on any ADTRAN object and select the following from the pull-down menu on the menu bar:

   Tools > ADVISION Manager > ADVISION

   OR

2. From the OpenView map, single-click the right mouse button on any ADTRAN object and select **ADVISION** from the pop-up menu.

   OR

3. From the OpenView map, double-click the left mouse button on any executable ADTRAN object. (Executable objects have a raised, button-like appearance.)

While loading, the ADVISION loading-status window displays. Once ADVISION successfully loads, the loading-status window automatically closes, and a device-specific window opens to provide complete access to all features supported by the ADTRAN SNMP devices.

Using Online Help

ADVISION help is delivered online as a subset of the HP OpenView help system. Access the file from within the ADVISION GUI by selecting and executing an ADTRAN device, and then clicking on the **Help** button. You can also access the ADVISION help system by selecting **ADVISION** from the HP OpenView Help menu. Choose **Print** from Help's **File** menu to print a hard copy of the help information.

Chapter 3

ADVISION Integration with HP OpenView

OVERVIEW

When integrated with HP OpenView, ADVISION becomes a comprehensive network management application. ADTRAN provides MIBs containing definitions of management information used to remotely monitor, configure, and control networked devices. ADVISION allows OpenView to automatically discover ADTRAN devices and place them into the appropriate submap using an ADTRAN-specific symbol (see Figure 1-2 on page 1-2). ADVISION also allows you to manually discover devices and add them to a submap. In addition, OpenView provides device-status based on received traps or polled status information. This chapter discusses MIBs, discovery methods, and ADTRAN status.

MANAGEMENT INFORMATION BASES (MIBS)

ADTRAN-provided MIBs provide the following information and functions:

- Definitions needed to format traps with descriptions and interpretation of status variables contained in the trap messages. These embedded definitions can be passed to HP OpenView during the MIB loading process to automatically build the trap configuration database entries. This process eliminates the need for manual trap definition in HP OpenView version 4.x and later.
- Ability to use the OpenView MIB Browser to examine and alter SNMP data in ADTRAN devices.

MIB Loading Procedure

Follow the instructions in the ensuing Step/Action table to load the ADTRAN MIBs:

Instructions for Loading ADTRAN-provided MIBs	
Step	**Action**
1	Start HP OpenView.
2	From the HP OpenView menu bar, select the following: **Options > Load > Unload MIBS: SNMP**
3	From the **Load/Unload MIBS** dialog box, click on the **Load** button.

Instructions for Loading ADTRAN-provided MIBs *(Continued)*	
Step	**Action**
4	Load `adtran.mib`, `ads1.mib` (for T1 product support), and all device MIBs applicable to your setup. (ADTRAN MIBs are located under **Vendor/Adtran**.)
5	Click **OK**. *The message "MIB Successfully Loaded" appears.*
6	When asked if you want to load the **TRAP-TYPE** macro, click **OK**. *The system notifies you that the load was successful.*

NOTE *The Technical Support section of the ADTRAN website provides a complete list of the MIBs required to support each ADTRAN device.*

DISCOVERY

Discovery is the process by which devices (objects) are added to the HP OpenView submap. This process occurs either through *IP Auto-Discovery* (below) or *Manual Rediscovery* (see page 3-3). In both cases, an entry for the device is added into HP OpenView's SNMP configuration database, and onto a specific map.

Proxied Devices

ADVISION can also communicate by proxy, via SNMP, with a device that can't directly communicate with ADVISION. Figure 3-1 illustrates this process.

ADVISION

SNMP

Proxy Device

ADTRAN
Proprietary
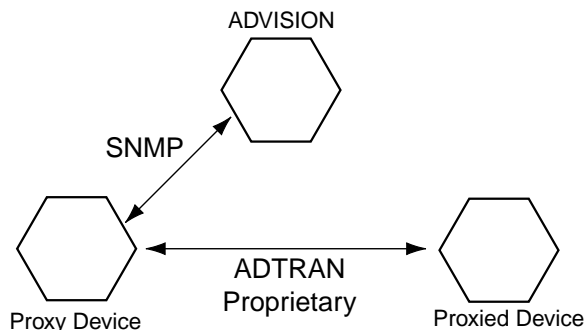
Proxied Device

Figure 3-1. ADVISION Communicating with a Proxied Device

IP Auto-Discovery

HP OpenView automatically discovers IP-addressable devices and places them on the submap as part of its normal auto-discovery process. ADVISION's auto-discovery process recognizes which option cards are installed in these devices and places these cards on the child submap. Through the process of auto-discovery, ADVISION automatically creates a second executable symbol for the object on the device's child submap. The new symbol's device status is set to "Status" indicating that the device's

condition is dependent on the alarm or test conditions reflected in traps and is independent of the polling status maintained by HP OpenView.

IP Auto-Discovery: Smart 16/16e Shelf Controller

For any auto-discovered *Smart 16/16e Shelf* controller, the ADVISION discovery process interrogates the unit and determines which (if any) other Smart 16/16e controllers are being proxied and adds symbols for the proxied shelf on the auto-discovered unit's child submap. A child submap for each proxied chassis is created with the second executable chassis symbol (which also reflects the unit status) and symbols for any of the proxied unit's option cards.

IP Auto-Discovery: TSU Products

While there is no auto-discovery option card support for the *TSU 100, 120, & 600*, the *TSU 100e, 120e, & 600e* do have option card support.

Manual Rediscovery

ADVISION does not automatically revise the configuration of a device (with respect to its resident option cards) within the HP OpenView database. Whenever a card is added or replaced in the unit, the user must manually rediscover the device so that the proper configuration is displayed. Rediscovery is also necessary when a unit is given an IP address which has been previously assigned to a different device type. To initiate a rediscovery of an ADTRAN product, follow the steps in the ensuing Step/Action table:

Instructions for Manually Rediscovering an ADTRAN Product	
Step	**Action**
1	Select the applicable unit on the HP OpenView map.(Only one selection at a time is allowed, and the map must be a Read/Write map.)
2	Execute ADTRAN's discovery process by selecting **Tools > ADVISION Manager > ADVISION Discovery** from the HP OpenView menu bar.

The rediscovery process interrogates the unit and updates its set of option cards listed on the child submap. The objects for existing cards which have changed type are updated accordingly; any newly discovered cards are added to the map; and any cards no longer present are deleted from the submap on the HP OpenView database.

Manual Rediscovery: Smart 16/16e Shelf Controller

The rediscovery process for the *Smart 16/16e Shelf* controller searches for new controllers being proxied by the device. If a new controller is found, it is added to the submap and its option cards are placed on their respective submap. You must initiate a manual discovery on a proxied chassis to discover changes. Any existing proxied chassis is not affected by this process.

Removing Objects

If a proxied chassis has been physically removed from service, it is also removed from the submap through manual object deletion. This practice alleviates the potential removal from a submap of a proxied device, in the event that communication with the unit fails during the rediscovery process. To remove an object that refers to units which have been removed from

service, select and delete the object from the HP OpenView map (**Edit > Delete > From All Submaps**).

OBJECT PLACEMENT WITHOUT DISCOVERY

In two instances, you must manually place ADTRAN objects on the map:

1. When you need to add IP-addressable units on an installation where OpenView's discovery has been disabled.
2. When you need to add proxied units which are not discovered during the normal discovery process (for instance, chained units attached to a *TSU 100e, 120e, & 600e*).

Adding IP-Addressable Objects via Loadhosts

The following Step/Action table provides instructions for adding IP-addressable units to an OpenView installation using OpenView's loadhosts utility. (The loadhosts utility adds (loads) hosts to the OpenView database.)

Instructions for Using loadhosts to Add IP-addressable Units	
Step	**Action**
1	Ensure the device is not already on the map.
2	Create a text file which contains the IP address followed by the name of the device you wish to add. An example of the file contents follows (underlined text is not included in the file): IP Address Device Comment identifying unit 10.22.3.7 tsuiq #Pleasant Prairie
NOTE	*You can have multiple devices in the file, but restrict the file to units of the same type (for instance, only TSU IQs in one file and DSU IQs in another).*
3	If using DNS, ensure it is updated with the hostnames specified in the above file(s). Otherwise, add the contents of the file(s) to the end of the /etc/hosts file for name resolution.

Instructions for Using loadhosts to Add IP-addressable Units	
Step	**Action**

4	Logged in as `root`, run the loadhosts command (`$OV_BIN/loadhosts -o`) from a command prompt. *(This action loads the nodes into the OpenView database/map.)*
	
	 Example invocations follow for TSU IQs and the TSU 600es, where the last parameter is the file you created in step 2. Type all of this information on one line.
	
	 `$OV_BIN/loadhosts -o 1.3.6.1.4.1.664.1.147`
	 `TSUIQfilename`
	
	 `$OV_BIN/loadhosts -o 1.3.6.1.4.1.664.1.149`
	 `TSU600efilename`

NOTE	*The last group of numbers of the octet string (*147 and 149 in the above example) *changes for each product type. A list of octet values for each supported product is located in the following file:* `/opt/advision/conf/C/oid2sym.txt`

Manually Adding Proxied Objects

You must manually add proxied devices to the submap (except for the *Smart 16/16e Shelf* which is placed on the submap via auto-discovery). Follow the instructions in the ensuing Step/Action table:

Instructions for Manually Adding Proxied Objects	
Step	**Action**
1	Select **Edit > Add Object** from the HP OpenView menu. (*The Add Object: Palette window appears.)*
2	Select the device class from the **Symbol Classes** list.
3	Select the appropriate **symbol** of the device you want to add.
4	Click and hold the middle-mouse button to drag the symbol to the child submap. *(The Add Object dialog box appears.)*
5	Enter the words that you want displayed underneath the symbol into the **Label** field.
6	If the ADVISION GUI supports the device, select **Execute**. If the device is not supported, skip to step 9. *(See the section Supported Devices on page 5-1 for a list of supported devices.)*
7	From the list under **Application Action:**, select **ADVISION:ADVISION**.
8	Set **Target Objects** for **Self**.

Instructions for Manually Adding Proxied Objects *(Continued)*	
Step	**Action**
9	Under **Object Attributes**, select **AdvisionStatus**.
10	Click on **Set Object Attributes...**. *(The Add Object-Set Attributes dialog box opens.)*
11	Enter the physical address or slot number into the **ADTRAN Device Address/Slot** field.
12	Select the **ADTRAN Product Type** from the scrollable list.
13	Click on **Verify**. *(The message All Data OK should appear. If not, information on how to correct the error is shown.)* If an error occurs, modify the appropriate entry and select **Verify** again.
14	Once you receive the **All Data OK** message, click **OK**. *(The system returns to the Add Object window.)*
15	For executable objects, enter the **Selection Name**. This entry consists of the selection name of the proxy, followed by a tilde and then the address, for example, `device.mycomp.com~3`

ADTRAN STATUS

The HP OpenView database contains a field entitled ADTRAN Status for each ADTRAN device (object). This field reflects the status of the device as determined through traps received from the device or from status information obtained while polling the device when displaying the unit's Device View.

The ADTRAN status field drives the HP OpenView object status for all non-IP-addressable ADTRAN objects, and drives the symbol status for the symbol of an IP-addressable device which resides on that object's child submap. (This action does not interfere with the device's object status which is determined by HP OpenView's netmon, a daemon that maintains the network topology and status).

Some ADTRAN devices have no SNMP status data associated with them (for instance all ESP option cards) and, therefore, normally have a status of "Unknown" (blue color). Also, while some devices may have SNMP status data available, the data in some cases may not be retrieved from the device while displaying the Device Viewer (for example, option cards within a Smart 16e Shelf).

You may modify the ADTRAN Status value (for instance, to set ESP option cards to Normal) by following these steps:

Instructions for Modifying the ADTRAN Status	
Step	**Action**
1	Start OpenView.
2	Select an ADTRAN object.
3	Select **Edit > Describe/Modify Object**.
4	In the **Object Description** dialog box, select **AdvisionStatus** and then select **View / Modify Object Attributes**.
5	In the **Attributes for Object** dialog box, select the desired status from the scrollable list displayed under **ADTRAN Status**.
6	Select **Verify** and, after receiving a confirmation message, select **OK**.
7	The object status (or symbol status for the child submap symbol for IP devices) on the map should now reflect the selected status.

Chapter 4   Graphical User Interface (GUI)

OVERVIEW

The ADVISION GUI provides access to configuration information, which is viewable and modifiable though a series of pull-down and pop-up menus located in five different device-specific viewers. This chapter discusses the GUI viewers and their menus in the following sections:

ACTIVATING THE GUI

To activate the device-specific GUI (shown in Figure 4-2 on page 4-3), follow one of the procedures described below.

---

1. From the OpenView map, single-click the left mouse button on any ADTRAN object and select the following from the pull-down menu on the menu bar:

   Tools > ADVISION Manager > ADVISION

   OR

2. From the OpenView map, single-click the right mouse button on any ADTRAN object and select **ADVISION** from the pop-up menu.

   OR

3. From the OpenView map, double-click the left mouse button on any executable ADTRAN object. (Executable objects have a raised, button-like appearance.)

While loading, the ADVISION window displays (see Figure 4-1). Once ADVISION successfully loads, the window automatically closes. The device-specific window opens to provide complete access to all features supported by the ADTRAN SNMP devices.
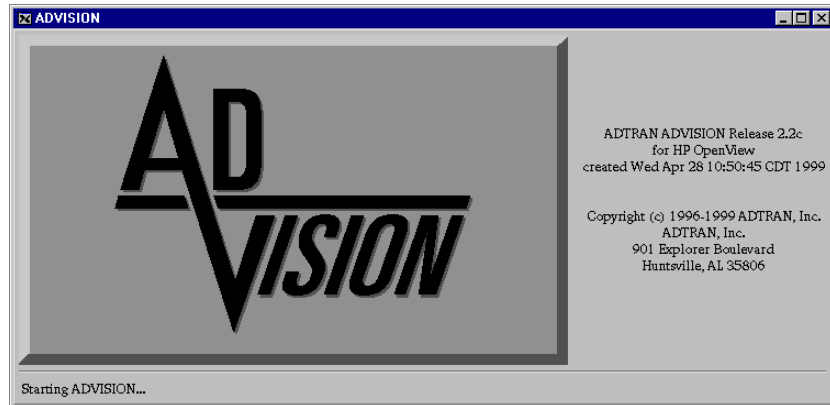
Figure 4-1. ADVISION Opening Window

DEVICE VIEWER

The Device Viewer (see Figure 4-2 on page 4-3) is the visual interface to the ADVISION-supported ADTRAN device. Four sections make up this viewer: the *Title Bar*, the *Menu Bar*, the *Device Image*, and the *Statistics Panel*.

The Title Bar identifies the device. The Menu Bar (see also, *Menu Bar* on page 4-4) contains a number of menus to configure the device. The Device Image pictorially depicts the unit. The Statistics Panel (see also, *Statistics Panel* on page 4-7) contains push buttons and numeric fields that keep you informed of the GUI's communication with the unit.

Title Bar

Menu Bar

Device Image

Statistics Panel

Title Bar

Menu Bar

Device Image

Statistics Panel

Figure 4-2. Two Views of the Device Viewer

Accessing the MIB Viewer from the Device Viewer

A special feature of the Device Viewer is the ability to jump from the *Device Viewer* to the *MIB Viewer*.

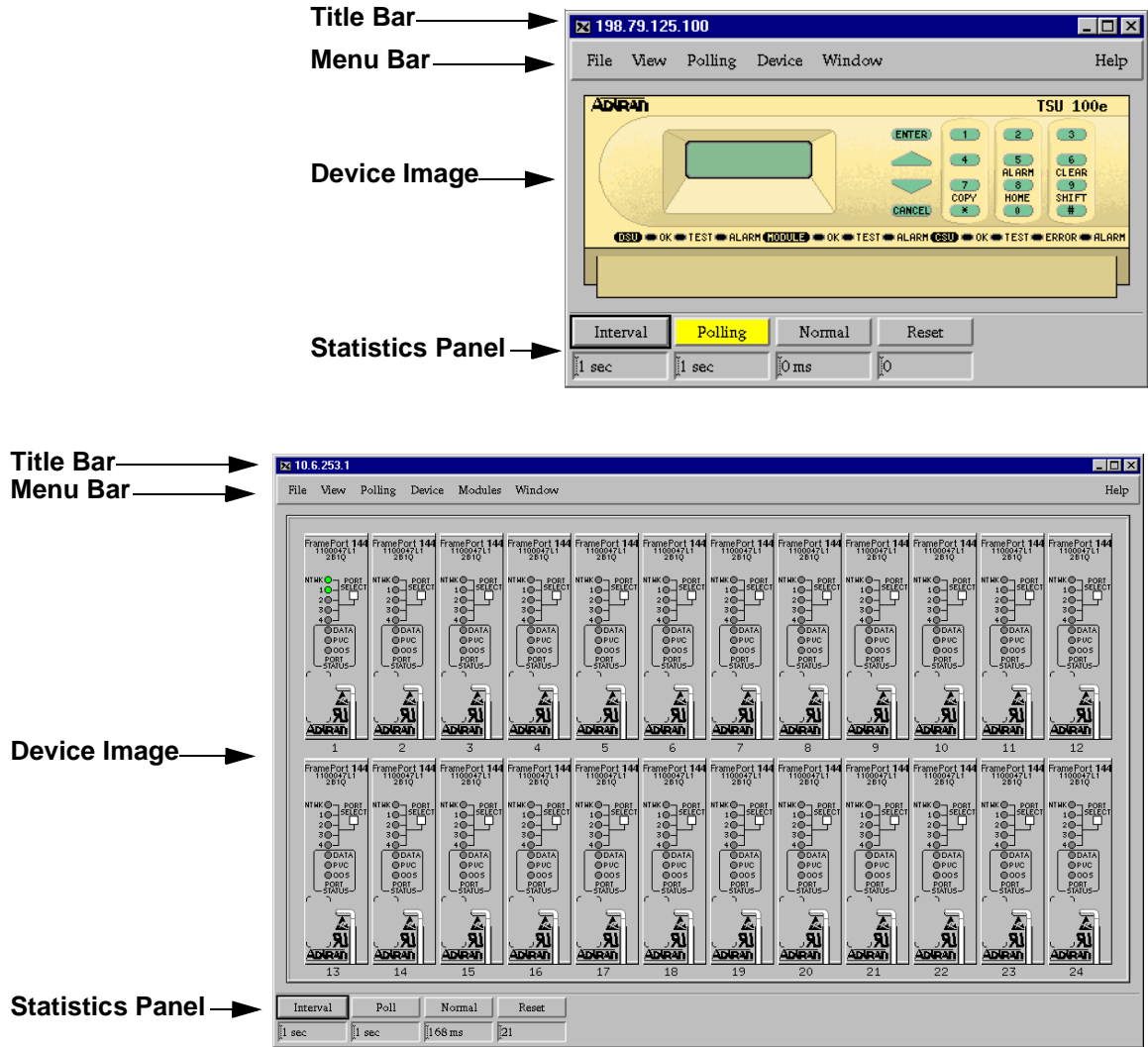| Instructions for Accessing the MIB Viewer from the Device Viewer	
Step	**Action**
1	Ensure that you are in the Device Viewer (see Figure 4-2 on page 4-3).
2	Right-click on the device or on any option card. *The available menus and unit identification for that item display in a pop-up menu.*
3	**For Option Cards Only:** Double-click the left mouse button on the option card to launch an independent option card Device Viewer. *(You can then display menu options by using the menu bar or by right-clicking on the option card.)*

> **NOTE** *If the main unit's Device Viewer is no longer needed, you can dismiss it without affecting the option card's Device Viewer. This procedure eliminates unnecessary polling.*

Menu Bar

The following options make up the menu bar: *File*, *View*, *Polling*, *Device*, *Modules*, and *Window*. (The Modules option only appears if an option card is installed in the device; compare the menu bars in Figure 4-2 on page 4-3.)

```
                                        Login
                                        Apply Configuration
                              File      Save Configuration
                                        Close
                                        Exit

                              View      Front
                                        Rear

                                        Hide/Show Statistics
              Menu Bar                  Suspend/Resume Polling
                                        Demand Poll
                              Polling   Clear Error
                                        Reset Statistics
                              Device    Device Polling
                                        All Polling
                              Modules
                                        Devices
                                        MIB Viewers
                              Window    Reviewers
                                        Graphs
                                        Tables
```
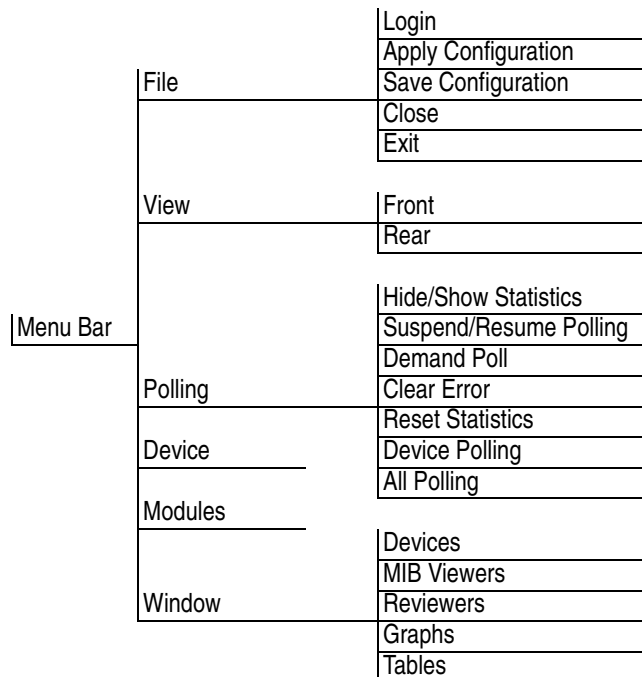
Figure 4-3. Menu Tree for the Device Viewer Menu Bar

File
Includes the menu items *Login*, *Apply Configuration*, *Save Configuration*, *Close*, and *Exit*.

Login
See *Login Dialog Box* on page 2-4.

Apply Configuration
Applies to the displayed device a complete device configuration previously saved in a text file. A Load File dialog box displays to allow selection of the text file (generated via the Save Configuration item described in the next section).

When the file selection is made, ADVISION reads the saved configuration data from the selected file into memory. The restrictions for each saved field are compared to the user's permissions. If ANY field has a higher permission requirement than that of the user, the download process is terminated and the user is notified through an information dialog box. Otherwise, ADVISION begins to transfer the saved configuration to the device.

A Downloading Progress dialog box displays during the transfer showing the number of required and completed transmissions. The **Stop** button in the Downloading Progress dialog box allows you to stop the transfer. If an SNMP error occurs (principally no-response timeouts), an information dialog box displays noting the error, and the rest of the transfer is terminated.

Terminating a Download Sequence

Only in the most unusual circumstances should you terminate a download sequence. Whenever a termination occurs (either manually initiated or due to I/O errors), immediately attempt to restore the device to a known configuration state by attempting a new Apply Configuration or by reviewing the configuration with the *MIB Viewer* and applying any required modifications.

Updating MIB-II System Parameters

An Apply Configuration updates the user-selectable system parameters of MIB-II. Therefore, while a saved configuration can be applied to two units of the same type, ensure that the sysContact, sysLocation, and sysName are correct after doing so.

> **NOTE**   *Date and time values in the device are not affected by an Apply Configuration.*

Save Configuration
Retrieves a complete device configuration from the displayed device and saves it in a text file. A Save File dialog box displays which allows you to select a file to create or update.

Uploading the Configuration

After you select the file, ADVISION begins retrieving the device's current configuration. An Uploading Progress dialog box displays during the retrieval process, showing the number of required and completed transmissions. The **Stop** button in the Uploading Progress dialog box allows you to stop the transfer. If an SNMP error occurs (principally no-response timeouts), an information dialog displays noting the error, and the uploading process terminates.

Terminating the Upload

A terminated upload, via the **Stop** button selection or an I/O error, does not affect the text file because all data must be retrieved without error before the text file opens and the retrieved data is written to it. This procedure helps ensure that a partial configuration file is never created.

I/O Errors

If problems persist with I/O timeouts during either an upload or download sequence, try suspending all polling of the device (and its proxy or host unit if it's a card in a multi-card unit), and try again. The reduced I/O load should have a positive impact on performance.

Close	Closes the current Device Viewer and all open MIB Viewers generated from the Device Viewer. If you close all windows without exiting, ADVISION remains dormant in memory, ready to quickly respond to the next invocation with no delay for program loading.
Exit	Exits ADVISION—closing all Device and MIB Viewers. A confirmation dialog box avoids accidental termination.
View	Selects from the views available for the unit (front and rear).
Polling	Contains the menu items *Hide/Show Statistics*, *Suspend/Resume Polling*, *Demand Poll*, *Clear Error*, *Reset Statistics*, *Device Polling*, and *All Polling*.
Hide/Show Statistics	Hides or shows the *Statistics Panel*. The *Preferences Files* specifies the default visibility of this panel (see also, *Preferences Files* on page 6-1).
Suspend/Resume Polling	Suspends or resumes polling for device status if *Interval* polling is specified.
Demand Poll	Forces an immediate poll, if no poll is currently outstanding.
Clear Error	Returns the error or timeout indication to Normal.
Reset Statistics	Resets the last poll elapsed time and the poll counter (displayed in the *Statistics Panel*) to 0.
Device Polling	Suspends or resumes polling for the Device View and all MIB Views currently displayed for this device. Does not affect the initial polling parameters set for any MIB View displayed at a later time. *Suspend* terminates a Graph or Table View refresh in progress.

All Polling   Suspends or resumes polling for the Device View and all MIB Views currently displayed for all devices. Does not affect the initial polling parameters set for any MIB View displayed at a later time. *Suspend* terminates a Graph or Table View refresh in progress.

Device   These headings indicate which MIB Viewers (dialog pages) are available for the selected device. Headings are device-specific and include categories such as Status, Configure, Diagnostics, Performance, Dial, Test, etc.
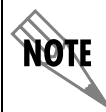
> **NOTE** *See the selected device's user manual for information on the fields represented on the MIB Viewers.*

Modules   Accesses the Device menus for the option cards (for units containing option cards) and identifies these options cards.

Window   Provides a list of open ADVISION views. All MIB, graph, and table views opened for a unit remain in this list until the unit's device view is closed. These lists consists of Devices, the MIB Viewer, the Graph Viewer, the Table Viewer, and the MIB Reviewer.

- **Devices** - lists names of open device views. Select from the list of unit names to bring that view to the top of the desktop.
- **MIB Viewers** - lists names of opened MIB views. Entries include Unit Name: MIB View Title. Select from the list to bring that view to the top of the desktop (see also, *MIB Viewer* on page 4-10).
- **Reviewer** - lists names of open reviews. The entries are Unit Name: MIB View Title. For reviews of files, the unit name is extracted from the saved file. Select from the list to bring that view to the top of the desktop (see also, *Reviewer* on page 4-14).
- **Graph Viewer** - lists names of opened graph views. The entries are Unit Name: Graph View Title. Select from the list to bring that view to the top of the desktop (see also, *Graph Viewer* on page 4-16).
- **Table Viewer** - lists names of opened table views. The entries are Unit Name: Table View Title. Select from the list to bring that view to the top of the desktop (see also, *Table Viewer* on page 4-21).
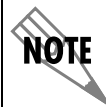
> **NOTE** *The MIB Viewer and the MIB Reviewer differ in that the MIB Reviewer does not communicate with the device at all and all fields are editable.*

Statistics Panel

The Statistics Panel, if enabled, appears on both the Device Viewer and the MIB Viewer windows. To hide or display the Statistics Panel, use the selections under Polling (from the menu bar). The default state of hidden or visible is an installation option specified in the *Preferences Files* (see *Preferences Files* on page 6-1). The Statistics Panel automatically becomes visible if an SNMP error or a time-out occurs. Automatic visibility ensures that the ab-

normal condition displays. Changing a view image in either type of viewer also automatically initializes the Statistics Panel.

The Statistics Panel is organized into two rows of four blocks (see Figure 4-4). The top row contains four push-button (PB) indicators, referred to as PB1—PB4 in the following paragraphs. The bottom row contains numeric (N) fields (some editable, some strictly informative), referred to as N1—N4 in the following paragraphs.
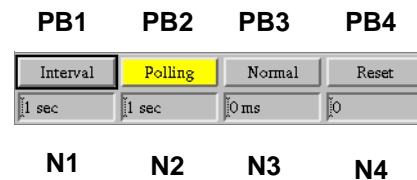
PB1　　**PB2**　　**PB3**　　**PB4**

Interval	Polling	Normal	Reset
1 sec	1 sec	0 ms	0

N1　　**N2**　　**N3**　　**N4**

Figure 4-4. Statistics Panel

Push-button Indicators

The push-button indicators act as shortcuts for the *Polling* menu. Click these buttons to activate the following options. The push-buttons vary, depending on the view selected and the action requested.

PB1

Indicates the viewer's polling mode by displaying *Demand*, *Once*, *Interval*, or *Suspended*.

Demand

Polling takes place only upon your request. This mode is uncommon and is found on views that contain no dynamic data (such as some option cards).

Once

Polls the device only once to supply dynamic data (which is most commonly unchanging configuration data). You can initiate a demand poll at any time.

Interval

Repeatedly polls the device to collect dynamic data for the viewer. Polling takes place at the rate indicated in the numeric field directly below this push-button (N1). The time shown in the field is the time between the end of one poll and the beginning of the next poll. Click this push-button indicator or change the *Polling* menu selection to suspend interval polling.

Suspended

Suspends polling. Click this push-button indicator to suspend polling then use the *Polling* menu to resume interval polling. (The field now displays *Interval*.)

PB2

Indicates SNMP input/output (I/O) activity by displaying *Poll*, *Polling*, or *Applying*.

Poll	Displays when there is no SNMP I/O activity. Click this push-button indicator or change the *Polling* menu selection to initiate a demand poll. You can initiate a demand poll no matter what poll mode is active (interval, once, demand, or suspended); however, attempting to demand a poll while a poll is still outstanding has no effect.
Polling	Displays with a yellow highlight the duration of time that the SNMP GET request and response transaction is in progress. The elapsed time displays in N3.
Applying	Displays with a green highlight for the duration of time that the SNMP SET transaction is in progress. The elapsed time displays in N3.
PB3	Indicates the status of the last SNMP transaction by displaying *Normal*, *Timeout*, or *Error*. If a time-out or error condition occurs while the *Statistics Panel* is hidden, the panel automatically becomes visible again. Reset the Error or Timeout indication back to Normal by clicking this push-button indicator or by changing the *Polling* menu selection.
Normal	Initially (and at the end of every successfully completed SNMP transaction) Normal displays and continues to display until an abnormal result is received.
Timeout	Indicates that a poll failed to obtain a response after waiting and retrying as specified in the HP OpenView SNMP configuration database. Timeout indicates that the displayed data is not current. Possible errors resulting in this display include community string errors, loss of physical link, and device errors.(see also, *SNMP I/O Timeout Errors* on page 5-3).
Error	Indicates that an SNMP error occurred. An SNMP error usually indicates that the device does not have a compatible firmware revision for ADVISION management. Report this condition to ADTRAN Technical Support (see inside back cover) for resolution.
	This error could also indicate a device configuration change. If an SNMP error is detected and the polling mode is Interval, polling automatically suspends because this error is unlikely to be corrected by retries. You can demand a poll to verify this and/or to resume interval polling, as previously described.
PB4	Displays the word "Reset" and is not an indicator. Click on this button to reset the duration of the last poll in N3 and to reset to zero the count of the number of polls in N4.
Numeric Fields	Specify the length of time between successive polls when in the interval mode, the length of time between successive polls when a timeout condition occurs, displays the time that the last SNMP activity took to complete the transaction of a GET or SET request, and displays a count of the number of SNMP transactions completed.
N1	Determines the length of time between successive polls when in the interval mode. Most device and status views are defined to poll at one-second intervals. You can suspend interval polling or temporarily override the rate by

editing the value to any suitable value (in seconds) and then pressing **Enter**. Specifying a value of zero causes ADVISION to poll the device continuously at the fastest rate possible. The flashing yellow polling indicator in block PB2 reflects the impact of this setting.

N2   Specifies the length of time between successive polls when a timeout condition occurs. Typical default value are the same as the timeout value for normal Polls. To reduce congestion during high traffic periods, manually increase this value by editing the field to the appropriate value (in seconds) and then pressing **Enter**.

N3   Displays the time that the last SNMP activity took to complete the transaction of a GET or SET request and its corresponding response. Use this time when diagnosing network problems, when determining practical timeout settings for the SNMP Configuration database, or when establishing baselines of access performance.

N4   Displays a count of the number of completed SNMP transactions, with or without error, since either initiating the view or resetting the statistics.

MIB VIEWER

MIB Viewers are dialog pages which display SNMP data obtained from a device. View, change, and control the data parameters from within the pages. These pages consist of six parts: the *Title Bar*, the *Menu Bar*, the *SNMP Data Area*, the *Table Index Selectors*, the *Statistics Panel*, and the *Command Buttons* (see Figure 4-5).
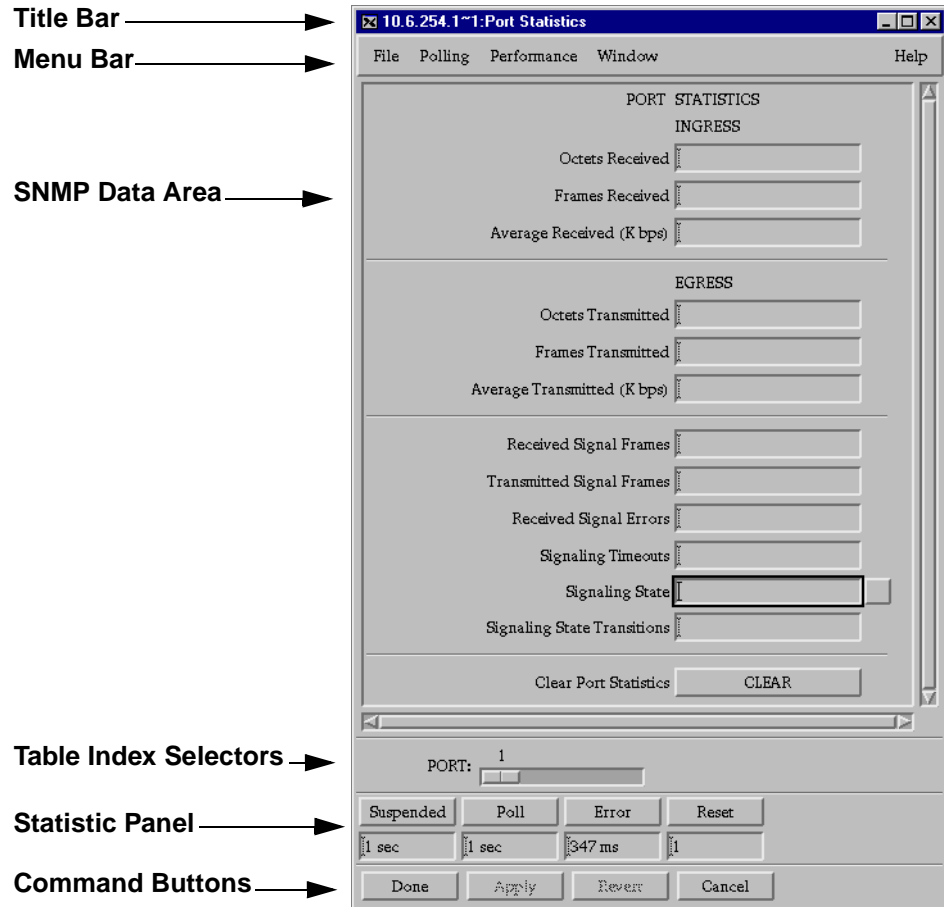
Title Bar ➝

Menu Bar ➝

SNMP Data Area ➝

Table Index Selectors ➝

Statistic Panel ➝

Command Buttons ➝

Figure 4-5. MIB Viewer

To select a MIB Viewer, go to the Device Viewer menu bar and select Device (for the main device MIB Viewer) or Module (for any option card MIB Viewer). MIB Viewers are also accessible from the Device Viewer through the pop-up menus displayed when you right-click an ADTRAN device (or its option cards).

Title Bar

Identifies the device and the title of the MIB Viewer.

Menu Bar

The following menu items make up the Menu Bar: *File*, *Polling*, *Status*, and *Window*. Status is unique to the device and the category selected (for example Status, Configure, etc.).

File

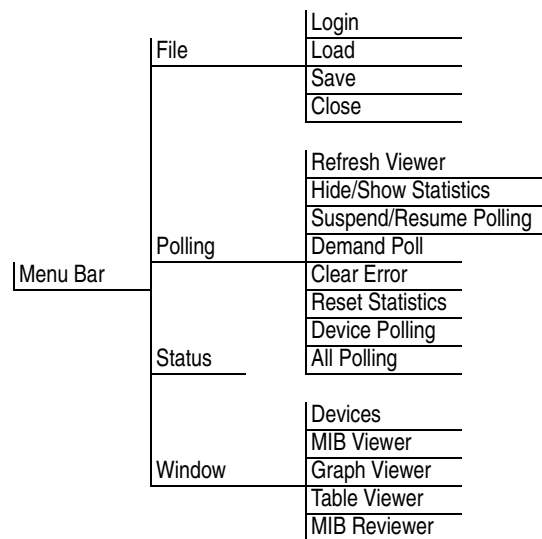Contains the following options: *Login*, *Load*, *Save*, and *Close*.

		Login
	File	Load
		Save
		Close
		Refresh Viewer
		Hide/Show Statistics
		Suspend/Resume Polling
	Polling	Demand Poll
Menu Bar		Clear Error
		Reset Statistics
		Device Polling
	Status	All Polling
		Devices
		MIB Viewer
	Window	Graph Viewer
		Table Viewer
		MIB Reviewer

Figure 4-6. Menu Tree for the MIB Viewer Menu Bar

Login   See *Login Dialog Box* on page 2-4.

Load   Restores any MIB View to a previously saved set of values. When loading
                           the saved values, all user-modifiable fields are updated and can be subse-
                           quently edited. Any ReadOnly fields or fields not modifiable due to the
                           user's privilege level are not restored. When you click the **Apply** button, all
                           updated fields (either by **File > Load** or user input) are downloaded to the
                           device.

                           You can also use the **File > Load** feature to download common configura-
                           tions to other devices. After properly configuring one device, save the base-
                           lines and then load them to the corresponding pages of other devices. After
                           loading the saved configuration to the MIB page, you can make adjustments
                           to the fields as necessary. Click the **Apply** button to download the new con-
                           figuration.

                           ADVISION issues a warning message to prevent you from loading a saved
                           page file that is different from the currently displayed page.

                           For pages with *Table Index Selectors*, if the selected index is different from the
                           index saved in the file, a warning message generates noting the mismatch. If
                           you continue the load by clicking **Apply**, the values from the file update the
                           associated fields, disregarding the index mismatch.

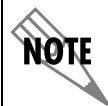   By default, these files are located in your home directory with a preferred
                           suffix of `.sav`. You can alter this location during navigation in the **Load >
                           Save** dialog, or preset the location in the *Preferences Files*.

Save   When saving a MIB Viewer page to a file, all of the values are stored as they
                           are currently displayed (even if some fields have been edited since the
                           device was last polled). All fields, whether they have permissions of
                           ReadOnly or ReadWrite, are stored in the file. Saving all the fields captures

the complete MIB Viewer page state as a baseline, so you can review it at a later time.

Close   Closes the current MIB Viewer.

Polling   Contains the same menu options as *Device Viewer/Polling* (see page 4-6) with the addition of *Refresh Viewer*.

Refresh Viewer   Conditionally enabled when a page containing a Table Index Selector's value range is dynamically bounded by an SNMP variable obtained from the device. Whenever a page is initially viewed, the unit is polled to obtain the valid range for the selector and then data is retrieved for the selector's default value. Any subsequent polling of the device maintains the limits initially obtained.

However, in many cases the Table Index Selector's range may change while the page is being reviewed. If you have reason to believe the range might have changed during this time, simply select Refresh Viewer and the Table Index Selector's range variable will be polled. Data displayed within the dialog will be subsequently polled.

Status   Shows the status category (Status, Configure, etc.) of the displayed page. Menu items under this option are radio-buttons identifying all of the pages associated with the category. To display a different page, select the page name from the list.

Window   See *Window* on page 4-7.

SNMP Data Area

Displays information about SNMP data parameters. Several different field types contain this information. Some fields are editable or executable; some fields are view-only. The different types of fields are described below:

Text Fields   Accepts data entered using the keyboard and allows you to view the displayed information. The system beeps if you attempt to edit a read-only text field, or if you attempt to enter more characters than are supported by the device.

Combo Boxes   Provide additional menus. To access these menus, click the box located to the right of the combo box menu field to view and select from the menu options. Combo box menus with an arrow indicate alterable fields. Combo box menus with no arrow indicate a read-only field.

Scales   Increases and decreases a value when you drag the selector right or left, respectively. Click to the right/left of the selector to increase/decrease the value by one.

Push Buttons   Activates an option when you click on the push-button.

> **NOTE**   *Push-button action implicitly applies all pending field changes.*

Toggle Boxes

Enables (checked box) and disables (unchecked box) mutually exclusive options when you click the box. If the system does not respond to your command, the field is read-only.

Table Index Selectors

Some MIB Viewer pages display selected data for a set of parameters within the device. For example, a device may have multiple ports which have identical configuration parameters. To identify which port the data is associated with, a scale displays between the Data Area and the Command Buttons. Select data for two different parameters, using two scales displayed in the same region. When a page with selectors first displays, the selector values default to their minimum. If you want to view data for a different item (e.g., port), move the scale to the appropriate value. The data associated with the new selection is retrieved from the device and displayed.

Statistics Panel

This section is the same as for Device Viewer Statistics Panel (see page 4-7).

Command Buttons

Located beneath the Statistics Panel, the Command Buttons include *Done*, *Apply*, *Revert*, and *Cancel*.

Done

Applies any changes made on the current page to the device and dismisses the MIB Viewer.

Apply

Applies changes to the device. This button is only active when fields have been altered. In any text field, altered integer values are compared to an allowable range for the text field before being sent to the device. If the value is not within range, a message dialog opens noting which field is in error and describing the allowable range. Correct the value before attempting another **Apply**.

Revert

Discards field changes made since the last Apply and polls the unit for its current set of values.

Cancel

Discards field changes made since the last Apply and dismisses the MIB Viewer.

REVIEWER

The MIB Reviewer allows you to review and modify the contents of MIB views which have been saved through the **File > Save** function of the MIB Viewer. The two primary differences between the MIB Viewer and the MIB Reviewer are that the Reviewer does not communicate with the device (neither Polling nor Apply is supported) and all fields are editable.

When launched from the Device Viewer, the MIB Reviewer displays a **File > Load** dialog box which prompts you for a file to display. When launched from the MIB Viewer, the current MIB view is copied and displayed. The Reviewer consists of the following sections: *Title Bar*, *Menu Bar*, *SNMP Data Area*, and *Table Index Selectors*.

Title Bar

Identifies the device and the title of the MIB Reviewer.

Menu Bar

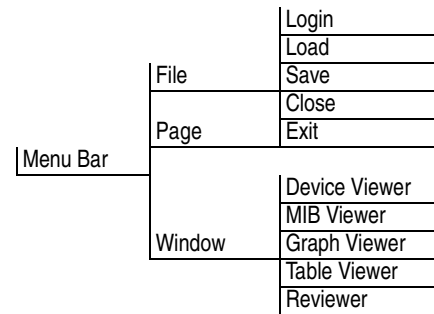Includes the following menu items: *File*, *Page*, and *Window*.

```
                                          Login
                                          Load
                               File       Save
                                          Close
                               Page       Exit

        Menu Bar
                                          Device Viewer
                                          MIB Viewer
                               Window     Graph Viewer
                                          Table Viewer
                                          Reviewer
```

Figure 4-7. Menu Tree for the Reviewer Menu Bar

File

Contains the following menu items: *Login*, *Load*, *Save*, *Close*, and *Exit*.

Login

See *Login Dialog Box* on page 2-4.

Load

Displays a previously saved set of values.   When loading, all saved values (including Table Index Selectors) are updated and can be subsequently edited and saved.

By default, these files are located in your home directory with a preferred suffix of `.sav`. You can alter this location during navigation in the **Load > Save** dialog, or preset the location in the *Preferences Files*.

Save

Saves the current MIB Reviewer contents to a text file. All fields, regardless of current user permissions, are stored in the file.

Close

Closes the Reviewer window.

Exit

Exits ADVISION, closing all Viewers and exiting the ADVISION application. Your response to a confirmation box, avoids accidental termination.

Page

Conditionally displays the total configuration page for some products, for example, TSU 100e, TSU 120e, and TSU 600e. Page is actually a set of pages, consisting of its own total configuration page and additional total configuration pages for each of its option cards. When multiple pages make up the total configuration page, Page becomes visible and has a drop-down radio-button list of included page names. To view a page, simply select the page name from the list.

Window

See *Window* on page 4-7.

SNMP Data Area

Contains several different field types. All fields are editable regardless of your permission. These field types include the following: *Text Fields*, *Combo Boxes*, *Scales*, *Push Buttons*, and *Toggle Boxes*.

Text Fields   See *Text Fields* on page 4-13.

Combo Boxes   See *Combo Boxes* on page 4-13.

Scales   See *Scales* on page 4-13.

Push Buttons   See *Push Buttons* on page 4-13.

Toggle Boxes   See *Toggle Boxes* on page 4-14.

Table Index Selectors

Some pages display selected data for a set of parameters within the device. For example, a device may have multiple ports which have identical configuration parameters. To identify which port the data is associated with, a scale displays between the Data Area and the Command Buttons. Data may be selected for two different parameters, which are displayed with two scales in the same region. In the MIB Reviewer, the Table Index Selector values are view-only items.

GRAPH VIEWER

Provides a graphical presentation of various tabular MIB data available in ADTRAN devices. Each graph displays in a separate window. Some graphs are preconfigured so that the viewable data sets are not user-selectable. However, several graphs have logically grouped together a sizable number of MIB variables and allow you to select from a list a reasonable number of variables to simultaneously view. You may also modify several presentation parameters at run time. The following sections make up the Graph Viewer: *Title Bar*, *Menu Bar*, *Variable Selection Dialog*, and *Graph Data Area*.

Figure 4-8. Graph Viewer

Title Bar

Identifies the device and presented data.

Menu Bar

The following menu options make up the Menu Bar: *File*, *Polling*, and *Window*.

		Login
	File	Export Data
		Close
		Exit
		Refresh
Menu Bar	Polling	Reconfigure
		Device Polling
		All Polling
		Device Viewer
		MIB Viewer
	Window	Graph Viewer
		Table Viewer
		Reviewer

Figure 4-9. Menu Tree for the Graph Viewer Menu Bar

File   Contains the following menu items: *Login*, *Export Data*, *Close*, and *Exit*.

Login   See *Login Dialog Box* on page 2-4.

Export Data   Allows you to save data currently displayed on the Graph to a file which can later be transferred to a database or spreadsheet program. The data is saved in a comma-delimited format with data for each variable stored in a single column. When you select Export Data, a file dialog box prompts you to select the data filename.

                       Importing the Exported Data File

                       When importing the file, be aware that several identifier lines are saved at the beginning of the file identifying the user who created the file, his ADVISION permissions, the file creation time, the filename, the source ADTRAN unit, and the ADVISION graph page name. Following these identifier lines, the first data row contains a description of the field and the second data row contains the actual MIB variable, along with any instance specification noted as an index.

Close   Closes the Graph window.

Exit   Exits ADVISION, closing all viewers. Your response to a confirmation box avoids accidental termination.

Polling   Includes the following items: *Refresh*, *Reconfigure*, *Device Polling Suspend/Resume*, and *All Polling Suspend/Resume*.

Refresh   Accesses the device to update all data displayed on the graph. A progress dialog box displays progress during data acquisition.

Reconfigure   Displays the *Variable Selection Dialog* from which to select for viewing a different set of data.

Device Polling   Suspends or resumes polling for the Device View and all MIB Views cur-
Suspend/Resume   rently displayed for this device. It does not affect the initial polling parameters set for any MIB View displayed at a later time. *Suspend* terminates a Graph or Table View refresh in progress.

All Polling   Suspends or resumes polling for the Device View and all MIB Views cur-
Suspend/Resume   rently displayed for all devices. It does not affect the initial polling parameters set for any MIB View displayed at a later time. *Suspend* terminates a Graph or Table View refresh in progress.

Window   See *Window* on page 4-7.

Variable Selection Dialog

Lists variables that may be displayed in the Graph Viewer (see Figure 4-10 on page 4-19). The listed variables are logically associated, for example, listing all Network Frame Relay Performance data for a unit from the IQ product family. Each list has a maximum number of variables that may be simultaneously viewed. Typically, that number is four and is displayed in the upper-right corner of the dialog box. To select a variable, simply check

the toggle button to the left of the variable description. If the maximum number of variables has been selected, the remaining list is grayed-out.
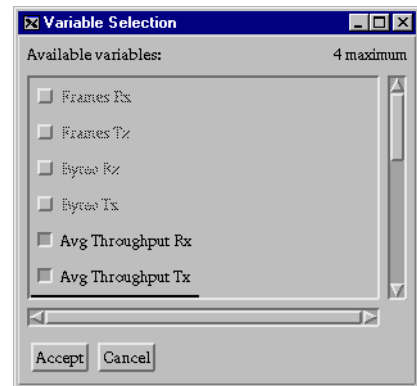
Figure 4-10. Variable Selection Dialog Box

If the maximum number of variables has been selected, you can replace a current variable with a grayed-out variable, by de-selecting (unchecking) one of the current variables. This action makes the number of variables selected no longer the maximum. Then, you can select a new variable from the list of available variables. After making a new selection, click the **Accept** button at the bottom of the dialog box to view the new graph, or click **Cancel** to view data for previous variable selections.

Graph Data Area

Displays in several different ways: point plot, area plot, bar chart, and stacked bar. The default display method is chosen to best represent the data. Each axis is appropriately scaled and labeled. The Graph Viewer window size and the graph size and scale can be modified.

Progress Dialog

While data is acquired from the device, either from the initial window display or a subsequent Refresh Graph request, a Progress dialog box displays to show how much of the requested data has been retrieved. A progress bar along with a numeric percentage is shown. This is particularly useful when most of the retrieved data is plotted along the X-axis, and, therefore, not visible.

Stop Button

Interrupts data acquisition and leaves the graph in its current, partially complete state. This option can eliminate unnecessary network traffic if only part of the graphed data is of interest and is already displayed.

Scales

Presets scaling to show defined ranges of data, for example, 0-900 for DS1 Errored Seconds by 15-minute intervals. Scales can also "float," automatically re-scaling the graph to plot the displayed data, as in DS1 Path Coding Violations by 15-minute interval.

Axes Labels

Displays text along the graph's axes describing the engineering units of the data.

Data Labels   Provides labels across the bottom of graph identifying the data represented by symbol type (for point/line plots) or by color (for area or bar charts).

Window Resize   Resizes the graph window in any direction, at any time. The aspect ratio of the graph need not be maintained.The graph is redrawn to fit the new window display area, rescaling the axes and possibly changing the data label organization to best-fit the new window area.

Resizing/Scaling   Changes the graph scale, independent of the window. To alter the graph scale, press the **Ctrl** key on the keyboard and simultaneously hold down the middle mouse button. To increase the graph's size, drag the mouse towards you. To decrease its size, drag the mouse away from you. When enlarging the view, the graph display is clipped within the window.

Translation   Re-positions (translates) the location of the graph within the window (under normal scale or when reduced) or of the portion of the graph being viewed (when the scale has been so enlarged that all of the graph is not viewable). Press the **Shift** key on your keyboard and simultaneously hold down the middle mouse button. Move the mouse in the appropriate direction to re-position the graph. Releasing the middle mouse button "drops" the graph at the current location within the window.

Zooming   Enlarges (zooms-in on) a particular portion of a graph to fill the current window. The zoomed graph may or may not have labeled axes depending on the selection method. To view the data without any axes, place the mouse pointer at a corner of the area to be enlarged. Simultaneously press the **Ctrl** key on your keyboard and the left mouse button, and proceed to "lasso" a rectangular region to enlarge. Release the mouse button and the graph changes to display the lassoed region. If an axis is included in the lassoed region, it is shown in the resulting view. To ensure that both axes are displayed, use the **Shift** key instead of the **Ctrl** key.

Return to Default   After scaling, translation, or zooming the graph, you may return the graph to its original display settings by pressing the **r** key on your keyboard. All interactive scaling, translation, and zooming are removed and the default graph margins and axes bounds display. While the original geometry is restored, the axes scaling may differ slightly from the original display.

Error Dialogs   Various errors may occur when communicating with a device to retrieve data for display in the graph. When errors occur, the viewer displays a dialog box to help explain the encountered problem. The dialogs are listed below along with a brief explanation of the problem and its possible source.

GET Error   A general SNMP communication error occurred. The type of error is displayed within the dialog. This error can result from several different problem sources including an intermittent communication error, an incorrect GET community string, and an attempt to retrieve data not stored within the device.

Viewer Creation Warning   The message states, *Device contains no data*. A graph with a selectable list of indices (for example, the TSU/DSU IQ PVC Interval Performance Graph) has no list entries from which to select. In this example, this error may occur when the unit has not identified any PVCs to monitor.

Initialization Error   A problem occurred while trying to determine data display constraints (index ranges) before actually retrieving data. For instance, all TSU IQ performance graphs have to poll (interrogate) the device to determine what set of intervals and PVCs are available for retrieval. If an SNMP I/O error occurs during this phase of graph generation, the dialog text explains the detected error. If the index ranges are obtained and the index maximum value is zero, the dialog text states, *Device contains no data*. You may observe this when attempting to retrieve daily performance statistics before the unit has recorded the first day's data.

If the maximum index range value is nonzero, but still below the minimum value, the text states, *Startup limits out of range*. No errors resulting from normal operations should result in this notice.

TABLE VIEWER

Provides a tabular view of various MIB data available in ADTRAN devices. Each table opens within a separate window and is ReadOnly regardless of the user's permission. Some tables are preconfigured so that the viewable data sets are not user-selectable. However, several tables have logically grouped a sizable number of MIB variables together and allow you to select from a list a reasonable number of variables which can be simultaneously viewed.

This viewer consists of the following sections: *Title Bar*, *Menu Bar*, *Variable Selection Dialog*, and *Table Data Area* (see the menu tree in Figure 4-11 and, also, Figure 4-11 on page 4-21).

Title Bar

The title bar identifies the device and presented data.

Menu Bar

The following menu items make up the Men Bar: *File*, *Polling*, and *Window*.

Menu Bar	File	Login
		Export Data
		Close
		Exit
	Polling	Refresh
		Reconfigure
		Device Polling
		All Polling
	Window	Device Viewer
		MIB Viewer
		Graph Viewer
		Table Viewer
		Reviewer
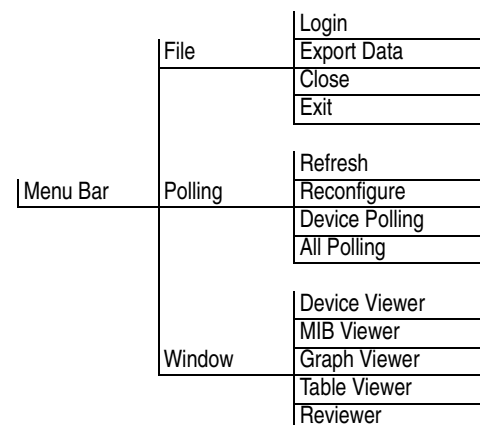
Figure 4-11. Menu Tree for the Table Viewer Menu Bar

Figure 4-12. Table Viewer

File   Contains the following menu items: *Login*, *Export Data*, *Close*, and *Exit*.

Login   See *Login Dialog Box* on page 2-4.

Export Data   Saves data currently displayed in the table to a text file which can later be
                            transferred to a database or spreadsheet program. The data is saved in a
                            comma-delimited format with data for each variable stored in a single col-
                            umn. After selecting Export Data, you are prompted with a file dialog box
                            to enter a name for the text file.

                            Importing the Export Data File

                            When importing the text file, be aware that several identifier lines are saved
                            at the beginning of the file identifying the user who created the file, his
                            ADVISION permissions, the file creation time, the filename, the source
                            ADTRAN unit, and the ADVISION table page name. Following these
                            identifier lines, the first data row contains a description of the field and the
                            second row contains the actual MIB variable along with any instance
                            specification noted as an index.

Close	Closes the table window.
Exit	Exits ADVISION, closing all viewers. Your response to a confirmation box avoids accidental termination.
Polling	Contains the following options: *Refresh*, *Reconfigure*, *Device Polling Suspend/Resume*, and *All Polling Suspend/Resume*.
Refresh	See *Refresh* on page 4-18.
Reconfigure	See *Reconfigure* on page 4-18.
Device Polling Suspend/Resume	See *Device Polling Suspend/Resume* on page 4-18.
All Polling Suspend/Resume	See *All Polling Suspend/Resume* on page 4-18.
Window	See *Window* on page 4-7.

Variable Selection Dialog

Lists variables that may be displayed on the Table Viewer. The listed variables are logically associated, for example, listing all Network Frame Relay Performance data for an IQ product. Each list has a maximum number of variables that may be simultaneously viewed. Typically, that number is eight and is displayed in the upper-right corner of the dialog box. To select a variable, simply check the toggle button to the left of the variable description. If the maximum number of variables has been selected, the remaining list is grayed-out.

If the maximum number of variables has been selected, you can replace a current variable with a grayed-out variable, by deselecting (unchecking) one of the current variables. This action makes the number of variables selected no longer the maximum. Then, you can select a new variable from the list of available variables. After making a new selection, click the **Accept** button at the bottom of the dialog box to view the new graph, or click **Cancel** to view data for previous variable selections.

Table Data Area

The displayed table represents tabular MIB data displayed in columnar fashion. Each row represents data for a given index for the MIB table with each column a MIB variable within the table. The Viewer's window size and the size of a column or row can be modified.

Progress Dialog

Shows how much data has been retrieved from the device (either from the initial window display or from a subsequent Refresh Table request). The dialog box includes a progress bar and a numeric percentage. The Progress dialog box also has a **Stop** push-button which interrupts the data acquisition and leaves the table in its current, partially complete state. Stopping data acquisition can eliminate unnecessary network traffic if only part of the table's data is of interest and is already displayed.

Labels

Each table column contains a label identifying the displayed MIB variable, and each row has a label identifying the entry's index.

Window Resize

Resizes the window in any direction, at any time; however, the table is not rescaled to adjust to the new window size. Table adjustments must be performed by the user. If the table display area is larger than the window size, scroll bars automatically appear to allow the user to view the entire table.

Row/Column Resize

Alters the height of each row and the width of each column. When you position the mouse cursor over a cell border, the cursor changes to a bounded arrow (e.g. ->|). Hold down the left mouse button and drag the border to the desired location, and drop it there by releasing the button. By selecting an intersection, the width and height of a cell (along with its row and column) can be concurrently altered in a similar manner.

Error Dialogs

Various errors may occur when communicating with the device to retrieve data to display in the table. When errors occur, the viewer displays a dialog box to help explain the encountered problem. The dialogs are listed below along with a brief explanation of the problem and its possible source.

GET Error

A general SNMP communication error occurred. The type of error is displayed within the dialog. This error can result from several different problem sources including an intermittent communication error, an incorrect GET community string, and an attempt to retrieve data not stored within the device.

Viewer Creation Warning

Message states, *Device contains no data.* A table with a selectable list of indices (for example, the TSU/DSU IQ PVC Interval Performance Table) has no list entries from which to select. In this example, this error may occur when the unit has not identified any PVCs to monitor.

Initialization Error

A problem occurred while trying to determine data display constraints (index ranges) before actually retrieving data. For instance, all TSU IQ performance tables have to poll (interrogate) the device to determine what set of intervals and PVCs are available for retrieval. If an SNMP I/O error occurs during this phase of table generation, the dialog text explains the detected error. If the index ranges are obtained and the index maximum value is zero, the dialog text states, *Device contains no data.* You may observe this error when attempting to retrieve daily performance statistics before the unit has recorded the first day's data.

If the maximum index range value is nonzero, but still below the minimum value, the text states, *Startup limits out of range.* No errors resulting from normal operations should result in this notice.

Chapter 5   Device-Specific Information

OVERVIEW

This chapter discusses device-specific information for ADVISION and provides details on the features unique to the ADVISION GUI. For all other device-specific information, refer to the device user manual.

SUPPORTED DEVICES

ADVISION supports the following devices:

- ATLAS 800, ATLAS 800^{PLUS} (base units and Quad T1/PRI Option Card only)
- IQ Units (DSU IQ, TSU IQ, IQ Probe, NxIQ, TSU IQ Rackmount, and TSU IQ+)
- DSU IV ESP
- *FramePort 144 & 768* on page 5-2
- MX2800 & MX2810
- *Smart 16/16e Shelf* on page 5-3
- *T3SU 300*
- Total Access Shelf (Gen 1 SCU and NMI)
- *TSU 100, 120, & 600* on page 5-4
- *TSU 100e, 120e, & 600e* on page 5-4
- TSU ESP

SYSTEM INFORMATION

Activate the system information MIB Viewer by selecting it from the device's Status menu. You can edit the following fields: System contact, Name, and Location. All other fields are read-only.

IQ UNITS PRIOR TO V 3.22

For DSU/TSU IQ units with a software revision prior to 3.22, most SNMP configuration modifications are not applied by the unit until an Apply Configuration command is sent. Send this command by clicking the push button on the Unit Configuration page. Refer to your DSU/TSU IQ manual for the list of items which do not require an Apply Configuration command to become active.

Also, for these units to allow a total configuration download to work without error, the Apply Configuration command is not automatically sent at the end of

the application sequence. You must manually send the Apply Configuration to activate the downloaded configuration.

IQ UNITS LATER THAN V 3.22

DSU IQ, TSU IQ, IQ Probe and TSU IQ+ units with software revision 3.22 and later do not require the Apply Configuration command for updates to take effect. Individual modifications and Total Configuration updates take effect automatically. On all units, applying a Total Configuration does not update PVC performance monitoring configurations or PVC diagnostic configurations. This decision allows a Total Configuration file saved for one unit to be readily applied to another unit (whose list of defined PVC DLCIs are most likely different).

The last parameters to be updated when applying a Total Configuration to these devices are the Performance data interval settings (for example, number of intervals, length of interval, etc.). The device's SNMP agent typically will not respond before a timeout condition occurs, since it is in the process of reallocating its memory to the specified settings (even if the values did not change). Therefore, the Apply Total Configuration process typically generates an error on the last buffer transmitted, while the unit actually has been updated properly. Be sure to review the Performance data interval settings after observing this to ensure the desired settings were achieved.

Get Error Dialog Box

A Get Error dialog may occur when retrieving the last interval of a large set of performance data for the TSU IQ / DSU IQ. This is especially true if 5-minute intervals are being retrieved. The interval range is determined at the start of data retrieval. Data for the oldest interval may be removed from the unit's buffers before the graph or table viewer attempts to retrieve it.

Specifying a New PVC

To specify a new PVC within the Configure PVC dialog, select the largest available index, which will have a DLCI value of zero (0). Enter the appropriate settings and select **Apply**. The new DLCI will be entered into the configuration table and the next higher index will be available for entering a new definition. To view the new index, you must select *Refresh Viewer* (see page 4-13) from the *Polling* item in the menu bar.

IP Host Table

The entire IP Host table is currently not included in the unit's Total Configuration. Only the first table entry is saved and restored upon applying the configuration to the unit. Additions to the IP Host table should be handled in a similar fashion as described in *Specifying a New PVC*, above.

FRAMEPORT 144 & 768

ADVISION displays the option cards installed in the FramePort 144 and 768 in a shelf called a D4 DiGroup. The shelf is arranged in two rows of twelve cards and does not necessarily reflect the actual layout of the option card's physical chassis. Gain access to information on the network data associated with the FramePort via the D4 DiGroup menu selections (by selecting Device from the menu bar or by right-clicking on the shelf in an area where an installed card is not shown). Gain access to information and options for individual cards by selecting the card from the Modules menu or by right-clicking the card.

An additional menu item, the Provisioning selection, is included in the
FramePort 144 and 768 ADVISION interface. Access this selection from the
Device menu. Choose to provision the card, port, PVC, or DLCI. You must
have Provision permission to be able to write to the Provisioning pages;
however, with ReadWrite permission, you may perform test functions. See
the *Using Online Help* on page 2-6 for more information on Provision and
ReadWrite permission.

SMART 16/16E SHELF

The Smart 16/16e Shelf controller provides SNMP support for up to 16
shelves. The rackmount cards supported include the following:

- DSU III AR

- DSU III DBU (V.34, V.32, ISDN, S4W)

- ISU 128

- ISU 2x64

- T1 ESF CSU

- TSU (V.35, EIA-530)

DSU III DBU

The DSU III DBU V.32 is treated as a V.34 card and is controlled in the same
manner.

Removing a Device Card

Removing a device card from the Smart 16e Shelf causes the MIB Viewer to
report an error in the statistics panel and to suspend interval polling. When
the card is replaced, polling may be resumed. If the card configuration is al-
tered so that the HP OpenView submap is no longer valid, select the Smart
16/16e Shelf symbol and initiate Manual Rediscovery to rebuild the sub-
map. Close the ADVISION Device Viewer for the shelf and relaunch to al-
low the GUI to reflect the new configuration.

SNMP I/O Timeout Errors

You may experience SNMP I/O timeout errors when applying a Total Con-
figuration to a unit or its option cards or when applying several changes
from any MIB View/Configuration page. Responses from the unit can be de-
layed since all changes have to be validated. To alleviate this problem, in the
OpenView SNMP Configuration Database extend the unit's timeout value
(up to 5 seconds) and set its retry value to none (0). Note that these values do
not affect ADVISION's operation until the Device View of the unit is closed
and re-opened.

T3SU 300

Port Configurations cannot be updated directly on the T3SU 300. To modify a port configuration, select the Port Configuration page. Next select which port to modify by setting the field Update Profile from Port and clicking **Apply**. The port's configuration will be copied to the units temporary working buffer which is displayed in the configuration dialog. Modify the configuration as desired and then select the port in the Apply Profile to Port field. Clicking **Apply** updates the selected port's configuration with the working buffer's settings.

The port configuration procedure described above is not supported under the current Load/Save Configuration for the T3SU 300. All non-port configuration parameters are saved and restored. You must update each port configuration separately to completely restore a unit's configuration. You may use the individual page **Save > Load** feature from the port configuration page to aid you in this.

TSU 100, 120, & 600

These products have limited SNMP support for ADVISION version 3.1 using the SNMP Agent option card, although they have complete proprietary management support using the ADTRAN product T-Watch Pro™.

Under ADVISION 3.1, the following limitations exist for the TSU Multiplexers (TSU Mux) product family (TSU 100, 120, and 600):

- In the front view of the Device Viewer, only three of four CSU indicators are animated: OK, ALARM, and TEST (ERROR is not supported). The OK (green) indicator is on when the DS1 line status variable indicates no errors. The ALARM (red) indicator is on when an error is reported. The TEST (yellow) indicator is only on when the device is reporting an active local loopback test but does not show when the device is in non-loopback test mode. Some test conditions at the device produce OK and ALARM indications that are not reported to ADVISION.
- The rear view in the Device Viewer does not display the presence of option cards. There is no SNMP support of TSU MUX option cards in ADVISION 3.1.
- Members of this product family, as well as the standalone TSU and ISU 512, can be chained to a TSU with an SNMP agent card to provide SNMP support through one IP address. The existence of these chained devices is currently not reported by the SNMP agent card to ADVISION. Manually place these devices on a submap to allow management with ADVISION by following the procedure described under *Manually Adding Proxied Objects* on page 3-5.

TSU 100E, 120E, & 600E

These products have expanded SNMP support for ADVISION version 3.1. The Device Viewer presents an accurate representation of all front panel LEDs and shows supported option cards in their appropriate location on the rear view of the device. Status, configuration, and test parameters for the option cards are available for review and setting. While there is some additional support for the base units, complete management support requires use of the ADTRAN product T-Watch Pro (for instance, to manipulate the DS1-DS0s mapping.)

TSU Mux Limitations

Under ADVISION 3.1, the following limitation exists for the TSU Multiplexers (TSU Mux) "e" product family (TSU 100e, 120e, and 600e):

- Members of this product family, as well as the standalone TSU and ISU 512, can be chained to a TSU "e" unit to provide SNMP support through one IP address. The existence of these chained devices is currently not reported by the unit to ADVISION. Manually place these devices on a submap to allow management with ADVISION by following the procedure described under *Manually Adding Proxied Objects* on page 3-5.
- ADTRAN units which are remotely controllable via the FDL link with a TSU Mux "e" product are accessible to ADVISION. However, the user must manually add the remote device to the OpenView map. See *Manually Adding Proxied Objects* on page 3-5 for general help on adding objects to the map. The following describes naming conventions and Address/Slot specifications for the TSU Mux "e" units.

NAMING CONVENTIONS

Remember the following naming conventions:

- The name of the remote device should be the name of the unit which is connected to it via the FDL with the remote unit's unit address appended (separated by "~"), for example, near.unit.name~25. Set the remote device's Address/Slot specification in the Advision Status dialog to the unit's address.
- To add the remote device's option cards, add them to the Open View map with a name constructed by appending the card's slot and port (separated by "~") to the remote unit's name (near.unit.name~unitaddress~slot~port), for example, near.unit.name~25~1~3 (for unit 25, slot 1, and port 3). Set the card's Address/Slot specification in the Advision Status dialog to the unit's Interface Index. This number can be viewed on the Interface Table dialog of the remote unit.

SNMP I/O TIMEOUT ERRORS

You may experience SNMP I/O timeout errors when applying a Total Configuration to a unit containing option cards or when applying several changes from a MIB View Configuration page. Responses from the unit can be delayed since all changes have to be validated. To alleviate this problem, in the OpenView SNMP Configuration Database extend the unit's timeout value (up to 20 seconds) and set its retry value to none (0). These values do not affect ADVISION's operation until the Device view of the unit is closed and re-opened.

TSU MUX OPTION CARDS

ADVISION supports the following TSU Mux option cards:

- DSU III
- Drop and Insert
- DSX-1
- Dual OCU DP
- Dual Modem
- Dual Nx56/64
- E&M
- FXO
- FXS
- Multiport DBU
- Nx56/64
- Nx56/64 DBU
- OCU DP
- Quad Modem

Chapter 6   ADVISION Setup Parameters

OVERVIEW

ADVISION's setup parameters include preference files, environment variables, and command line options. Preference files contain entry definitions that affect software operation and specify certain filenames. Environment variables specify file locations and the directories used. Command line options include run time specifications which affect operation of the GUI. This chapter provides information on these three parameters.

PREFERENCES FILES

ADVISION allows the installation of two `.advisionrc` preferences files. The administrator may place one `.advisionrc` file in the `ADVISION_INSTALL` directory, and all users may have one in their home directory. The `ADVISION_INSTALL` directory provides an example of this file.

> **NOTE**
>
> *Any options set by* `.advisionrc` *found in the home directory take precedence over values set by the* `ADVISION_INSTALL` *preference file.*

File Entries

Preferences file entries ARE case sensitive. Table 6-1 on page 6-2 lists the entry definitions. The syntax for each option is as follows:

```
<option> <value>
```

Table 6-1. Preferences File Entry Definitions

Option	Value	Definition
confirm	TRUE = required (default) FALSE = none required	User preference for requiring a confirmation step after selecting a push-button control in a MIB Viewer and before exiting ADVISION.
dir.load	$HOME = default	Directory from which saved configuration pages are retrieved.
dir.save	$HOME = default	Directory to which configuration pages are saved.
file.errors	.advision_errors = default	Informs ADVISION where to output the error data.
splash	TRUE = always displayed (default) FALSE = never displayed	The user preference for the ADVISION About window displayed at startup.
statistics	TRUE = initially visible (default) FALSE = initially hidden.	The user preference for the initial display of the statistics panel on any viewer.

ENVIRONMENT VARIABLES

The environmental variables listed in Table 6-2 are entered at the command line or within a .profile (or .bashrc, etc.) file.

Table 6-2. Environmental Variables

Option	Definition
ADVISION_FILE_ERRS	Tells ADVISION where to output the error data, other than .advision_errors.
ADVISION_INSTALL	Directory in which the ADVISION files are installed (not just the application). This directory is defined at installation and must be correct for the HP OpenView connection to work properly.
HOME	Environment variables of the user's home directory. This option can be set by command line or .advisionrc file, but it is typically the $HOME environment variable. This is a mandatory variable and is required for ADVISION to run. In most cases, $HOME is defined by the system for the user, so no additional action is required.

COMMAND LINE OPTIONS

This information is provided only for reference purposes. The command line options listed in Table 6-3 supersede all other options and are entered when typing the ADVISION command.

Table 6-3. Command Line Options

Option	Definition
-error_file=<filename>	Informs ADVISION of where to output the error data, other than .advision_errors.
-ovw	Required for HP OpenView integration; notifies the process to register with HP OpenView for ADTRAN object selections.
-server	Required for HP OpenView integration; notifies process to connect with .advdb (ADVISION database server) to identify the configuration of objects for display.

Database Server (advdb)

The database base server, as a default, supports 10,000 ADTRAN objects including IP-addressable units, proxied units, and their option cards. If the maximum supported value is reached, the daemon exits with an error message stating that maximum number of objects has been reached.

Changing the Number of Supported Objects

To change the number of supported objects, edit the advdb startup command in the following file to include as a command line argument "-nxxx," where xxxx is the number of objects to be supported:

$ADVISION_INSTALL/advdb.lrf

Then, restart advdb by entering the following on the command line:

$OV_BIN/ovstart advdb

The command line argument can also be used to decrease the number of supported objects and hence the amount of memory required by advdb. This should only be done if the number of ADTRAN devices is known to be small.

Appendix A   Acronyms

CSU .... Channel Service Unit

DLCI .... Data Link Connection Identifier

DSU .... Data Service Unit

FDL .... Facility Data Link

FSU .... Frame Relay Service Unit

HP .... Hewlett Packard

ISU .... ISDN Service Unit

MIB .... Management Information Base

PVC .... Permanent Virtual Circuit

SNMP .... Simple Network Management Protocol

TSU .... Terminal Service Unit

Appendix B   Glossary

D4 DiGroup

An ADVISION shelf that displays the FramePort 144 and 768.

daemon

A background program that runs unattended, collecting information or performing operating system administration tasks. Some daemons activate when an event occurs while others activate at timed intervals.

Data Link Connection Identifier (DLCI)

A group of bits in a frame relay connection's overhead that identifies the virtual circuit or channel over which the data is being sent to its address.

discovery

The process by which devices are added to an HP OpenView submap.

event

An occurrence or happening.

lasso

The process of selecting an area on an active window by using the left mouse button to draw a rectangular or square outline around the area.

loadhosts

HP OpenView file that loads (adds) hosts to the IP topology database maintained by `ovtopmd` and used by `netmon` and `ipmap`. Lines are read from standard input, or from the specified in-file, and are in the format used by `/etc/hosts`.

Management Information Base (MIB)

Specifications containing definitions of management information so that networked systems can be remotely monitored, configured, and controlled.

netmon

A daemon that attempts to discover nodes on the network. After it discovers a node, it polls the node regularly to check for status, topology, configuration, and threshold changes. This daemon discovers and polls only the nodes in the management region.

object

Object has many meanings. It can represent a logical or physical entity or resource, or a group of such physical entities or resources that exist in a network environment. For example, an object can be an ADTRAN device or a group of ADTRAN devices.

permanent virtual circuit (PVC)

A dedicated (private line) channel in a multiplexed transmission or packet network.

polling

The periodic gathering of data.

proxy

A device that provides communication between two noncommunicating devices.

registration

The permanent assignment of a unique object identity to an item.

Simple Network Management Protocol (SNMP)

A protocol that communicates management information between network management stations and the agents in the network elements.

trap

A message sent to indicate a failure or problem with a specific device.

Appendix C   Installation Files

INSTALLED FILES

The following files comprise the ADVISION install. These files are placed in the specified directory `$ADVISION_INSTALL`:

FileName	Function
`Advision`	X-Resource file for the ADVISION (GUI)
`Data_A`	File containing device descriptions which drives all GUI views
`Help/`	Contains files for integration into the CDE Help system
`INSTALL.SH`	Tape Installation script (obsolete)
`INSTALL_CD.SH`	CD Installation script
`Images/`	Image files for ADTRAN unit Device Views
`README`	Text file describing new features, new product support, etc.
`advdb.lrf`	File to use with `ovaddobj` to register `advdb`, the ADTRAN database server
`auth.sample`	Sample user-authentication file
`bin/`	Contains executables and user-includes for login scripts
`bitmaps/C/device/*.pm`	Bit maps defining OpenView symbols for ADTRAN devices
`conf/C/`	Contains files to be added to OpenView's `oid_to_sym` and `oid_to_type` files to properly register ADTRAN units for netmon discovery.
`fields/C/Adtran.fld`	File to register additional OpenView database fields required to support ADVISION
`registration/*.lrf`	OpenView registration files for ADVISION processes associated with an OpenView window (map) session
`snmp_mibs/*.mib`	ADTRAN product MIBs

`symbols/C/Adtran.mib`   File used to register symbols for ADTRAN products with OpenView

`Uninstall.sh`   This is an uninstall script which runs without operator intervention (once started).

FILES ALTERED BY INSTALLATION

During installation, the files in the following directories are linked into the specified OV directories.

Directory	**Filename**
bitmaps/	`$OV_BITMAPS`
conf/	`$OV_CONF`
fields/	`$OV_FIELDS`
registration/	`$OV_REGISTRATION`
snmp_mibs/	`$OV_SNMP_MIBS`
symbols/	`$OV_SYMBOLS`

Installation also updates the `/etc/services` file, with an entry for the advdb socket.

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ADTRAN Support

General Information   (800) 9ADTRAN

ADTRAN Home Page   http://www.adtran.com

ADTRAN Technical Support   Phone: (888) 4ADTRAN

                                E-mail: support@adtran.com