Ascend NavisAccess Getting Started Guide for Solaris

- Includes HP OpenView –

NavisAccess Version 4.1

Ascend Communications

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Ascend Customer Service

When you contact Ascend Customer Service, make sure you have this information:

- The product name and model
- The software version
- The operating system and version
- The type of installation (server, workstation, standalone)
- A description of the problem

How to contact Ascend Customer Service

Ways to contact Ascend Customer Service	Telephone number or address
Telephone in the United States	800-ASCEND-4 800-272-3634
Telephone outside the United States	510-769-8027
Austria/Germany/Switzerland	(+33) 492 96 5672
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Italy	(+33) 492 96 5676
Japan	(+81) 3 5325 7397
Middle East/Africa	(+33) 492 96 5679
Scandinavia	(+33) 492 96 5677
Spain/Portugal	(+33) 492 96 5675
UK	(+33) 492 96 5671
E-mail	support@ascend.com
Email (outside US)	EMEAsupport@ascend.com
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Customer Support BBS by modem	510-814-2302

You can also contact the Ascend main office by dialing 510-769-6001, or you can write to Ascend at the following address:

Ascend Communications, Inc.
1701 Harbor Parkway
Alameda, CA 94502

Need information on new features and products?

We are committed to constantly improving our products. You can find out about new features and product improvement as follows:

- For the latest information on the Ascend product line, visit our site on the World Wide Web: `http://www.ascend.com/`
- For software upgrades, release notes, and addenda to this manual, visit our FTP site: `ftp.ascend.com`

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Getting Started with NavisAccess 1

About NavisAccess

Ascend NavisAccess ™ network management software is the next generation tool for managing carrier networks, Points of Presence (POPs) and enterprise networks. It is the only end-to-end, multi-vendor solution designed specifically for ISPs, carriers and corporations who need to support a variety of network access devices and services. Features such as discovery and mapping, configuration management, performance measurement and fault monitoring provide customized information about the network -- ranging from the "big picture" view of the enterprise to the details about the performance on a single modem port.

Among the features of NavisAccess are:

- Access Watch, the first and only software solution that summarizes key remote access operating parameters for elements and groups of elements.
- Enterprise-wide discovery and mapping.
- Centralized, remote management of devices and device groups, including chassis, software and configuration file change control.
- An extensive suite of performance management tools.
- Fault detection tools that continually monitor all aspects of the network.
- Multi-vendor device support.

For a complete discussion of NavisAccess features, consult the *NavisAccess User Guide* (available both on-line and in printed form) or the NavisAccess online help.

What's New in Version 4.1

NavisAccess 4.1 extends the industry-leading functionality of NavisAccess management software by providing new features and enhancements, many based on end-user suggestions.

- Improved system performance.
- A greatly enhanced selection of historical reports, including the following new reports:

  Top N Calls report – Displays the top "N" users or devices based on selected criteria. Criteria include total calls, call duration, connect speed, authorization failures, etc.

  Call Rate Detail report – Displays call statistics over a selected time range. Statistics include total calls, call duration, connect speed, authorization failures, etc.

  Calls by DNIS/NAS report – Displays call statistics based on phone number called (DNIS) or device name (NAS). Statistics include total calls, call duration, connect speed, authorization failures, etc.

  User Detail report – Displays call statistics based on user name. Statistics include total calls, call duration, connect speed, authorization failures, etc.

  Modem Site Utilization report – Displays call statistics in half-hour intervals. Statistics include the number of Call Starts, Call Ends, Failed Calls and a Max Peak value, which is the most calls being made at any moment during the half-hour monitoring period.

  Call Rate report – Graphs the number of calls received by devices or groups of devices.

  Connect Speed report – Graphs the average dial-up connection rate by devices or groups of devices.

  Authentication Delay report – Graphs the average time required by users to authenticate, by devices or groups of devices.

  Failed Calls Report – Graphs the number of calls failures by devices or groups of devices.

- A DS1 application that reports real-time statistics for T1 and E1 line utilization.

- The Audit Trails and Audit Trail History applets which monitor and record user actions in real-time and historically.
- New options for the Database Groomer that allow you to specify the kinds of data to purge from the database.
- The Community Manager applet, which allows you to set the read- and read-write community strings for multiple devices at the same time.
- An additional option to the Device Change Control schedule that automatically saves the configuration file(s) downloaded.

For full details on new features and functionality, consult the NavisAccess *User Guide* or NavisAccess online help.

Device Preparation

Before NavisAccess can be used with Ascend devices or devices from other vendors, certain device-specific prerequisites must be met.

See Chapter 4, "Preparing to Use NavisAccess With Ascend Devices" for information on preparing Ascend devices for use.

For non-Ascend devices (including Cisco routers and switches, and routers from 3Com, Bay/Wellfleet, Digital and Novell MPR), see the *NavisAccess User Guide* or online help in the sections entitled, "Special Considerations for [router type]."

Product Licensing

You must purchase a separate copy of NavisAccess for EACH user that will be concurrently logging in to the server.

NavisAccess Options

The following NavisAccess options are available:

- **NavisAccess:Trend**
  NavisAccess:Trend provides reporting capabilities for historical system trend analysis. Includes an HTML reporting option.
- **NavisAccess:IP**
  NavisAccess:IP provides multi-vendor device capabilities, allowing you to manage devices from Cisco (routers and switches) and routers from 3Com, Bay Networks and Digital Equipment Corporation.

Both options must be purchased separately and installed separately, after installing NavisAccess. One copy of NavisAccess:Trend and/or NavisAccess:IP is required per server. There is no user log-in limit.

Standalone vs. HP OpenView

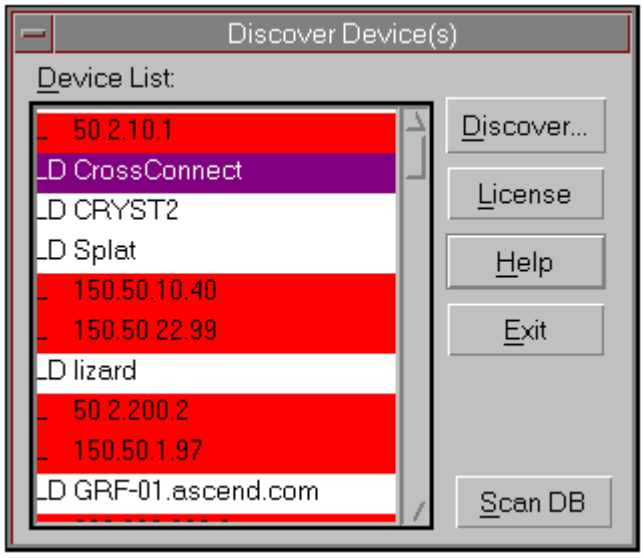
Certain features of NavisAccess are not available when running on HP OpenView. This is because NavisAccess leverages OpenView features where available and thereby avoids duplicating functionality.

The following topics describe which NavisAccess features are not found on HP OpenView and explains where that functionality is available.

Device Discovery

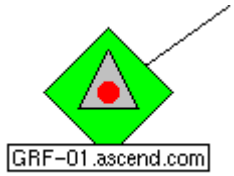
The NavisAccess Explorer and New Device features, which are used to locate network devices and add them to the NavisAccess database, are not available. HP OpenView uses its own network discovery features to locate devices, and NavisAccess incorporates these devices into its own database on a user-selected basis.

To enter devices in the NavisAccess database, from the OpenView map menu bar select **NavisAccess** > **Devices** > **Discover** to open the Discover Devices window.



Click the [Scan DB] button to load devices from the OpenView database into the Discover Devices window. Select the devices you wish to enter into the NavisAccess database. Click the [Discover] button to enter the devices.

All Discovered devices will display the NavisAccess icon on the OpenView map, as in this example:



MIB Compiler and MIB Browser

The NavisAccess MIB Compiler and MIB Browser are not available. The OpenView application corresponding to the MIB Compiler is the Load/Unload MIBs application, located under **Options > Load/Unload MIBs** on the OpenView map menu bar. The OpenView application corresponding to the MIB Browser is the MIB Application Builder, located under **Options > MIB Application Builder** on the OpenView map menu bar.

Event Viewer

The NavisAccess Event Viewer, which displays system Traps and messages, is not available. Traps are displayed via the OpenView event system. However, other NavisAccess fault management features are available. These include the Alarm Monitor, Alert, Event Report and Incident Monitor. Consult the *NavisAccess User Guide* or online for details on these applications.

Installing NavisAccess on Solaris 2

Installing NavisAccess for Solaris

NOTE: The following information is critical to proper NavisAccess operation. Please read the following sections carefully *before* beginning your NavisAccess installation.

Without proper environment configuration, NavisAccess will not be able to operate. This chapter refers to installing NavisAccess as a standalone product on Solaris. To install under HP OpenView, please see Chapter 3, "Installing NavisAccess on HP OpenView."

HP OpenView NOTE: Documentation specific to using NavisAccess on the HP OpenView platform is indicated in this manual by an OpenView icon, as shown at left.

Unless specifically indicated as an OpenView application, all functionality refers to NavisAccess. For example, both NavisAccess and OpenView have a MIB compiler. The OpenView MIB compiler will be specifically referred to as such.

System Requirements

To install and operate NavisAccess for Solaris, the following hardware and software minimum requirements must be satisfied. Note that if multiple workstations will be logging in to one server, additional memory and processor power is recommended for optimal performance on the server.

To support up to 500 ports:

System	Sun Enterprise 150 w/ Single 167MHz or higher processor
System Memory (RAM)	128 Meg RAM
Free Disk Space	2 GB

Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1

To support up to 1000 ports:

System	Sun Enterprise 2 Dual 167MHz or higher processor
System Memory (RAM)	256 Meg RAM
Free Disk Space	4 GB
Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1

To support up to 5000 ports:

System	Sun Enterprise 3000 with 1 UltaSPARC II 336MHZ
System Memory (RAM)	256meg RAM
Free Disk Space	10 GB
Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1

To support up to 10,000 ports:

System	Sun Enterprise 3000 with 2 UltaSPARC II 336MHZ or more
System Memory (RAM)	512 Meg RAM
Free Disk Space	20 GB
Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1

Getting Ready to Install: Things to Know

Please read the following prerequisites and preparatory steps before beginning installation of NavisAccess.

- Installation checks for the environment variable **AutoBahn** to find a previous installation. If there is a previous installation, AutoBahn must be set to the installed directory. Otherwise, it must not be set. This can be checked with the command

  ```
  echo $AutoBahn
  ```

  If Autobahn is not set, nothing will be returned by this command.

- AutoBahn can be unset using the following command:

  ```
  unset AutoBahn
  ```

- Installation will ask for the home directory of the Common Desktop Environment (CDE) if it is not installed in the default directory **/usr/dt**.
- Installation can be run from an X terminal or a character terminal.
- All NavisAccess files are installed with owner and group of the user who installed it. The files are given 755 as mode.
- NavisAccess must be installed by a super user.
- Installation creates three required daemons. They are:

  Registry daemon **windu_registryd40**

  Service daemon **windu_serviced40**

  Database engine daemon **dbeng50**

  After installation, these daemons will be started when the system is booted and stopped when it is shut down. Installation also prepares the Event Dispatcher service (**edispatcher**) to be started and stopped by the Service daemon.

  If there is no previous installation (i.e. AutoBahn is not set), installation will assume that all the above four entities are not running. If there is a previous installation (i.e., AutoBahn is set), installation will stop them if they are running.

- Installation creates the following files and directories:

  S99windu and **S99ascendDBeng** in directory **/etc/rc2.d**

  K99windu and **K99ascendDBeng** in directory **/etc/rc0.d**

  windu and **ascendDBeng** in directory **/etc/init.d**

  windu in directory **/var/adm**

- Note the following start and stop syntax for NavisAccess services.

  ```
  edispatcher  -start
  edispatcher  -stop
  imc   -start
  imc   -stop
  eventstreamer  -start
  eventstreamer  -stop
  ```

  These services should not be killed. Also, you should stop all other services prior to stopping the edispatcher service.

- To start/stop the database engine daemon manually, use the following commands:

  ```
  /etc/rc2.d/S99ascendDBeng start
  /etc/rc0.d/K99ascendDBeng stop
  ```

- In order to use the NavisAccess TFTP server, you must comment out the tftp line in the **/etc/inetd.conf** file by entering a number sign (#) in front of the line. This line will look similar to the following:

  ```
  tftp dgram udp wait root /usr/lbin/tftpd
  tftpd/opt/ignite/var/opt/ignite
  ```

- There is a shell-script file, **start_all.ksh**, in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.
  To start the services, open a terminal session, switch to the NavisAccess installation directory and enter:

  ```
  start_all.ksh
  ```

  Use the shell-script file **stop_all.ksh** in the NavisAccess installed directory as a guideline to stop the background jobs started by **start_all.ksh**.

NavisAccess Installation Step Summary : Solaris Standalone

Use this summary as a checklist to ensure you follow all the steps for proper installation. Failure to follow all the steps outlined below may lead to problems starting or using NavisAccess. Detailed installation instructions follow this list.

Prerequisites to Installation:

- ❑ Solaris Operating System must be installed.
- ❑ CDE must be installed.

Installation Steps:

Step 1: ❑ Set System Semaphores

Step 2: ❑ Begin installation from the CD

Step 3: ❑ Continue with installation – Log file created

Step 4: ❑ Updating environment variables

Step 5: ❑ Reboot system

Step 6: ❑ Define environment variables

Step 7: ❑ Check LD_LIBRARY_PATH

Step 8: ❑ Compile MIBs.

NavisAccess Installation Steps: Solaris Standalone

NOTE: The follow steps apply if you are installing NavisAccess for the first time. If you are upgrading or re-installing on a system that already contains NavisAccess, please refer to the following section beginning, "NavisAccess Upgrade Step Summary," on page 26.

Please follow *all* of the steps below to insure proper installation of NavisAccess. You can use the check boxes to mark your progress.

❑ STEP 1: Set Semaphores.

1.1 Changes must be made to the Solaris Semaphore settings to run NavisAccess. Please use the following chart as a guideline. Note that your settings may not be the same as the Solaris default settings.

SEMAPHORE	Add this value to current setting	Solaris default
Seminfo_semmap	Add 50 (for example, if your current value is 10, add 50 for a total of 60)	10
Seminfo_semmni	Add 50	10
Seminfo_semmns	Add 120	60
Seminfo_semmnu	Add 60	30
Seminfo_semmsl	Add 50	25
Seminfo_semopm	Add 50	10
Seminfo_semume	Add 50	10
The following values are absolutes:		
Seminfo_semvmx	Set to 65535.	
Seminfo_semaem	Set to 32768.	

To check your current settings, enter the following command from the **etc** directory:

```
sysdef -i
```

To change a semaphore setting, add a line to the **/etc/system** file. The following example sets the **seminfo_semmni** variable to 60:

```
set semsys:seminfo_semmni=60
```

To edit the **system** file, enter

```
vi system
```

or use any suitable text editor. Semaphore settings will not take effect until you reboot the machine.

If you do not have any default semaphore settings in the system file, the following parameters may be used as a starting point. Enter the following text exactly as shown into the system file.

```
set semsys:seminfo_semmap=60
set semsys:seminfo_semmni=60
set semsys:seminfo_semmns=180
set semsys:seminfo_semmnu=90
set semsys:seminfo_semmsl=75
set semsys:seminfo_semopm=60
set semsys:seminfo_semume=60
set semsys:seminfo_semvmx=65535
set semsys:seminfo_semaem=32768
```

1.2 Save the new semaphore settings when complete.

❑ STEP 2: Begin installation from the CD.

2.1 Insert the installation CD into the drive.

2.2 Change to the directory where the CD is mounted (usually **/cdrom**).

2.3 Change to the NavisAccess directory and run the installation file by entering:

```
./install.ksh
```

A welcome message displays, followed by a prompt to enter a user name.

2.4 Enter User Name.

2.5 Enter Company Name at the prompt.

2.6 At this point, the script will check to see that the proper services are present

in the **/etc/services** file.

If any of the services are not currently in the services file, setup will prompt you to enter the line in the services file.

For example, you may see a message similar to:

```
tftp service is not present in /etc/services
Please enter the line "tftp 69/udp" in /etc/services
```

Make a note of the needed changes and edit the **/etc/services** file by adding the line as presented to you.

2.7 If any changes were required, after making them restart the install script, as in Step 2.3.

2.8 You will be prompted to enter the directory path for NavisAccess. The directory must be all lower case as specified by the program, and it must be a full path. For example:

```
/usr/target_directory
```

NOTE: The software installs to the exact directory path you specify. If you specify **/opt/navisaccess** all of the NavisAccess files will be placed directly in **/opt/navisaccess**. You should always specify a specific new sub-directory to which NavisAccess should be installed, such as **/opt/navisaccess,** because all files in the final directory will be deleted.

2.9 A message similar to the following will appear:

```
You have given the following options:
User name is (username)
Company name is (company name)
Target directory is (/usr/target_directory)
Do you want to continue?[y/n]
```

Select [Y] to continue or [N] to quit the installation.

2.10 The installation script will look for any files that may exist in the directory that has been chosen for installation. If any files exist, a message similar to the following will appear:

```
All files in the target directory will be
removed. Continue[c]or Quit [q]?
```

2.11 If Continue is selected, *all files in the target directory will be deleted*.

❑ STEP 3: Continue with installation – Log file created.

3.1 A log file will be created in the **/target/directory/ascend_install.log** directory containing information such as user name, company name, target directory, and other installation information.

3.2 The system is checked for proper system resources such as Disk space.

3.3 The script will start copying files to the target directory. A message will indicate files are being copied.

3.4 When the file transfer is complete, the registry and service daemons will start. Confirmation messages will appear as they are confirmed. When complete, a message similar to the following appears:

```
A file .NavisAccessProfile in the directory
/target/directory has been created. This file contains
all of the environment variables which are required to
run NavisAccess.
```

❑ STEP 4: Updating environment variables.

4.1 Installation will ask if the environment variables should be made system-wide environment variables. If "Yes" is chosen, then all these variables are available to any user who logs in to the CDE. There will be no need to have these variables in the user profile file.

4.2 If you have a .profile, a message prompt will ask:

```
Do you want to update your .profile ?[y/n]
```

When yes is selected, the **.profile** must get updated and contain all of the environment variables that are necessary for the application to run and perform correctly.

4.3 After the .profile file has been updated, the previous profile will be backed up and a message similar to the following will appear:

A copy of your previous .profile has been placed in .profile.ascend.bak

4.4 Messages will appear indicating the Edispatcher is being registered and the database engine is initialized as daemon.

❑ STEP 5: Reboot.

5.1 Upon completion of the above steps, an **Installation over** message will appear.

Reboot the machine at this time.

❑ STEP 6: Define environment variables.

6.1 The following environment variables are defined by installation:

AutoBahn

WUHOME

SQLANY

WINDU

The following environment variables need to be augmented:

PATH

LD_LIBRARY_PATH

Installation creates a file **.NavisAccessProfile** in the installation directory which has all the above variables defined in **sh** and **ksh** syntax. Please make sure they are defined for all users who will be using NavisAccess.

❑ STEP 7: Check the LD_LIBRARY_PATH environment variables.

7.1 Before running NavisAccess, make sure that **LD_LIBRARY_PATH** environment variable in the .NavisAccessProfile has reference to standard system libraries **/usr/lib**, **/usr/dt/lib** and **/usr/openwin/lib**. *These directories must be contained in your LD_LIBRARY_PATH.*

7.2 To update the LD_LIBRARY_PATH variables, open a terminal window, switch to the NavisAccess installation directory, and edit the profile by entering

```
vi .NavisAccessProfile
```

or use a suitable text editor.

7.3 Enter the following text into the .NavisAccessProfile file.

```
LD_LIBRARY_PATH=/usr/lib:/usr/openwin/lib:/usr/dt/
lib;export LD_LIBRARY_PATH
```

```
PATH=/opt/SUNWspro/bin:$PATH:.:/usr/openwin;export
PATH
```

7.4 Save the file and close it.

❑ STEP 8: Compile MIBs.

8.1 Before using NavisAccess, the necessary MIBs must be compiled. To compile the MIBs, open a Terminal session and switch to the NavisAccess installation directory.

8.2 Run the NavisAccess profile by entering:

```
. ./.NavisAccessProfile
```

NOTE: At this time, you may also wish to copy *.mib from Navis_Installation_Directory/mibs/rfc up one level to the Navis_Installation_Directory/mibs directory. This will create a MIB-II directory tree available from the MIB Browser to allow you to do your own MIB browsing.

8.3 Start the NavisAccess services by running the following from the NavisAccess installation directory:

```
start_all.ksh
```

8.4 Enter the following command from the NavisAccess installation directory to open the MIB Compiler:

```
mibc
```

8.5 Click the [Compile] button. The compilation process will begin and will be displayed in the MIB compiler window.

Compiling of a MIB will generate messages reading: "Processing File: *<name of file>*."

NOTE: The database engine (**dbeng50**) must be running while compiling MIBs using the **mibc** command. Once the system has been rebooted, the dbeng50 daemon will automatically start.

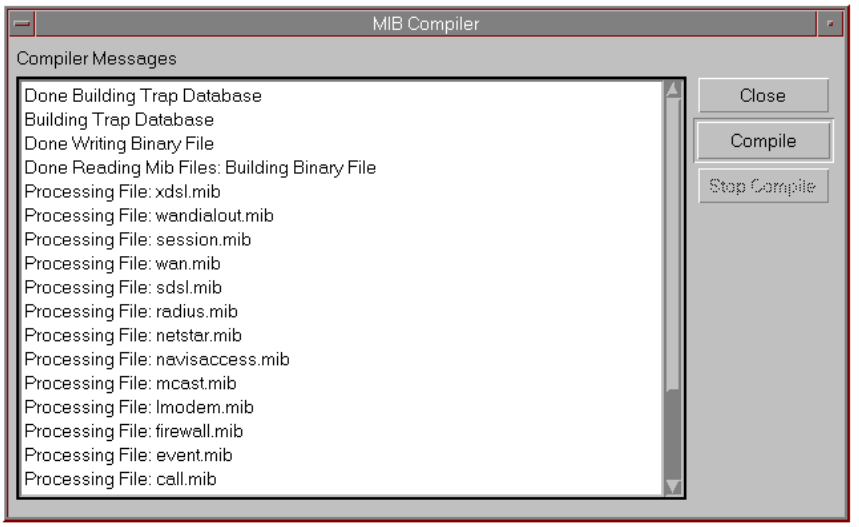
However, if a an error dialog box “libsrmdb” appears stating “Unable to open database,” the dbeng50 has not started for some reason. It can be

started using the following:

```
/etc/rc2.d/S99ascendDBeng start
```

After starting dbeng50, run [Compile] again.

8.6 Upon completion of the compiling process, the MIB Compiler will write a binary file and then build a Trap database. If the entire process is successful, a screen similar to the one below will be displayed.



NOTE: If you are not installing an evaluation copy of NavisAccess, you must now install any option packages you have purchased for use with the NavisAccess:Console. Available option packages are:

- NavisAccess:Trend (historical reporting)
- NavisAccess:IP (multi-vendor support)

Starting NavisAccess: Solaris standalone

To start NavisAccess, the environment must be set and the server services must be started. Then the user application (GUI) can be started. This can be started on the server or any workstation logging in to the server.

Starting NavisAccess

NOTE: The following procedure must be run by ROOT.

1. Open a Terminal session and switch to the NavisAccess installation directory.
2. Run the following script:

   `. ./.NavisAccessProfile`

   This script activates the necessary environment variables and paths for NavisAccess.
3. Run the following script:

   `start_all.ksh`

   This is a shell-script file located in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.

   This will start the required services.
4. Enter the following:

   `srm`

   The srm executable starts the NavisAccess graphical user interface.
5. The first time you start NavisAccess, the default User Name and password are **Admin** and **Admin**.

   NOTE: Every console user of NavisAccess must have their own account and should be logged in as such. Do not run multiple instances of NavisAccess from the same login ID.

   A user who Xterms into the server machine (running .NavisAccessProfile and the start_all.ksh under ‘root’), must use a different login than other users currently logged in to that server machine.

NavisAccess Upgrade Step Summary : Solaris Standalone

Use this summary as a check list to ensure you follow all the steps for proper installation. Failure to follow all the steps outlined below may lead to problems starting or using NavisAccess. Detailed installation instructions follow this list.

Prerequisites to Installation:

- ❑ Solaris Operating System must be installed.
- ❑ CDE must be installed.

Upgrade Steps:

Step 1: ❑ Shut down all running NavisAccess services.

Step 2: ❑ Set System Semaphores

Step 3: ❑ Begin installation from the CD

Step 4: ❑ Reusing the existing database.

Step 5: ❑ Continue with installation – Log file created

Step 6: ❑ Updating environment variables

Step 7: ❑ Reboot system

Step 8: ❑ Define environment variables

Step 9: ❑ Check LD_LIBRARY_PATH

Step 10: ❑ Compile MIBs.

NavisAccess Upgrade Steps: Solaris Standalone

NOTE: The follow steps apply if you are:

- Upgrading from a previous version of NavisAccess
- Re-installing a copy of NavisAccess
- Installing a live copy to update an evaluation copy.

If you are installing on a system that has never contained NavisAccess, please refer to the previous section, "NavisAccess Installation Step Summary," on page 17.

Please follow *all* of the steps below to insure proper installation of NavisAccess. You can use the check boxes to mark your progress.

❑ STEP 1: Shut down all running NavisAccess services.

1.1 Stop the NavisAccess services, database engine and windu services using the following commands:

`stop_all.ksh` [to stop the services]

`dbstop` [to stop the database engine]

`/etc/rc0.d/K99windu stop` [to stop all windu services]

Also check if any other windu clients are running. If they are, you must kill them before you proceed. One way to do this is as follows:

```
ps –aef | grep windu_client
```

Note the process ID of windu_clientd40 and kill it as follows:

```
kill  -9 <windu_clientd40-pid>
```

❑ STEP 2: Set Semaphores.

2.1 Changes must be made to the Solaris Semaphore settings to run NavisAccess. Please use the following chart as a guideline. Note that your settings may not be the same as the Solaris default settings.

SEMAPHORE	Add this value to current setting	Solaris default
Seminfo_semmap	Add 50 (for example, if your current value is 10, add 50 for a total of 60)	10
Seminfo_semmni	Add 50	10
Seminfo_semmns	Add 120	60
Seminfo_semmnu	Add 60	30
Seminfo_semmsl	Add 50	25
Seminfo_semopm	Add 50	10
Seminfo_semume	Add 50	10
The following values are absolutes:		
Seminfo_semvmx	Set to 65535.	
Seminfo_semaem	Set to 32768.	

To check your current settings, enter the following command from the **etc** directory:

```
sysdef -i
```

To change a semaphore setting, add a line to the **/etc/system** file. The following example sets the **seminfo_semmni** variable to 60:

```
set semsys:seminfo_semmni=60
```

To edit the **system** file, enter

```
vi system
```

or use any suitable text editor. Semaphore settings will not take effect until

you reboot the machine.

If you do not have any default semaphore settings in the system file, the following parameters may be used as a starting point. Enter the following text exactly as shown into the system file.

```
set semsys:seminfo_semmap=60
set semsys:seminfo_semmni=60
set semsys:seminfo_semmns=180
set semsys:seminfo_semmnu=90
set semsys:seminfo_semmsl=75
set semsys:seminfo_semopm=60
set semsys:seminfo_semume=60
set semsys:seminfo_semvmx=65535
set semsys:seminfo_semaem=32768
```

2.2 Save the new semaphore settings when complete.

❑ STEP 3: Begin installation from the CD.

3.1 Insert the installation CD into the drive.

3.2 Change to the directory where the CD is mounted (usually **/cdrom**).

3.3 Change to the NavisAccess directory and run the installation file by entering:

```
./install.ksh
```

A welcome message displays, followed by a prompt to enter a user name.

3.4 Enter User Name.

3.5 Enter Company Name at the prompt.

3.6 At this point, the script will check to see that the proper services are present in the **/etc/services** file.

If any of the services are not currently in the services file, setup will prompt you to enter the line in the services file.

For example, you may see a message similar to:

```
tftp service is not present in /etc/services
Please enter the line “tftp 69/udp” in /etc/services
```

Make a note of the needed changes and edit the **/etc/services** file by adding the line as presented to you.

3.7 If any changes were required, after making them restart the install script, as in Step 3.3.

3.8 You will be prompted to enter the directory path for NavisAccess. The directory must be all lower case as specified by the program, and it must be a full path. For example:

```
/usr/target_directory
```

NOTE: The software installs to the exact directory path you specify. If you specify **/opt/navisaccess** all of the NavisAccess files will be placed directly in **/opt/navisaccess**. You should always specify a specific new sub-directory to which NavisAccess should be installed, such as **/opt/navisaccess,** because all files in the final directory will be deleted.

3.9 A message similar to the following will appear:

```
You have given the following options:
User name is (username)
Company name is (company name)
Target directory is (/usr/target_directory)
Do you want to continue?[y/n]
```

Select [Y] to continue or [N] to quit the installation.

3.10 The installation script will look for any files that may exist in the directory that has been chosen for installation. If any files exist, a message similar to the following will appear:

```
All files in the target directory will be
removed. Continue[c]or Quit [q]?
```

3.11 If Continue is selected, *all files in the target directory will be deleted*.

❑ STEP 4: Reusing the existing database.

4.1 If you are upgrading from NavisAccess 4.0 and **AutoBahn** is already set (e.g., at **/usr/navisaccess**), the installation script provides an option to reuse the existing database. The database file is **ascend.db**. This file contains device information, configuration files, historical trending data, etc. If you do *not* reuse the database, all information you have gathered will be lost.

The installation script will copy and upgrade the existing database to support NavisAccess 4.1 (databases from NavisAccess 4.0 and 4.1 are *not* compatible otherwise).

A message similar to the following will appear:

```
(install.ksh) sensed an existing installation of
navisaccess at /usr/navisaccess

If you continue, the existing version cannot be
used.

Continue [c] or quit [q]?
```

Select [c] to reinstall NavisAccess. Select [q] to quit installation.

If you are reinstalling, the database file will be backed up to a temporary store. ***The install script also advises that you back up the old database as a safety mechanism.*** At this point, you will be asked if you wish to reuse the existing database. Type "y" if you want to re-use the existing database with the new installation.

If there is any previous installation, the script will check for installed Daemons/services. If any Daemons are currently running a message will appear indicating this, and the Daemons will be stopped.

❑ STEP 5: Continue with installation – Log file created.

5.1 A log file will be created in the **/target/directory/ascend_install.log** directory containing information such as user name, company name, target directory, and other installation information.

5.2 The system is checked for proper system resources such as Disk space.

5.3 The script will start copying files to the target directory. A message will indicate files are being copied.

5.4 When the file transfer is complete, the registry and service daemons will start. Confirmation messages will appear as they are confirmed. When complete, a message similar to the following appears:

```
A file .NavisAccessProfile in the directory
/target/directory has been created. This file contains
all of the environment variables which are required to
run NavisAccess.
```

❑ STEP 6: Updating environment variables.

6.1 Installation will ask if the environment variables should be made system-wide environment variables. If "Yes" is chosen, then all these variables are available to any user who logs in to the CDE. There will be no need to have these variables in the user profile file.

6.2 If you have a .profile, a message prompt will ask:

```
Do you want to update your .profile ?[y/n]
```

When yes is selected, the existing **.profile** will get updated and contain all of the environment variables that are necessary for the application to run and perform correctly.

6.3 After the .profile file has been updated, the previous profile will be backed up and a message similar to the following will appear:

A copy of your previous .profile has been placed in .profile.ascend.bak

6.4 Messages will appear indicating the Edispatcher is being registered and the database engine is initialized as daemon.

6.5 If you are upgrading from version 4.0 and have chosen to save you previous database file, the installation process will ask for your final confirmation to retain the previous database. A message similar to the following appears:

```
… checking for the need of database
copy/upgradation.

Trying to copy old database (Ver: V...) into new
installation (Ver: V...)
```

❑ STEP 7: Reboot.

7.1 Upon completion of the above steps, an **Installation over** message will appear.

Reboot the machine at this time.

❑ STEP 8: Define environment variables.

8.1 The following environment variables are defined by installation:

AutoBahn

WUHOME

SQLANY

WINDU

The following environment variables need to be augmented:

PATH

LD_LIBRARY_PATH

Installation creates a file **.NavisAccessProfile** in the installation directory which has all the above variables defined in **sh** and **ksh** syntax. Please make sure they are defined for all users who will be using NavisAccess.

❑ STEP 9: Check the LD_LIBRARY_PATH environment variables.

9.1 Before running NavisAccess, make sure that **LD_LIBRARY_PATH** environment variable in the .NavisAccessProfile has reference to standard system libraries **/usr/lib**, **/usr/dt/lib** and **/usr/openwin/lib**. *These directories must be contained in your LD_LIBRARY_PATH.*

9.2 To update the LD_LIBRARY_PATH variables, open a terminal window, switch to the NavisAccess installation directory, and edit the profile by entering

```
vi .NavisAccessProfile
```

or use a suitable text editor.

9.3 Enter the following text into the .NavisAccessProfile file.

```
LD_LIBRARY_PATH=/usr/lib:/usr/openwin/lib:/usr/dt/
lib;export LD_LIBRARY_PATH

PATH=/opt/SUNWspro/bin:$PATH:.:/usr/openwin;export
PATH
```

9.4 Save the file and close it.

❑ STEP 10: Compile MIBs.

10.1 Before using NavisAccess, the necessary MIBs must be compiled. To compile the MIBs, open a Terminal session and switch to the NavisAccess installation directory. You must complete this step, even if you have compiled MIBs using a previous version of NavisAcccess.

10.2 Run the NavisAccess profile by entering:

```
. ./.NavisAccessProfile
```

NOTE: At this time, you may also wish to copy *.mib from Navis_Installation_Directory/mibs/rfc up one level to the Navis_Installation_Directory/mibs directory. This will create a MIB-II directory tree available from the MIB Browser to allow you to do your own MIB browsing.

10.3 Start the NavisAccess services by running the following from the NavisAccess installation directory:

```
start_all.ksh
```

10.4 Enter the following command from the NavisAccess installation directory:

```
mibc
```

This opens the MIB Compiler.

10.5 Click the [Compile] button. The compilation process will begin and will be displayed in the MIB compiler window. Compiling of a MIB will generate messages reading: "Processing File: <*name of file*>."

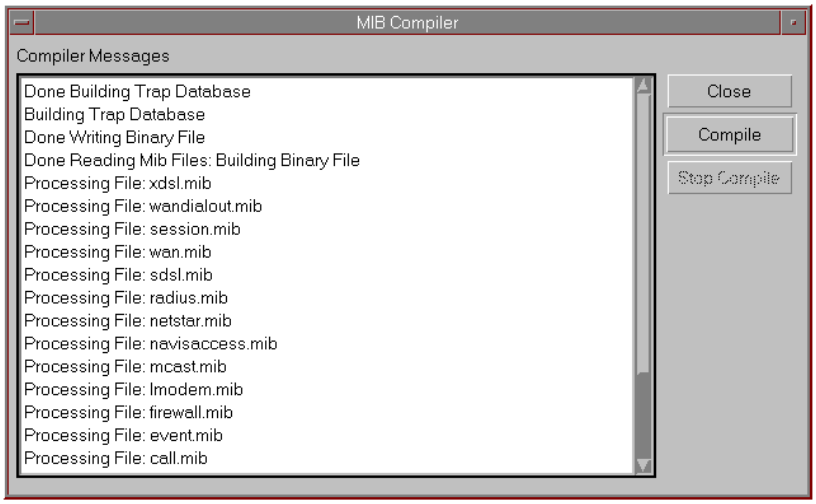
NOTE: The database engine (**dbeng50**) must be running while compiling MIBs using the **mibc** command. Once the system has been rebooted, the dbeng50 daemon will automatically start.

However, if a an error dialog box “libsrmdb” appears stating “Unable to open database,” the dbeng50 has not started for some reason. It can be started using the following:

```
/etc/rc2.d/S99ascendDBeng start
```

After starting dbeng50, run [Compile] again.

10.6 Upon completion of the compiling process, the MIB Compiler will write a binary file and then build a Trap database. If the entire process is successful, a screen similar to the one below will be displayed.



NOTE: If you are not installing an evaluation copy of NavisAccess, you must now re-install any option packages you have purchased for use with the NavisAccess:Console. Available option packages are:

- NavisAccess:Trend (historical reporting)
- NavisAccess:IP (multi-vendor support)

Starting NavisAccess: Solaris standalone

To start NavisAccess, the environment must be set and the server services must be started. Then the user application (GUI) can be started. This can be started on the server or any workstation logging in to the server.

Starting NavisAccess

NOTE: The following procedure must be run by ROOT.

1. Open a Terminal session and switch to the NavisAccess installation directory.
2. Run the following script:

   `. ./.NavisAccessProfile`

   This script activates the necessary environment variables and paths for NavisAccess.
3. Run the following script:

`start_all.ksh`

This is a shell-script file located in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.

This will start the required services.

4. Enter the following:

   `srm`

   The srm executable starts the NavisAccess graphical user interface.

5. The first time you start NavisAccess, the default User Name and password are **Admin** and **Admin**.

   NOTE: Every console user of NavisAccess must have their own account and should be logged in as such. Do not run multiple instances of NavisAccess from the same login ID.

   A user who Xterms into the server machine (running .NavisAccessProfile and the start_all.ksh under ‘root’), must use a different login than other users currently logged in to that server machine.

Installing NavisAccess on HP OpenView 3

NOTE: The following information is critical to proper NavisAccess operation. Please read the following sections carefully *before* beginning your NavisAccess installation.

Without proper environment configuration, NavisAccess will not be able to operate. This chapter refers to installing NavisAccess under HP OpenView. To install as a standalone product on Solaris, please see Chapter 2, "Installing NavisAccess on Solaris."

HP OpenView NOTE: Documentation specific to using NavisAccess on the HP OpenView platform is indicated in this manual by an OpenView icon, as shown at left.

Unless specifically indicated as an OpenView application, all functionality refers to NavisAccess. For example, both NavisAccess and OpenView have a MIB compiler. The OpenView MIB compiler will be specifically referred to as such.

System Requirements

To install and operate NavisAccess for Solaris on HP OpenView, the following hardware and software minimum requirements must be satisfied. Note that if multiple workstations will be logging in to one server, additional memory and processor power is recommended for optimal performance on the server.

To support up to 500 ports:

System	Sun Enterprise 150 w/ Single 167MHz or higher processor
System Memory (RAM)	128 Meg RAM
Free Disk Space	2 GB

Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1
HPOV version	4.11

To support up to 1000 ports:

System	Sun Enterprise 2 Dual 167MHz or higher processor
System Memory (RAM)	256 Meg RAM
Free Disk Space	4 GB
Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1
HPOV version	4.11

To support up to 5000 ports:

System	Sun Enterprise 3000 with 1 UltaSPARC II 336MHZ
System Memory (RAM)	256meg RAM
Free Disk Space	10 GB
Video Resolution	1152x900 minimum resolution
OS version	Solaris 2.5.1
HPOV version	4.11

To support up to 10,000 ports:

System	Sun Enterprise 3000 with 2 UltaSPARC II 336MHZ or more
System Memory (RAM)	512 Meg RAM
Free Disk Space	20 GB
Video Resolution	1152x900 minimum resolution

OS version	Solaris 2.5.1
HPOV version	4.11

Getting Ready to Install: Things to Know

Please read the following prerequisites and preparatory steps before beginning installation of NavisAccess.

- Installation checks for the environment variable **AutoBahn** to find a previous installation. If there is a previous installation, AutoBahn must be set to the installed directory. Otherwise, it must not be set. This can be checked with the command

  ```
  echo $AutoBahn
  ```

  If Autobahn is not set, nothing will be returned by this command.

- AutoBahn can be unset using the following command:

  ```
  unset AutoBahn
  ```

- Installation will ask for the home directory of the Common Desktop Environment (CDE) if it is not installed in the default directory **/usr/dt**.
- Installation can be run from an X terminal or a character terminal.
- All NavisAccess files are installed with owner and group of the user who installed it. The files are given 755 as mode.
- NavisAccess must be installed by a super user.
- Installation creates three required daemons. They are:

  Registry daemon **windu_registryd40**

  Service daemon **windu_serviced40**

  Database engine daemon **dbeng50**

  After installation, these daemons will be started when the system is booted and stopped when it is shut down. Installation also prepares the Event Dispatcher service (**edispatcher**) to be started and stopped by the Service daemon.

  If there is no previous installation (i.e. AutoBahn is not set), installation will assume that all the above four entities are not running. If there is a previous

installation (i.e., AutoBahn is set), installation will stop them if they are running.

- Installation creates the following files and directories:

  S99windu and **S99ascendDBeng** in directory **/etc/rc2.d**

  K99windu and **K99ascendDBeng** in directory **/etc/rc0.d**

  windu and **ascendDBeng** in directory **/etc/init.d**

  windu in directory **/var/adm**

- Note the following start and stop syntax for NavisAccess services.

```
edispatcher  -start
edispathcer  -stop
imc   -start
imc   -stop
eventstreamer  -start
eventstreamer  -stop
```

  These services should not be killed. To verify which services are running, enter the command:

```
nastatus
```

- In order to use the NavisAccess TFTP server, you must comment out the tftp line in the **/etc/inetd.conf** file by entering a number sign (#) in front of the line. This line will look similar to the following:

```
tftp dgram udp wait root /usr/lbin/tftpd
tftpd/opt/ignite/var/opt/ignite
```

- To start/stop the database engine daemon manually, use the following commands:

```
/etc/rc2.d/S99ascendDBeng start
/etc/rc0.d/K99ascendDBeng stop
```

- There is a shell-script file, **start_all.ksh**, in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.
  To start the services, open a terminal session, switch to the NavisAccess installation directory and enter:

```
start_all.ksh
```

  Use the shell-script file **stop_all.ksh** in the NavisAccess installed directory as a guideline to stop the background jobs started by **start_all.ksh**.

NavisAccess Installation Step Summary : HP OpenView on Solaris

Use this summary as a check list to ensure you follow all the steps for proper installation. Failure to follow all the steps outlined below may lead to problems starting or using NavisAccess. Detailed installation instructions follow this list.

Prerequisites to Installation:

- ❑ Solaris Operating System must be installed.
- ❑ HP OpenView on Solaris must be installed
- ❑ CDE must be installed.

Installation Steps:

Step 1: ❑ Set System Semaphores

Step 2: ❑ Begin installation from the CD

Step 3: ❑ Continue with installation – Log file created

Step 4: ❑ Updating environment variables

Step 5: ❑ Reboot system

Step 6: ❑ Define environment variables

Step 7: ❑ Check LD_LIBRARY_PATH

Step 8: ❑ Perform HP OpenView integration steps.

Step 9: ❑ Configure NavisAccess Events for HP OpenView.

Step 10: ❑ Compile MIBs.

NavisAccess Installation Steps: HP OpenView

NOTE: The follow steps apply if you are installing NavisAccess on HP OpenView for the first time. If you are upgrading or re-installing on a system that already contains NavisAccess, please refer to the following section beginning, "NavisAccess Upgrade Step Summary," on page 53.

Please follow *all* of the steps below to insure proper installation of NavisAccess. You can use the check boxes to mark your progress.

❑ STEP 1: Set Semaphores.

1.1 Changes must be made to the Solaris Semaphore settings to run NavisAccess. Please use the following chart as a guideline. Note that your settings may not be the same as the Solaris default settings.

SEMAPHORE	Add this value to current setting	Solaris default
Seminfo_semmap	Add 50 (for example, if your current value is 10, add 50 for a total of 60)	10
Seminfo_semmni	Add 50	10
Seminfo_semmns	Add 120	60
Seminfo_semmnu	Add 60	30
Seminfo_semmsl	Add 50	25
Seminfo_semopm	Add 50	10
Seminfo_semume	Add 50	10
The following values are absolutes:		
Seminfo_semvmx	Set to 65535.	
Seminfo_semaem	Set to 32768.	

To check your current settings, enter the following command from the **etc** directory:

```
sysdef -i
```

To change a semaphore setting, add a line to the **/etc/system** file. The following example sets the **seminfo_semmni** variable to 60:

```
set semsys:seminfo_semmni=60
```

To edit the **system** file, enter

```
vi system
```

or use any suitable text editor. Semaphore settings will not take effect until you reboot the machine.

If you do not have any default semaphore settings in the system file, the following parameters may be used as a starting point. Enter the following text exactly as shown into the system file.

```
set semsys:seminfo_semmap=60
set semsys:seminfo_semmni=60
set semsys:seminfo_semmns=180
set semsys:seminfo_semmnu=90
set semsys:seminfo_semmsl=75
set semsys:seminfo_semopm=60
set semsys:seminfo_semume=60
set semsys:seminfo_semvmx=65535
set semsys:seminfo_semaem=32768
```

1.2 Save the new semaphore settings when complete.

❑ STEP 2: Begin installation from the CD.

2.1 Insert the installation CD into the drive.

2.2 Change to the directory where the CD is mounted (usually **/cdrom**).

2.3 Change to the NavisAccess directory and run the installation file by entering:

```
./install.ksh
```

A welcome message displays, followed by a prompt to enter a user name.

2.4 Enter User Name.

2.5 Enter Company Name at the prompt.

2.6 At this point, the script will check to see that the proper services are present

in the **/etc/services** file.

If any of the services are not currently in the services file, setup will prompt you to enter the line in the services file.

For example, you may see a message similar to:

```
tftp service is not present in /etc/services
Please enter the line "tftp 69/udp" in /etc/services
```

Make a note of the needed changes and edit the **/etc/services** file by adding the line as presented to you.

2.7 If any changes were required, after making them restart the install script, as in Step 2.3.

2.8 You will be prompted to enter the directory path for NavisAccess. The directory must be all lower case as specified by the program, and it must be a full path. For example:

```
/usr/target_directory
```

NOTE: The software installs to the exact directory path you specify. If you specify **/opt/navisaccess** all of the NavisAccess files will be placed directly in **/opt/navisaccess**. You should always specify a specific new sub-directory to which NavisAccess should be installed, such as **/opt/navisaccess,** because all files in the final directory will be deleted.

2.9 A message similar to the following will appear:

```
You have given the following options:
User name is (username)
Company name is (company name)
Target directory is (/usr/target_directory)
Do you want to continue?[y/n]
```

Select [Y] to continue or [N] to quit the installation.

2.10 The installation script will look for any files that may exist in the directory that has been chosen for installation. If any files exist, a message similar to the following will appear:

```
All files in the target directory will be
removed. Continue[c]or Quit [q]?
```

2.11 If Continue is selected, *all files in the target directory will be deleted*.

❑ STEP 3: Continue with installation – Log file created.

3.1 A log file will be created in the **/target/directory/ascend_install.log** directory containing information such as user name, company name, target directory, and other installation information.

3.2 The system is checked for proper system resources such as Disk space.

3.3 The script will start copying files to the target directory. A message will indicate files are being copied.

3.4 When the file transfer is complete, the registry and service daemons will start. Confirmation messages will appear as they are confirmed. When complete, a message similar to the following appears:

```
A file .NavisAccessProfile in the directory
/target/directory has been created. This file contains
all of the environment variables which are required to
run NavisAccess.
```

❑ STEP 4: Updating environment variables.

4.1 Installation will ask if the environment variables should be made system-wide environment variables. If "Yes" is chosen, then all these variables are available to any user who logs in to the CDE. There will be no need to have these variables in the user profile file.

4.2 If you have a .profile, a message prompt will ask:

```
Do you want to update your .profile ?[y/n]
```

When yes is selected, the **.profile** must get updated and contain all of the environment variables that are necessary for the application to run and perform correctly.

4.3 After the .profile file has been updated, the previous profile will be backed up and a message similar to the following will appear:

A copy of your previous .profile has been placed in .profile.ascend.bak

4.4 Messages will appear indicating the Edispatcher is being registered and the database engine is initialized as daemon.

❑ STEP 5: Reboot.

5.1 Upon completion of the above steps, an **Installation over** message will appear.

Reboot the machine at this time.

❑ STEP 6: Define environment variables.

6.1 The following environment variables are defined by installation:

AutoBahn

WUHOME

SQLANY

WINDU

The following environment variables need to be augmented:

PATH

LD_LIBRARY_PATH

Installation creates a file **.NavisAccessProfile** in the installation directory which has all the above variables defined in **sh** and **ksh** syntax. Please make sure they are defined for all users who will be using NavisAccess.

❑ STEP 7: Check the LD_LIBRARY_PATH environment variables.

7.1 Before running NavisAccess, make sure that **LD_LIBRARY_PATH** environment variable in the .NavisAccessProfile has reference to standard system libraries **/usr/lib**, **/usr/dt/lib, /usr/openwin/lib** and **/opt/OV/lib**. *These directories must be contained in your LD_LIBRARY_PATH.*

7.2 To update the LD_LIBRARY_PATH variables, open a terminal window, switch to the NavisAccess installation directory, and edit the profile by entering

```
vi .NavisAccessProfile
```

or use a suitable text editor.

7.3 Enter the following text into the .NavisAccessProfile file.

```
LD_LIBRARY_PATH=/usr/lib:/usr/openwin/lib:/usr/dt/
lib:/opt/OV/lib;export LD_LIBRARY_PATH
```

```
PATH=/opt/SUNWspro/bin:$PATH:.:/usr/openwin;export
PATH
```

7.4 Save the file and close it.

❑ STEP 8: Perform HP OpenView Integration Steps.

NOTE: OpenView *must not* be running when the following steps are performed.

NOTE: The following procedures assume HP OpenView is already installed. DO NOT proceed if OpenView is not installed.

8.1 Switch to the NavisAccess **/ov** directory under the NavisAccess install directory. Run the script, **install-ov-integration.ksh**.

8.2 The script will look for OpenView in a predetermined location:

/opt/OV/bin /etc/opt/OV/share

8.3 The script then verifies that OpenView is not running, and a prompt allows you to shut down OpenView if you have not done so already.

8.4 Files are then copied to appropriate directories.

8.5 OpenView commands are issued and the daemons are started.

8.6 Upon completion, you will receive a message similar to the following:

```
OpenView Integration Preparation Successful
```

8.7 Reboot the machine at this time.

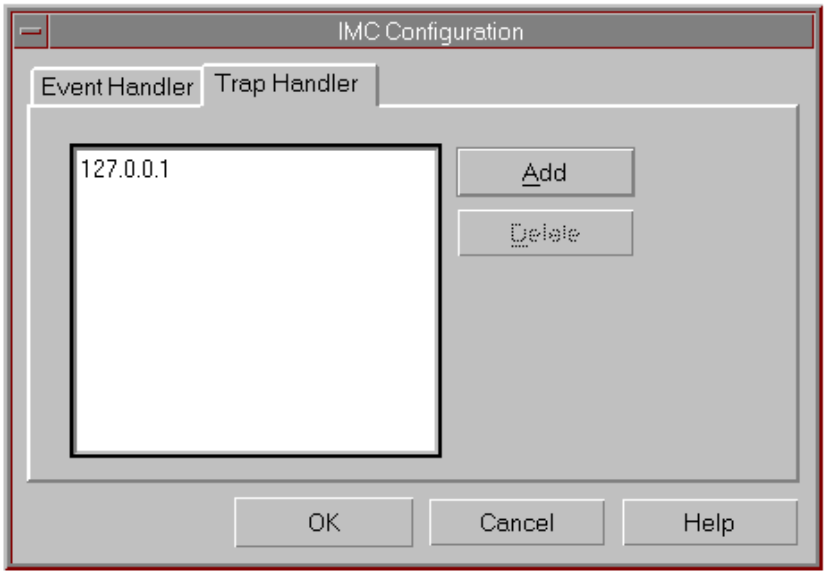
❑ STEP 9: Configure NavisAccess Events for HP OpenView

9.1 In order for NavisAccess generated events to be displayed in the HP OpenView event viewer, the following steps are needed.

Open the IMC Configuration window by entering:

```
imccfg &
```

The IMC Configuration screen appears



9.2 Click the Trap Handler tab.

9.3 Click the [Add] button, and in the IP Address field enter the following:

```
127.0.0.1
```

9.4 Click [OK] to close the Add window, then click [OK] to close the IMC Configuration window.

❑ STEP 10: Compile MIBs.

10.1 Before using NavisAccess, the necessary MIBs must be compiled. To compile the MIBs, open a Terminal session and switch to the NavisAccess installation directory.

10.2 Run the NavisAccess profile by entering:

```
. ./.NavisAccessProfile
```

NOTE: At this time, you may also wish to copy *.mib from Navis_Installation_Directory/mibs/rfc up one level to the Navis_Installation_Directory/mibs directory. This will create a MIB-II directory tree available from the MIB Browser to allow you to do your own MIB browsing.

10.3 Start the NavisAccess services by running the following from the NavisAccess installation directory:

```
start_all.ksh
```

10.4 Enter the following command from the NavisAccess installation directory to open the MIB Compiler:

```
mibc
```

10.5 Click the [Compile] button. The compilation process will begin and will be displayed in the MIB compiler window.

Compiling of a MIB will generate messages reading: "Processing File: <*name of file*>."

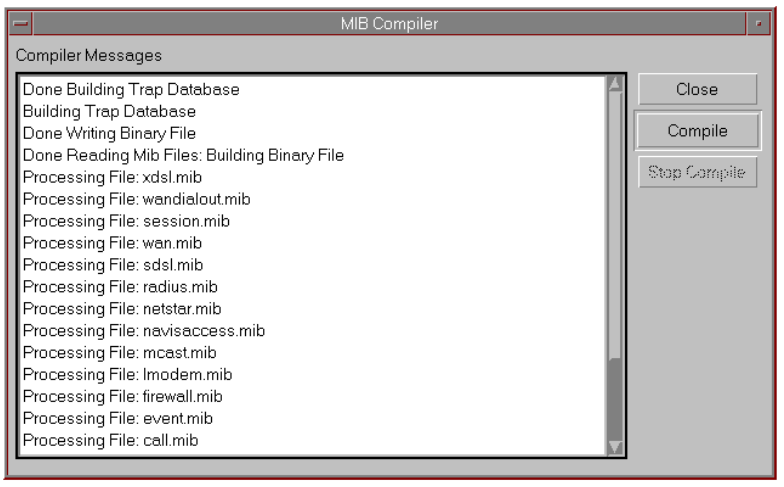
NOTE: The database engine (**dbeng50**) must be running while compiling MIBs using the **mibc** command. Once the system has been rebooted, the dbeng50 daemon will automatically start.

However, if a an error dialog box "libsrmdb" appears stating "Unable to open database," the dbeng50 has not started for some reason. It can be started using the following:

```
/etc/rc2.d/S99ascendDBeng start
```

After starting dbeng50, run [Compile] again.

10.6 Upon completion of the compiling process, the MIB Compiler will write a binary file and then build a Trap database. If the entire process is successful, a screen similar to the one below will be displayed.



You are now ready to start NavisAccess.

NOTE: If you are not installing an evaluation copy of NavisAccess, you must now install any option packages you have purchased for use with the NavisAccess:Console. Available option packages are:

- NavisAccess:Trend (historical reporting)
- NavisAccess:IP (multi-vendor support)

Starting NavisAccess: HP OpenView

There are two steps involved in starting NavisAccess on HP OpenView. The environment must be set and the server services must be started. Then the user application (GUI) can be started. This can be started on the server or any workstation logging in to the server.

Starting NavisAccess on HP OpenView

NOTE: The following procedure must be run by ROOT.

1. Open a Terminal session and switch to the NavisAccess installation directory.
2. Run the following script:

   `. ./.NavisAccessProfile`

   This script activates the necessary environment variables and paths for NavisAccess.
3. Run the following script:

   `start_all.ksh`

   This is a shell-script file located in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.

   This will start the required services.
4. Enter the following at the command line:

   `ovw &`
5. NavisAccess is now ready to run. When you launch the HP OpenView map, a NavisAccess menu item will appear on the map's main menu bar. Select any NavisAccess application on the menu to start NavisAccess.

   The first time you start NavisAccess, the default User Name and Password

are **Admin** and **Admin**.

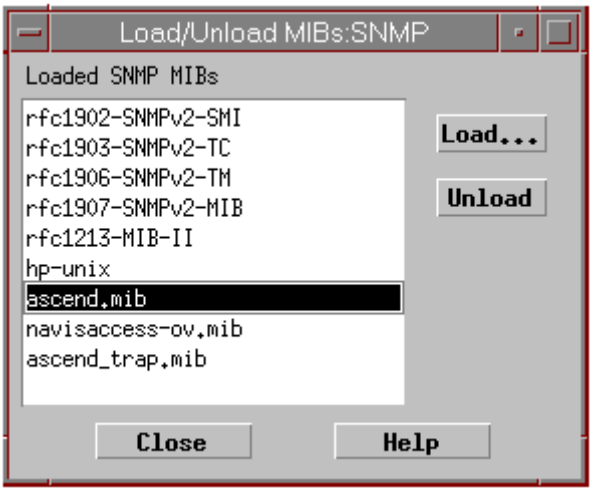
See the NavisAccess Quick Tour in Chapter 5 for details on exploring NavisAccess.

Preparing MIBs for use on OpenView.

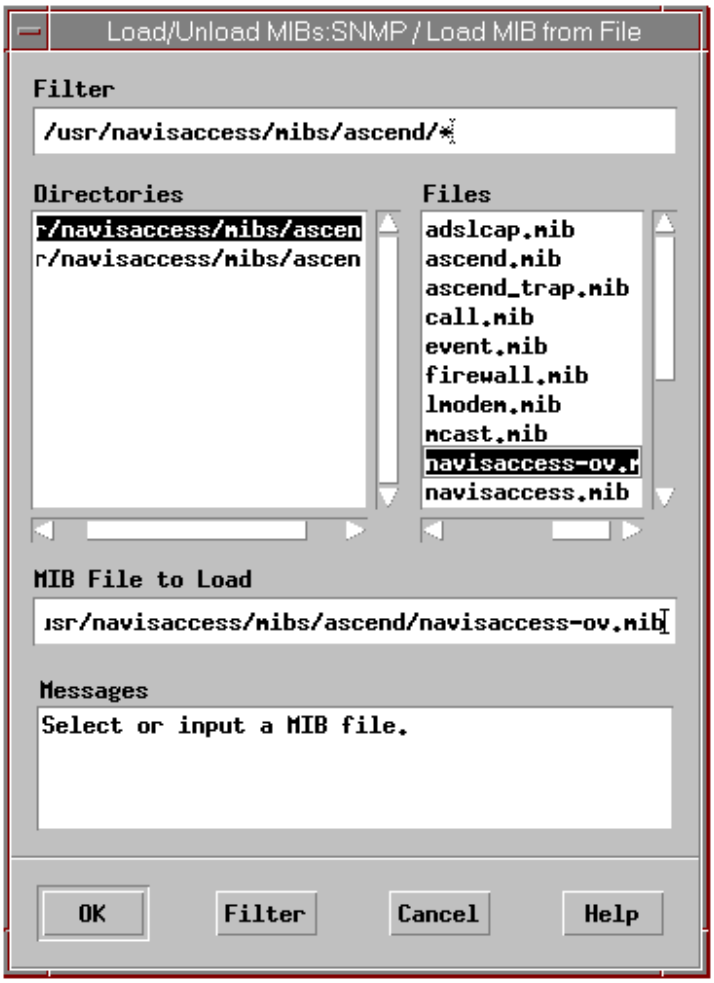
When running on OpenView, NavisAccess integrates with the OpenView event system. There are additional steps and special considerations for MIBs on OpenView.

To load MIBs in OpenView

1. From the OpenView map window, select **Options > Load/Unload MIBs** to open the MIB loader.



2. Click the [Load] button to open the Load MIB From File window:



3. From the **Navis_Install/mibs/ascend** directory, select **ascend.mib** and click [OK] to load the MIB. *This must be the first MIB you load.*

4. Click the [Load] button again, select **navisaccess-ov.mib** and click [OK] to load it.

5. You may load any additional MIBs you wish to load, with the following consideration. You must load **wan.mib** before loading **xdsl.mib**, **adslcap.mib** and/or **sdsl.mib**.

NavisAccess Upgrade Step Summary : HP OpenView on Solaris

Use this summary as a check list to ensure you follow all the steps for proper installation. Failure to follow all the steps outlined below may lead to problems starting or using NavisAccess. Detailed installation instructions follow this list.

Prerequisites to Installation:

- ❑ Solaris Operating System must be installed.
- ❑ HP OpenView on Solaris must be installed
- ❑ CDE must be installed.

Upgrade Steps:

Step 1: ❑ Shut down all running NavisAccess services.

Step 2: ❑ Set System Semaphores

Step 3: ❑ Begin installation from the CD

Step 4: ❑ Reusing the existing database.

Step 5: ❑ Continue with installation – Log file created

Step 6: ❑ Updating environment variables

Step 7: ❑ Reboot system

Step 8: ❑ Define environment variables

Step 9: ❑ Check LD_LIBRARY_PATH

Step 10: ❑ Perform HP OpenView integration steps.

Step 11: ❑ Configure NavisAccess Events for HP OpenView.

Step 12: ❑ Compile MIBs.

NavisAccess Upgrade Steps: HP OpenView

NOTE: The follow steps apply if you are:

- Upgrading from a previous version of NavisAccess
- Re-installing a copy of NavisAccess
- Installing a live copy to update an evaluation copy.

If you are installing on a system that has never contained NavisAccess, please refer to the previous section, "NavisAccess Installation Step Summary: HP OpenView," on page 41.

Please follow *all* of the steps below to insure proper installation of NavisAccess. You can use the check boxes to mark your progress.

❑ STEP 1: Shut down all running NavisAccess services.

1.1 Stop the NavisAccess services, database engine and windu services using the following commands:

`stop_all.ksh` [to stop the services]

`dbstop` [to stop the database engine]

`/etc/rc0.d/K99windu stop` [to stop all windu services]

Also check if any other windu clients are running. If they are, you must kill them before you proceed. One way to do this is as follows:

```
ps –aef | grep windu_client
```

Note the process ID of windu_clientd40 and kill it as follows:

```
kill  -9 <windu_clientd40-pid>
```

❑ STEP 2: Set Semaphores.

2.1 Changes must be made to the Solaris Semaphore settings to run NavisAccess. Please use the following chart as a guideline. Note that your settings may not be the same as the Solaris default settings.

SEMAPHORE	Add this value to current setting	Solaris default
Seminfo_semmap	Add 50 (for example, if your current value is 10, add 50 for a total of 60)	10
Seminfo_semmni	Add 50	10
Seminfo_semmns	Add 120	60
Seminfo_semmnu	Add 60	30
Seminfo_semmsl	Add 50	25
Seminfo_semopm	Add 50	10
Seminfo_semume	Add 50	10
The following values are absolutes:		
Seminfo_semvmx	Set to 65535.	
Seminfo_semaem	Set to 32768.	

To check your current settings, enter the following command from the **etc** directory:

```
sysdef -i
```

To change a semaphore setting, add a line to the **/etc/system** file. The following example sets the **seminfo_semmni** variable to 60:

```
set semsys:seminfo_semmni=60
```

To edit the **system** file, enter

```
vi system
```

or use any suitable text editor. Semaphore settings will not take effect until

after you reboot the machine.

If you do not have any default semaphore settings in the system file, the following parameters may be used as a starting point. Enter the following text exactly as shown into the system file.

```
set semsys:seminfo_semmap=60
set semsys:seminfo_semmni=60
set semsys:seminfo_semmns=180
set semsys:seminfo_semmnu=90
set semsys:seminfo_semmsl=75
set semsys:seminfo_semopm=60
set semsys:seminfo_semume=60
set semsys:seminfo_semvmx=65535
set semsys:seminfo_semaem=32768
```

2.2 Save the new semaphore settings when complete.

❑ STEP 3: Begin installation from the CD.

3.1 Insert the installation CD into the drive.

3.2 Change to the directory where the CD is mounted (usually **/cdrom**).

3.3 Change to the NavisAccess directory and run the installation file by entering:

```
./install.ksh
```

A welcome message displays, followed by a prompt to enter a user name.

3.4 Enter User Name.

3.5 Enter Company Name at the prompt.

3.6 At this point, the script will check to see that the proper services are present in the **/etc/services** file.

If any of the services are not currently in the services file, setup will prompt you to enter the line in the services file.

For example, you may see a message similar to:

```
tftp service is not present in /etc/services
Please enter the line “tftp 69/udp” in /etc/services
```

Make a note of the needed changes and edit the **/etc/services** file by adding the line as presented to you.

3.7 If any changes were required, after making them restart the install script, as in Step 3.3.

3.8 You will be prompted to enter the directory path for NavisAccess. The directory must be all lower case as specified by the program, and it must be a full path. For example:

```
/usr/target_directory
```

NOTE: The software installs to the exact directory path you specify. If you specify **/opt/navisaccess** all of the NavisAccess files will be placed directly in **/opt/navisaccess**. You should always specify a specific new sub-directory to which NavisAccess should be installed, such as **/opt/navisaccess,** because all files in the final directory will be deleted.

3.9 A message similar to the following will appear:

```
You have given the following options:
User name is (username)
Company name is (company name)
Target directory is (/usr/target_directory)
Do you want to continue?[y/n]
```

Select [Y] to continue or [N] to quit the installation.

3.10 The installation script will look for any files that may exist in the directory that has been chosen for installation. If any files exist, a message similar to the following will appear:

```
All files in the target directory will be
removed. Continue[c]or Quit [q]?
```

3.11 If Continue is selected, *all files in the target directory will be deleted*.

❑ STEP 4: Reusing the existing database.

4.1 If you are upgrading from NavisAccess 4.0 and **AutoBahn** is already set (e.g., at **/usr/navisaccess**), the installation script provides an option to reuse the existing database. The database file is **ascend.db**. This file contains device information, configuration files, historical trending data, etc. If you do *not* reuse the database, all information you have gathered will be lost.

The installation script will copy and upgrade the existing database to support NavisAccess 4.1 (databases from NavisAccess 4.0 and 4.1 are *not* compatible otherwise).

A message similar to the following will appear:

```
(install.ksh) sensed an existing installation of
navisaccess at /usr/navisaccess

If you continue, the existing version cannot be
used.

Continue [c] or quit [q]?
```

Select [c] to reinstall NavisAccess. Select [q] to quit installation.

If you are reinstalling, the database file will be backed up to a temporary store. ***The install script also advises that you back up the old database as a safety mechanism.*** At this point, you will be asked if you wish to reuse the existing database. Type "y" if you want to re-use the existing database with the new installation.

If there is any previous installation, the script will check for installed Daemons/services. If any Daemons are currently running a message will appear indicating this, and the Daemons will be stopped.

❑ STEP 5: Continue with installation – Log file created.

5.1 A log file will be created in the **/target/directory/ascend_install.log** directory containing information such as user name, company name, target directory, and other installation information.

5.2 The system is checked for proper system resources such as Disk space.

5.3 The script will start copying files to the target directory. A message will indicate files are being copied.

5.4 When the file transfer is complete, the registry and service daemons will start. Confirmation messages will appear as they are confirmed. When complete, a message similar to the following appears:

```
A file .NavisAccessProfile in the directory
/target/directory has been created. This file contains
all of the environment variables which are required to
run NavisAccess.
```

❑ STEP 6: Updating environment variables.

6.1 Installation will ask if the environment variables should be made system-wide environment variables. If "Yes" is chosen, then all these variables are

available to any user who logs in to the CDE. There will be no need to have these variables in the user profile file.

6.2 If you have a .profile, a message prompt will ask:

```
Do you want to update your .profile ?[y/n]
```

When yes is selected, the **.profile** must get updated and contain all of the environment variables that are necessary for the application to run and perform correctly.

6.3 After the .profile file has been updated, the previous profile will be backed up and a message similar to the following will appear:

A copy of your previous .profile has been placed in .profile.ascend.bak

6.4 Messages will appear indicating the Edispatcher is being registered and the database engine is initialized as daemon.

❑ STEP 7: Reboot.

7.1 Upon completion of the above steps, an **Installation over** message will appear.

Reboot the machine at this time.

❑ STEP 8: Define environment variables.

8.1 The following environment variables are defined by installation:

AutoBahn

WUHOME

SQLANY

WINDU

The following environment variables need to be augmented:

PATH

LD_LIBRARY_PATH

Installation creates a file **.NavisAccessProfile** in the installation directory which has all the above variables defined in **sh** and **ksh** syntax. Please make sure they are defined for all users who will be using NavisAccess.

❑ STEP 9: Check the LD_LIBRARY_PATH environment variables.

9.1 Before running NavisAccess, make sure that **LD_LIBRARY_PATH** environment variable in the .NavisAccessProfile has reference to standard system libraries **/usr/lib**, **/usr/dt/lib, /usr/openwin/lib** and **/opt/OV/lib**. *These directories must be contained in your LD_LIBRARY_PATH.*

9.2 To update the LD_LIBRARY_PATH variables, open a terminal window, switch to the NavisAccess installation directory, and edit the profile by entering

```
vi .NavisAccessProfile
```

or use a suitable text editor.

9.3 Enter the following text into the .NavisAccessProfile file.

```
LD_LIBRARY_PATH=/usr/lib:/usr/openwin/lib:/usr/dt/
lib:/opt/OV/lib;export LD_LIBRARY_PATH
```

```
PATH=/opt/SUNWspro/bin:$PATH:.:/usr/openwin;export
PATH
```

9.4 Save the file and close it.

❑ STEP 10: Perform HP OpenView Integration Steps.

NOTE: OpenView *must not* be running when the following steps are performed.

NOTE: The following procedures assume HP OpenView is already installed. DO NOT proceed if OpenView is not installed.

10.1 Switch to the NavisAccess **/ov** directory under the NavisAccess install directory. Run the script, **install-ov-integration.ksh**.

10.2 The script will look for OpenView in a predetermined location:

/opt/OV/bin /etc/opt/OV/share

10.3 The script then verifies that OpenView is not running, and a prompt allows you to shut down OpenView if you have not done so already.

10.4 Files are then copied to appropriate directories.

10.5 OpenView commands are issued and the daemons are started.

10.6 Upon completion, you will receive a message similar to the following:

```
OpenView Integration Preparation Successful
```

10.7 Reboot the machine at this time.

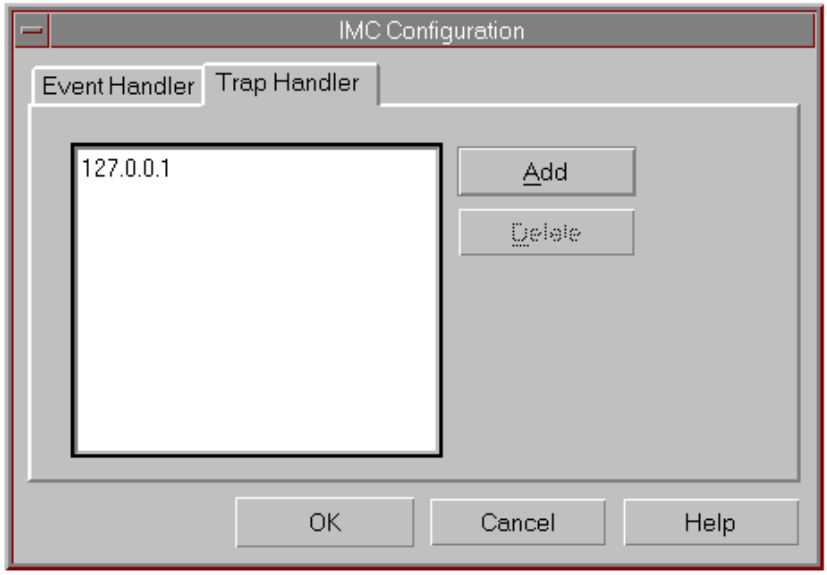
❑ STEP 11: Configure NavisAccess Events for HP OpenView

11.1 In order for NavisAccess generated events to be displayed in the HP OpenView event viewer, the following steps are needed.

Open the IMC Configuration window by entering:

```
imccfg &
```

The IMC Configuration screen appears



11.2 Click the Trap Handler tab.

11.3 Click the [Add] button, and in the IP Address field enter the following:

```
127.0.0.1
```

11.4 Click [OK] to close the Add window, then click [OK] to close the IMC Configuration window.

❑ STEP 12: Compile MIBs.

12.1 Before using NavisAccess, the necessary MIBs must be compiled. To compile the MIBs, open a Terminal session and switch to the NavisAccess installation directory.

12.2 Run the NavisAccess profile by entering:

```
. ./.NavisAccessProfile
```

NOTE: At this time, you may also wish to copy *.mib from Navis_Installation_Directory/mibs/rfc up one level to the Navis_Installation_Directory/mibs directory. This will create a MIB-II directory tree available from the MIB Browser to allow you to do your own MIB browsing.

12.3 Start the NavisAccess services by running the following from the NavisAccess installation directory:

```
start_all.ksh
```

12.4 Enter the following command from the NavisAccess installation directory to open the MIB Compiler:

```
mibc
```

12.5 Click the [Compile] button. The compilation process will begin and will be displayed in the MIB compiler window.

Compiling of a MIB will generate messages reading: "Processing File: <*name of file*>."

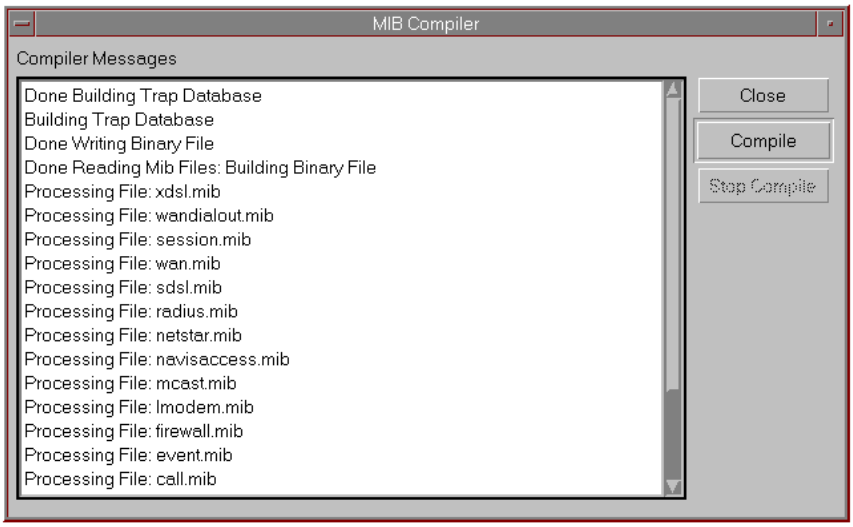
NOTE: The database engine (**dbeng50**) must be running while compiling MIBs using the **mibc** command. Once the system has been rebooted, the dbeng50 daemon will automatically start.

However, if a an error dialog box "libsrmdb" appears stating "Unable to open database," the dbeng50 has not started for some reason. It can be started using the following:

```
/etc/rc2.d/S99ascendDBeng start
```

After starting dbeng50, run [Compile] again.

12.6 Upon completion of the compiling process, the MIB Compiler will write a binary file and then build a Trap database. If the entire process is successful, a screen similar to the one below will be displayed.



You are now ready to start NavisAccess.

NOTE: If you are not installing an evaluation copy of NavisAccess, you must now install any option packages you have purchased for use with the NavisAccess:Console. Available option packages are:

- NavisAccess:Trend (historical reporting)
- NavisAccess:IP (multi-vendor support)

Starting NavisAccess: HP OpenView

To start NavisAccess on HP OpenView, the environment must be set and the server services must be started. Then the user application (GUI) can be started. This can be started on the server or any workstation logging in to the server.

Starting NavisAccess on HP OpenView

NOTE: The following procedure must be run by ROOT.

1. Open a Terminal session and switch to the NavisAccess installation directory.
2. Run the following script:

   `. ./.NavisAccessProfile`

   This script activates the necessary environment variables and paths for NavisAccess.

3. Run the following script:

   ```
   start_all.ksh
   ```

   This is a shell-script file located in the installed directory of NavisAccess. Use this file as a guideline to start all the background jobs which are required to be run before starting NavisAccess.

   This will start the required services.

4. Enter the following at the command line:

   ```
   ovw &
   ```

5. NavisAccess is now ready to run. When you launch the HP OpenView map, a NavisAccess menu item will appear on the map's main menu bar. Select any NavisAccess application on the menu to start NavisAccess.

   The first time you start NavisAccess, the default User Name and Password are **Admin** and **Admin**.

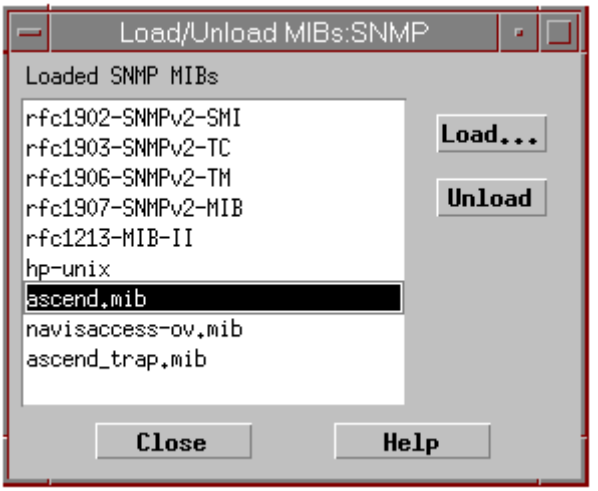
   See the NavisAccess Quick Tour in Chapter 5 for details on exploring NavisAccess.

Preparing MIBs for use on OpenView.

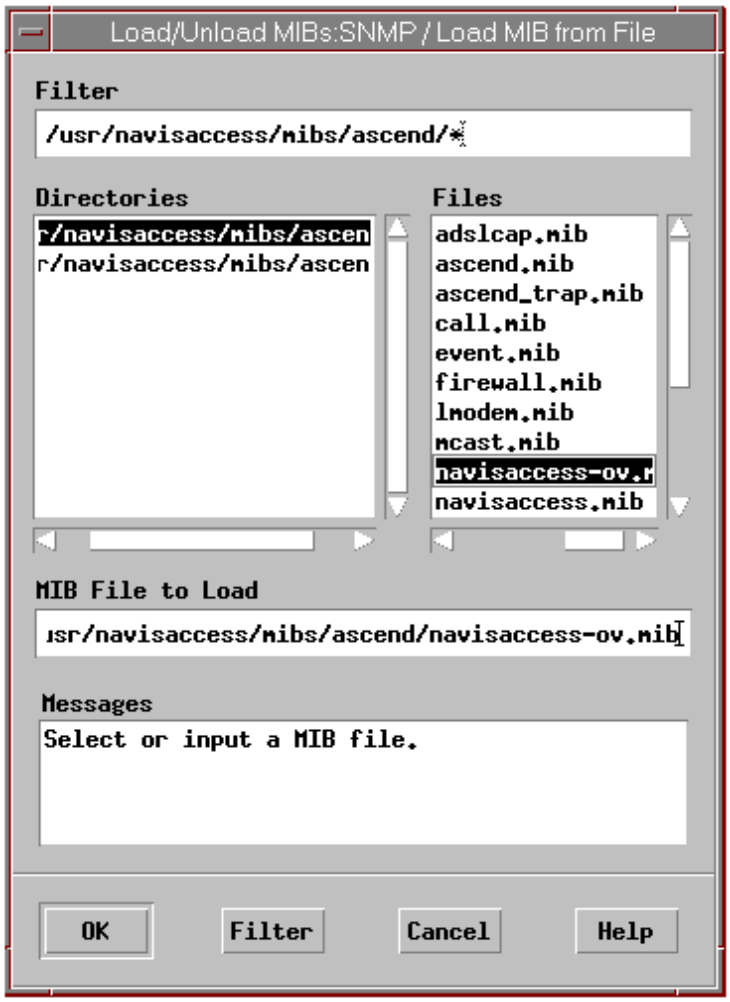
When running on OpenView, NavisAccess integrates with the OpenView event system. There are additional steps and special considerations needed for MIBs on OpenView.

To load MIBs in OpenView

1. From the OpenView map window, select **Options > Load/Unload MIBs** to open the MIB loader.



2. Click the [Load] button to open the Load MIB From File window:



3. From the **Navis_Install/mibs/ascend** directory, select **ascend.mib** and click [OK] to load the MIB. *This must be the first MIB you load.*
4. Click the [Load] button again, select **navisaccess-ov.mib** and click [OK] to load it.
5. You may load any additional MIBs you wish to load, with the following consideration. You must load **wan.mib** before loading **xdsl.mib**, **adslcap.mib** and/or **sdsl.mib**.

NavisAccess Events in HP OpenView

NavisAccess events can be configured using HP OpenView. There are two important facts to consider when deciding whether or not to configure events.

- If events are *not* configured in OpenView, they will appear in the OpenView event window in a format that is not fully edited. The event message will be located within a larger string of data. For example, below is a typical message that would appear. For this illustration, the event message has been underlined.

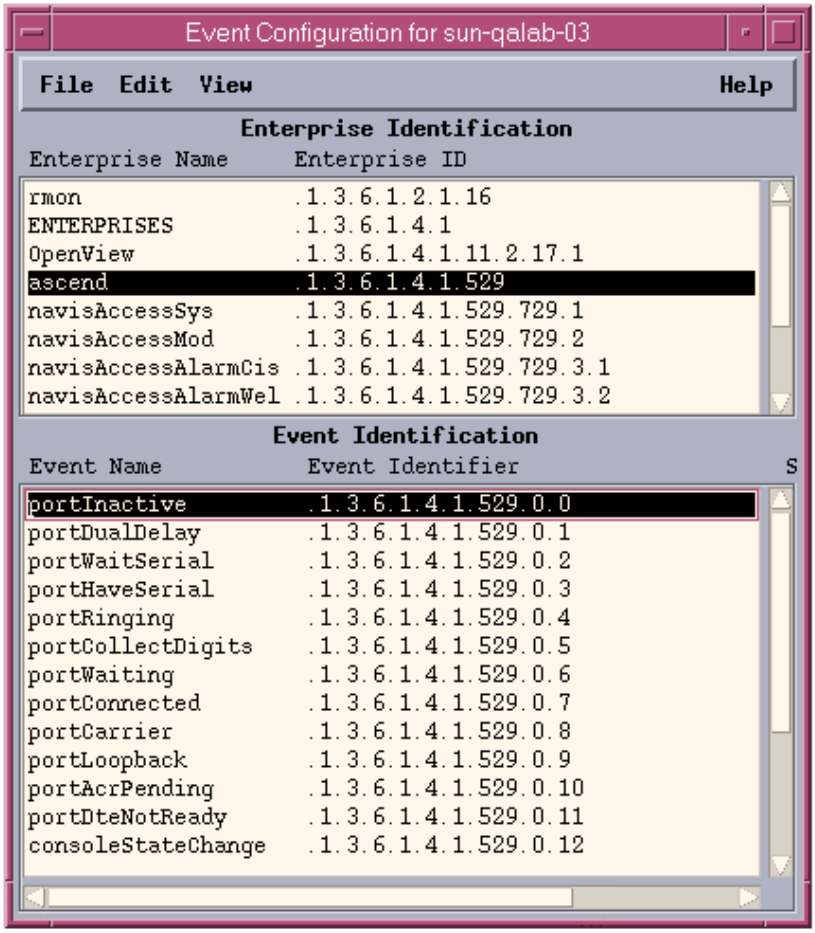
  ```
  Wed Sep 17 08:15:56  150.50.1.1  NO TRAPD.CONF FMT
  FOR .1.3.6.1.4.529.729.3.0.6 ARGS(4): [1]
  private.ascendInternal.navisAccess.navisAccessAlarm
  .1 (OctetString): An IP packet was discarded
  because there was no route to its destination  [2]
  private.ascendInternal.navisAccess.navisAccessAlarm
  .2 (OctetString): IP No Route To Destination  [3]
  private.ascendInternal.navisAccess.navisAccessAlarm
  .3 (Integer): 5
  ```

- If you decide to configure events in OpenView, you must configure *all events* contained in a given NavisAccess Enterprise ID. If you configure only some of the events, any unconfigured events will *not* appear in the OpenView Event Viewer.

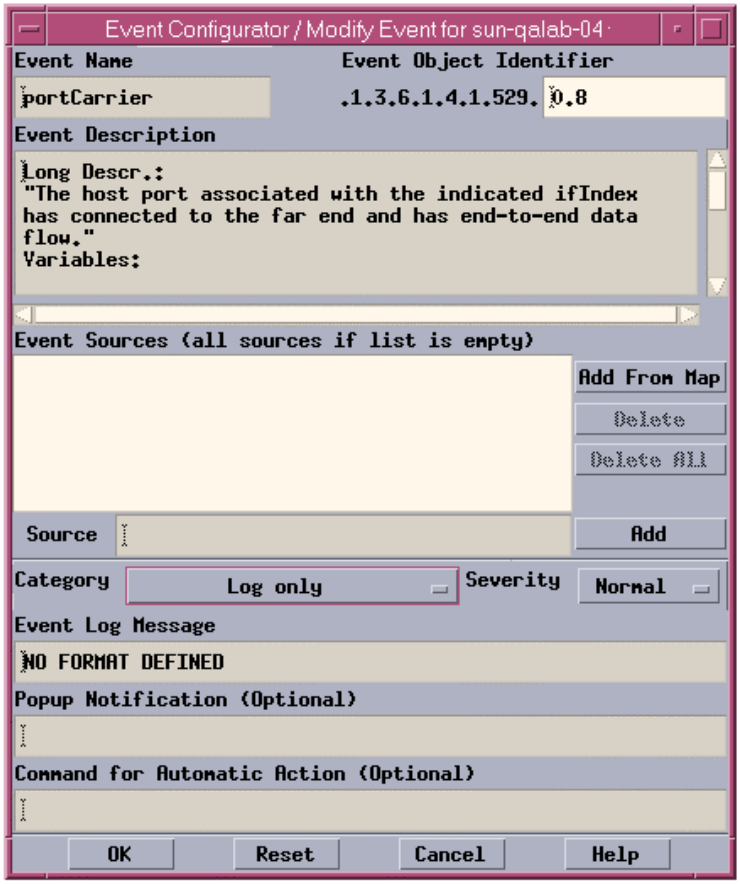
  For further details, see the event configuration steps below.

Configuring Events

1. From the OpenView map, select **Options > Event Configuration** to open the Event Configuration window. NavisAccess events are grouped into various Enterprises listed in the window. The Enterprise IDs displayed will vary based on the MIBs you have loaded.



2. Select one of the Enterprises. The specific events will display in the Event Identification section in the lower half of the window.
3. Select a specific Event Name by double-clicking on it. This will open the Event Configurator window, as shown below.



A number of configuration options can be set. Consult the OpenView help for full details. If you wish to display the event message as configured in NavisAccess, enter

$1

in the Event Log Message field. This will display the event message in a properly edited format.

Note, that if you configure one Event Name in an Enterprise, you must configure *all* the Event Names in the Enterprise. If you do not configure them all, any unconfigured events will not appear in the OpenView Event Viewer.

Preparing to use NavisAccess with Ascend devices 4

Preparation Checklist: MAX, MAX TNT, Pipeline

Before NavisAccess can be used with Ascend MAX, MAX TNT and Pipeline devices, several preparatory steps must be made. These steps are outlined in checklist form below. Specific details follow.

- ❑ **Update Ascend device software as needed**
  See "Device Software Requirements" on page 72 for details on what software versions are required.
- ❑ **Configure SNMP Trap destinations to send Traps to NavisAccess.**
  See "Configuring SNMP Trap destinations for the MAX and Pipeline" on page 73 and "Configuring SNMP Trap destinations for the MAX TNT" on page 80.
- ❑ **Configure device read/write community strings.**
  See "Setting SNMP community strings for the MAX and Pipeline" on page 75 and "Enabling SNMP, community strings on the MAX TNT" on page 82.
- ❑ **Enable the Call Logging feature on the MAX and MAX TNT.**
  See "Enabling Call Logging on the MAX" on page 76 and "Enabling Call Logging on the MAX TNT" on page 84.
- ❑ **Configure SNMP security**
  See "Configuring SNMP Security on the MAX and Pipeline" on page 78 and "Enabling SNMP, community strings on the MAX TNT" on page 82.
- ❑ **To use the NavisAccess software option, the proper hash codes must be installed on the device.**
  See "Installing the Hash Codes" on page 87.

Device Software Requirements

NavisAccess requires certain levels of Ascend device software for full functionality. In addition, the NavisAccess Software Option is required for each Ascend MAX, MAX TNT, Pipeline 220 and GRF device that NavisAccess will manage. Pipeline 50, 75, 85 and 130 models include the Software Option at no additional cost.

The following table lists required device software levels:

Device	Software Level
MAX family	6.0 or higher
Pipeline Family	6.0 or higher
MAX TNT	2.0 or higher
GRF	1.4 or higher

About the NavisAccess Software

Each Ascend MAX, MAX TNT, Pipeline 220 and GRF device requires the NavisAccess Software Option in order to be managed using NavisAccess. The Software Option is sold on a per-device basis, based on the specific device. Contact Ascend Communications for details on purchasing the Software Option.

The Software Option is installed on devices using a hash code mechanism. See "Installing the Hash Codes" on page 87 for specifics.

MAX and Pipeline Preparation

Configuring SNMP Trap destinations for the MAX and Pipeline

The Ascend MAX and Pipeline products send alarm messages in the form of SNMP Traps. These Traps are sent to a management station (such as NavisAccess) for logging and interpretation. If there is an existing Management Station in your network, the devices may be set up to pass all Traps to it. Contact the network administrator for this information.

To configure the MAX/Pipeline Trap destination:

1. Attach to the MAX/Pipeline via Telnet or through the console port.
2. Log in with write access.
3. Open the Ethernet menu.
4. Open the SNMP Traps menu.
5. Press [Enter] to open a profile.

6. Assign a name to the profile. For example:

   `Name=Navis_Machine`

   The name can be up to 31 characters. It is typically set to the destination of the Traps (for example, the machine running NavisAccess).

7. Turn on traps for alarm events, port state changes and security events.

   ```
   Alarm=Yes
   Port=Yes
   Security=Yes
   ```

8. Enter the SNMP community string for the MAX or Pipeline. For example:

   Comm=*secret_string*

   The entered string must match the SNMP read/write or read "community name," which becomes a password sent to the SNMP management station when an SNMP trap event occurs. It authenticates the sender who is identified by the source IP address. See "Setting SNMP community strings" below.

   NOTE: To turn off SNMP traps, delete the value for the Comm parameter and set the next parameter (Dest) to 0.0.0.0.

9. Specify the IP address of a NavisAccess machine. If you are using multiple NavisAccess consoles logging in to a common server, you can specify any NavisAccess machine. Information will be shared across all NavisAccess stations via the NavisAccess common event system. For example:

   ```
   Dest=10.1.2.3/24
   ```

   Dest establishes the destination address of the trap-status report. Use IP dotted decimal format. Its default value is 0.0.0.0.

   NOTE: To turn off SNMP traps, set Dest=0.0.0.0 and delete the value for Comm.

10. Save and close the SNMP Traps Profile.

Setting SNMP community strings for the MAX and Pipeline

SNMP validates each message with a password-like mechanism called a Community Name. There are two communities defined on the MAX and Pipeline families:

- **Read Comm**
  Enables an SNMP manager to perform read commands (GET and GET NEXT) to request specific information. The default Read Comm string is **public**.
- **R/W Comm**
  Enables an SNMP manager to perform both read and write commands (GET, GET NEXT, and SET), which means the application can access management information, set alarm thresholds, and change some settings on the devices. The default R/W Comm string is **write**.

If there is an existing management station on your network, the community names may have been changed from the default values. Contact the network administrator for this information.

NOTE: The read and write Community Names used by NavisAccess must match what is specified by (on) the device. Otherwise, communication cannot be established with the device.

SECURITY NOTE: There is no way to turn off SNMP write, so you must change the default read-write string to secure the unit against unauthorized SNMP access.

To configure the MAX and Pipeline community names:

1. Attach to the MAX/Pipeline via Telnet or through the console port.
2. Log in with write access.
3. Open the Ethernet menu.
4. Open the Mod Config submenu.
5. Open the SNMP Options submenu.
6. Enter up to 16 characters for the Read Comm parameter. For example:
   `Read Comm=`*`secret_string`*
7. Enter up to 16 characters for the R/W Comm parameter. For example:
   `R/W Comm=`*`unique_string`*

8. Save and close the Ethernet profile.

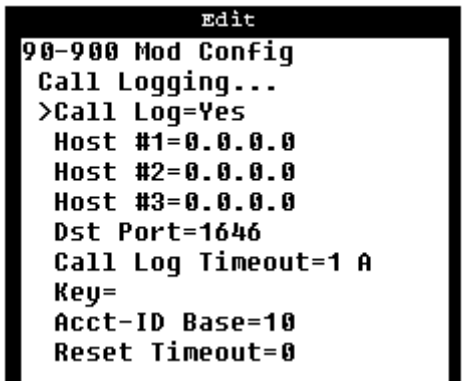
Enabling Call Logging on the MAX

In order for the Access Watch application to receive data from the MAX , the Call Logging feature must be enabled and set to send data to the NavisAccess workstation(s). Up to three IP addresses can be configured.

NOTE: If you are using multiple NavisAccess consoles logging in to a common server, you can specify any NavisAccess machine(s). Information will be shared across all NavisAccess stations via the NavisAccess common event system.

To configure Call Logging for use with Access Watch:

1. Attach to the MAX via Telnet or through the console port.
2. Log in with write access.
3. Open the Ethernet menu.
4. Open the Mod Config menu.
5. Open the Call Logging menu. (You may need to scroll down the menu list to see this entry.)



6. Set the **Call Log** field to Yes. To do so, move the cursor to the field and press [Enter].
7. Enter up to three Host IP addresses. These are NavisAccess machines to which Call Logging will send information. For example:

```
Host #1 = 10.1.2.3
Host #2 = 10.1.2.4
```

```
Host #3 = 10.1.30.10
```

Each **Host #n** parameter can specify the IP address of one NavisAccess server or workstation. The MAX first tries to connect to machine #1 for call-logging. If it receives no response, it tries to connect to machine #2. If it receives no response from machine #2, it tries machine #3. If the MAX connects to a NavisAccess machine other than machine #1, it continues to use that machine until it fails to service requests, even if the first server has come online again.

NOTE: If you are using multiple NavisAccess workstations logging in to a common server, you can specify any NavisAccess machine(s). Information will be shared across all NavisAccess stations via the common event system.

8. If necessary, change the **Dst Port** value. This is the destination port through which the device will send information. The default value of 1646 is recommended.

9. Set the **Call Log Timeout** period from 1 to 60 seconds.

The device sends a request to the first host on the list of hosts specified (see step 7) and waits for a response from the server for the number of seconds specified in the Call Log Timeout parameter. If the device does not receive a response within that time, it sends a second request for authentication to the same server and waits for the same amount of time. If the device does not receive a response within the specified time-out, it sends a request to the next host on the list and repeats the process.

10. Enter a Call Logging **Key** (up to 20 characters). The Key is used to provide NavisAccess with access to the device. *The same Key entered on the device must also be entered in NavisAccess.* This is similar in function to the community string, but not the same.

A default Call Logging Key can be entered in NavisAccess using the Default Secret field on the Access Watch Configuration tab found under **Config > System Options**.

To enter a Key different from the default, open the device Boxmap, right-click on the Configuration icon and choose **Configuration**. Enter the new key in the Call Logging Secret field. (For details on the Boxmap, see the NavisAccess online help or *User Guide*.)

11. The **Acct-ID Base** parameter determines if data is sent in Base 10 (decimal) or Base 16 (hexadecimal) format. *This value must be set to 10 for Call Logging to work properly.*

12. Set a **Reset Timeout** period, from 0 to 86400 seconds. (86400 seconds = 1 day.)
13. Save and close the Call Logging profile.

Configuring SNMP Security on the MAX and Pipeline

The SNMP Security feature on the MAX and Pipeline restricts device access to only those management stations specifically entered on the device. If the Security feature is currently enabled on your devices, you need to update the settings to include the NavisAccess station.

You can list up to five IP hosts that can access the MIB read-write access, and up to five hosts that can read traps and other information. Following are details about specifying which hosts can access the MIB.

To configure SNMP manager access on the MAX and Pipeline:

1. Attach to the MAX or Pipeline via Telnet or through the console port.
2. Log in with write access.
3. Open the Ethernet menu.
4. Open the Mod Config submenu.
5. Open the SNMP Options submenu.
6. Set the Security parameter to Yes.

   ```
   Security=Yes
   ```

   This parameter specifies that the device compare the source IP address of packets containing SNMP commands against a list of qualified IP addresses. The unit checks the version and community strings before making source IP address comparisons. (The Security parameter does not affect those checks.)

   If Security is set to No, you do not need to enter the NavisAccess machine address. We do not recommend setting Security to No.

7. Specify the IP addresses of hosts that will have SNMP read permission. The NavisAccess station must be included for NavisAccess to manage the device. For example:

   ```
   RD Mgr1=10.1.2.3
   RD Mgr2=10.1.2.4
   RD Mgr3=10.1.2.5
   ```

```
RD Mgr4=10.1.2.6
RD Mgr5=10.1.2.7
```

If the Security parameter is set to Yes, only SNMP managers at those IP addresses will be allowed to execute the SNMP GET and GET-NEXT commands.

8. Specify the IP addresses of hosts that will have SNMP write permission. For example:

```
WR Mgr1=10.1.2.3
WR Mgr2=10.1.2.4
WR Mgr3=10.1.2.5
WR Mgr4=10.1.2.6
WR Mgr5=10.1.2.7
```

If the Security parameter is set to Yes, only SNMP managers at those IP addresses will be allowed to execute the SNMP SET command.

9. Save and close the Ethernet profile.

MAX TNT Preparation

Configuring SNMP Trap destinations for the MAX TNT

The Ascend MAX TNT sends messages in the form of SNMP Traps. These Traps are sent to a management station (such as NavisAccess) for logging and interpretation. If there is an existing Management Station in your network, the devices may be set up to pass all Traps to it. Contact the network administrator for this information.

To configure the MAX TNT Trap destination:

1. Attach to the MAX TNT via Telnet or through the console port.
2. Log in with write access.
3. At the command prompt, enter:

   ```
   new trap
   ```

   This will return a **TRAP/" " read** message and a new command prompt.
4. At the command prompt, enter:

   ```
   list
   ```

   This will return the following parameter list:

   ```
   host-name* = “ ”
   community-name = “ ”
   host-address = 0.0.0.0
   alarm-enabled = yes
   security-enabled = no
   port-enabled = no
   ```
5. Enter a host-name (up to 16 characters), as follows:

   ```
   set host-name = my_host_name
   ```

   The host-name specifies the hostname of the NavisAccess station. This is the host to which the MAX TNT will send SNMP traps. If the host-address field contains an IP address, the specified name is not used to actually locate the host.

6. Enter a community-name (up to 31 characters), as follows:

   `set community-name = my_community-name`

   This specifies the SNMP community name associated with the SNMP PDU (Protocol Data Units). The string you specify becomes a password that the MAX TNT sends to NavisAccess when an SNMP trap event occurs. The password authenticates the sender identified by the host address.

7. Enter an IP address for the host-address. For example:

   `set host-address = 10.2.3.4`

   The host-address is the same address as that of the NavisAccess station.

   NOTE: If you are using multiple NavisAccess consoles logging in to a common server, you can specify any NavisAccess machine(s). Information will be shared across all NavisAccess stations via the NavisAccess common event system.

8. Enable all three classes of Traps.

   ```
   set alarm-enabled = yes
   set security-enabled = yes
   set port-enabled = yes
   ```

9. Finish the configuration by writing the new parameters to the device, as follows:

   `write`

   This will be followed by a "TRAP/*host-name* written" message.

Enabling SNMP, community strings on the MAX TNT

The SNMP profile contains SNMP-readable information related to the MAX TNT and its SNMP security. There are two levels of security: community strings, which must be known by NavisAccess to access the box, and address security, which excludes SNMP access unless it is initiated from a specified IP address.

To enable SNMP and set security on the MAX TNT:

1. Attach to the MAX TNT via Telnet or through the console port.
2. Log in with write access.
3. At the command prompt, enter:

   ```
   read snmp
   ```

   This will return a "SNMP read" message, and a new command prompt.
4. At the command prompt, enter:

   ```
   list
   ```

   This will return the following parameter list:

   ```
   enabled = no
   read-community = public
   read-write-community = write
   enforce-address-security = no
   read-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0
   0.0.0.0 0.0.0.0 ]
   write-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0
   0.0.0.0 0.0.0.0 ]
   contact = " "
   location = " "
   ```
5. Set the enabled parameter to yes as follows.

   ```
   set enabled = yes
   ```

   If the enabled parameter in the SNMP profile is set to No (the default), the MAX TNT cannot be accessed by NavisAccess.

6. If necessary, set new read-community and read-write-community strings (up to 32 characters) as follows:

```
set read-community = secret_string
set read-write-community = unique_string
```

The read-community string permits read access to the MAX TNT and the read-write string permits read/write access.

NOTE: The read and write Community Names used by NavisAccess must match what is specified on the MAX TNT. Otherwise, communication cannot be established with the device.

7. Set the enforce-address-security parameter to yes, as follows:

```
set enforce-address-security = yes
```

If the enforce-address-security parameter is set to No (its default value), any SNMP manager that presents the right community name will be allowed access. If it is set to Yes, the MAX TNT checks the source IP address of the SNMP manager and allows access only to those IP addresses listed in the read-access-host and write-access-host arrays. Each array can include up to five host addresses.

8. Set IP addresses for up to five read-access-hosts. For example:

```
set read-access-hosts 1 = 10.2.3.4
set read-access-hosts 2 = 10.2.3.5
set read-access-hosts 3 = 10.2.3.6
set read-access-hosts 4 = 10.2.50.123
set read-access-hosts 5 = 10.2.50.124
```

When this parameter is set, only NavisAccess stations logging in from the set IP addresses will be granted read-access to the MAX TNT.

9. Set IP addresses for up to five write-access hosts. For example:

```
set write-access-hosts 1 = 10.2.3.4
set write-access-hosts 2 = 10.2.3.5
set write-access-hosts 3 = 10.2.3.6
set write-access-hosts 4 = 10.2.50.123
set write-access-hosts 5 = 10.2.50.124
```

When this parameter is set, only NavisAccess stations logging in from the set IP addresses will be granted write-access to the MAX TNT.

10. It is recommended that you set the contact and location parameters with the

name and location of the person to contact if there is a problem with the unit (up to 84 characters). For example:

```
set contact = Mary Smith
set location = Green Bay office, 555-1212
```

11. Finish the configuration by writing the new parameters to the device, as follows:

    ```
    write
    ```

    This will be followed by an “SNMP written” message.

Enabling Call Logging on the MAX TNT

In order for the Access Watch application to receive data from the MAX TNT, the Call Logging feature must be enabled and set to send data to the NavisAccess workstation(s). Up to three IP addresses can be configured.

NOTE: If you are using multiple NavisAccess consoles logging in to a common server, you can specify any NavisAccess machine(s). Information will be shared across all NavisAccess stations via the common event system.

To configure Call Logging for use with Access Watch:

1. Attach to the MAX TNT via Telnet or through the console port.
2. Log in with write access
3. At the command prompt, enter:

   ```
   read call-logging
   ```

   This will return an "CALL-LOGGING read" message, and a new command prompt.

4. At the command prompt, enter:

   ```
   list
   ```

   This will return a parameter list similar to the following.

   ```
   call-log-enable = no
   call-log-host-1 = 0.0.0.0
   call-log-host-2 = 0.0.0.0
   call-log-host-3 = 0.0.0.0
   call-log-port = 0
   call-log-key = ""
   ```

```
call-log-timeout = 0
call-log-id-base = acct-base-10
call-log-reset-time = 0
call-log-stop-only = yes
call-log-limit-retry = 0
```

5. Set the call-log enable parameter to “yes” as follows:

   ```
   set call-log-enable = yes
   ```

6. The other parameters may or may not need to be set using the same syntax:

   ```
   set command-name = parameter-value
   ```

   Parameters are explained below, and shown with default values in place:

   call-log-host-1 = 0.0.0.0
   call-log-host-2 = 0.0.0.0
   call-log-host-3 = 0.0.0.0
   This points call logging information to the NavisAccess console (server, workstation or standalone). Set this parameter to the IP address of a NavisAccess console.

   Each **call-log-host-n** parameter can specify the IP address of one NavisAccess server or workstation. The MAX TNT first tries to connect to machine #1 for call-logging. If it receives no response, it tries to connect to machine #2. If it receives no response from machine #2, it tries machine #3. If the MAX TNT connects to a NavisAccess machine other than machine #1, it continues to use that machine until it fails to service requests, even if the first server has come online again.

   NOTE: If you are using multiple NavisAccess consoles logging in to a common server, you can specify any NavisAccess machine(s). Information will be shared across all NavisAccess stations via the common event system.

   call-log-port =0
   The call-log-port parameter specifies the UDP destination port to use for call-logging requests. The default zero indicates any UDP port. If you specify a different number, the call log host (NavisAccess) must specify the same port number (the numbers must match).

   By default, NavisAccess uses port 1646. This is the recommended setting on the TNT.

   call-log-key = " "

Enter a Call Logging key. The key is used to provide NavisAccess with access to the TNT. The same Key entered on the device must also be entered in NavisAccess. This is similar in function to the community string, but not the same.

A default Call Logging Key can be entered in NavisAccess using the Default Secret field on the Access Watch Configuration tab found under **Config > System Options**.

To enter a Key different from the default, open the device Boxmap, right-click on the Configuration icon and choose Configuration. Enter the new key in the Call Logging Secret field.

call-log-timeout =0
The number of seconds the MAX TNT will wait for a response to a call-logging request. This value can be set from 1 to 10. 0 is the default, which disables the timer.

call-log-id-base = acct-base-10
Specifies if data is sent in Base 10 (decimal) or Base-16 (hexadecimal) format. Parameter settings are acct-base-10 and acct-base-16, respectively. This value must be set to acct-base-10 for NavisAccess to function properly.

call-log-reset-time = 0
Indicates the number of seconds that must elapse before the MAX TNT returns to using the primary call log host (call-log-host-1). The default zero disables the reset to the primary call log host.

call-log-stop-only = yes
The MAX TNT typically sends Start and Stop packets to the host to record connections. Authentication is required to send a Start packet. There are situations that the MAX TNT will send a Stop packet without having sent a Start packet. These Stop packets have no user name. The **call-log-stop-only** parameter specifies whether the MAX TNT should send an Stop packet with no user name. The default value is Yes. You can set this parameter to No to prevent the unit from sending Stop packets with no user name.

call-log-limit-retry = 0
If the NavisAccess station does not acknowledge a Start or Stop packet within the number of seconds in call-log-timeout, the MAX TNT tries again, re-sending the packet until the server responds or the packet is dropped because the queue is full. The call-log-limit-retry parameter sets the maximum number of retries for these packets. A value of 0 (the default)

indicates an unlimited number of retries. There is minimum of 1 retry. For example, setting the parameter to 10 retries would make a total of 11 attempts: the original attempt plus 10 retries.

8. Make the necessary setting changes to the parameters discussed in Step 6. Following is a sample setting of Call Logging parameters. Comments are shown in brackets [ ].

```
Set call-log-enable = yes                [Must be set or Call Logging will
                                         not work]
Set call-log-host-1 = 150.10.10.10       [NavisAccess console]
Set call-log-host-2 = 150.10.10.12       [Alternate NavisAccess console]
Set call-log-port = 1646
set call-log-key = mysecretstring        [Must match string entered via
                                         NavisAccess.]
set call-log-timeout = 2
set call-log-id-base = acct-base-10      [This parameter must be set as
                                         shown.]
```

9. Finish the configuration by writing the new parameters to the device, as follows:

   `write`

   This will be followed by a "CALL-LOGGING written" message.

Installing the Hash Codes

To use NavisAccess on Ascend devices, the NavisAccess Software Option must be purchased for each Ascend device. (MAX, MAX TNT, Pipeline 220 and GRF. Pipeline 50, 75, 85 and 130 models include the Software Option.)

To enable the Option on the MAX, MAX TNT and Pipeline, a hash code must be entered on the device.

To purchase the Option and receive a hash code, contact your Ascend Communications sales representative. A brief outline of the procedure is provided below.

Entering the hash code

1. A hash code is received from Ascend Communications. The code consists of several lines of text.
2. Connect to the device via Telnet or console.

3. Enter device debug mode.

   This brings up the > prompt.

4. Type the hash code and hit [Return]. Alternately, if you have the hash code in electronic format, cut and paste the codes onto the screen.

5. A confirmation message will display.

6. Reset the device to enable the Software Option.

Preparation Checklist: Ascend GRF

To use NavisAccess with the Ascend GRF, the following must be done:

- SNMP community strings on the device must match those entered in NavisAccess.
- The GRF must be configured to send Traps to the NavisAccess server or workstation.
- The NavisAccess Software Option must be purchased for the device.

Please consult the GRF documentation for instructions.

The NavisAccess QuickTour 5

About the QuickTour

The NavisAccess QuickTour is a short walk through several NavisAccess features, with an emphasis on management of the access layer. This is not a comprehensive tour of the NavisAccess product. Many more applications are available within NavisAccess. Consult the online help or NavisAccess *User Guide* for details.

Similarly, many of the applications touched on in the QuickTour are not explained in detail. Consult the online help or *User Guide* for specifics, such as definitions of all fields on a screen.

Before you Start

Before the QuickTour begins, the following should be in place:

- NavisAccess should be installed, and you should have Administrator-level rights to the software.
- You should be familiar with the IP addresses of a few network devices.
- You should know both the read and write community strings for at least several devices on your network. More is better.
- It is very helpful to activate Call Logging on at least some Ascend devices.

HP OpenView Users

If you are using NavisAccess on HP OpenView, some of the steps in the QuickTour will be different. OpenView-specific steps and information are highlighted in the QuickTour using the OpenView icon, as seen at left.

The Tour Starts Here

The NavisAccess QuickTour consists of several phases.

- **PHASE 1- Startup and Discovery**
  How to start NavisAccess and discover network devices.
- **PHASE 2 - The Group Wizard and Boxmap**
  How to configure devices into groups, access applications and view device backpanels.
- **PHASE 3 - Access Watch: Remote Access at a Glance**
  Your entire access network on one screen.
- **PHASE 4 - The Internet Map**
  A visual, configurable depiction of the network.
- **PHASE 5 - Performance Monitoring**
  Multiple tools to monitor network performance.
- **PHASE 6 - Frame Relay**
  Evaluating Frame Relay performance based on CIR.
- **PHASE 7 - Pinpointing Network Bottlenecks**
  A quick way to find out where problems are.
- **PHASE 8 - Configuration Management**
  Making configuration easier and error-free.
- **PHASE 9 - Other Features**
  A quick overview of the many other powerful features found in NavisAccess.

The QuickTour assumes that you have not yet discovered any devices and have an empty database. If you have already started NavisAccess and discovered some devices, you can proceed to PHASE 2.

PHASE 1 - Startup and Discovery

NOTE: For the purposes of the QuickTour, many dialog box fields will not be explained. We will only use those fields needed for the Tour. Please click the online help button for more details on a particular screen.

1. NavisAccess must first be started on the server. For details, see "Starting NavisAccess:Solaris standalone" on page 24 or "Starting NavisAccess:HP OpenView" on page 50.
2. To start the console application, open a terminal session and make sure you are in the NavisAccess installation directory. Enter

   `SRM`

   to start the console.

HP OpenView STEP:

From the OpenView Node Manager menu bar, select **NavisAccess > Start NavisAccess**.

3. The NavisAccess login screen appears. If this is the first time you are logging in to the software, enter **Admin** for both user name and password. This can be changed later.
4. When NavisAccess starts, the Group Wizard screen will appear with no devices. There are two ways to add devices to the Group Wizard: manually and with automatic discovery. We will do both.

HP OpenView NOTE:

The Group Wizard will not automatically open in OpenView. To open the Group Wizard, select **NavisAccess > Devices > Group Wizard**.

Manual discovery

HP OpenView NOTE:

NavisAccess on OpenView uses the OpenView database and does not do its own discovery. See the OpenView note at the end of Phase 1 for details.

5. First, we will add a known device to the Group Wizard. From the main menu bar, select **File >New Device**. The New Device screen opens.

6. Enter the IP address and community string for a device, and click OK. The device will appear in the Group Wizard. (The device may temporarily have a yellow "X" across it while NavisAccess scans the device and identifies it.)

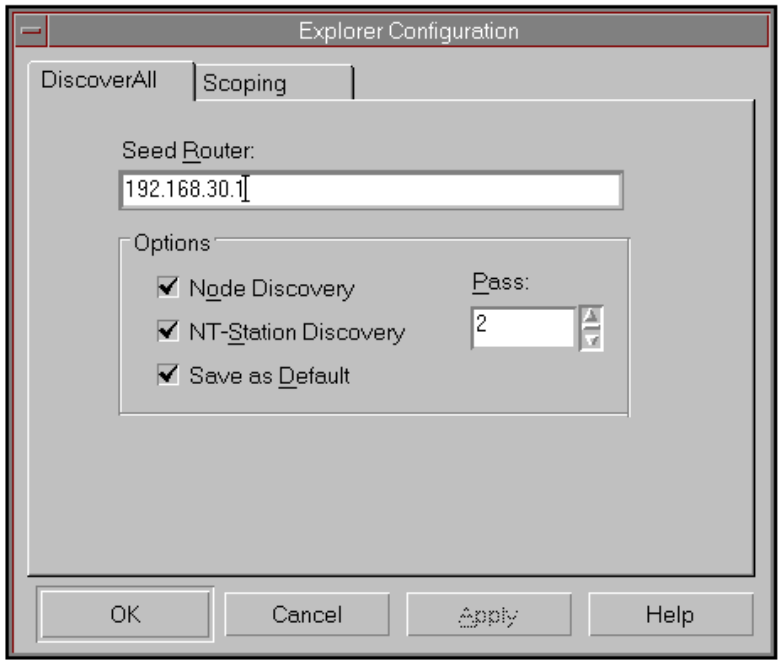
   Devices are identified by vendor-specific icons. Ascend device icons also identify the type of device (MAX, Pipeline, etc.). Discover several more devices this way if you wish.

Automatic discovery

7. Manual discovery is acceptable for a few devices, but it is insufficient for a large network. Fortunately, the NavisAccess Explorer can cover even the largest networks.

   Before starting Explorer, we must set the default community strings NavisAccess will use to access devices. "Public" is already configured in the system. If you need to enter other strings, open the System Options screen by selecting **Config > System Options** from the main menu bar. Then click the **CommStr** tab. Enter a write community string and one or more read strings. Click [New] to enter read strings. The default write string is "write".

8. Close the Configuration window. Open the Explorer by selecting **Tools > Explorer** from the main menu.



In the Seed Router field, enter a device IP address. The Seed Router is the first device NavisAccess will contact as it explores the network. You may choose a device that is already discovered or one that has not yet been discovered.

9. Click [OK] to start discovery. You will soon see devices appearing one at a time in the Group Wizard window. Explorer will attempt to traverse the entire network, and this could take quite some time in a large network. Once you have discovered a dozen or so devices, you may want to stop the Explorer to continue the QuickTour. (You can continue the QuickTour while Explorer is still running, but there will be some slowdown in performance as Explorer is continually writing information to the database.)

Stop Explorer simply by closing the Explorer window.

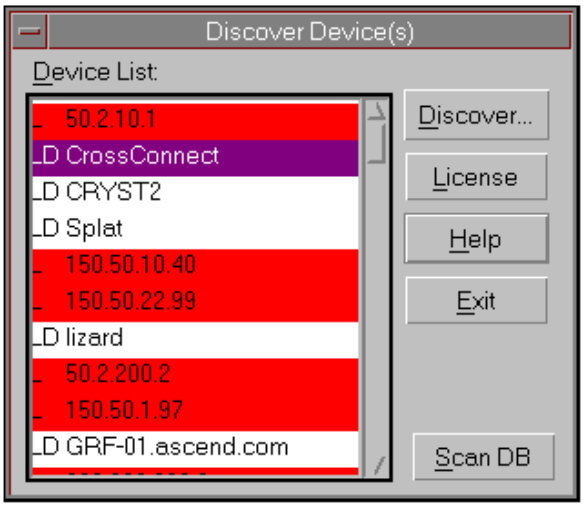
When you have enough devices discovered, go on to PHASE 2. If you wish to test remote access management, make sure you have several Ascend access devices discovered.

Discovery on OpenView

NavisAccess utilizes the OpenView discovery and device database. If you have not already discovered devices using OpenView, please consult your OpenView documentation and discover your network.

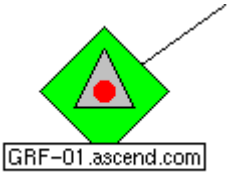
When OpenView discovery is complete, devices are scanned by NavisAccess and entered into the NavisAccess database.

To enter devices in the NavisAccess database, select **NavisAccess > Devices > Discover** to open the Discover Devices window.



Click the [Scan DB] button to load devices from the OpenView database into the Discover Devices window. Select the devices you wish to enter into the NavisAccess database. Click the [Discover] button to enter the devices.

All Discovered devices will display the NavisAccess icon on the OpenView map, as in this example:

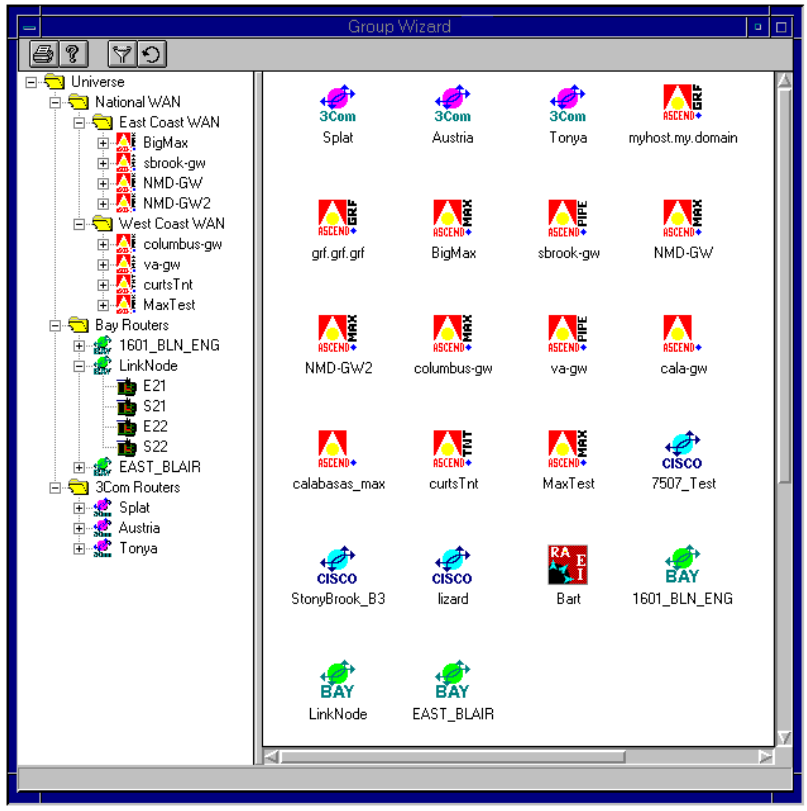


PHASE 2 - The Group Wizard and Boxmap

NOTE: For maximum benefit in Phase 2, you should have Group Wizard populated by a dozen or so devices.

The Group Wizard provides access to a great deal of NavisAccess functionality, including the unique ability to combine devices into logical groups. If you right-click on a device icon you will see a large number of menu choices (they will vary based on the type of device). Let's begin to look at some of these.

1. First, let's customize Group Wizard to look the way we want it to. If you right-click on a blank area of the right-side window, you will see a number of viewing options (similar to those in the Windows Explorer). Try out several options to find what you like. Here is a sample Group Wizard showing multi-vendor devices and several groups.



2. Next, right-click on a device icon and select Boxmap. The Boxmap is the

central location for most device-specific applications.

When the Boxmap opens, you may see one of two things. If the device is an Ascend device (MAX, MAX TNT, Pipeline, GRF) or certain Cisco routers, you will see an illustration of the device backpanel. If the device contains slot cards, they will appear in the illustration as they are scanned and identified. This view is referred to as the Physical View.

For other devices, you will see the Application View, which is a collection of icons, each of which provides access to related applications. For Ascend and Cisco devices, you can switch from the Physical View to the Application View by double-clicking in the Boxmap anywhere but on a device interface.

HP OpenView NOTE:

You can also access the Boxmap by highlighting a device on the OpenView map and selecting **NavisAccess > Devices > Boxmap** from the menu bar.

About the Physical View

The Physical View is an accurate depiction of the device as it exists on the network. The slot cards and interfaces appear in the appropriate place, and a red or green line indicates if they are up or down. Tool-tips identify items on the illustration. By right-clicking on an interface, you can access several applications specific to the interface, such as Interface Utilization.

If you right-click anywhere but on an interface, you will access a full menu of applications for that device. As the applications become familiar to you, this will be a fast and easy way to launch them.

About the Application View

The Application View provides access to the same applications as the Physical View, but it displays them in a different fashion. Each category of application is given an icon, and the right-click menu from the icon launches them.

We will look at some of these applications as the QuickTour continues.

Creating device groups

3. Now it's time to create groups. Device grouping provides a critical management advantage: the ability to consolidate a large, sprawling access network into manageable units.

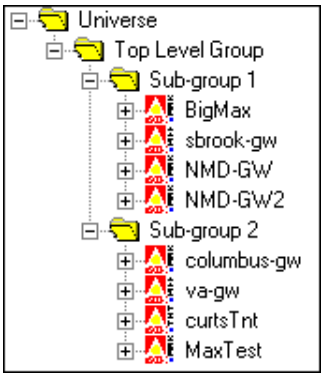
In the left-pane of the Group Wizard, right-click the Universe folder and select **New Group**. A new folder will appear with the default name "New Group." Type a new name for the group. Let's name this folder Group 1. Create another folder and name it Group 2.

Then, click and hold a device icon in the right-pane and drag it into folder Group 1. Do the same with another device. You have just grouped two devices. As easy as that.

Continue to add devices to your two groups. The same device can be added to both groups. You can drag multiple devices by using standard Windows [Ctrl] and [Shift] selection functions. There are also many options for copying groups, moving them, linking them and so on. See the *User Guide* or online help for details.

Group Wizard also allows for sub-groups. For example, if you right-click the Group 1 folder and choose **New Group**, you can create a sub-group within Group 1. Try it. Create as many sub-groups as you wish. The same devices can be added to any groups or sub-groups, even within the same tree structure.

4. You can group any devices in the Group Wizard, but there are special applications associated with access devices (MAX, MAX TNT, Pipeline). Create at least one group that consists *only* of access devices. Ideally, create a top level group with two sub-groups, and populate the sub-groups with access devices. It will be similar to this:



Groups of routers are useful for tasks such as scheduling background data gathering. For now, let's look at one of the most powerful features of NavisAccess -- Access Watch.

PHASE 3 - Access Watch: Remote Access at a Glance

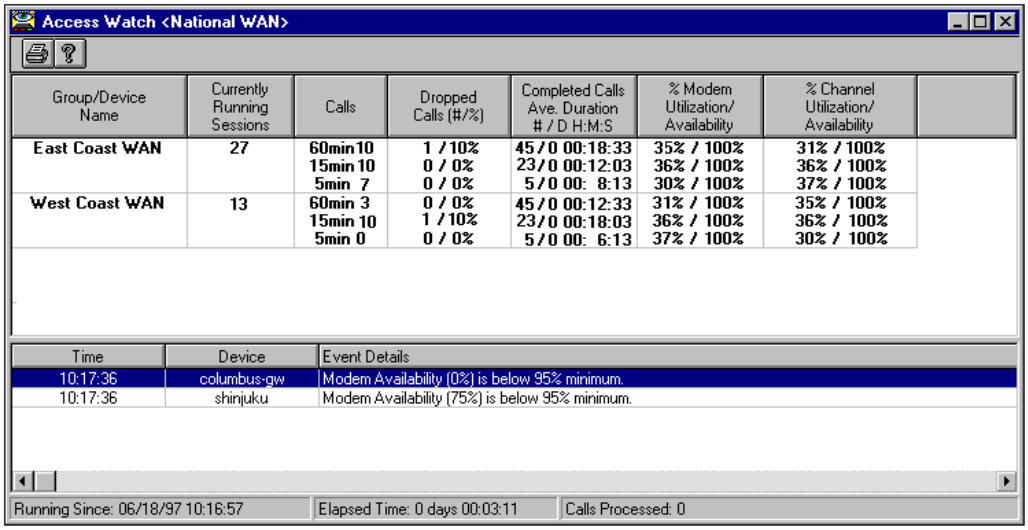
NOTE: For Phase 3, you should have created at least one group consisting of Ascend access devices. For Access Watch to report data, the Call Logging parameter must be configured for MAX and MAX TNT devices. This parameter requires MAX software version 6.0 or higher and/or MAX TNT software 2.0 or higher. See Chapter 4 for details.

Access Watch lets you monitor your entire access network from one screen. The powerful grouping ability of NavisAccess not only consolidates many devices into a single view, but it provides aggregate performance data for the grouped devices.

1. If you have not yet done so, create a group consisting of only Ascend access devices (MAX, MAX TNT). Ideally, the group should have two sub-groups, each with access devices (for this illustration, you can use the same devices in each group). For full Access Watch functionality, the devices must be properly configured with the Call Logging parameter set (see Chapter 4 for details).

   For our illustration, we have created a group called **National WAN**, with two subgroups: **East Coast WAN** and **West Coast WAN**.

2. In the Group Wizard, right-click on the top-level group and select **Access Watch**. The Access Watch top level screen opens.



Within seconds, aggregate call statistics begin appearing on the screen. Groups statistics are shown in bold type, single-devices are in regular type.

It is vital to realize that any displayed group information is *consolidated data* from all devices in the group. For example, if the Currently Running Sessions field for a group shows 150, that means there is a *total* of 150 sessions running on all devices in the group.

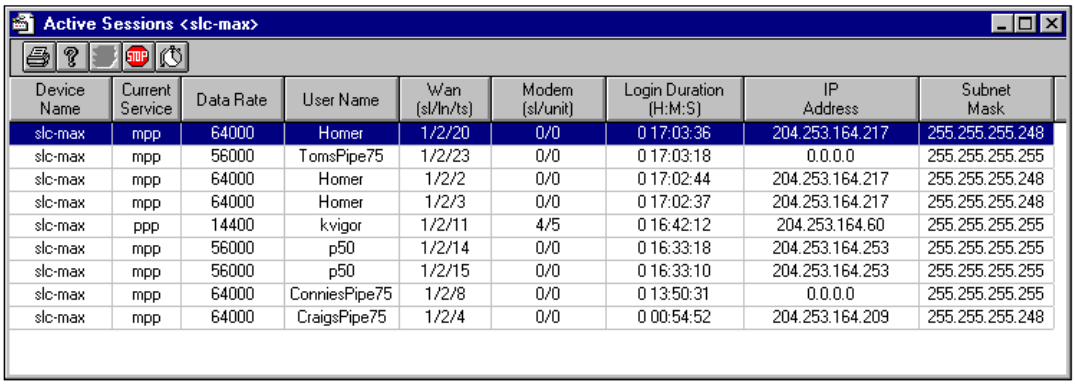
Only NavisAccess can manage your access services in this fashion, providing you with an overall understanding of the entire access layer.

As you can see, the Access Watch screen provides an enormous amount of information: number of sessions and calls, dropped calls, call duration, modem and channel utilization and availability. It also monitors threshold levels and will generate warnings if thresholds are breached.

Want to see what the individual devices in a group are doing? Just click on the group name in the first column and a second screen will launch which will show the same statistics on a device-by-device basis.

But this screen is only the beginning. There are many additional screens you can drill down into for details about the statistics and other functionality. Let's look at some of them.

3. The Currently Running Sessions column shows the number of sessions. Clicking on the cell opens the Active Sessions window, which breaks out the data into individual sessions.

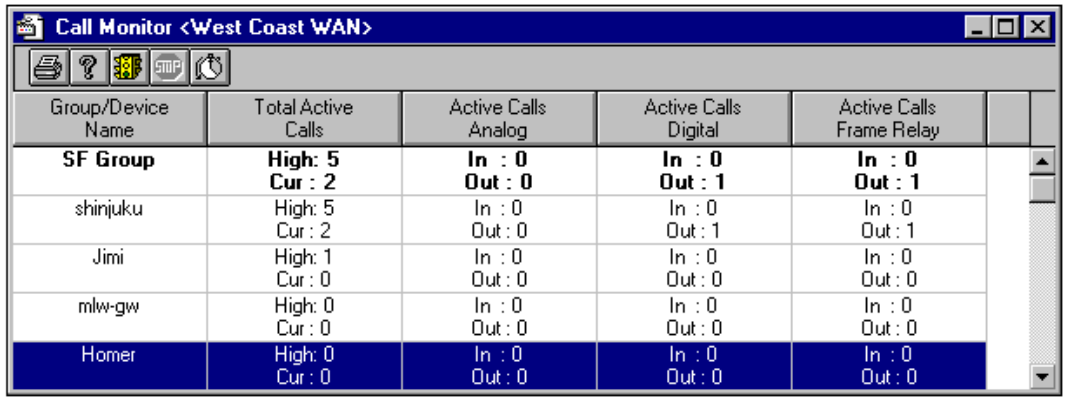


Active Sessions <slc-max>

Device Name	Current Service	Data Rate	User Name	Wan (sl/ln/ts)	Modem (sl/unit)	Login Duration (H:M:S)	IP Address	Subnet Mask
slc-max	mpp	64000	Homer	1/2/20	0/0	0 17:03:36	204.253.164.217	255.255.255.248
slc-max	mpp	56000	TomsPipe75	1/2/23	0/0	0 17:03:18	0.0.0.0	255.255.255.255
slc-max	mpp	64000	Homer	1/2/2	0/0	0 17:02:44	204.253.164.217	255.255.255.248
slc-max	mpp	64000	Homer	1/2/3	0/0	0 17:02:37	204.253.164.217	255.255.255.248
slc-max	ppp	14400	kvigor	1/2/11	4/5	0 16:42:12	204.253.164.60	255.255.255.255
slc-max	mpp	56000	p50	1/2/14	0/0	0 16:33:18	204.253.164.253	255.255.255.255
slc-max	mpp	56000	p50	1/2/15	0/0	0 16:33:10	204.253.164.253	255.255.255.255
slc-max	mpp	64000	ConniesPipe75	1/2/8	0/0	0 13:50:31	0.0.0.0	255.255.255.255
slc-max	mpp	64000	CraigsPipe75	1/2/4	0/0	0 00:54:52	204.253.164.209	255.255.255.248

Here we see exactly who is connected, how long they've been connected, the connection rate and more. Not only that, but we can disconnect any caller on the screen. Just right-click on a row to bring up the **Disconnect User Name** menu. When NavisAccess asks if you are sure you want to disconnect this user, answer [Yes] and the call will be dropped.

4. Go back to the main screen and click the Calls cell. This opens the Call Monitor window.



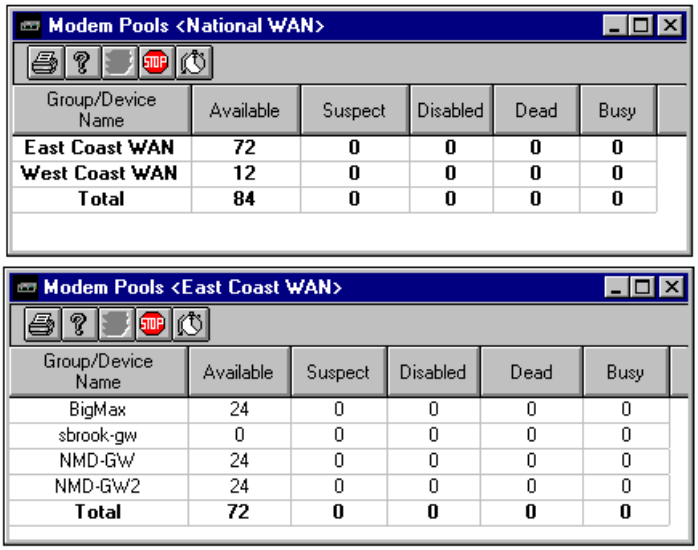
Call Monitor <West Coast WAN>

Group/Device Name	Total Active Calls	Active Calls Analog	Active Calls Digital	Active Calls Frame Relay
SF Group	**High: 5 Cur : 2**	**In : 0 Out : 0**	**In : 0 Out : 1**	**In : 0 Out : 1**
shinjuku	High: 5 Cur : 2	In : 0 Out : 0	In : 0 Out : 1	In : 0 Out : 1
Jimi	High: 1 Cur : 0	In : 0 Out : 0	In : 0 Out : 0	In : 0 Out : 0
mlw-gw	High: 0 Cur : 0	In : 0 Out : 0	In : 0 Out : 0	In : 0 Out : 0
Homer	High: 0 Cur : 0	In : 0 Out : 0	In : 0 Out : 0	In : 0 Out : 0

The Call Monitor displays the total number of ongoing calls, and breaks them up by type. It also shows the High number, which is the highest number of active calls at any point in the monitoring period.

5. Among the most valuable tools for trouble-shooting is the Modem Pools window. Click in the % Modem Utilization/Availability cell to open the window. There are two examples below, one showing Modem Pools at a group level, the other at a device-level. Just double-click on the group

level to open the device level window.



Modem Pools <National WAN>

Group/Device Name	Available	Suspect	Disabled	Dead	Busy
East Coast WAN	**72**	**0**	**0**	**0**	**0**
West Coast WAN	**12**	**0**	**0**	**0**	**0**
Total	**84**	**0**	**0**	**0**	**0**

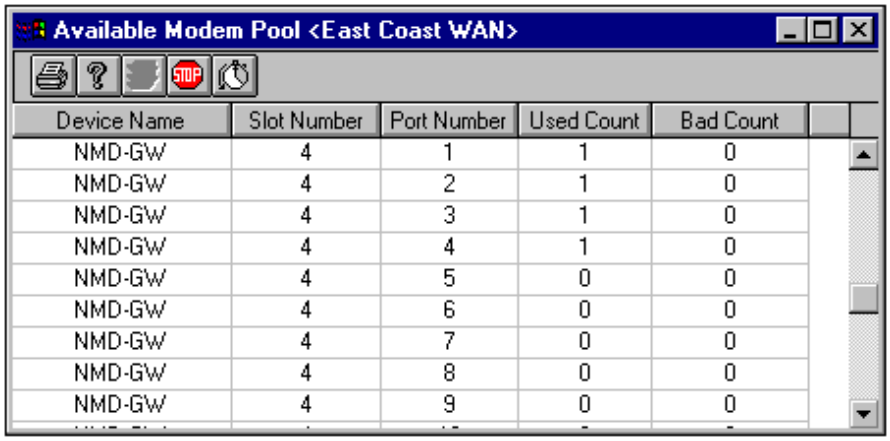
Modem Pools <East Coast WAN>

Group/Device Name	Available	Suspect	Disabled	Dead	Busy
BigMax	24	0	0	0	0
sbrook-gw	0	0	0	0	0
NMD-GW	24	0	0	0	0
NMD-GW2	24	0	0	0	0
Total	**72**	**0**	**0**	**0**	**0**

The Modem Pools screen lets you see exactly which devices have suspect, disabled or dead modems, allowing you to zero in on problems.

Double-clicking in any cell will bring up the individual Modem Pool window, which provides details on all the modems in a particular state.

For example, if you clicked in the Available cell, you would see a window similar to this:

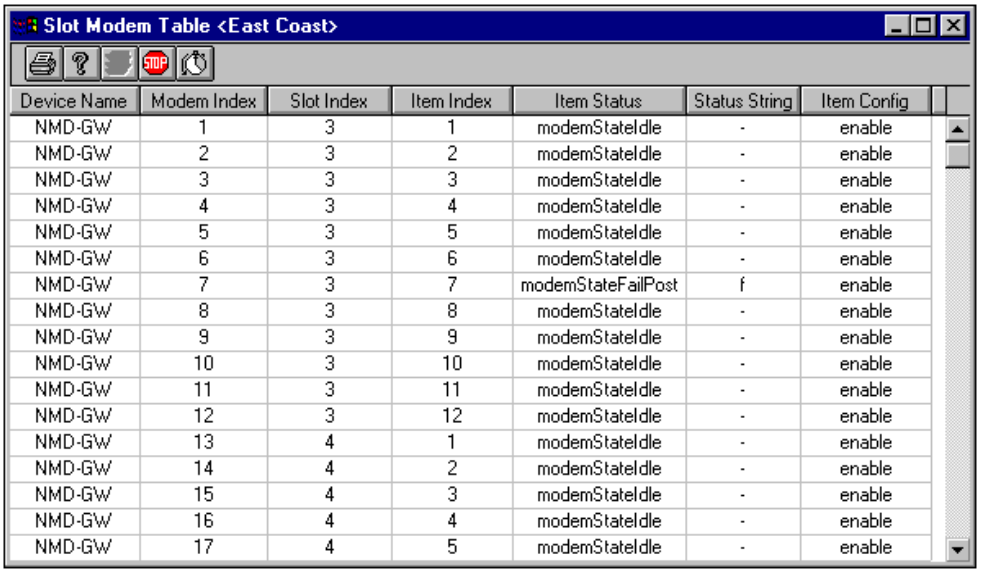


Available Modem Pool <East Coast WAN>

Device Name	Slot Number	Port Number	Used Count	Bad Count
NMD-GW	4	1	1	0
NMD-GW	4	2	1	0
NMD-GW	4	3	1	0
NMD-GW	4	4	1	0
NMD-GW	4	5	0	0
NMD-GW	4	6	0	0
NMD-GW	4	7	0	0
NMD-GW	4	8	0	0
NMD-GW	4	9	0	0

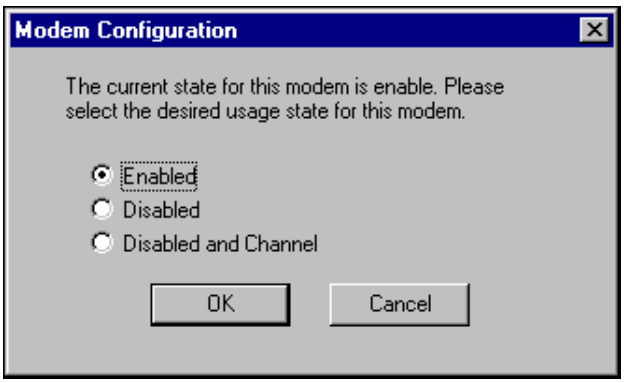
This shows where the available modems are, based on slot number and port number, how many times the modems were used (Used Count) and how many times they failed (Bad Count).

6. Further modem details can be accessed through the Slot Modem Table. Right-click on a device icon in the Group Wizard and select **Access Apps > Slot Modem Table**.

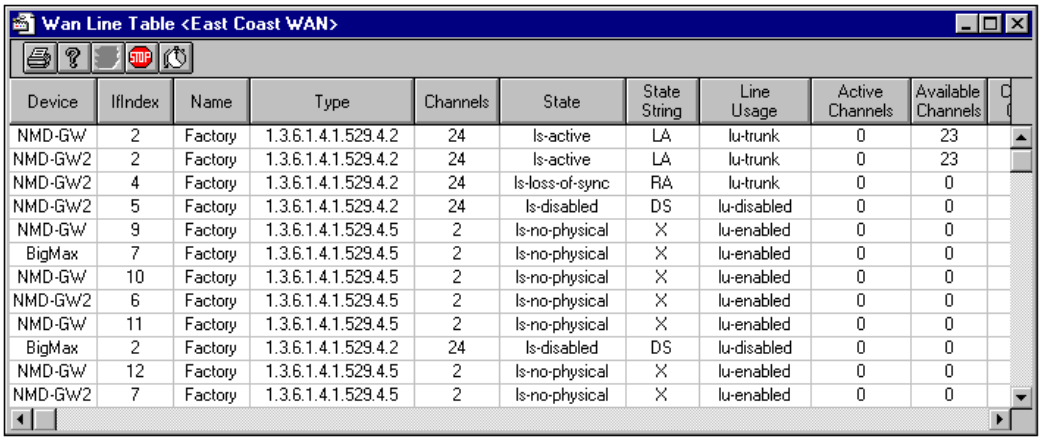


Device Name	Modem Index	Slot Index	Item Index	Item Status	Status String	Item Config
NMD-GW	1	3	1	modemStateIdle	-	enable
NMD-GW	2	3	2	modemStateIdle	-	enable
NMD-GW	3	3	3	modemStateIdle	-	enable
NMD-GW	4	3	4	modemStateIdle	-	enable
NMD-GW	5	3	5	modemStateIdle	-	enable
NMD-GW	6	3	6	modemStateIdle	-	enable
NMD-GW	7	3	7	modemStateFailPost	f	enable
NMD-GW	8	3	8	modemStateIdle	-	enable
NMD-GW	9	3	9	modemStateIdle	-	enable
NMD-GW	10	3	10	modemStateIdle	-	enable
NMD-GW	11	3	11	modemStateIdle	-	enable
NMD-GW	12	3	12	modemStateIdle	-	enable
NMD-GW	13	4	1	modemStateIdle	-	enable
NMD-GW	14	4	2	modemStateIdle	-	enable
NMD-GW	15	4	3	modemStateIdle	-	enable
NMD-GW	16	4	4	modemStateIdle	-	enable
NMD-GW	17	4	5	modemStateIdle	-	enable

The Slot Modem Table drills-down to the individual modem level, allowing you to view status at the smallest level of granularity. In addition, you can enable and disable modems from this window by right-clicking on a modem and opening the Modem Configuration dialog.



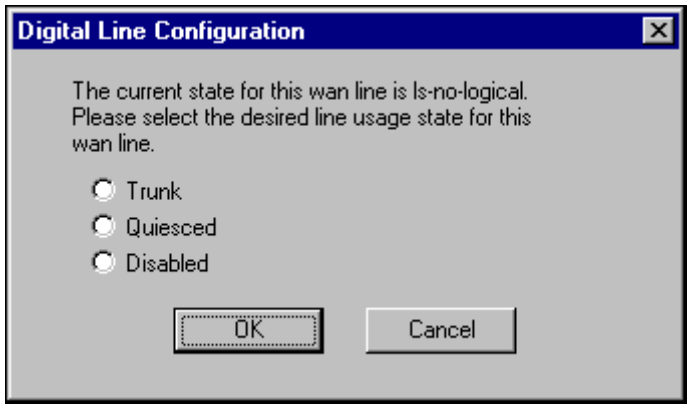
7. The % Channel Utilization/Availability cell also offers drill-down into channel specifics. Click in the cell to open the Wan Line Table window.



Wan Line Table <East Coast WAN>

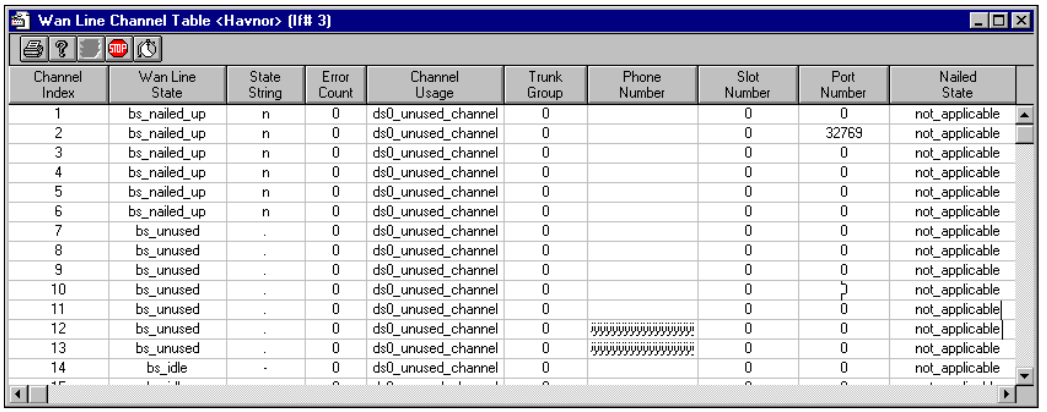
Device	IfIndex	Name	Type	Channels	State	State String	Line Usage	Active Channels	Available Channels	C
NMD-GW	2	Factory	1.3.6.1.4.1.529.4.2	24	ls-active	LA	lu-trunk	0	23	
NMD-GW2	2	Factory	1.3.6.1.4.1.529.4.2	24	ls-active	LA	lu-trunk	0	23	
NMD-GW2	4	Factory	1.3.6.1.4.1.529.4.2	24	ls-loss-of-sync	RA	lu-trunk	0	0	
NMD-GW2	5	Factory	1.3.6.1.4.1.529.4.2	24	ls-disabled	DS	lu-disabled	0	0	
NMD-GW	9	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
BigMax	7	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
NMD-GW	10	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
NMD-GW2	6	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
NMD-GW	11	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
BigMax	2	Factory	1.3.6.1.4.1.529.4.2	24	ls-disabled	DS	lu-disabled	0	0	
NMD-GW	12	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	
NMD-GW2	7	Factory	1.3.6.1.4.1.529.4.5	2	ls-no-physical	X	lu-enabled	0	0	

This window gives channel details for each interface. You can change the state of a channel by right-clicking on it to bring up the Digital Line Configuration dialog.



You can use this to enable a line (trunk), quiesce it or disable it.

Still another level of drill-down is available by double-clicking on a row to access the WAN Line Channel Table.



Wan Line Channel Table <Havnor> (If# 3)

Channel Index	Wan Line State	State String	Error Count	Channel Usage	Trunk Group	Phone Number	Slot Number	Port Number	Nailed State
1	bs_nailed_up	n	0	ds0_unused_channel	0		0	0	not_applicable
2	bs_nailed_up	n	0	ds0_unused_channel	0		0	32769	not_applicable
3	bs_nailed_up	n	0	ds0_unused_channel	0		0	0	not_applicable
4	bs_nailed_up	n	0	ds0_unused_channel	0		0	0	not_applicable
5	bs_nailed_up	n	0	ds0_unused_channel	0		0	0	not_applicable
6	bs_nailed_up	n	0	ds0_unused_channel	0		0	0	not_applicable
7	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
8	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
9	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
10	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
11	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
12	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
13	bs_unused	.	0	ds0_unused_channel	0		0	0	not_applicable
14	bs_idle	-	0	ds0_unused_channel	0		0	0	not_applicable

This breaks out interface data on a per-channel basis, allowing you to see exactly what is happening right down to the channel level.

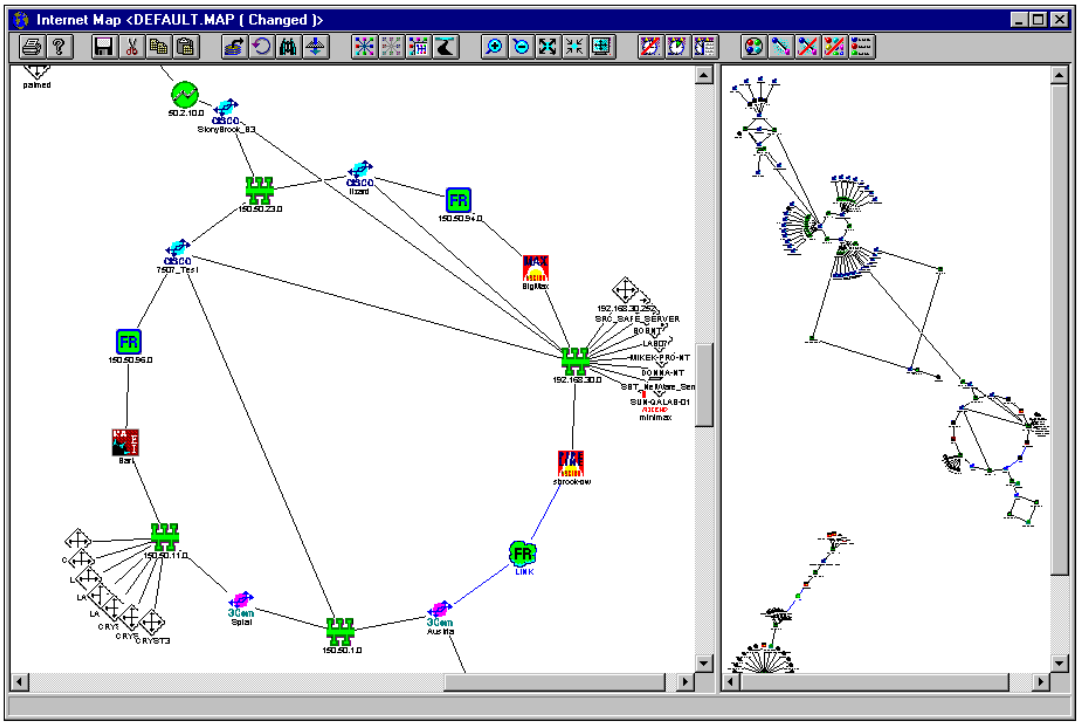
As you can see, Access Watch gathers all the information you need and delivers it right to your finger-tips.

PHASE 4 - The Internet Map

The Internet Map provides a graphical depiction of the entire network, including network devices and connection types. To launch the Internet Map, select **File > Internet Map** from the main menu bar.

HP OpenView NOTE:

The NavisAccess map is available in addition to the OpenView map, and it provides many extra features. To access the map in OpenView, select **NavisAccess > Devices > Internet Map** from the OpenView map's menu bar.



The map contains device icons, which represent specific devices, and link icons, which represent connection types (Ethernet, Frame Relay, etc.) Among the capabilities provided by the map are:

- Launching of device-specific applications
- Launching of link/connection-specific applications
- Launching of protocol/service-specific applications
- Grouping of map icons into logical entities (LAN, POP, Corporate Office, etc.)
- Manually creating links between devices
- Drill-down into smaller submaps, circuit maps and segment maps
- Reporting of device alarms
- Color-coding of network link status (up, down, degraded)
- Filtering and finding tools

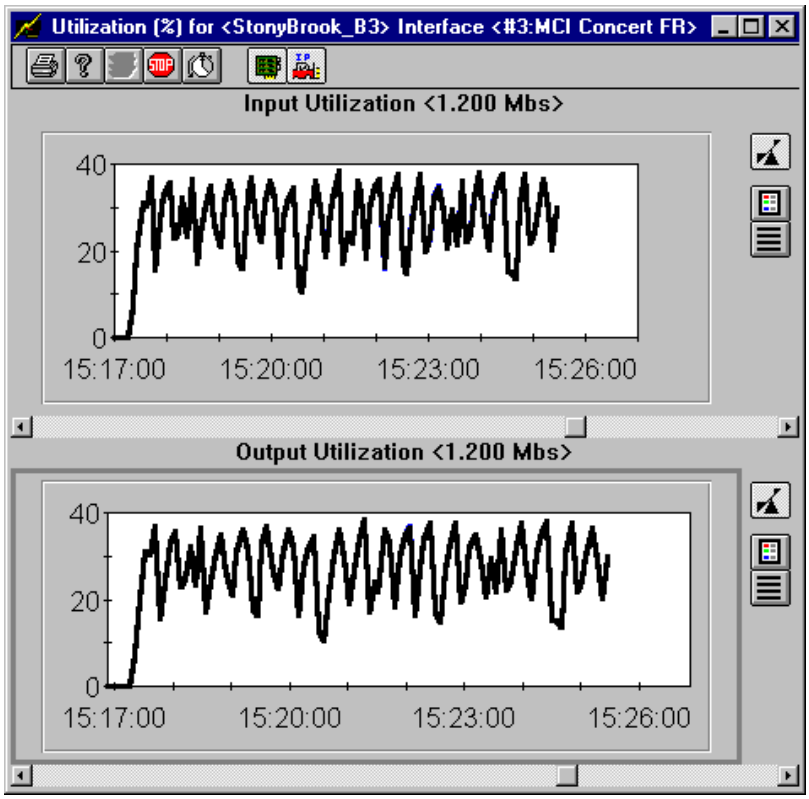
Consult the online help or *User Guide* for detailed instructions on using the Internet Map. For now, just take a few minutes to explore the map by clicking on icons, moving them around, trying some of the toolbar buttons, viewing right-click menus, etc. You will find that most map functionality is easy and intuitive, and after only a short time you will be an expert map user.

PHASE 5 - Performance Monitoring

NavisAccess provides a wealth of tools to monitor network performance. We have already seen performance tools for access devices in Phase 3. This section will highlight a few more such tools, but by no means all of them.

Link Utilization

1. Open the Internet Map and choose a device you'd like to monitor. Double-click on a link line close to the device.
2. The Applet Parameters box will display, with a default setting of a 60 second polling interval and a Line Style graph. Click [OK].
3. The Utilization Graph for the interface on the device which is responsible for that link displays. It will be similar to this:

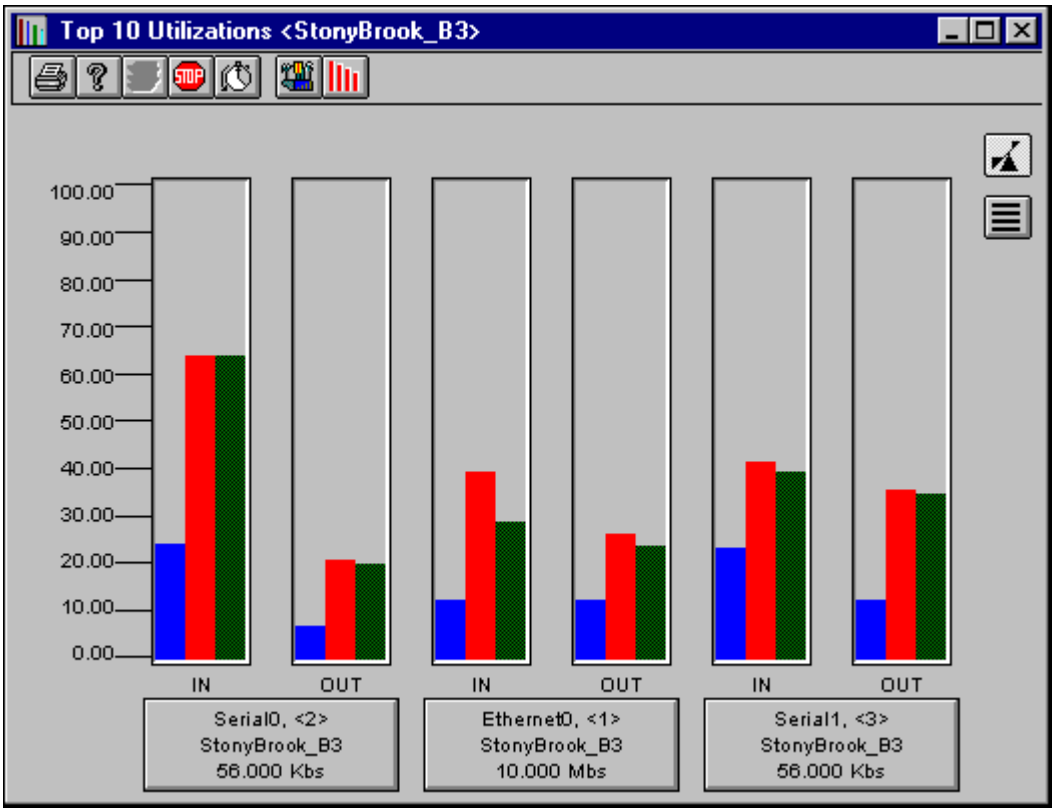


Top 10 Utilization

4. So far we have looked at utilization on a single device and a single interface. Unfortunately, rarely in life is troubleshooting so easy. In most cases you'll need to look at the subnet or device as a whole. The Top 10 Utilizations application is designed to do this. To see how it works on a single device, follow the steps below.

5. Open the Boxmap and double-click the Top 10 Utilization icon.

6. Click [OK] for the Applet Parameters window. The Top 10 Utilizations window displays.



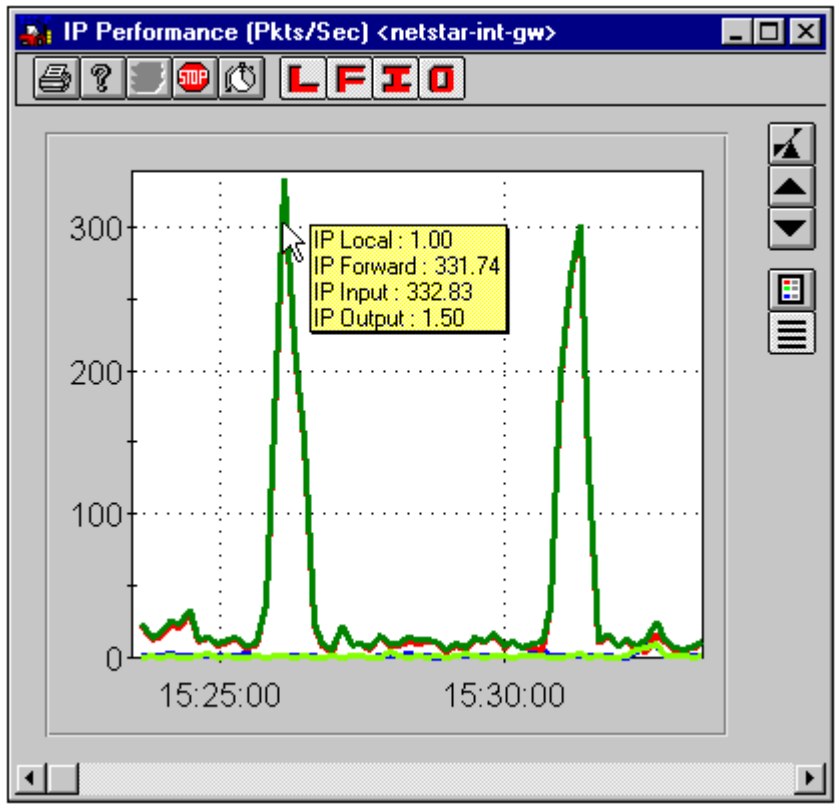
The Blue bar indicates Average utilization. The Red bar indicates Maximum utilization. The Green bar indicates Current utilization.

This graph displays up to the ten most active interfaces on the device. If the device has less than ten interfaces, all of the interfaces on the device

will be represented in the graph. Feel free to investigate the Sort and Config tools for details on how activity is measured.

IP Performance

7. Now let's check performance for the IP Protocol. The IP Performance applet monitors Input, Forward, Local and Output packet statistics. To launch, right-click on the IP icon in the Boxmap and select **Performance**.

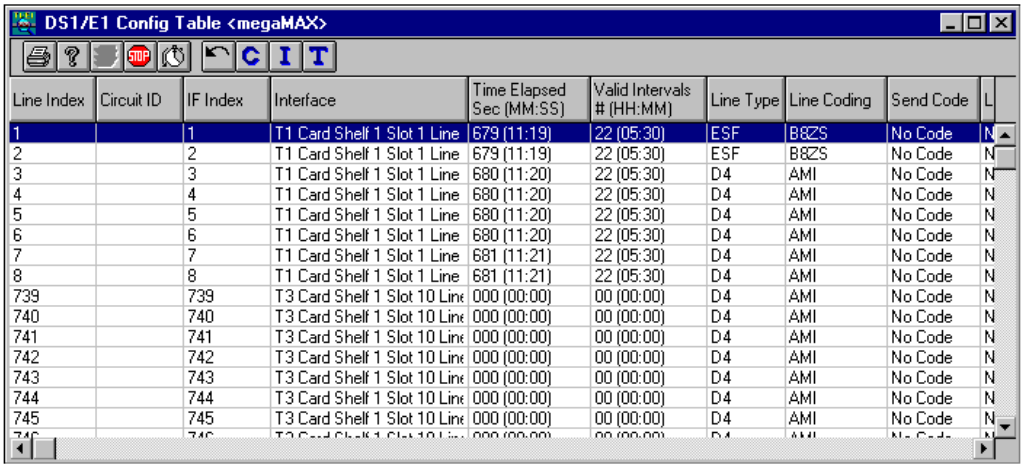


Similar graphs are available for IPX and AppleTalk.

DS1 Status and Statistics

8. We can also get quick access to DS1 (T1 and E1) line status conditions and statistics using the DS1 applet. Right-click on the DS1 icon and select **DS1/E1 Configuration** (the icon will only appear on devices with a T1 or E1 connection). This bring up the DS1 Config table, which lists

information such as line type, line coding, etc. You can also view details such as Errored Seconds, Severely Errored Seconds, etc. by selecting a row in the Config table and clicking the appropriate toolbar buttons.

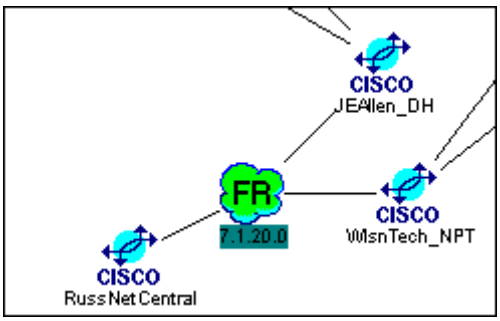


Line Index	Circuit ID	IF Index	Interface	Time Elapsed Sec (MM:SS)	Valid Intervals # (HH:MM)	Line Type	Line Coding	Send Code	L
1		1	T1 Card Shelf 1 Slot 1 Line	679 (11:19)	22 (05:30)	ESF	B8ZS	No Code	N
2		2	T1 Card Shelf 1 Slot 1 Line	679 (11:19)	22 (05:30)	ESF	B8ZS	No Code	N
3		3	T1 Card Shelf 1 Slot 1 Line	680 (11:20)	22 (05:30)	D4	AMI	No Code	N
4		4	T1 Card Shelf 1 Slot 1 Line	680 (11:20)	22 (05:30)	D4	AMI	No Code	N
5		5	T1 Card Shelf 1 Slot 1 Line	680 (11:20)	22 (05:30)	D4	AMI	No Code	N
6		6	T1 Card Shelf 1 Slot 1 Line	680 (11:20)	22 (05:30)	D4	AMI	No Code	N
7		7	T1 Card Shelf 1 Slot 1 Line	681 (11:21)	22 (05:30)	D4	AMI	No Code	N
8		8	T1 Card Shelf 1 Slot 1 Line	681 (11:21)	22 (05:30)	D4	AMI	No Code	N
739		739	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
740		740	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
741		741	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
742		742	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
743		743	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
744		744	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N
745		745	T3 Card Shelf 1 Slot 10 Line	000 (00:00)	00 (00:00)	D4	AMI	No Code	N

PHASE 6 - Frame Relay

NOTE: For Phase 6, you must have Frame Relay running on your network. If you are running Frame Relay, continue with this phase. Otherwise, move on to Phase 7.

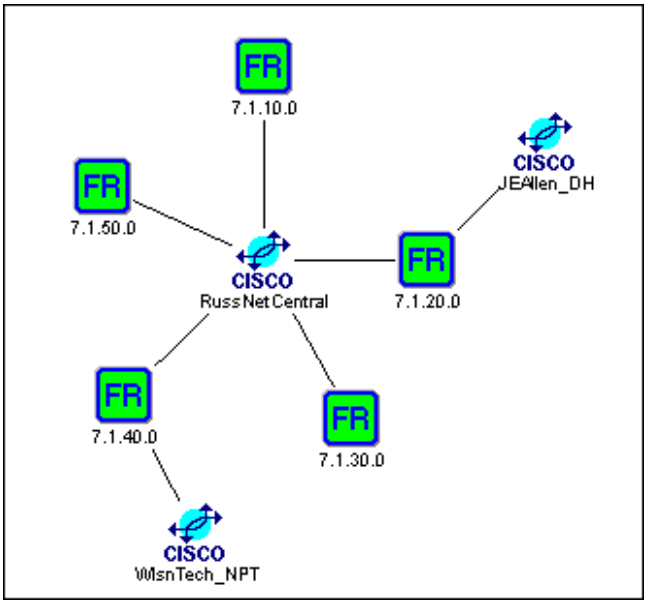
1. Open the NavisAccess Internet Map and locate a Frame Relay cloud icon, such as this one that connects three routers.



If Frame Relay is not running on your network, you will not see this icon.

2. Double-click the icon to open a Circuit Map, which displays the individual

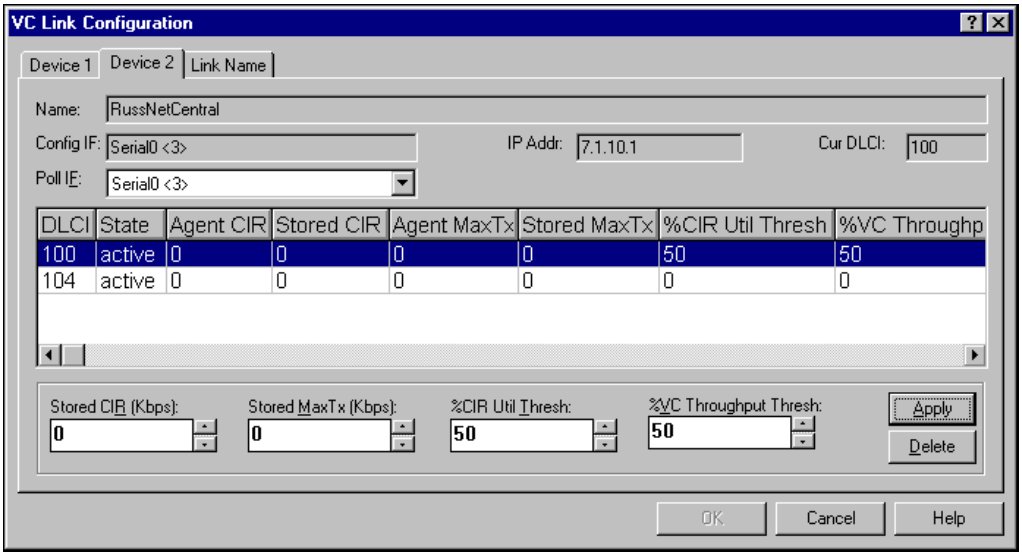
Frame Relay circuits, such as this:



A Frame Relay circuit is a logical connection between two routers. Each circuit contains a DLCI on one router, the path through the carrier network, and a DLCI on a second router.

3. The next steps involve creating a Virtual Circuit by associating the proper DLCI# on each router with the Virtual Circuit. An IP subnet address is listed under each Frame Relay icon to help you associate it with the correct DLCI.

4. Double-click a circuit icon that is connecting two devices. The Virtual Circuit Link Configuration dialog box displays.



To top of the dialog displays the name of the device, its parent interface (Poll IF), its logical interface that you are configuring (Config IF), and its IP address.

NOTE: If you are using subinterfacing or virtual ports, you must verify that the Poll IF field contains the correct information. The Poll IF Field should contain the physical interface connected to the Frame Relay network.

The Stored CIR field gives you access to the Frame Relay CIR Override feature. This feature allows you to set the CIR value of a DLCI. The CIR value that you set is known as the "Stored CIR" value.

5. Select the DLCI associated with the IP subnet for Device 1 from the list that appears in the dialog box. You should check the documentation for the device to determine the DLCI associated with the IP subnet.
6. Click the Device 2 tab and select a DLCI for that device.
7. Click the Link Name tab. Enter a descriptive name for the DLCI Link, and choose the Create Virtual Element option.
8. Click [OK] to close the window.

   A Virtual Element will now be available in the Group Wizard. A Virtual Element is an icon that represents the Virtual Circuit Link we have just created. From this icon you can launch performance-related applications.

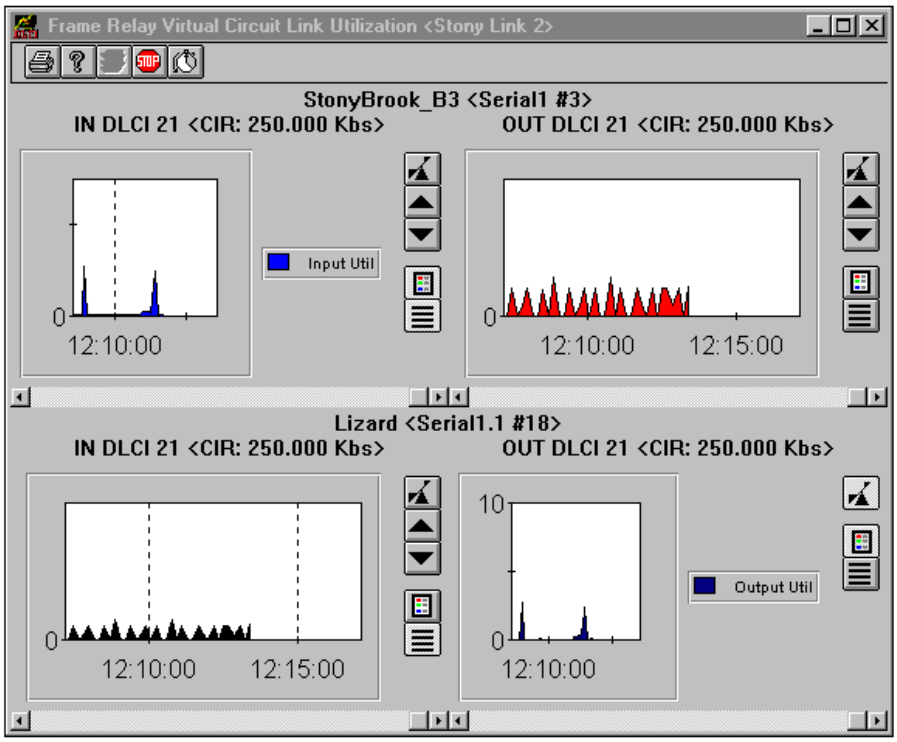
The Virtual Element appears as follows:

The display name will be whatever name you entered in Step 7.

9. Right-click on the Virtual Element icon. You will see three options: **Configuration**, **Utilization** and **Statistics**.

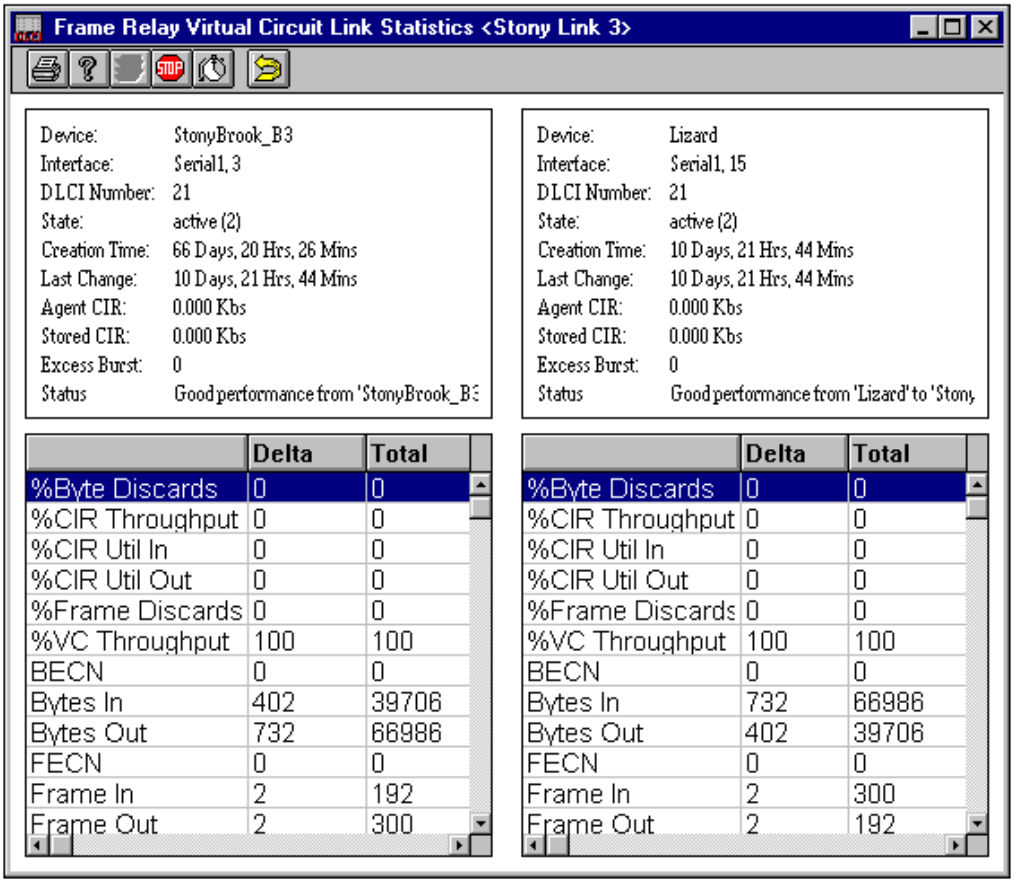
Configuration allows you to edit the link you just created by changing the name, changing DLCIs, etc.

10. Choose the **Utilization** option. This will open the Frame Relay Virtual Circuit Link Utilization graph:



The graph displays the input and output utilization for both sides of the configured Link.

11. Right-click the Virtual Element again and choose Statistics. The Frame Relay Virtual Circuit Link Statistics window displays:



The upper panes contain information on the devices in the Virtual Circuit Link. The Stored CIR value indicated in the top pane will be the ifSpeed value for the CIR if both the agent CIR (CIR MIB variable supplied by the manufacturer of the device) and stored CIR values are zero.

The lower pane contains a wealth of performance information (see the online help for field specifics).

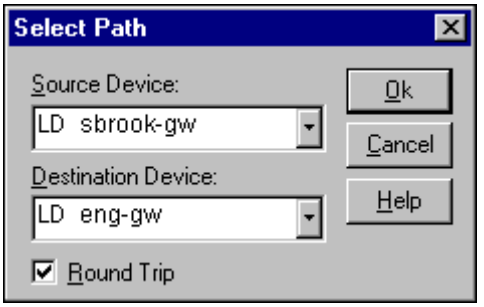
The *Bytes In* on one side of the Virtual Circuit should match the *Bytes Out* on the other side, and the *Frame In* on one side of the Virtual Circuit should match the *Frame Out* on the other side. The *% Byte Discards* and

% Frame Discards inform you of the percent of data that your carrier is dropping. A high percentage of discards can indicate the need to increase the bandwidth for this circuit.

PHASE 7 - Pinpointing Network Bottlenecks

Think you may have a bottleneck, or just want to check on the data flow between two devices? The PathFinder Tool gives you the information you need in a matter of seconds.

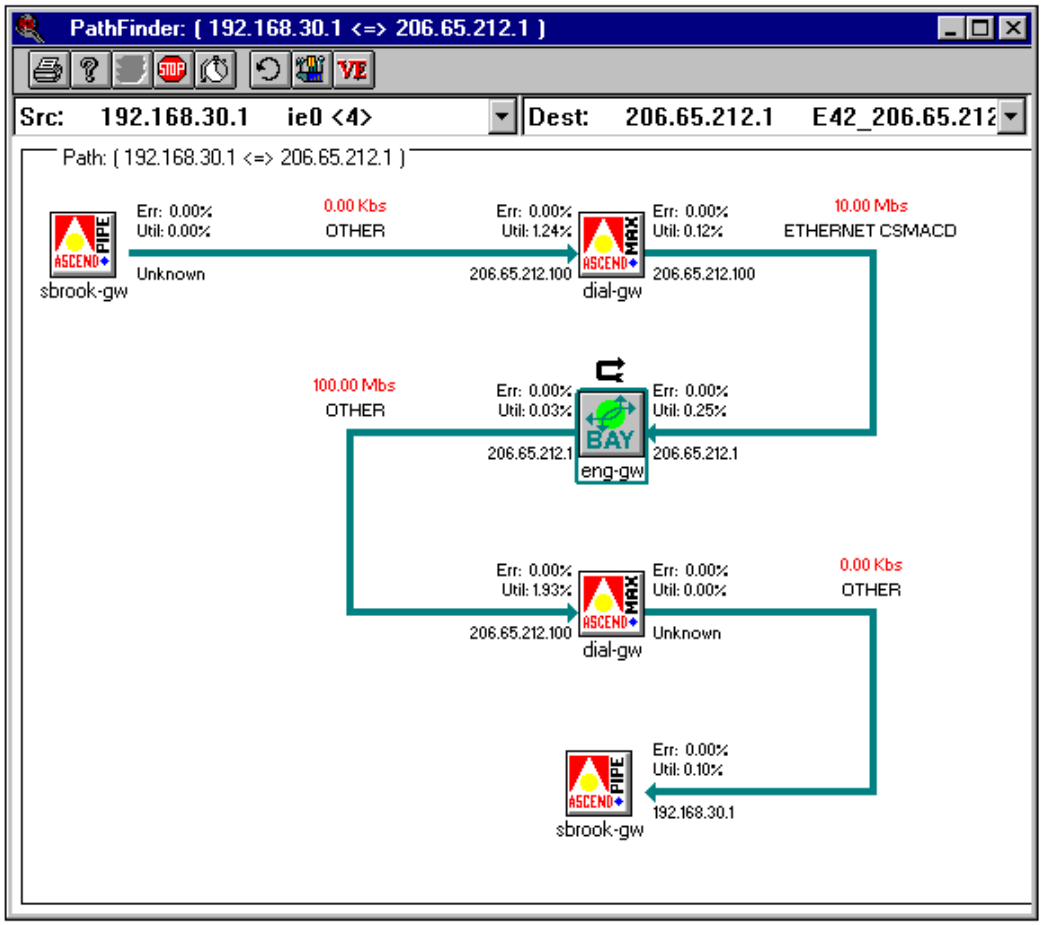
1. From the File menu, select **File > Pathfinder**. The Select Path dialog opens:



HP OpenView STEP:

To access PathFinder in OpenView, select **NavisAccess > Devices > PathFinder** from the OpenView map's menu bar.

2. Using the drop-down boxes, select a Source Device and a Destination Device. These represent the start and end points for the network path we will trace. For this illustration, select the Round Trip option.
3. Click [OK]. NavisAccess will trace the path between the devices and graphically portray it:



From the PathFinder screen, you can easily view the port Utilization and Error levels -- both in to and out of each device. The type and bandwidth of the interfaces used to determine the route are shown, giving you a concise view of the path between the selected devices.

NavisAccess also gives you the ability to specify which interface on the Source device should be used as the starting point for determining the path, and which interface on the Destination device should be used as the ending point for determining the path. In addition, NavisAccess makes it easy to see whether a path is symmetrical or asymmetrical.

4. If you wish to easily run Pathfinder for these two devices in the future, click the [Create Virtual Element] button to create a Virtual Element in the

Group Wizard. From this icon, you can re-launch Pathfinder for these two devices by just double-clicking. The Pathfinder Virtual Element icon looks like this, with user-defined text.

PHASE 8 - Configuration Management

NavisAccess provides many tools to make device configuration faster, easier and error-free. We will look at one of these tools and briefly discuss several others.

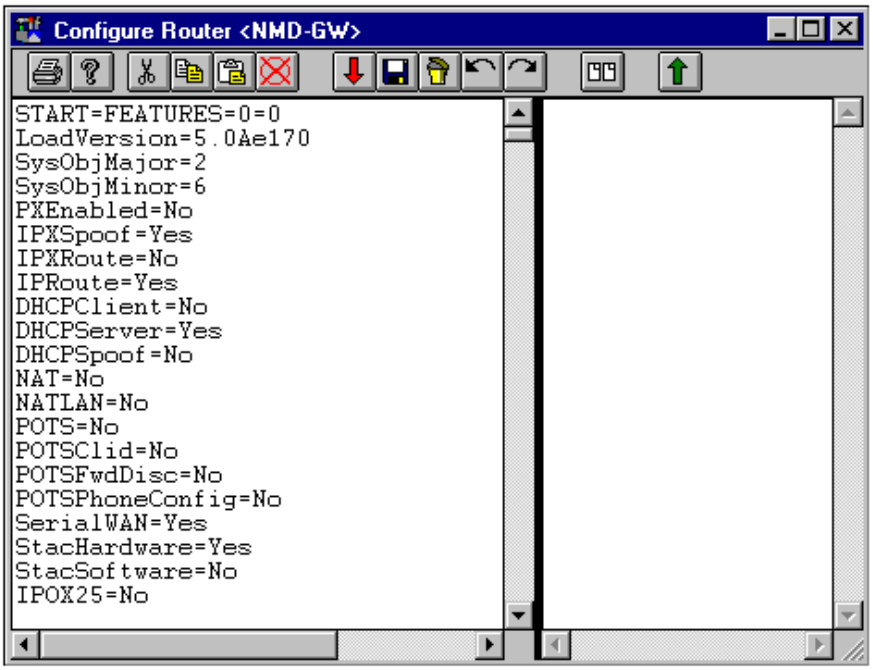
Configuration File management

Managing device configuration files is an ongoing, labor-intensive task that often involves time-consuming and error-prone Telnet sessions. NavisAccess provides an easy-to-use utility that makes configuration file management easy.

1. From the Boxmap of an Ascend device, right-click on the Configuration icon and choose **Configure Router**.
2. The Configure Router applet appears. The first step is to download the configuration file currently on the device.

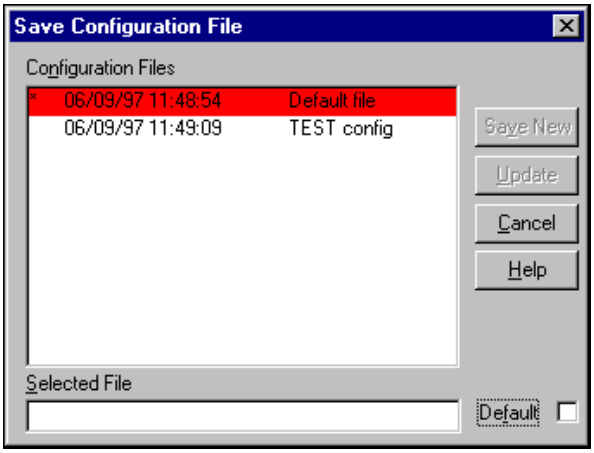
3. Click the [Retrieve Configuration File] button. In the Get Configuration File window, click [Download]. This will bring up the Select Download Mode dialog. Consult the online help for details on available options. For now, keep the default value and click [OK].
4. If you have the proper write community string configured, the configuration file will begin to download. (To change the write string, right-click on the same Configuration icon and choose "Configuration".)

   The configuration file will appear in the left-pane of the Configure Router applet.



5. The next step is to save this file in the NavisAccess database. This will become the default configuration file.

   To save it, click the [Save] button. This opens the Save Configuration file window.



6. In the Selected File box, enter a name (we suggest DEFAULT for the default file) and click the Default check box. Then click [Save New] to save the file.

   This file is now saved as the default configuration file. There are a number of uses for this. You can use this file as a template for creating new configuration files. You can use it as a rollback file if and when an incorrect change to a configuration file causes a problem. You can use it as a base file against which a differences operation can be performed.

   Let's take a look at that feature.

7. NavisAccess lets you compare two configuration files to quickly see exactly what is different between the two files. This is a great way to immediately identify where a configuration setting may have gone wrong.

   Begin by clearing the screen by clicking the [Clear Configuration] button.

8. Next, reopen the config file we just saved. Click the [Retrieve Configuration File] button again. The default file will be highlighted in red. Click the file name and then click the [Retrieve] button. The file will appear in the left-hand pane.

9. Select any three parameters and change the settings. We will change the following:

   NAT=No
   NATLAN=No
   POTS=No

   They will all be changed to equal Yes.

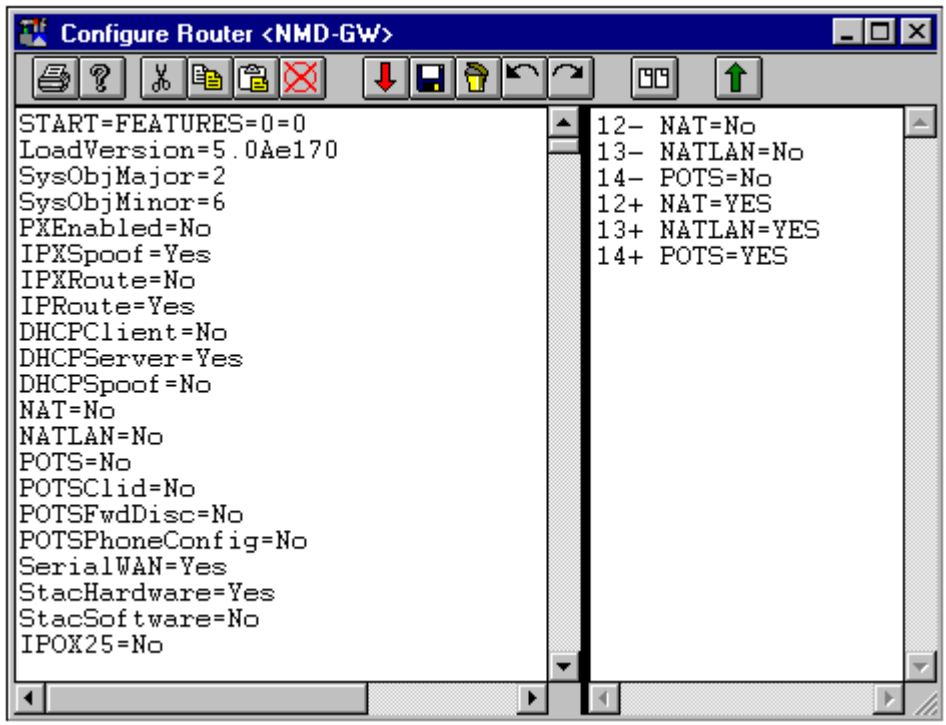
10. Make similar changes in your own file, save the file again, and call it TEST.

11. Clear the screen.

12. Download the file from the device a second time so it appears in the left-hand window pane.

13. Click the [Perform Differences Operation] button. Highlight the file TEST, and click [Retrieve].

    The TEST file (in which we made changes) will be compared to the file we just downloaded. The differences between the files will be displayed in the right-hand window pane. In our example, it would look like this:



Notice that the three parameters we changed appear in the window, along with their line numbers and a plus or minus sign. The signs indicate what needs to be done to make the two files identical.

A minus sign indicates that you would have to remove those lines from the file now showing in the left-hand pane. A plus sign means you need to add those lines to the file. In our example, that clearly means changing the No parameters to Yes.

More configuration tools

This is only one example of what NavisAccess offers. Among other tools are:

- **Scheduled config download and diffing**
  You can schedule a download to take place on a regular basis. The downloaded file will be compared with the Default file, and if there are any differences an alert will be generated. This allows you to maintain close watch on any changes that are being made.
- **Configuration uploads**

Using the same utility we just explored, you can easily upload configuration files. You can also schedule uploads to take place on one device or across many devices at the same time. This means you can update the configuration files on your entire network with one simple schedule.

- **Software uploads**
  You can also upload device software, either individually or across multiple devices.
- **Multi-vendor support**
  Configuration tools are available for many different vendor devices.
- **System Reset**
  For Ascend MAX, Pipeline and MAX TNT devices, right-clicking on the Configuration icon presents a System Reset option, which lets you reset the box with a simple point-and-click process.

See the online help or NavisAccess *User Guide* for details on these and still other configuration utilities.

PHASE 9 - Other Features

Even with all the features we have just touched on, they are only a part of what NavisAccess has to offer. Many other features are available. They are all fully documented in the online help or NavisAccess *User Guide*.

Of course, you can always just explore the application on your own, opening screens and seeing what shows up. All screens have context-sensitive help which should answer any questions you have.

Some major features you might want to look for:

- **Fault Monitoring**
  NavisAccess features an extensive system of fault monitoring tools. Access devices can be monitored for changes in call rates, modem and channel utilization thresholds and more. Routers can be monitored for error levels, interface up and down status, utilization thresholds and more.
- **Extensive Reporting**
  The NavisAccess reporting tools let you trend your network over days and weeks. There are over 40 predefined reports which can be run on single devices or, more importantly, on groups of devices. Only through group-based reports can you get an accurate picture of what happens on your network over the course of a day or a week.

- **Scheduled Applications**
  NavisAccess provides an easy-to-use Schedule Wizard that lets you schedule many different tasks. Some of the schedules work in conjunction with the reporting tools to gather data for network performance, interface utilization, etc. Other schedules perform specific tasks, such as configuration file download and diffing, software uploads, password changes, device discovery, etc.

- **MIB Tools**
  The NavisAccess MIB compiler is a handy tool that lets you quickly browse a device MIB and check the current values for any MIB variables. MIB profiles can be created allowing you one-click access to MIB variables. The tools can return data in text, table or even graphical format.

- **Additional Performance Tools**
  In addition to the performance tools covered in the QuickTour, NavisAccess has other tools for monitoring IP, IPX, AppleTalk, X.25, Bridging, Buffers, Performance Distribution and more.

Appendix A: Uninstalling Solaris standalone

Uninstalling NavisAccess on Solaris standalone

The following procedure can be used to uninstall NavisAccess from your Solaris system. This is only for the standalone version of NavisAccess.

1. Make sure you are using the kourne shell (type **ksh** at the prompt) and also make sure that NavisAccess program is closed.
2. Run the following at the command prompt:

   `stop_all.ksh` [to stop the services]
3. Run the following:

   `dbstop` [to stop the database engine]
4. Run the following:

   `/etc/rc0.d/K99windu stop` [to stop all windu services]

   Also check if any other windu clients are running. If they are, you must kill them before you proceed. One way to do this is as follows:

   `ps –aef | grep windu_client`

   Note the process ID of windu_clientd40 and kill it as follows:

   `kill -9 <windu_clientd40-pid>`
5. Run the following:

   `unset AutoBahn`
6. Delete the following files:

   `/etc/rc2.d/S99ascendDBeng`
   `/etc/rc2.d/S99windu`
   `/etc/rc0.d/K99ascendDBeng`
   `/etc/rc0.d/K99windu`
   `/etc/init.d/ascendDBeng`
   `/etc/init.d/windu`
   `/etc/dt/config/Xsession.d/ascendNavisAccess`
7. Delete the NavisAccess installation directory, for example:

`/export/home/navisaccess`

- or -

`/opt/navisaccess)`

8. If you edited your .profile file to run the .NavisAccessProfile script, you can re-edit to remove references to running this script.
9. Optional: Re-edit your semaphore changes back to default:
10. Under the file

    `/etc/system...`

    Remove the "set" statements you previously entered in.
11. Reboot your system at this time.

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