



ForeView™ 4.2
RMON ST Expert Visualizer
User's Manual

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Software Version 4.1.3

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CHAPTER 1

Expert Visualizer Basics

You can use the *ForeView RMON ST* application suite to configure, manage, and display statistical information collected from a variety of agents, switches, and frame-relay links. Expert Visualizer is the tool you can use when you want to see all this information, from a large number of devices, in a single screen.

Expert Visualizer features powerful 3-D display capabilities that let you not only view agents and segments on your network, but also let you size the visual display based on variables such as utilization, bytes, or errors. Using the 3-D display capabilities, you can quickly and easily focus on specific areas using other available tools.

You can zoom in on selected portions of your network based on various RMON parameters such as collisions, utilization, packets, broadcasts, and errors, among others. The size of each screen object indicates the intensity of the selected statistic at that location. The number of lines connecting the objects indicate the intensity of network traffic between segments or hosts across the entire enterprise network.

When you want to examine a portion of a network in more detail, you can launch *ForeView RMON ST* Manager diagnostic tools such as Segment Zoom, Host Zoom, and others directly from Expert Visualizer. For information on these features, see the *ForeView RMON ST User's Manual*.

You can use Expert Visualizer to graphically display information about your network for a single agent, a frame relay agent, an agent group, or a switch. Visualizer also provides an interface to *ForeView RMON ST* tools that you can use to focus on problem areas, resolve problems, and even view trend analysis and print data.



When working with switches, Expert Visualizer lets you see all ports. The collection of ports on a switch are an implicit agent group. Although the ports on a switch aren't classified as an agent group in the *ForeView RMON ST* main window, they are in fact a group.

1.1 Working with Visualizer modes

In Expert Visualizer, you can choose from three different display modes: **Traffic Monitor**, **Internet Monitor**, and **Application Monitor**. These modes let you evaluate your network in terms of physical, logical, or application traffic as follows:

- **Traffic Monitor**. Helps you troubleshoot physical layer network problems. The information is taken from the data-link layer and maps onto the basic RMON standard supporting any RMON-compliant agent or probe. Traffic Monitor provides information relating to performance, topology, and traffic patterns for one or more segments.

Traffic Monitor runs in **Basic**, **Frame Relay**, or **Switch** mode, depending on what you select from the *ForeView RMON ST* main window list boxes (agent, frame relay agent, agent group, or switch) before launching Visualizer. Traffic Monitor intelligently launches the correct application, depending on what you choose to monitor.

Regardless of whether your network is a switched environment or contains WAN frame-relay circuits or shared/legacy LAN traffic, you can use Traffic Monitor to view traffic, just as you would in a less complex network. The beauty of the application is that the interface you work with in all modes is identical, yet Traffic Monitor does all the background work for you, gathering useful statistics without additional configuration. Even though there are multiple applications running in the background, the only difference you'll see when you run different Traffic Monitor modes is the application name on the title bar of each window in the GUI. The modes available are **Basic** mode, **Frame Relay** mode, and **Switch** mode.



For more information about the different Monitor types and the Views available with each, see Changing Views on page 3-3.

- **Internet Monitor**. Helps you troubleshoot logical network problems with information taken from the network layer and maps onto the RMON2 standard. Visualizer can display information from any RMON2-compliant agent or probe. Internet Monitor provides information related to subnetworks and enterprise network-layer traffic patterns and performance for a variety of network layers including IP, Novell, DECnet, Vines, and Appletalk.



Internet Monitor operates only in conjunction with an RMON2-compliant agent or probe. It is not supported by the FORE Systems' LAN switches.

- **Application Monitor.** Helps you troubleshoot application-level problems for applications such as Notes, cc:mail, and Sybase, among others. The information is derived from *ForeView RMON ST* extensions for Domain View and Enterprise RMON and the application-specific group of RMON2. Application Monitor provides information about application traffic and usage patterns throughout an enterprise network. You can customize the set of applications participating in the Application Monitor.



Application Monitor will not function properly or produce useful data unless it is used in conjunction with a NETscout Probe. For information on NETscout Probes, please contact the FORE Systems TAC (Technical Assistance Center).

1.1.1 About Different Agent Types

Before launching Visualizer, you can select a normal agent, a frame relay agent, or a switch. When you select a frame relay agent, you'll be able to see DLCI information for the selected network segment. When you select a switch, you'll be able to see all the ports on it. The ports are an implicit group. Keep in mind that the tools available for further drill-down and problem resolution may differ, depending on the type of agent you select before launching Visualizer.

1.2 About RMON2

RMON2 support is necessary when you need to monitor and troubleshoot at layers higher than data link. With *ForeView RMON ST*'s RMON2 functionality, you can monitor traffic at network and application layers. You now can get statistics for all hosts accessing a specific segment, no matter where the hosts are located, or how the network is connected.



The PowerHub LAN switches contain mini-RMON or Roving RMON groups, but do not support RMON2 in the 4.2 software release.

With RMON2, RMON groups map into all of the major network layer protocols, such as IP, IPX, DECnet, Appletalk, Vines, and OSI. You can monitor application layer traffic, so you can monitor network applications such as Notes, Telnet, Microsoft Mail, and Sybase. You can do this because RMON2 outlines how you can construct logical filters for remote agents. *ForeView RMON ST* can now monitor and help you troubleshoot key application layer traffic within the enterprise network.

Both *ForeView* Expert Visualizer and *ForeView RMON ST* are built in the framework of the RMON standard and provide tools that are structured for easy migration to the upcoming RMON2 standard.

1.3 Chapter Summaries

This manual is organized into five chapters that contain the information you need to work with all of *ForeView* Expert Visualizer's capabilities. The following chapters are included in this book:

Chapter 1: Expert Visualizer Basics - Introduces the *ForeView* Expert Visualizer.

Chapter 2: Getting Started - Tells you how to get started with Visualizer.

Chapter 3: Using ForeView Expert Visualizer - Discusses Visualizer basic functions and tells you how to use them.

Chapter 4: Using and Customizing Views - Describes Visualizer Views and tells you how to use them.

Chapter 5: Troubleshooting with Expert Visualizer - Tells you how to use Visualizer as a powerful starting point for troubleshooting your network.

Appendix A: Visualizer's Configuration File - Contains the `config.vis` file listing.

Appendix B: Color Applications and X-Window Displays - Describes color applications and the X-window display.

1.4 Document Conventions

This section illustrates and describes all the conventions used throughout the manual. Take a look now, before you begin using this book, so that you'll know how to interpret the information presented.

1.4.1 Using a Mouse

Throughout this book, we provide mouse instructions based upon use of a three-button mouse. If you're using a two-button mouse, you can generally press and hold down *both* the left and right buttons to simulate the middle mouse button's actions on a three-button mouse.

1.4.2 Understanding Different Fonts

When you're using this book, you'll notice that some words look different. The table below explains what the differences in word appearance mean.

When you see this:	It means you must:	For example:
Commands in Bold (may be used with other conventions)	type a command or some other element, as shown.	type <code>setenv</code>
Words within text in a sans-serif font.	Commands, Menu selections, such as File/Run, or file names that appear within text of this manual.	<code>\$HOME/usr/dvinst.cfg</code>
Bold field names, headings, and other bold words	field names, section names within a window, list box names, variables, and special emphasis.	Command button example: Click on the Edit button.
menu selections in a different font, such as Edit/Reset... or File/Print	select the first menu item shown, then select the next item specified.	Select Size By/Utilization
Words within the less-than and greater-than symbols. (<>)	Words representing function keys on the keyboard. Press the specified key.	Press <Enter> press and hold the <Shift>+<Ctrl> keys to...
Words shown in bold within the less-than and greater-than symbols (<>)	provide a filename, path, or system variable; however, do not type the symbols!	Specify the <install_path>: HOME

1.5 Text Notes and Graphics

Text notes are always set off by one of the three terms that follow in the examples below. When you see these terms, you'll know what kind of information to expect from the related text notes.



This is the text note. A text note provides references to other areas of the manual or other documentation for supplementary information, as well as interesting information that's related to, but different from, basic text.

CAUTION



This is the Caution text note. A caution text note provides information you need to know to prevent operations problems with system hardware or software.

WARNING!



This is the Warning text note. A warning text note provides **extremely important** information you **must** read to prevent damage to the system hardware, or to the person operating the hardware.

1.6 Procedures

Procedures begin with a feature description, followed by step-by-step, numbered instructions. When procedures require you to supply user-defined information, refer to the table in Understanding Different Fonts on page 1-6.

The following paragraphs show how procedures are displayed.

1. Numbered steps tell you what action to take.
2. Numbered steps may give you options, as shown below:
 - Option 1 and criteria required.
or
 - Option 2 and criteria required.

1.6.1 Sample Windows

In this book, all the sample windows you'll see show a white background with differently shaded gray objects displayed. The Visualizer screens you'll see when you launch the application are actually differently colored objects displayed upon a black screen. However, to ensure that the screens are as useful as possible in this manual, we've inverted the colors so you can see the objects, labels, addresses, and other graphical elements clearly.

1.7 Technical Support

In the U.S.A., you can contact the FORE Systems TAC (Technical Assistance Center) by any one of the following four methods:

1. If you have access to the Internet, you may Contact the FORE Systems TAC via E-Mail at the following Internet address:

info@fore.com

2. You can access the FORE Systems Web Page at:

http://www.fore.com

3. You can send questions via US mail to the following address:

FORE Systems

1000 FORE Drive

Warrendale, PA 15086

4. You can telephone your questions for support to:

1-800-671-FORE

Non-U.S. customers can get support through their local distributors.

When contacting the FORE Systems TAC, please be prepared to provide information such as your support contract license number, your serial numbers of the products, and as much information as possible describing your system configuration and your problem or question.

1.8 Related Documentation

ForeView RMON ST User's Manual

If you're running *ForeView RMON ST* on a UNIX platform, the *ForeView RMON ST User's Manual* is the reference manual you'll use.

1.9 Installing Visualizer

If you installed the *ForeView* Expert Visualizer application when you installed *ForeView RMON ST*, then you should skip this section and proceed to Chapter 2: Getting Started. *ForeView* Expert Visualizer has been installed if there is an icon labeled "Expert Visualizer" in the main window of *ForeView RMON ST*.

Before installing *ForeView* Expert Visualizer, make sure that you have installed the *ForeView RMON ST* application. *ForeView* Expert Visualizer is an add-on application and requires *ForeView RMON ST*.

To install *ForeView* Expert Visualizer, use the following procedure.

1. Login as root user.
2. Insert the *ForeView* 4.2 CD in the CD-ROM drive and mount the file system as `/cdrom`, using the appropriate device name and mount command for your OS. See the documentation for your OS for more information.
3. Switch to the UNIX directory on the CD-ROM by typing the following:

```
cd /cdrom/unix
```

4. Launch the installation script by typing the following command:

```
./install
```

5. Follow the directions in the install script to install *ForeView* Expert Visualizer.

After the installation is complete, start *ForeView RMON ST* by changing to the `/usr/fore/foreview/bin` directory and typing the following command.

```
./fvrmon
```

CHAPTER 2

Getting Started

2.1 Introduction

In this chapter you'll learn how to start Visualizer, as well as get familiar with how to work with the menus.

2.2 Starting Visualizer

Visualizer is invoked from the *ForeView RMON ST* main window.

2.2.1 Starting Visualizer from *ForeView RMON ST*

To start Visualizer from the *ForeView RMON ST* main window, use the following procedure.

1. Start *ForeView RMON ST* as described in the *ForeView RMON ST Manager User's Manual*. The *ForeView RMON ST* Manager main window is displayed, as shown in Figure 2.1 on page 2-2.

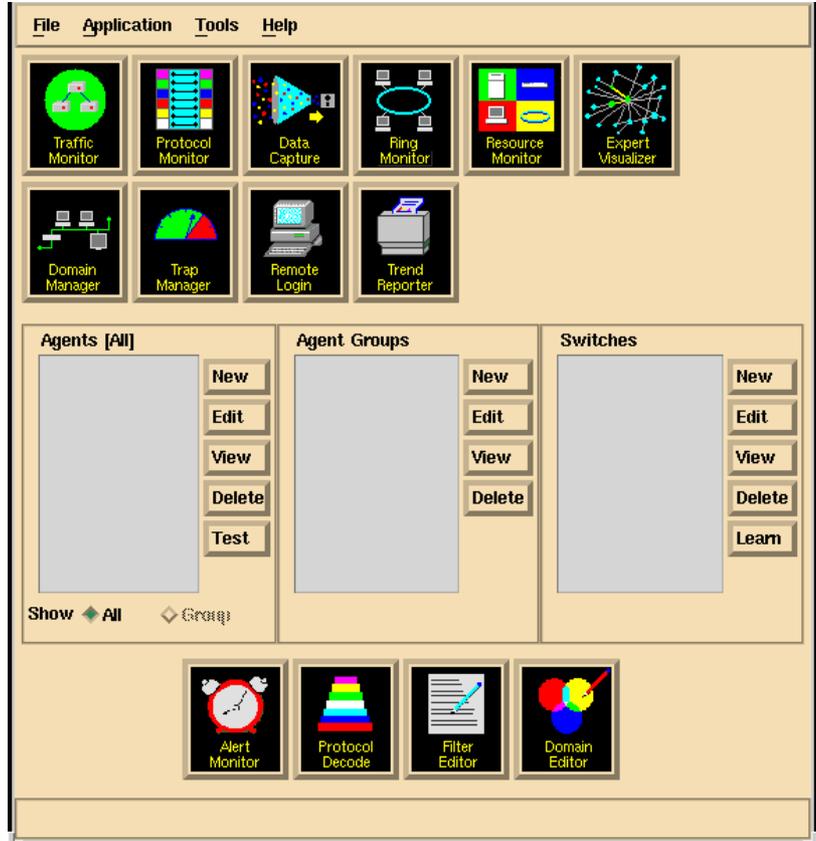


Figure 2.1 - ForeView RMON ST Manager main window

2. Define and select the agent, agent group, or switch you want to view in Visualizer. Keep in mind that although you can use Visualizer with individual agents, it's really most useful when you launch it for an agent group or a switch.
3. Click on the Visualizer icon shown in the ForeView RMON ST main window.

The Expert Visualizer main window (Figure 2.2 on page 2-3) is displayed. The display you see differs, depending on whether you selected an agent, group, or switch before launching the Visualizer.

2.2.2 Understanding the Visualizer Main Window

When you start Visualizer, the Visualizer main window (Figure 2.2) is displayed. The default view is Traffic Monitor, Segment View. Note that in this view, different network segments are shown as different shapes and colors. Segment view details are provided in Chapter 4.

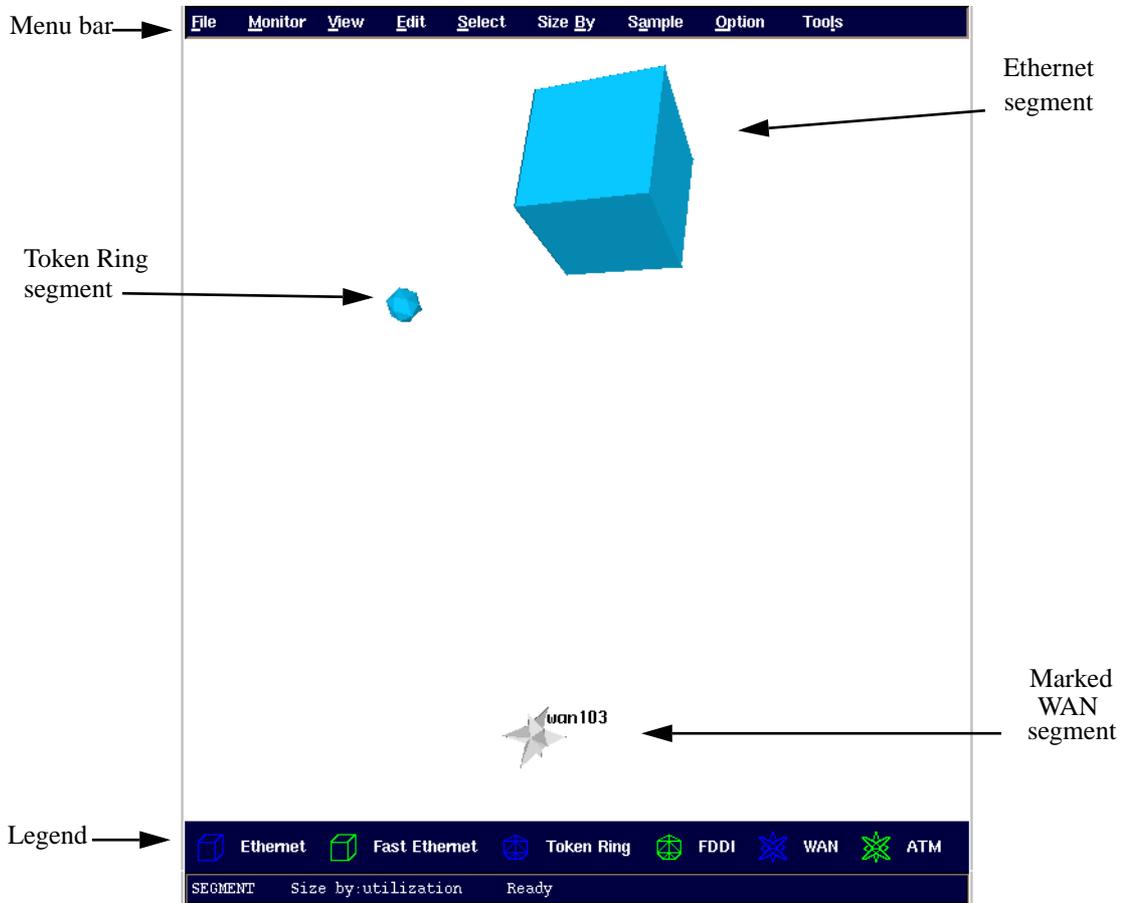


Figure 2.2 - Traffic Monitor, Segment View window

The rest of this manual describes each view, as well as viewing and troubleshooting your network.

2.3 Working with Menus

When you're working with Visualizer, you'll use the items on the menu bar often. For frequently used menus, a shortcut is detaching menus. When you detach a menu, it remains open, and you can drag it anywhere on the display to a convenient spot. For example, if you're using the **Size By** menu to customize elements in a view, you can open, detach, and move the menu so that it's easily accessible as you're working.

2.3.1 Detaching Menus

When you detach menus, manipulating the views is faster because you don't have to constantly open and close the menus you want. Detached menus update automatically as necessary, depending on the selections you make.

Whenever you want to detach a menu from the menu bar, use the following procedure.

1. Click on the menu you want to detach from the menu bar.
2. Using your middle mouse button, click and hold while you drag the opened menu off the Visualizer window and move it to a convenient spot elsewhere on your desktop.
3. The menu you selected is opened and detached from the menu bar, although the name of the menu is still displayed on the menu bar.
4. Repeat Step 1 and Step 2 for as many menus as you want to detach.



The Visualizer window displays all the menus you detached. Figure 2.3 on page 2-5 shows what a window with *all* menus detached looks like.

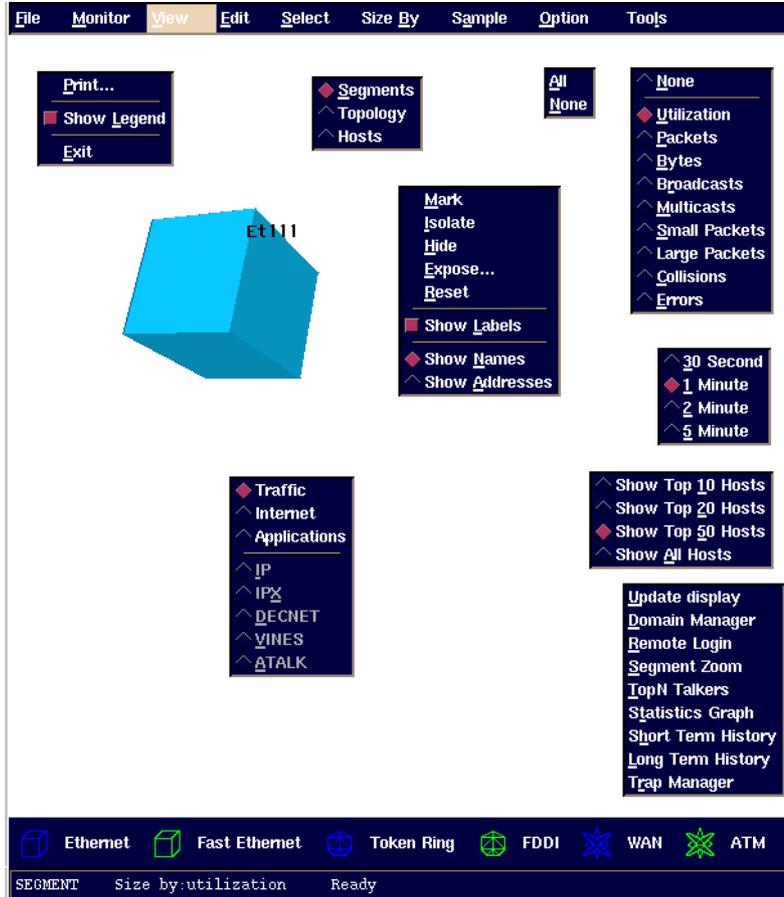


Figure 2.3 - Visualizer window with all menus detached

2.3.2 Reattaching Menus

To close and put a menu back on the menu bar, just click on the menu name (on the menu bar) of the detached menu. When you do so, the menu you detached earlier closes and moves back to the menu bar.

2.4 Sample Windows

As you work with Expert Visualizer, you'll see many different types of windows, depending on the views, tools, agents, groups, or switches you select. To give you an idea of what to expect, this section contains several sample views.

If you select Traffic Monitor and Segment View with labels, you'll see a window similar to the one shown in Figure 2.4.

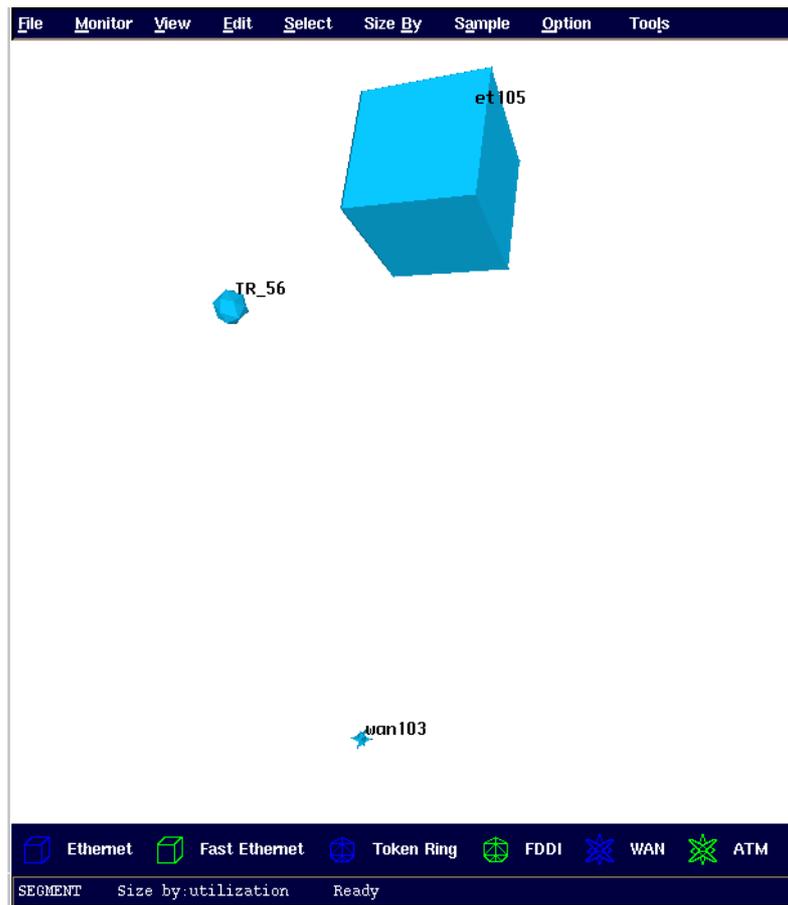


Figure 2.4 - Traffic Monitor window, Segment View,

If you select Traffic Monitor and Host View with labels, you'll see a window similar to the one shown in Figure 2.5.

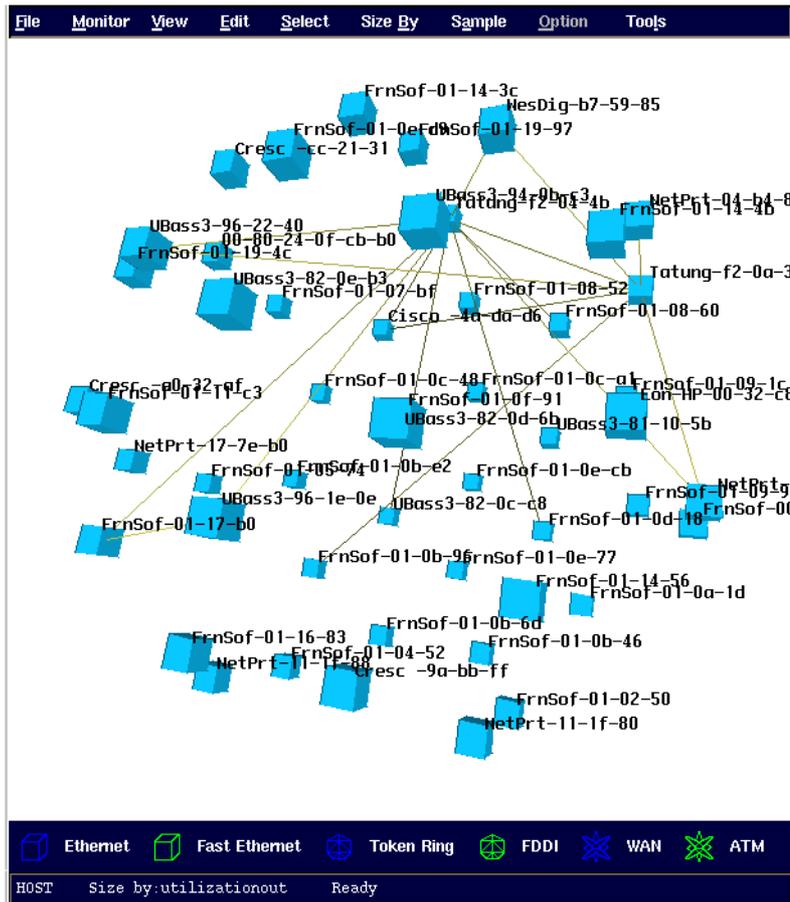


Figure 2.5 - Traffic Monitor window, Host View

Getting Started

If you selected Traffic Monitor, Topology View with labels, you'll see a window similar to the one shown in Figure 2.6.

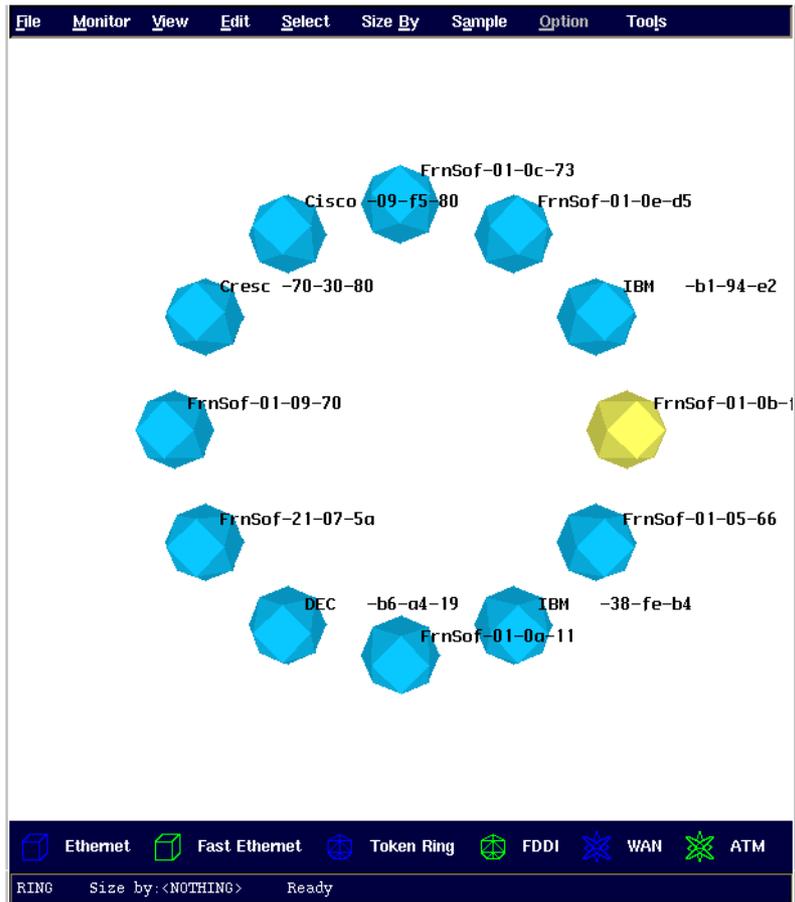


Figure 2.6 - Traffic Monitor window, Topology View

If you selected a switch before launching Expert Visualizer, the first window you'll see is similar to the one shown in Figure 2.7. Notice that in this view, each port on the selected switch is labelled.

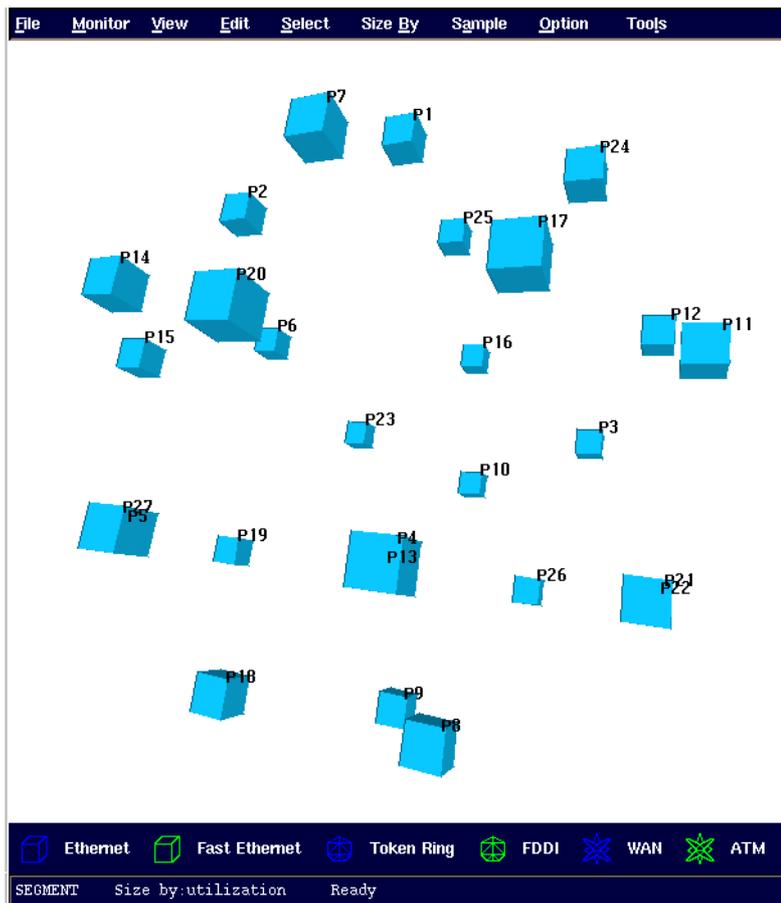


Figure 2.7 - Switch window, Segment View,

Getting Started

CHAPTER 3

Using *ForeView* Expert Visualizer

This chapter tells you how to use Visualizer basic functions. Later chapters provide more detailed information on Visualizer Views and on network troubleshooting using Visualizer.

3.1 Changing the Sample Time

You can select how often Visualizer samples selected elements. The default sample time is 1 minute. To change the sample time, select Sample from the menu bar and then select the sample time you want.

3.2 Selecting Visualizer Monitors

Visualizer lets you select one of three monitors (Traffic, Internet, or Application). The monitor you select affects the view (views are described in detail later in this manual). Monitors and RMON2 are described in Chapter 1. In this section, you learn about views, labels associated with each monitor, and how to select a monitor. Monitor selections you can choose include:

- **Traffic.** The default monitor, which lets you select any view at any time. It works on all segments for Segment View and for selected segments in the Host View and Topology View.

The Host View is clustered based on agent name if you've selected more than one segment. The segment labels available from the Traffic Monitor are:

- **Segment View.** Shows agent name and IP address.
- **Topology View.** Shows host name and MAC address.
- **Host View.** Shows host name and MAC address

For the Topology View, you can only select one segment, and that segment *must* be either FDDI or Token Ring.



In Traffic Monitor and Application Monitor, the Host View is clustered by agent name, if more than one segment is in use.

- **Internet.** The Internet Monitor works on all segments in the Segment View. You can select the Host View while you're in the Segment View.
 - **Segment View.** Shows agent name and IP address.
 - **Host View.** Shows host name and network address.
- **Application.** The Application Monitor works on all segments for the Segment View and for selected segments in the Host View. The labels available from the Application Monitor are:
 - **Segment View.** Shows agent name and domain name like this:
agent: domain
 - **Host View.** Shows host name and address.

To select a monitor, select Monitor from the menu bar and then click on the monitor type you want.



Internet Monitor and **Application Monitor** requires a NETscout Probe.

3.2.1 Monitoring Specific Protocols

In addition to selecting a monitor, the Internet Monitor enables you to select the *protocol* you want to monitor. Protocols you can select include the following:

- IP
- IPX
- DECNET
- VINES
- ATALK

To select a protocol, from the menu bar select Monitor, then select the protocol you want to monitor from those shown in the group at the bottom of the menu. Keep in mind that the Internetwork Monitor defaults to IP. To change this default setting, you must edit the `config.vis` file. For more about the `config.vis` file, see Appendix A.

3.3 Changing Views

This section presents a summary of Visualizer views. Views are discussed in detail in Chapter 4. The View menu changes dynamically when you change the Monitor. The View menu selections are as follows:

- If you've selected the **Traffic Monitor**:
 - Segments
 - Topology - Token Ring and FDDI only
 - Hosts
- If you've selected the **Internet Monitor**:
 - Segments
 - Hosts
- If you've selected the **Application Monitor**:
 - Segments
 - Hosts

CAUTION



When you change monitors, the view **always** defaults to Segments.

3.3.1 Rotating Views

Visualizer views are three-dimensional. You can look at any view from different perspectives by rotating it. When you do so, you select what portions of the view are most interesting to you and rotate them to the foreground of the display.

To rotate any view, just hold down the middle mouse button and move the mouse—keep in mind that the faster you move the mouse, the faster the view rotates. For automatic rotation (autorotation), press <Ctrl> and *then* press the middle mouse button as you move the mouse. To stop autorotation, press the middle mouse button again. If you want autorotation at a higher speed, when you start autorotation, move the mouse faster.

3.3.2 Zooming Views

Zooming is a useful tool that lets you focus on different elements in the Expert Visualizer display. If you want to see the “big picture,” you can adjust the application to show as many elements as possible, so you can see how they relate to each other. However, if you want to focus on just one element, you can adjust the application to show only that one element, and the other components of the picture drop out of your view.

Relating the binoculars example to Expert Visualizer, if you want to see all the elements that represent your network, you would zoom out. While the display window does not change size, you’ll notice that the elements within the display, the elements that are part of the view, do get smaller to accommodate as much of the view as possible while you zoom out.

If there’s a specific element of the view that you want to look at more closely, you would zoom in on that element. Again, doing so changes only the size of the elements on the display. Therefore, when you zoom in on an element, it gets larger and the elements around it drop out of the view. Whenever you want to zoom in or out in a view, use the following procedure.

1. Press and *hold* the <Shift> key and the middle mouse button.
2. Do one of the following;
 - If you want to **zoom in to the view**, move the mouse *up*.
 - or*
 - If you want to **zoom out of the view**, move the mouse *down*.

3.3.3 Panning Views

The pan tool complements the zoom tool. You can pan left, right, up, or down. After zooming in on a view, you can then expand it to see any elements that now don’t fit in the display. For example, if you’ve zoomed in on an element of your network and you notice that a key element isn’t shown, you might use the pan tool to find it. Because the display window showing the view you select is fixed, once you’ve zoomed in on an element other network, elements just don’t fit in the display window. Pan helps ensure that you see the whole network picture. To use pan view any time, use the following procedure.

1. Press and hold the <Ctrl> key and the left mouse button.
2. Move the mouse to pan the view. You can move the mouse up, down, left, or right.

3.3.4 Restoring Default Views

Whenever you’ve zoomed in or out of a view, or when you’ve used the panning tool, you can easily restore the original default view by just selecting Edit/Reset from the menu bar.

3.4 Selecting Elements

You select elements so that you can see them in detail or change them in some way, such as hiding them, hiding other elements in the view, and marking them, among others. Whenever you select an element, the color changes to off-white, making it easy for you to tell what you've selected.



Keep in mind that when you select an entity, its color changes to off-white. Off-white is also the same color as labels, so you might not be able to see a label on an entity you select. If this occurs, rotate the view until the label is displayed.

You manually can select one or more elements at any time. Selecting elements is very useful when you want to isolate part of your network and examine it in more detail. Selecting specific elements is especially useful if there are many elements shown in a view, and you only need information about a few of those shown. There are two methods you can use to select elements:

- **Manual element selection.** To manually select an element, click on it with the left mouse button. If you want to select more than one element manually, press and hold the <Shift> key and click on the elements you want.
- **Automatic menu element selection.** You can choose to select *all* elements shown in a view. To do so, from the menu bar, choose *Select/All*. Keep in mind that this method of selecting elements does select all shown; you cannot pick and choose as you can with the manual element selection method.

To deselect elements, choose *Select/None* from the menu bar. When you do so, all the elements are deselected and the correct colors are displayed.

3.5 Showing or Hiding the Legend

For each view you select, Visualizer offers a legend you can use to quickly identify what shapes shown on the display represent. Using the legend, you can identify at a glance all Ethernet elements in your network.

Visualizer shows the legend by default, although you can toggle it on and off. To turn the legend on or off, just select *File/Show Legend* from the menu bar.

3.6 Viewing Network Elements by Size

The key to troubleshooting with Visualizer is the Size By selection on the menu bar. When you choose the Size By menu, you can then select any of the listed variables, such as **utilization** and **packets in**. When you select a variable, the view changes size, depending on the variable you selected. You can tell what's happening in your network by looking at the relative sizes of different elements in the view.

The Size By menu offers different variables for different view. Size By defaults to **utilization** when you select Segment View and **utilization out** when you select either Host View or Subnet View. For more about sizing, see Chapter 5, Troubleshooting with Expert Visualizer.

3.7 Updating the Display

The information that Visualizer uses comes from one or more agents at periodic intervals. All data is accumulated before it is displayed. If you don't want to wait for all the data to be collected, you can use Update Display to show partial data.

Keep in mind that the Update Display tool isn't designed to work with the Size By option. Size By works only when all data objects have arrived. However, you can use Update Display to get an immediate display based on *partial* data objects.

3.8 Using the Right Mouse Button

You can use the right mouse button as a shortcut to making selections from the Tools menu. Please keep in mind, however, that it's *context sensitive*.

3.9 Printing Views

Any time you want, you can print the view displayed. To do so, use the following procedure.

1. With the view you want to print shown in the display window, select File/Print from the menu bar to display the Print window.
2. Select the print options you want, then click on OK to print the view.

3.10 Exiting Visualizer

To exit the Visualizer at any time, just select File/Exit from the menu bar.

Using ForeView Expert Visualizer

CHAPTER 4

Using and Customizing Views

This chapter presents the Expert Visualizer views and describes how you use them. It also describes how you can customize views to suit your needs.

4.1 Labelled Segments

As described in Chapter 3, Visualizer lets you label segments according to the type of segment and the monitor you're using. To see an example view showing labels, see Figure 4.1 on page 4-2.

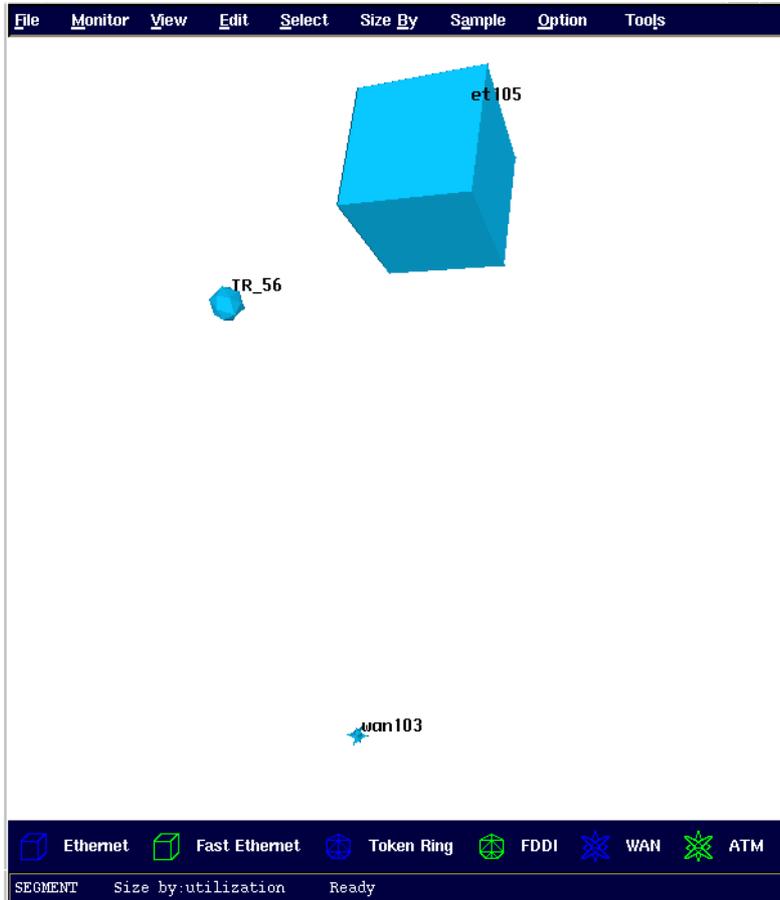


Figure 4.2 Segment View (default view)

To make sure that you understand what the different shapes and colors for elements mean, see Table 1 on page 4-4. When you select a view using Visualizer, you'll note that each element in the network is represented by a unique shape and color combination. The only exception to the unique shape and color rule is that the blue color and cube shape are used for the Host View displayed through the Internet Monitor. Host view is *independent* of the physical network topology. All objects belong to a particular agent; their colors and shapes are derived from the *agent type*.

Table 1 Element Identification

This network element:	Is shaped like this:	And is this color:
Ethernet	Cube	Blue
Fast Ethernet	Cube	Green
WAN	Star	Blue
ATM	Star	Green
Token Ring	Buckyball	Blue
FDDI	Buckyball	Green
Unresponsive agent	Square, 2-D	Red
Responsive agent, with no domain present	Shape derived from agent type and speed	Red
Agent (Topology View)	No change	Yellow
Selected elements	No change	White
Conversation lines (Host View)	Lines with 5 grades of thickness	Yellow

4.3 Host View

The Host View shows the traffic between hosts in a selected segment. The traffic between hosts appears as lines of varying thickness. The thicker the line, the higher the volume of traffic. To get a Host View, use the following procedure.

1. While in Segment View (the default view), select one or more segments.
2. From the menu bar, select View/Hosts.



Host group is not one of the mini-RMON groups, and so is not supported on the PowerHub 7000. It is supported in a limited fashion on the 3810 with Roving RMON. If you select View/Hosts from the menu bar when examining a segment on the PowerHub switch, the segment will appear, but no traffic will be shown.

Visualizer pauses a short time (sometimes up to a few minutes) as it gathers and organizes the host information you requested. Then the Host View (Figure 4.3 on page 4-5) is displayed. Notice that the lines between the hosts vary in thickness, indicating different volume levels of traffic between the hosts.

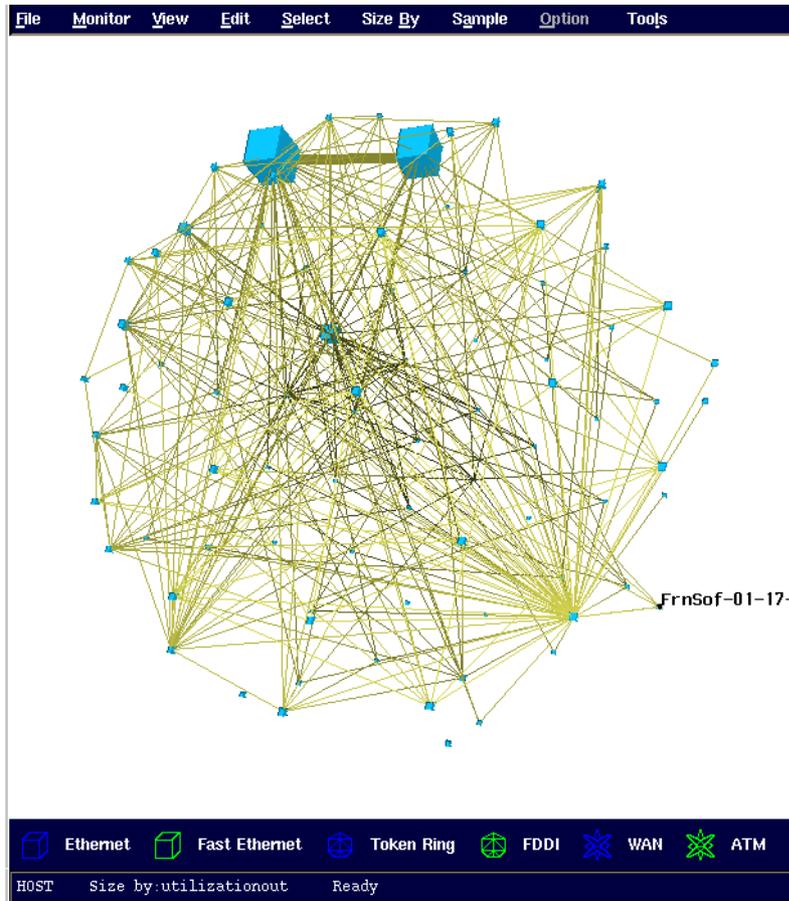


Figure 4.3 Host View

4.4 Topology View

The Topology View is only used for Token Ring and FDDI networks because this view shows ring structure that's unique to these two ring-based topologies. The Topology View is not supported on the FORE Systems LAN switches without a separate network probe. To see an example of the Topology View display, see Figure 4.4.

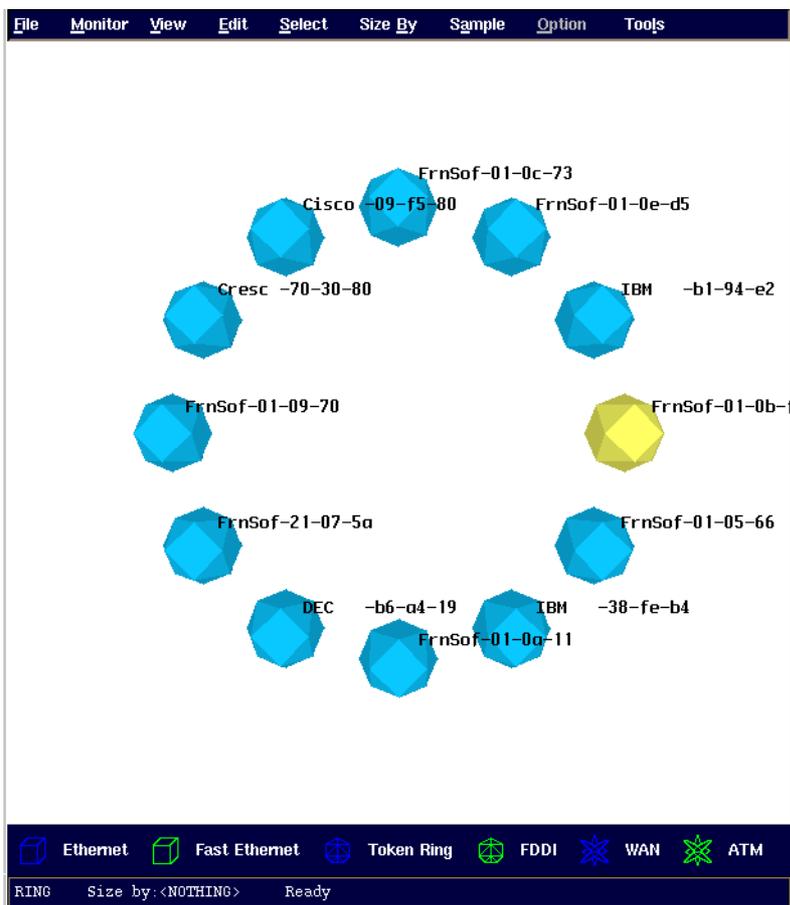


Figure 4.4 Topology View

4.5 Working with Views

Visualizer offers different views so you can select the one that you need for different situations. However, there might be times when you want to further customize a view to emphasize certain aspects of network performance. For example, if you're tracking end-of-month traffic volume levels on the segment containing hosts used by the finance and accounting departments, you might want to isolate only those hosts and the lines indicating the traffic volume. To do so, you would customize a view by isolating and labelling only the hosts used by finance and accounting.

4.5.1 Customizing Views with the Edit Menu

The Edit menu is especially helpful when you want to adjust how network elements are displayed in a view. To do so, use the following procedure.

1. With the elements you want displayed in the view of your choice, select the elements you want to change.
2. To change the selected elements in the view display, from the menu bar select Edit and any of the menu selections you need as described:
 - **Mark.** Mark selected elements for easy identification.
 - **Isolate.** Isolate selected elements, meaning that these selections are the only elements displayed in the view.
 - **Hide.** Hide selected elements, meaning that these selections are not displayed in the view. These elements are *not* deleted, but are only hidden.
 - **Expose.** Redisplays all hidden elements, as well as those you manually selected to be hidden.
 - **Reset.** Resets the display to the default view.

4.5.2 Labelling Elements in Views

You can also choose to label elements displayed in a view. To do so, choose Edit/Show Labels from the menu bar. Once you do so, you then can select either of the following label types:

- **Show Names.** Displays the names of selected elements.
- **Show Addresses.** Displays the addresses of selected elements.

4.6 Using Visualizer with Non-NETscout Probes

The Internet Monitor and Application Monitor do not present useful data with non-NETscout probes because these monitors rely on NETscout's Domain View features. Traffic Monitor works with NETscout Probes and other RMON-compliant switches and probes.

CHAPTER 5

Troubleshooting with Expert Visualizer

This chapter explains how to use Expert Visualizer as a first step in troubleshooting your network.

5.1 Recommended Troubleshooting Methodology

When you want to Troubleshoot with Visualizer, we recommend using the following methods (shown in order).

- Run Expert Visualizer and create a view showing the network elements in which you're interested. As described in Chapter 4, you can customize the view to show only selected elements.
- Use the **Size By** menu, described in this chapter, to quickly determine the level network activity among the selected elements.
- Use the **Expert Visualizer Tools** menu to investigate selected elements more closely using *ForeView RMON ST* tools directly.

5.1.1 Using Size By Options

On the menu bar, choosing **Size By** helps you customize elements in a view. This is useful when you want a view to *stress* how different elements relate to each other and the selected segment. To use **Size By** options, use the following procedure.

1. Select the view you want. You may want to hide or isolate certain elements.
2. From the menu bar, select **Size By**, then select the parameter that corresponds to how you want the elements sized.

5.1.1.1 Sized View Example

Different **Size By** options are available for different views. These options are described in the sections that follow. Figure 5.1 on page 5-2 shows an example view sized by a certain variable.

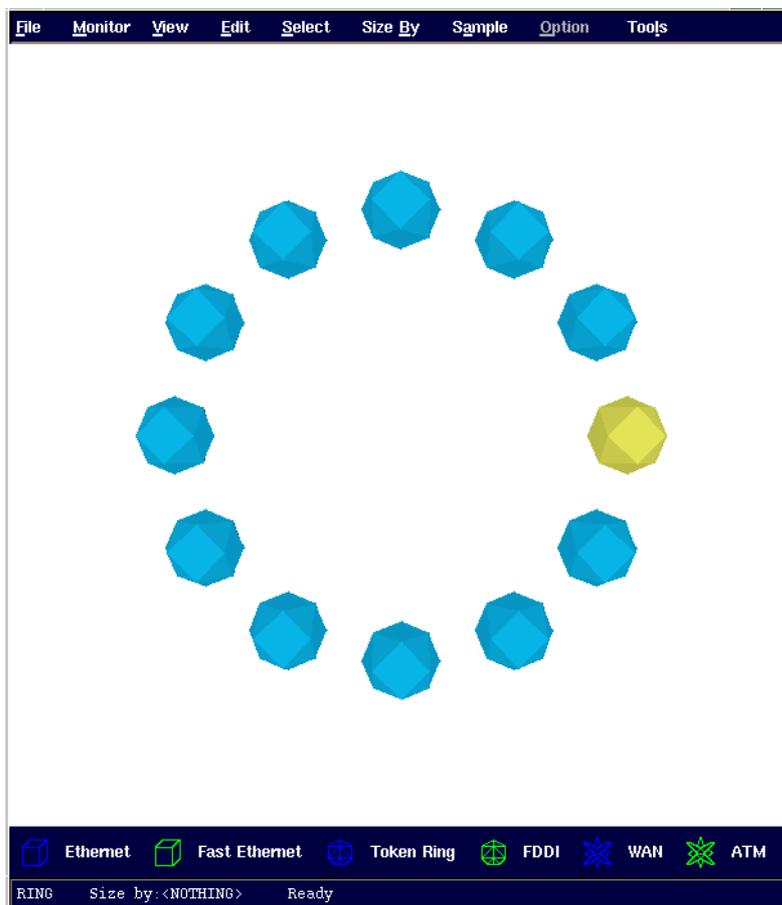


Figure 5.1 - Example of sized view

5.1.1.2 Using Size By Options with Traffic Monitor

This section describes the Size By options available on each view from the Traffic Monitor.

5.1.1.2.1 Segment View

The Size By options corresponding to the Segment View are:

- Utilization (default)
- Packets
- Broadcasts

- Multicasts
- Small Packets
- Large Packets
- Collisions
- Errors

5.1.1.2.2 Topology View

The Size By option corresponding to the Topology View is Ring Order.

5.1.1.2.3 Host View

The Size By options corresponding to the Host View are:

- In Util
- Out Util (default)
- In Packets
- Out Packets
- In Bytes
- Out Bytes
- Broadcasts
- Multicasts
- Errors

5.1.1.3 Using Size By Options with Internet Monitor



Using the Internet Monitor requires a Netscout Probe.

This section describes the Size By options available from the Internet Monitor.

5.1.1.3.1 Segment View

The Size By options corresponding to the Segment View are:

- Utilization (default)
- Packets

5.1.1.3.2 Host View

The Size By options available in the Host View are:

- In Util
- Out Util (default)
- In Packets
- Out Packets

5.1.1.4 Using Size By Options with Application Monitor

This section describes the Size By options available from the Application Monitor.



Using the Application Monitor requires a NETScout Probe.

5.1.1.4.1 Segment View

The Size By options corresponding to the Segment View are:

- Util (default)
- Packets

5.1.1.4.2 Host View

The Size By options corresponding to the Host View are:

- In Util
- Out Util (default)
- In Packets
- Out Packets

5.2 Using *ForeView RMON ST* Manager Tools

When you have viewed your network using Visualizer, you can immediately zero in on a segment using one or more of *ForeView RMON ST*'s tools. In this way, you isolate a network problem and quickly get more detailed information about it. The *ForeView RMON ST* tools you can choose (by selecting **TOOLS** from the menu bar) are specific for each view. The listing below specifies which tools you can select for each view. For complete instructions on using tools, see the *ForeView RMON ST User's Manual*.

5.2.1 Using *ForeView RMON ST* Tools with Traffic Monitor

This section describes the tools available on each view from the Traffic Monitor.

5.2.1.1 Segment View Tools

The tools corresponding to the Segment View are:

- Domain Manager
- Remote Login
- Segment Zoom
- Top N Talkers
- Statistics Graph
- Short-Term History Graph
- Long-Term History Graph
- Trap Manager

5.2.1.2 Topology View Tools

The tool corresponding to the Topology View is **Ring Monitor**.

5.2.1.3 Host View Tools

The tools corresponding to the Host View are:

- Trap Manager
- Data Capture
- Host Zoom

5.2.2 Using *ForeView RMON ST* with Internet Monitor

This section describes the tools available from the Internet Monitor.



Using the Internet Monitor requires a NETscout Probe.

5.2.2.1 Host View Tools

The tools available in the Host View are:

- Trap Manager
- Data Capture (for IP Internetwork Monitor)
- Host Zoom

5.2.3 Using *ForeView RMON ST* with Application Monitor

This section describes the tools available from the Application Monitor.



Using the Application Monitor requires a NETscout Probe.

5.2.3.1 Segment View Tools

The tools available in the Segment View are:

- Segment Zoom
- Top N Talkers
- Trap Manager

5.2.3.2 Host View Tools

The tools available in the Host View are:

- Host Zoom
- Trap Manager

APPENDIX A

Visualizer's Configuration File

In this appendix, you'll see the default `config.vis` file (Visualizer's configuration file). You will need to edit this file whenever you change Visualizer's parameters.



Anything preceding a colon (:) is a keyword. You cannot change keywords. In the following example **trafficlimit** is a keyword.
trafficlimit: 2

Anything following a colon (:) is a variable and can be changed. In the above example, the **2** is a variable.

The following is an example of the `config.vis` file:

```
# ForeView Expert Visualizer configuration file.
#

# This is the netmask value which will be used in creating
# subnetviews.
#
netmask: 255.255.255.0

# The default net which will be selected when the Internet
# monitor type is chosen.
#
defaultnet: ip

# Limit the number of segments which can be selected when
# moving to the Host/Subnet view(s) for each monitor type.
#
trafficlimit: 2
internetlimit: 2
applicationlimit: 2
```

Visualizer's Configuration File

```
# Define the domains which will be used for the Traffic monitor views.
#
traffic-segment: ALL
traffic-host: ALL
traffic-topology: ALL

# For each network type (ip, ipx, vines, dec, and atalk) specify
# the domains for each view type (segment, subnet, hosts). If
# a network or view type is omitted, it will not be shown.
# However, the 'segment' view cannot be removed without
# removing all of the other views for that monitor as well.
#
ip-segment: IP
ip-subnet: IP-SNET
ip-user: IP

ipx-segment: NOVELL
ipx-subnet: NOV-SNET
ipx-user: NOVELL

dec-segment: DECNET
dec-subnet: DEC-SNET
dec-user: DECNET

vines-segment: VINES
vines-subnet: VINESNET
vines-user: VINES

atalk-segment: ATALK
atalk-subnet: ATLKSNET
atalk-user: ATALK

# Specify the application monitor domain names.
#
application-segment: IP NOVELL DECNET
application-user: IP NOVELL DECNET
```

```
# Specify domain names which should not be clustered.  
#  
notclustered: IP-SNET NOVELL NOV-SNET VINESNET DEC-SNET ATLSNET
```

Visualizer's Configuration File

Sometimes when running color-intensive applications like *ForeView* Expert Visualizer, your X11 display might flash or show unusual colors in some windows. This appendix explains how application software such as *ForeView* Expert Visualizer, your X-windows server code, and the system hardware interact to manage the use of color.

B.1 About System Limitations

Today's color workstation displays typically have just one megabyte of image memory. At high resolution, one byte of storage is available per picture element (pixel) to store color information.

Although people can distinguish among literally millions of different colors, one byte stores only 256 different color values. To get around this problem, a special "map" is used so that the X-window server can create a limited palette of 256 different colors from a much larger total color space (typically about 16 million colors).

The X server cooperates with user-level software so that the 256 color map locations can be shared among all applications running.

B.1.1 When Your System Runs Out of Colors

You might think that 256 different colors is quite a lot to be using at one time, but remember:

- A Motif widget uses at least five colors: one for each chiseled side, one for the top, and one for the label.
- The window manager (OpenLook, Vue, and mwm, among others) uses another set of colors for the screen background, icons, and window decorations. On some vendors' systems, the window manager alone can require more than 60 different colors.
- In a 3-D window, each object color actually uses eight or more different shade levels to give depth to the display.
- Showing any kind of GIF, TIFF, and other graphics formats can use up one or two hundred colors quite easily.
- Applications generally can't share colors except under special circumstances.

As you can tell from the bullets above, it's pretty easy to run out of colors with even only two graphics applications open. What happens when the system has run out of available colors depends on the behavior of each individual application.

Some applications just refuse to run, and indicate that no colors are available. Other applications may switch to a black-and-white mode. Most graphics programs try to cope by creating what's known as a "private color map"—essentially, a new set of 256 colors supplied by the X server software.

Since there is still really only one hardware color map, to do this, the X server swaps the hardware color map contents whenever you go into or out of such a privately held window. Therefore, all of the other applications now seem to be using an alien set of colors, and the display might look strange, with the exception of the window in the privately held applications. If you move back out of the private window, it looks peculiar while the rest of the display returns to normal.

B.1.2 Conserving Color

There's no way to remove the hardware-based 256-color limitation or to change X11 behavior; so the only way to prevent this kind of color map flashing is to conserve colors. Techniques you can use include:

- **Do *not* display scanned images.** Displaying a scanned image in a window, or on your screen background, can use up all available colors very quickly. Exit the application that is doing image display while you need to run other color-intensive tasks.
- **Configure the window manager.** Some window managers, like HP Vue, let you configure color usage. If this is available, try to configure it for "low" or "medium."
- **Work around X11 bugs.** Some versions of X11 (including the one distributed with SunOS 4.1.3) do not always free color map entries properly. Therefore, your system may appear to have very few colors available even though no other applications are running. The only thing to do in this case is to exit the window manager (log out) and restart the X11 server. The new server will have a fresh, empty color map.
- **Start *ForeView Expert Visualizer* last.** If you need to run a few color applications, start *ForeView Expert Visualizer* last because it can adapt itself to a smaller number of available colors. When you start *Visualizer* first, it tries to improve the image quality by taking more colors if it can.

B.1.3 Color Limits in *ForeView Expert Visualizer*

Visualizer only allows seven distinct colors to be used in its 3-D displays. Seven isn't exactly a magic number; it just simplifies the look of the display. The fewer number of colors, the easier

it is to take in at a glance.

Also, to let you move the 3-D display quickly, Visualizer uses a technique called color map double-buffering. This technique requires eight color map locations for each color displayed because some colors (the “invisible” ones hold the part of the display that the computer is painting while others provide a stable, visible display while motion is being computed.)

Color Applications and X-Window Displays

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