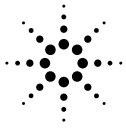
Agilent Technologies

Advisor LAN

Getting Started



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Introduction

Starting with the Quickstart Expert Guide 1-3
Starting with Expert Analyzer 1-4
Examining Physical Layer Activity 1-5
Examining the Top Talkers 1-6
Examining Protocol Errors 1-8
Discovering What Nodes Are on the Network 1-9
Decoding Frames on Your Network 1-10

Getting Started

Installing Undercradles, Interface Modules, and Software 2-5
Starting the Application 2-6
Connecting to an Ethernet Network 2-7
    To Connect as a Node 2-8
    To Connect in Monitor-Thru Mode 2-9
Connecting to an FDDI Network 2-10
    To Connect as an FDDI Station 2-11
    To Connect as an FDDI Repeater 2-13
    To Connect as an FDDI Monitor 2-15
    To Connect with an Optical Bypass Switch 2-17
    To Connect with an Optical Splitter 2-17
Connecting to a Token-Ring Network 2-18
    To Connect as an Token-Ring Station 2-18
Configuring the Instrument 2-19
Selecting a Measurement 2-20
Configuring a Measurement 2-21
Finding More Information 2-22

Sample Tests

Troubleshooting a Slow Ethernet Network 3-3
Tracing a Conversation Between Two Ethernet Stations 3-13
Export to CSV 3-20
Import a CSV File Into a Spreadsheet 3-23

1

- Starting with the Quickstart Expert Guide, page 1-3
- Starting with Expert Analyzer, page 1-4
- Examining Physical Layer Activity, page 1-5
- Examining the Top Talkers, page 1-6
- Examining Protocol Errors, page 1-8
- Discovering What Nodes Are on the Network, page 1-9
- Decoding Frames on Your Network, page 1-10

Introduction

Introduction

The Agilent Advisor LAN is a powerful protocol analyzer designed to help you troubleshoot and analyze your Ethernet, Fast Ethernet, FDDI, and Token-Ring networks.

It consists of a ruggedized personal computer equipped with modular data acquisition and transmission hardware, as well as powerful Microsoft® Windows® based network analysis software. Standard peripherals such as serial/parallel ports, floppy drive, pc card slot, etc. are also included.

You can use the Advisor LAN to:

- prevent network problems before they affect users
- resolve network problems quickly and effectively
- optimize network performance

The following pages provide a more detailed overview of the features of the Advisor LAN.

- Start with Expert Analyzer to see a quick overview of the health, utilization, and protocol activity on your network.
- Examine the physical layer to see if nodes on your network can connect and communicate.
- See who is sending the most traffic. See what protocols are they using. See which stations are establishing connections.
- Find out what network protocol errors are occurring on your network.
- Discover which nodes are on your network.

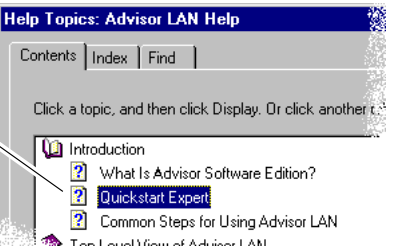
Starting with the Quickstart Expert Guide

See examples for common network problems

When you start the Advisor SW Edition application, a troubleshooting guide window displays a list of common network problems you can solve with the Advisor SW Edition.

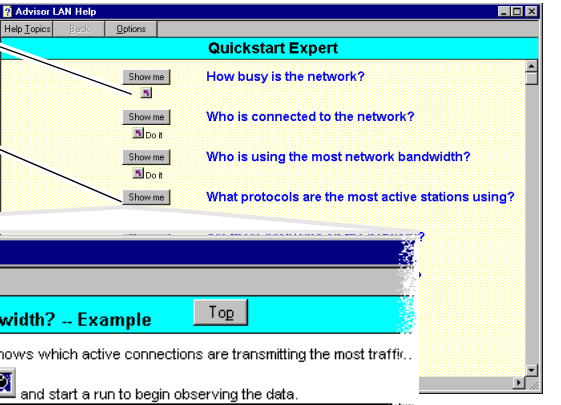
You can display the troubleshooting window:

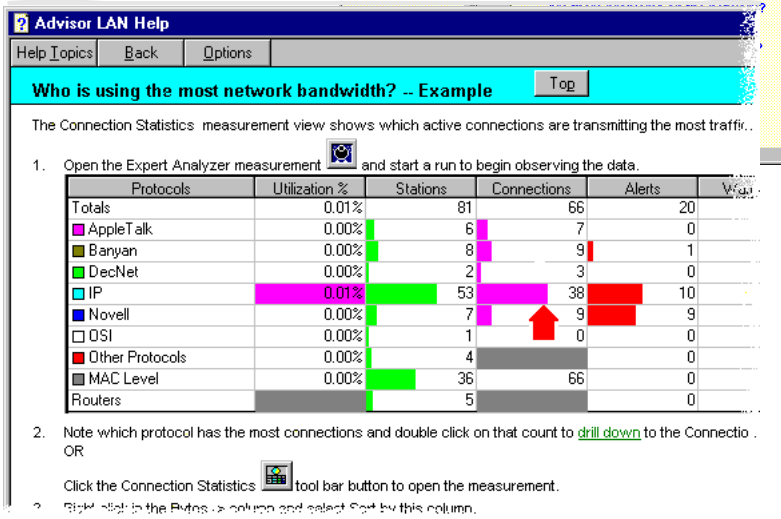
- At application start up
- from the Help menu
- In the online Help window, use the Contents - Introduction - Quickstart Expert topic



Use the Do It button to open the appropriate measurement window to troubleshoot the problem.

Use the Show Me button to display an example of using a measurement to troubleshoot the problem.



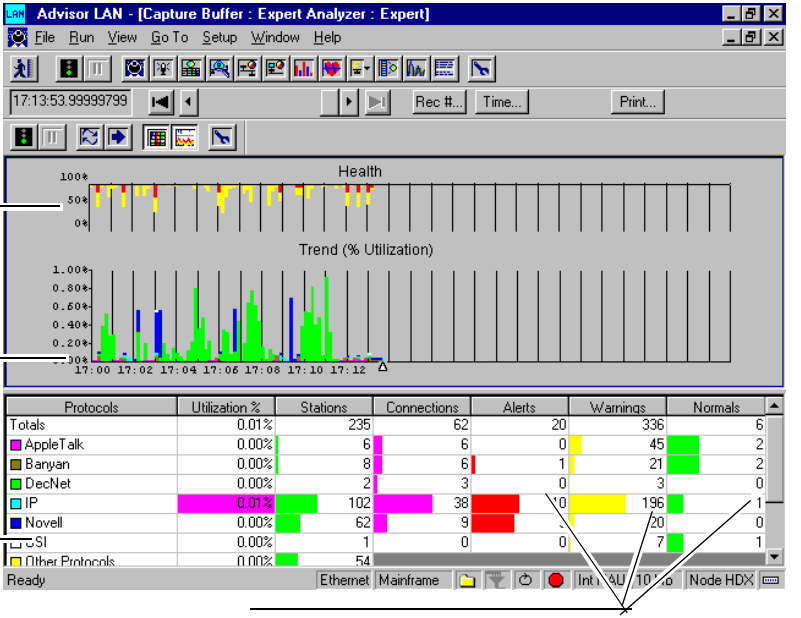


Starting with Expert Analyzer

See the health, utilization, and protocol activity at a glance

The Expert Analyzer measurement is an excellent way to see the performance of your network at-a-glance. The top section is a health and utilization graph. Health starts at the top of the graph at 100% and if your network is error free, it stays at 100%. When an event occurs, a value is subtracted from the health, more for alert events, less for warning everts. These values are configurable. The trend graph displays selectable parameters in a sliding 30-minute window. Each major protocol is shown in a different color on the trend graph.

Below the health and trend graph is a spreadsheet of information about your network. The rows are labeled with the active protocol stacks detected on the data source. The spreadsheet shows how much activity is occurring in each protocol. From this measurement, you can quickly drill-down to see supporting details to understand why a graph spike or a large count occurred.



The Health graph shows a weighted view of Alert and Warning protocol events and frame errors.

See a graph of network utilization.

The spreadsheet quickly identifies where the most protocol activity is occurring.

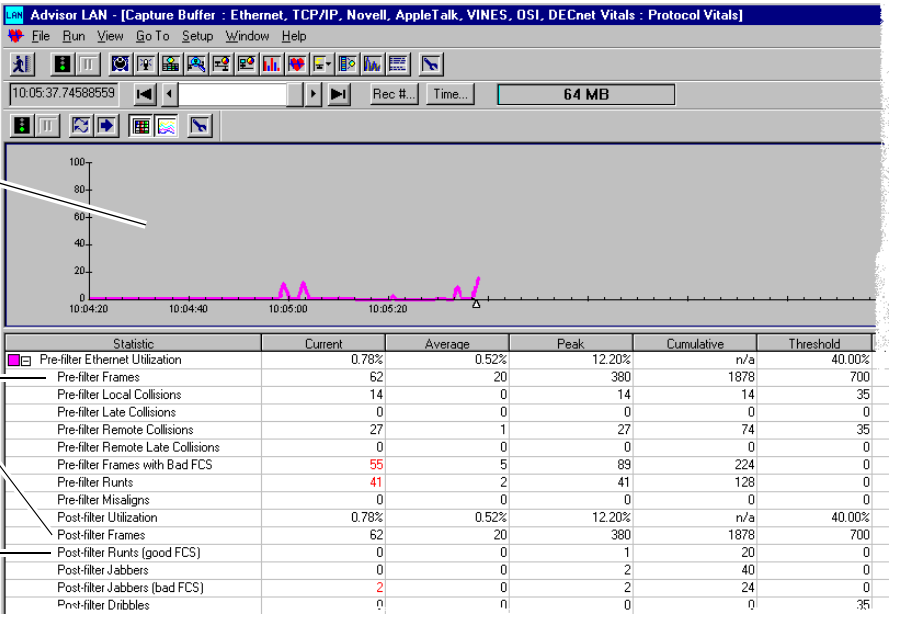
Count the Alerts, Warnings, and Normal protocol events for each protocol.

Examining Physical Layer Activity

Can stations connect and communicate?

Often, the first thing you want to know is if your network stations are even able to connect and communicate. The Protocol Vitals measurement quickly shows you if the data link and physical layers are operating.

Some of the Vitals counts indicate normal and desirable activity. Other counts may indicate serious and potentially damaging activity.



Right click on an item in the spreadsheet to select it for the graph.

See traffic before and after filtering is applied

See if any frames have transmission errors.

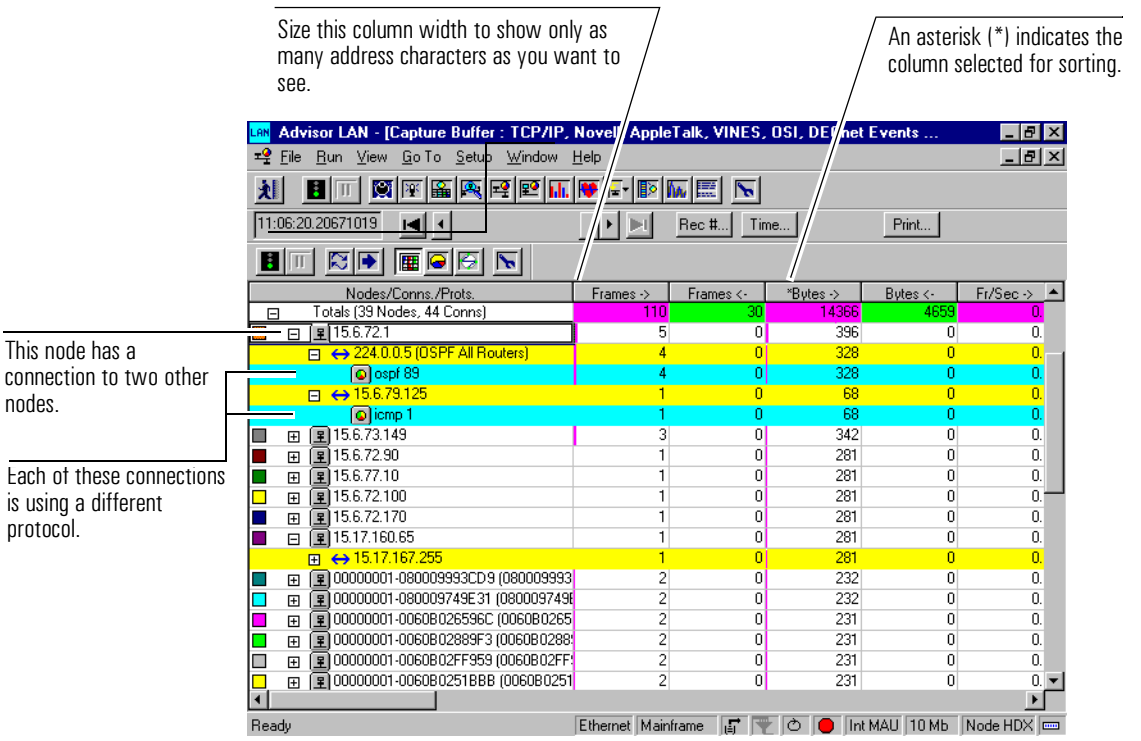
See the percentage of current and maximum network utilization over the last minute.

Examining the Top Talkers

Who is sending the most traffic? Who are they talking to? What protocol are they using?

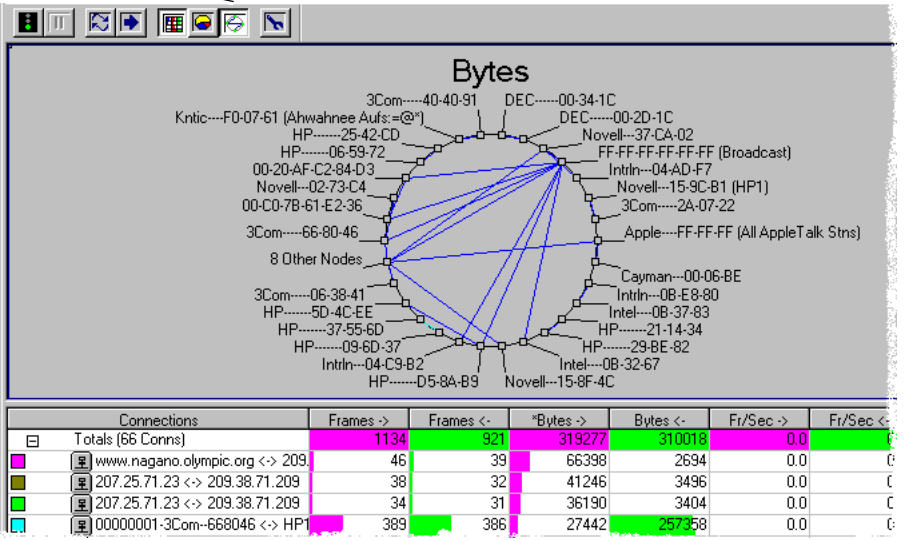
When you are having too high utilization, or perhaps slow network response, you can use the Connection Statistics measurement to quickly see who is using most of the network bandwidth. When you know who the top talkers are, you can make decisions about how to improve their network communications.

You can choose different parameters to sort. This shows you where the most traffic is occurring for different traffic conditions.



Also in the Connection statistics measurement, you can use the Show Connections tool bar button to display a connection diagram that graphically displays the connections.

Show Connections tool bar button.

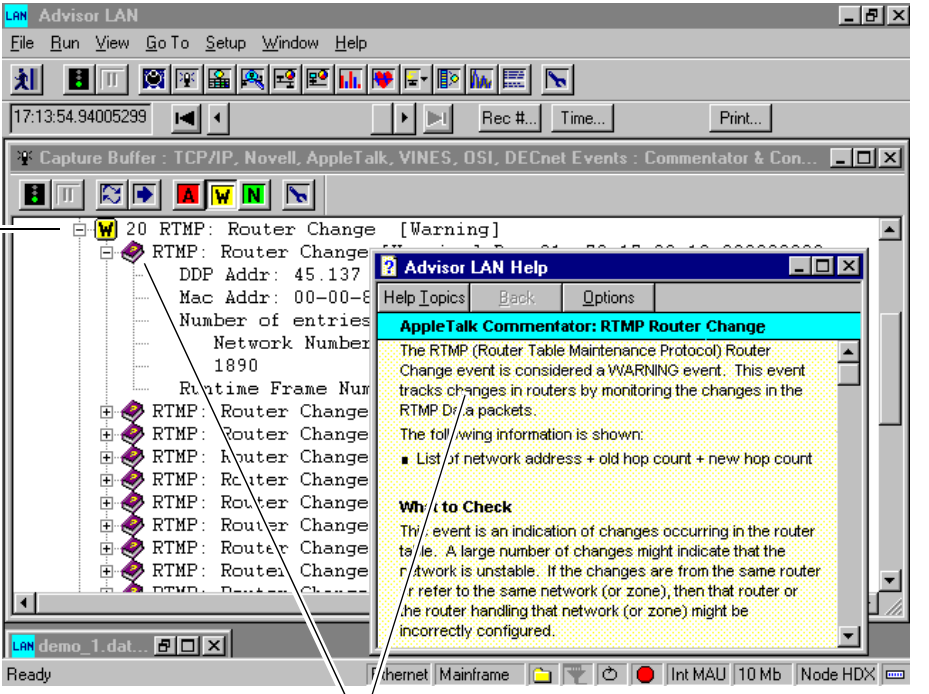


Connections	Frames ->	Frames <-	*Bytes ->	Bytes <-	Fr/Sec ->	Fr/Sec <-
Totals (66 Conns)	1134	921	319277	310018	0.0	0
www.nagano.olympic.org <-> 209.	46	39	66398	2694	0.0	0
207.25.71.23 <-> 209.38.71.209	38	32	41246	3496	0.0	0
207.25.71.23 <-> 209.38.71.209	34	31	36190	3404	0.0	0
00000001-3Com--668046 <-> HP1	389	386	27442	257358	0.0	0

Examining Protocol Errors

What network protocol errors are occurring?

With the Commentator measurement, you can quickly see what protocol events are occurring and organize the events by severity.



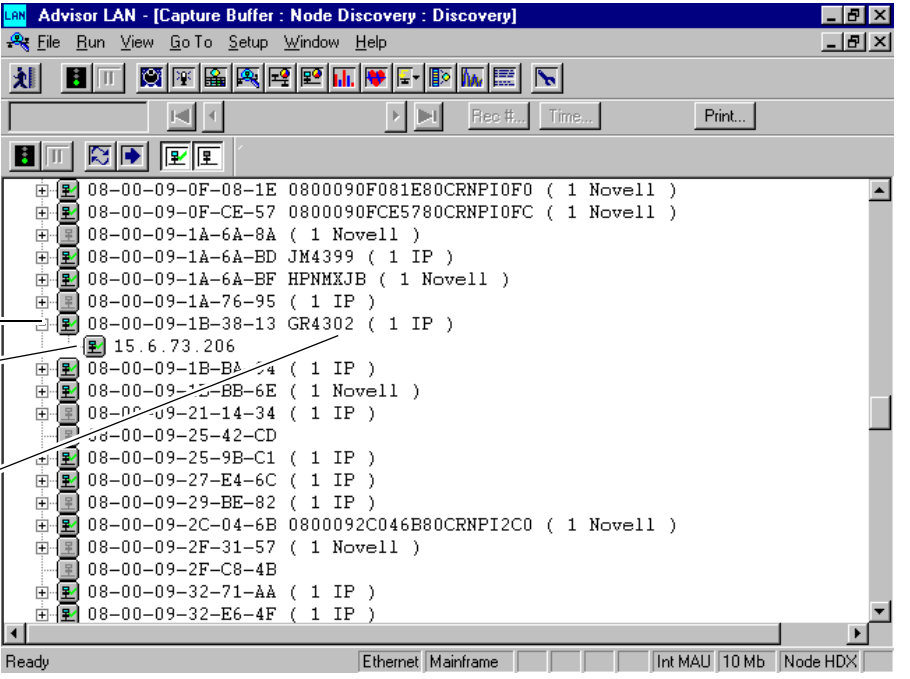
This protocol address has had 20 Router Change events occur. This is a Warning event.

Click the Book icon in the display to see detailed help about this event. Suggestions are given for possible remedies.

Discovering What Nodes Are on the Network

Are any unexpected nodes on my network?

During a measurement run, you can use the Node Discovery measurement to "discover" all the nodes on your network. You can see the nodes listed by MAC address or network layer address. You can also see a "friendly" or well-known name if it is known.



MAC address.

IP Protocol address.

A friendly name displays if it is seen for an address. For example, the Domain Name Service (DNS) provides this service for IP protocol.

Decoding Frames on Your Network

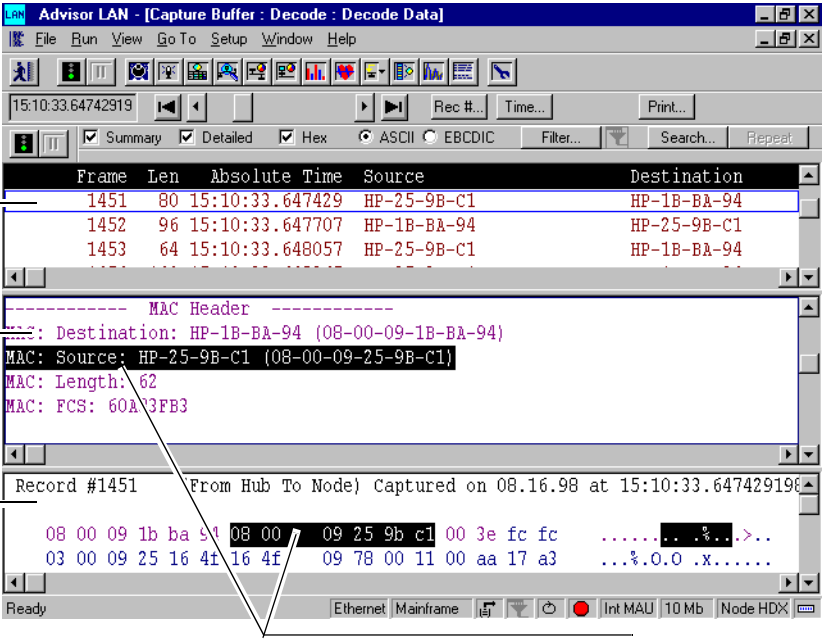
What are the actual contents of a frame on my network?

The Decode measurement interprets the data in a frame according to its protocol so you can examine the contents of the frames.

A timestamp and frame number are added to each frame to help you examine the data.

Examples of information you can determine from the Decode view include:

- Is a node on the network making requests and responses correctly?
- Do timing issues exist between frames on the network?
- Are higher levels of the protocol stack operating correctly (for example, does the Time to Live counter decrement properly)?



Summary view shows a summary line for each frame.

Detail view shows the decoded contents of each field in the selected frame.

Hex view shows the actual bytes in the selected frame. The right column shows the contents in ASCII or EBCDIC.

Click a field in the Detail view and see the corresponding bytes highlighted in the Hex view

2

- Installing Undercradles, Interface Modules, and Software, page 2-5
- Starting the Application, page 2-6
- Connecting to an Ethernet Network, page 2-7
- Connecting to an FDDI Network, page 2-10
- Connecting to a Token-Ring Network, page 2-18
- Configuring the Instrument, page 2-19
- Selecting a Measurement, page 2-20
- Configuring a Measurement, page 2-21
- Finding More Information, page 2-22

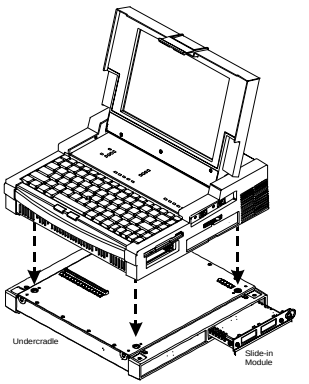
Getting Started

Getting Started

This chapter describes the steps you use to get started testing with the Advisor LAN.

There are some steps you perform each time you start testing your network. Other steps you do only one time or just check that a step you performed previously is still valid.

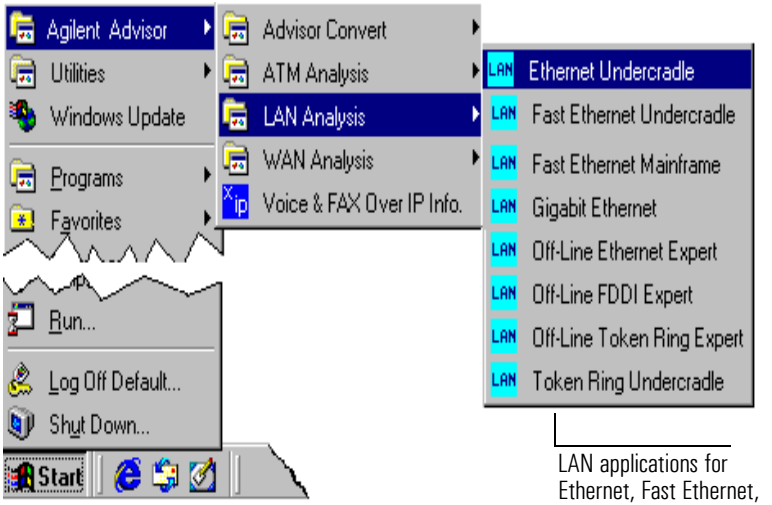
① Install the undercradle and slide-in module you are using.
Install software if necessary.



Use the Mainframe Features Guide to connect the mainframe, undercradle, and slide-in modules.
Use the CD-ROM Software Installation Guide to install or add software.

② Start the LAN application.

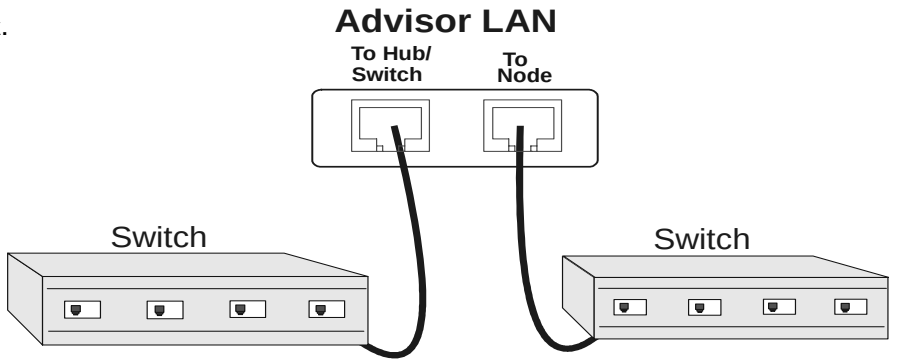
Select the mainframe or undercradle LAN product you are using.



LAN applications for Ethernet, Fast Ethernet, Token-Ring, and FDDI

③ Connect to the network.

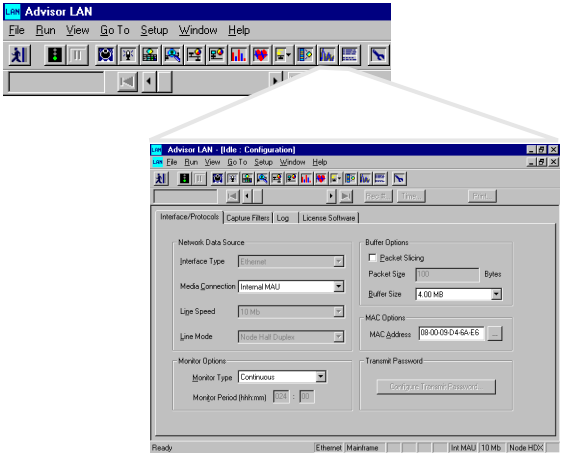
This example shows connecting the Advisor between two Fast Ethernet switches in monitor-thru mode.



④ Configure the Advisor Instrument.

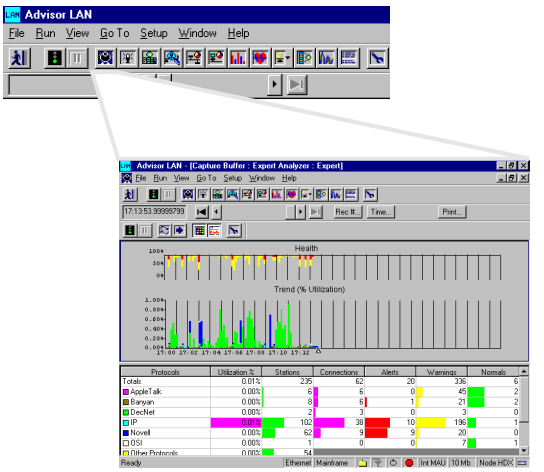
What test port are you connecting to?

How do you want the capture buffer to operate?



5 Select a measurement.

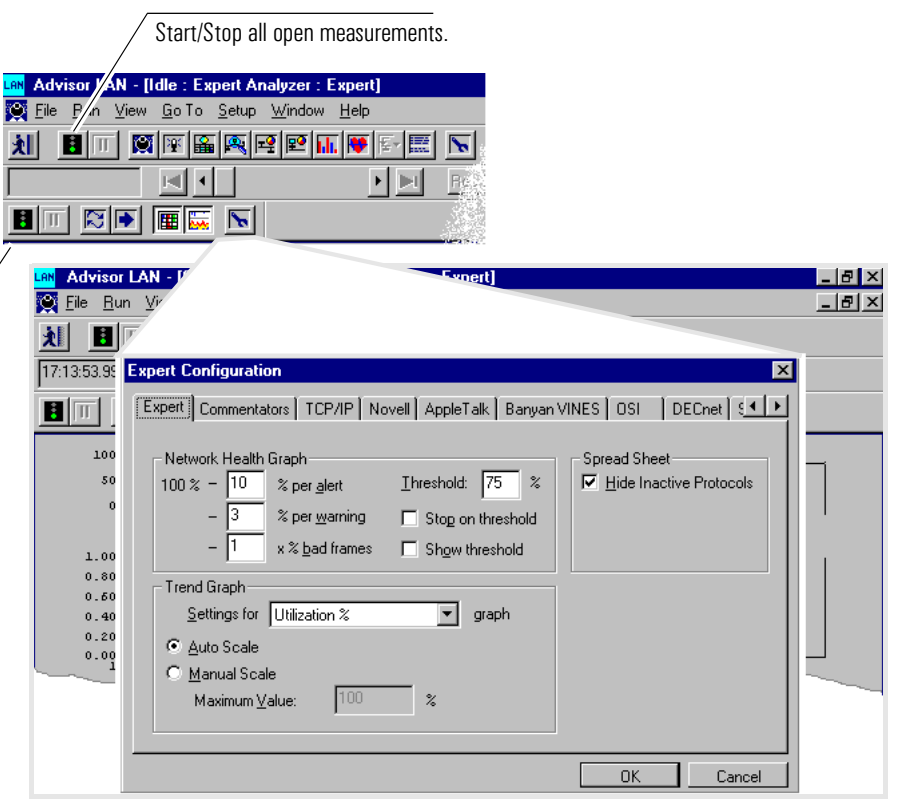
The Expert Analyzer measurement is a good place to start.



6 Configure the measurement and start the run.

What time do you want for the sample period?

Do you want to set any thresholds?



Installing Undercradles, Interface Modules, and Software

Undercradle and Interface Module installation

Depending on the options you have purchased, you may have to install an interface module or undercradle for the specific physical interface you intend to connect to. If these items are not already connected to your Advisor, refer to the *Mainframe Features* guide for instructions.

CAUTION

Be sure the Advisor power switch is set to Off before removing or installing undercradles or interface modules.

NOTE

Required Upgrade for Agilent Technologies J3444A Fast Ethernet Undercradle

Agilent Technologies J3444A-02 Upgrade for Plug & Play ROM and IO Boundary ROM

If you are using the Fast Ethernet undercradle, Agilent Technologies J3444A, you need to check if your undercradle has a BIOS upgrade before you use the undercradle with LAN.
Look for a silver label “EC:04” on the bottom of the undercradle.
The Agilent Technologies J3444A Fast Ethernet undercradle requires this upgrade to operate with the Windows Plug & Play feature.
Contact your local Agilent Technologies sales office for information.

Software Installation

The Advisor is shipped with it’s application software installed on the hard drive. If you are reinstalling the Advisor LAN software, or adding a new application, be sure to save any measurement and configuration files you have created to a floppy disk before installing the new LAN software.

To install the Advisor LAN software, first remove any attached undercradle and then use the instructions in the *Software Installation Guide* supplied with the Advisor software CD.

If you are installing other application software, follow the instructions provided with that software.

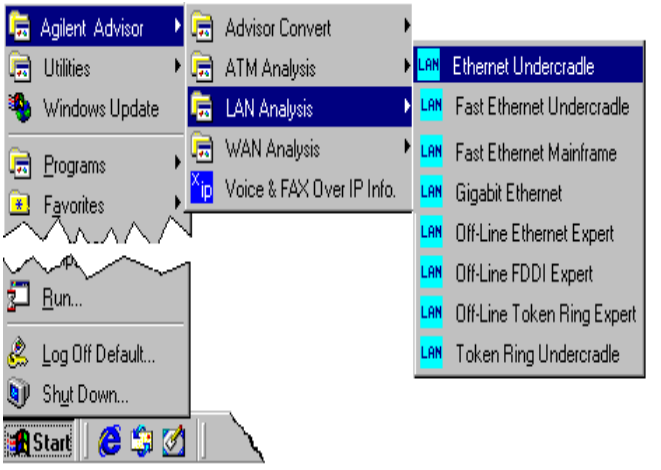
Starting the Application

Start the Advisor for the first time

The first time you start the Advisor with software shipped from Agilent Technologies, Microsoft requires you to provide some information to complete the configuration.

Several dialog boxes prompt you for information such as user name, company name, etc. You can accept the default selections by pressing ENTER.

A Certificate of Authenticity box prompts you for an authenticity number. Enter the Microsoft Windows authenticity product ID# provided with the mainframe.



Connecting to an Ethernet Network

The figures on the two following pages show how to connect the Advisor as a node to an Ethernet network segment or in monitor-thru mode between two network devices. See the Connect to the Network topic in the online help index for more details about connecting to the network.

Connect as a Node

When you connect the Advisor as a node to a network segment, the Advisor acts as regular node on the network. The Advisor can see all the traffic occurring on that network segment.

The Advisor measurements transparently see all the traffic that occurs at the hub or switch port you are connected to. The Advisor does not affect the data stream.

Connect in Monitor-Thru Mode.

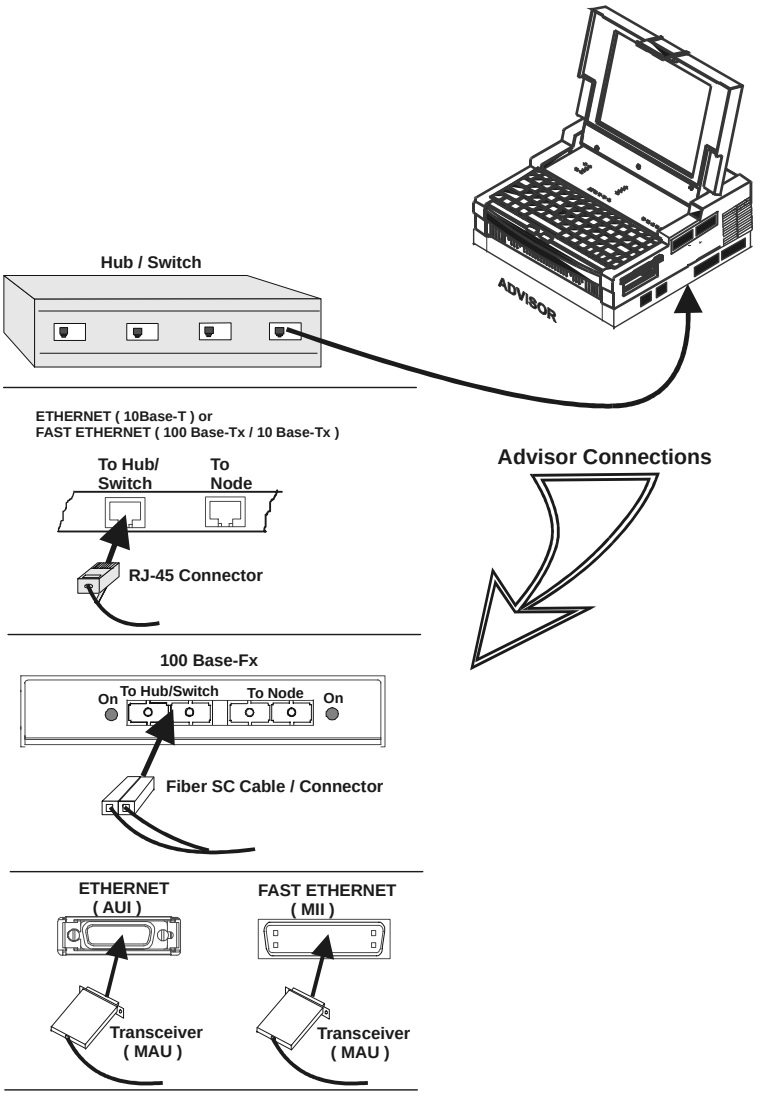
When you connect the Advisor in monitor-thru mode, the Advisor is inserted between two network devices. The Advisor does not interact with the traffic it sees, it only passively displays the traffic that is passing between the two devices connected to it.

The following table shows what connectors you can use for monitor-thru operation with Ethernet or Fast Ethernet.

10 Mbit Operation	**100 Mbit Operation (no Auto-Negotiate)**
RJ-45 (10BaseT)	SC fiber connectors (monitor HDX or FDX)
RJ-45 (100BaseTx) (monitor HDX only)	RJ-45 (100BaseTX) (monitor HDX or FDX)

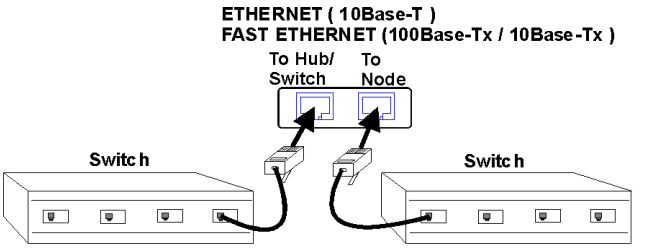
TIP: You can not monitor with TX Auto Negotiate selected as the media connection because auto negotiation can only occur between the two end devices. In this mode, the Advisor is only monitoring and cannot participate in the auto negotiate process.

To Connect as a Node

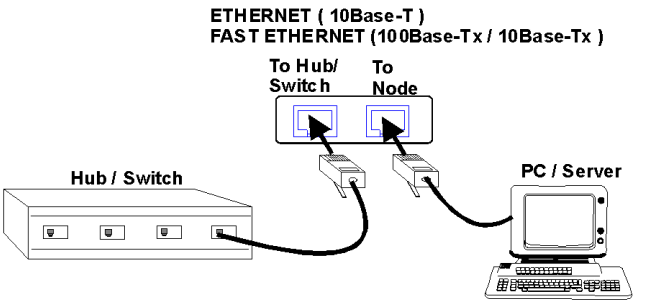


To Connect in Monitor-Thru Mode

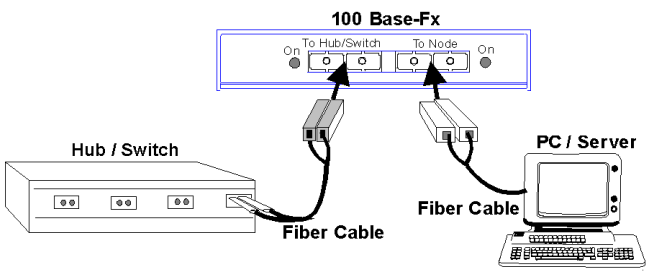
Monitoring between two switches.



Monitoring between a node and a hub/switch with RJ-45 connectors.



Monitoring between a node and a hub/switch with Fiber SC connectors.



To connect in monitor mode with a crossover cable

For switched 10/100 Ethernet, Advisor does not perform crossover of transmit/received pairs internally. If this function is required (e.g. connecting two switches together) the crossover function must be done external to the Advisor.

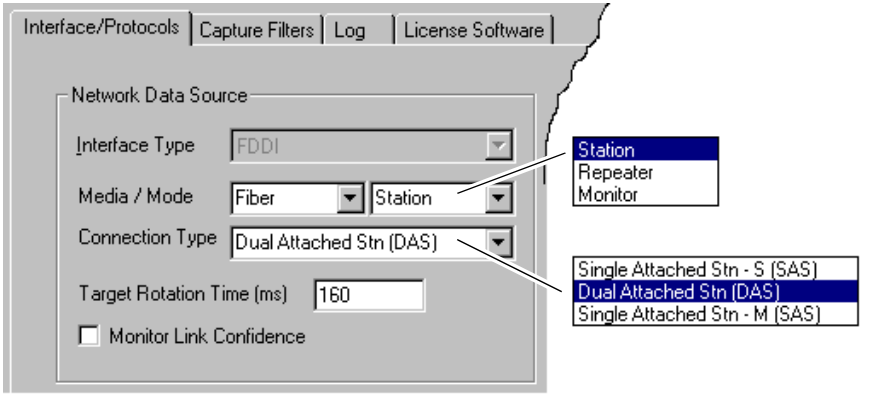
Use the cable you would use for a node to hub/switch connection as one of the cables in monitor mode and then use a straight-through cable for the other connection. The combined cable length for the two connections should not exceed 100 meters.

Connecting to an FDDI Network

The figures on the next few pages show how to connect the Advisor to an FDDI network. The Advisor must successfully connect to the FDDI network before it can be an active station on the ring. In the status bar at the bottom of the display, the station configurations: DAS, SAS-S, and SAS-M indicate that the Advisor's SMT module is active in the FDDI network. See the online help for more details about connecting to the network.

Connection Types

You can connect the Advisor as a station, repeater, or monitor on an FDDI network. Use the Configure Instrument dialog to set the connection Mode and Type and then connect the Advisor to the network as shown in the next few pages.

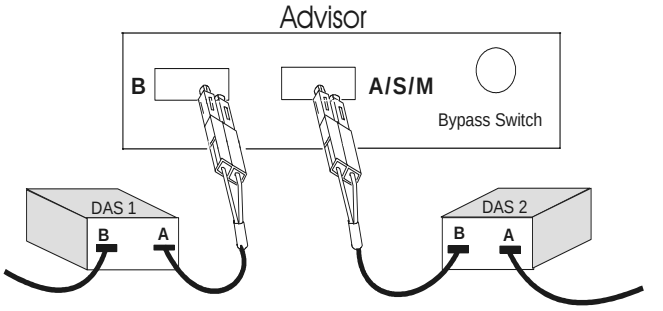


To Connect as an FDDI Station

DAS -- Dual Attach Station

The Advisor can be connected as a station in Dual Attach mode.

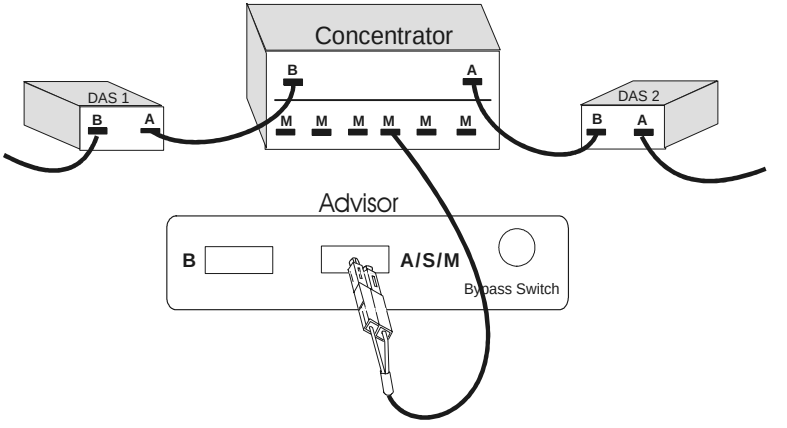
- The Advisor is attached to both the primary and secondary rings.
- The Advisor is an active station on the ring.
- Port A/S/M functions as an A port.



SAS-S -- Single Attach Station

The Advisor can be connected as a station in Single Attach mode.

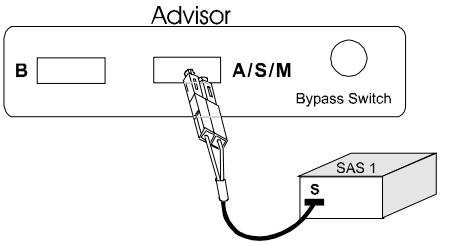
- The Advisor attaches to a concentrator's M port and is an active station on the ring.
- Port A/S/M functions as an S port.



SAS-M -- Single Attach Station

The Advisor can be connected as a station in Concentrator mode.

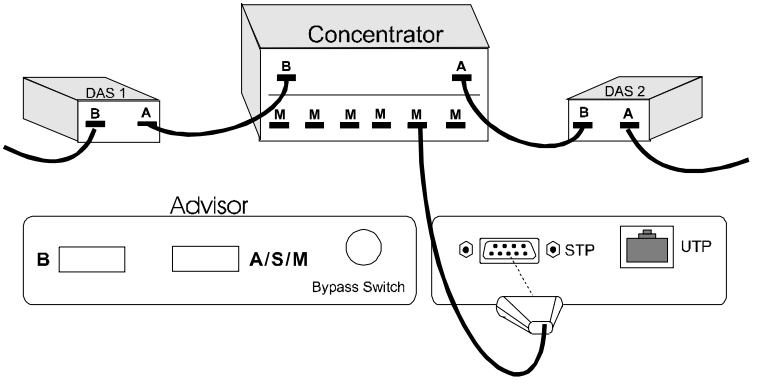
- The Advisor is acting as a concentrator.
- Port A/S/M functions as an M port and may be attached to an A, S, or B type port on another device.
- This configuration constitutes a small ring and is used to test a single attach station.



SAS-S -- Single Attach Station with Copper Twisted-Pair Cable

The Advisor can be connected as a station in Single Attach mode by using the copper twisted pair (STP) cable connection. The example below shows the shielded twisted-pair connector. You can also use the unshielded twisted-pair (UTP) cable connector.

- The Advisor attaches to a concentrator's M port and is an active station on the ring.
- Port A/S/M functions as an S port.

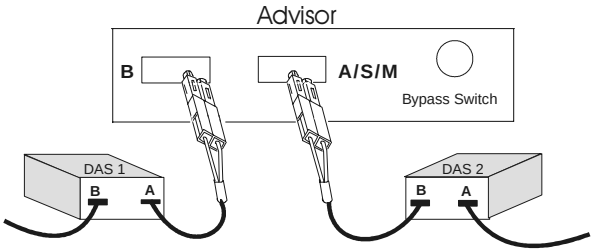


To Connect as an FDDI Repeater

DRP -- Dual Port Repeater - Primary

The Advisor can be connected in Dual Port Repeater - Primary mode.

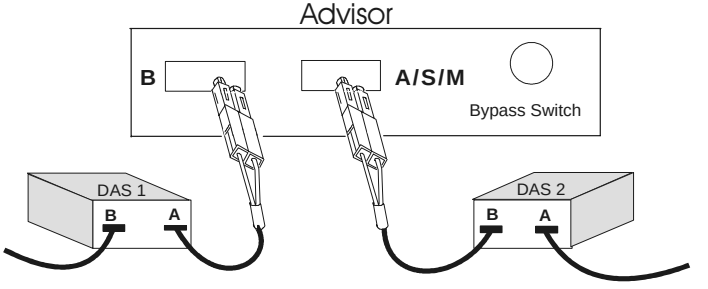
- The Advisor is attached to both the primary and secondary rings as a repeater.
- Symbols are reclocked and repeated.
- The Advisor receives and transmits on the primary ring.
- SMT is not active.
- Port A/S/M functions as an A port.



DRS -- Dual Port Repeater - Secondary

The Advisor can be connected in Dual Port Repeater - Secondary mode.

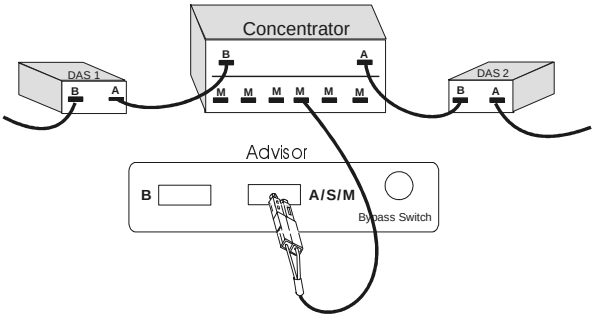
- The Advisor is attached to both the primary and secondary rings as a repeater.
- Symbols are reclocked and repeated.
- The Advisor receives and transmits on the secondary ring.
- SMT is not active.
- Port A/S/M functions as an A port.



SAR -- Single Port Repeater

The Advisor can be connected in Single Port Repeater mode.

- The Advisor is attached to the primary ring through a concentrator's M port.
- Symbols are reclocked and repeated.
- The Advisor receives and transmits on the primary ring.
- SMT is not active.
- Port A/S/M functions as an A port.

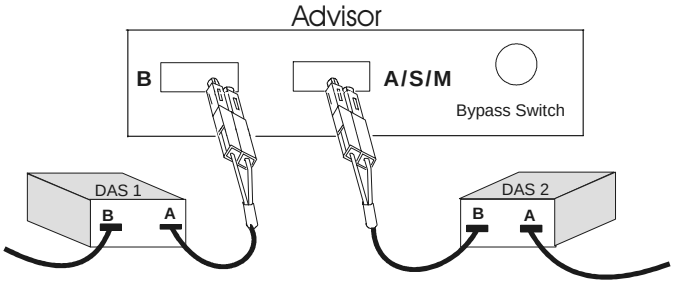


To Connect as an FDDI Monitor

DMP -- Dual Port Monitor - Primary

The Advisor can be connected in Dual Port Monitor - Primary mode.

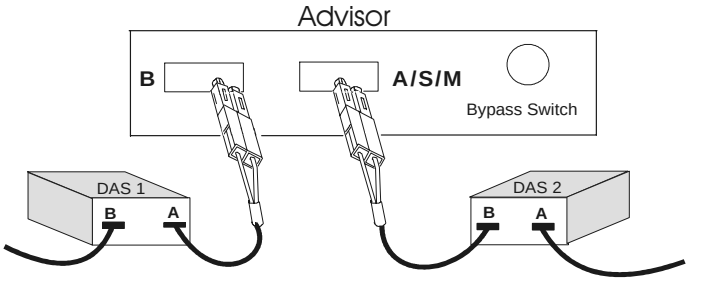
- The Advisor is attached to both the primary and secondary rings as a tap or monitor.
- The Advisor monitors the primary ring.
- Symbols are repeated but not reclocked.
- SMT is not active and Traffic Generation is disabled.
- Port A/S/M functions as an A port.



DMS -- Dual Port Monitor - Secondary

The Advisor can be connected in Dual Port Monitor - Primary mode.

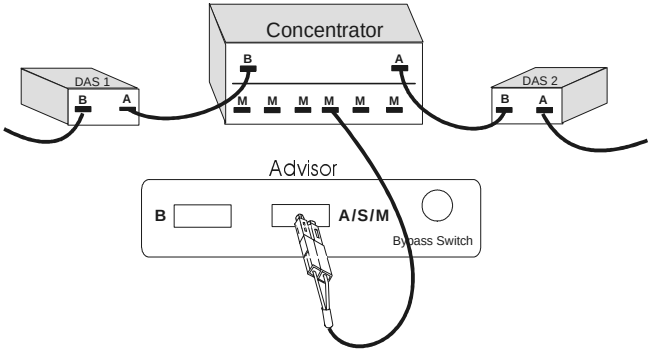
- The Advisor is attached to both the primary and secondary rings as a tap or monitor.
- The Advisor monitors the secondary ring.
- Symbols are repeated but not reclocked.
- SMT is not active and Traffic Generation is disabled.
- Port A/S/M functions as an A port.



SAM -- Single Port Monitor

The Advisor can be connected in Single Port Monitor mode.

- The Advisor is attached to the primary ring through a concentrator's M port as a tap or monitor.
- The Advisor monitors the primary ring.
- Symbols are repeated but not reclocked.
- SMT is not active and Traffic Generation is disabled.
- Port A/S/M functions as an S port.

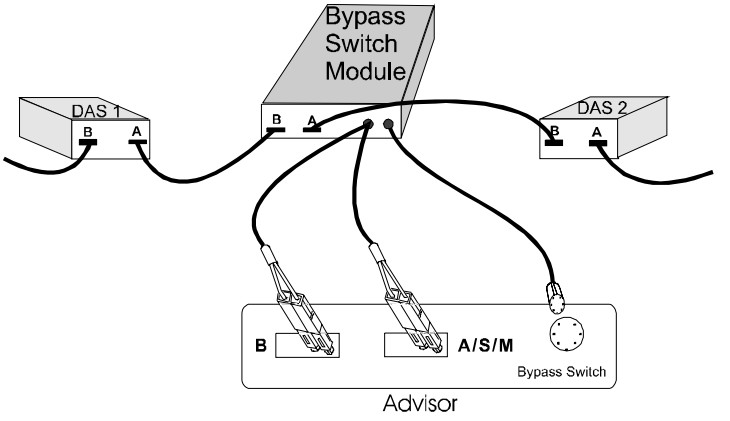


To Connect with an Optical Bypass Switch

Optical Bypass Switch Connection

You can use the Bypass Switch connector and the fiber SC connectors to connect the Advisor to a multi-mode fiber network. With this connection, the Advisor can operate in station, repeater, or monitor mode.

The Advisor's FDDI undercradle provides an output that can be used to drive an external optical bypass switch. If power is removed from the Advisor, the resulting loss of power to the bypass switch will cause its internal switch relays to bypass the Advisor.



To Connect with an Optical Splitter

Optical Splitter Connection

You can use an optical splitter to connect the Advisor to a fiber network.

The advantage of using an optical splitter is that you can attach the Advisor to the network without affecting the network. However, when you connect the Advisor to an FDDI network through an optical splitter, the Advisor can only monitor the network. The Advisor can not transmit onto the network when you use an optical splitter.

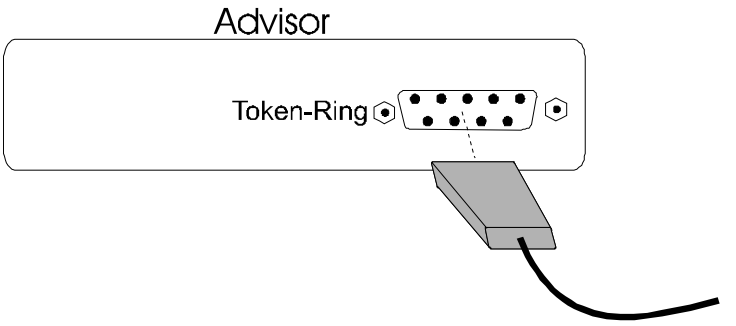
Connecting to a Token-Ring Network

This section shows how to connect the Advisor as a station to a Token-Ring network. The Advisor must successfully connect to the Token-Ring network before it can be an active station on the ring. In the status bar at the bottom of the display, icons show the connection status and ring speed. See the online help for more details about connecting to the network.

To Connect as an Token-Ring Station

The Advisor can be connected as a station in either 4 or 16 MBits/second mode. This is determined by the ring speed you select when you start the Advisor.

Both ring speeds use the same interface connector to connect to the network.

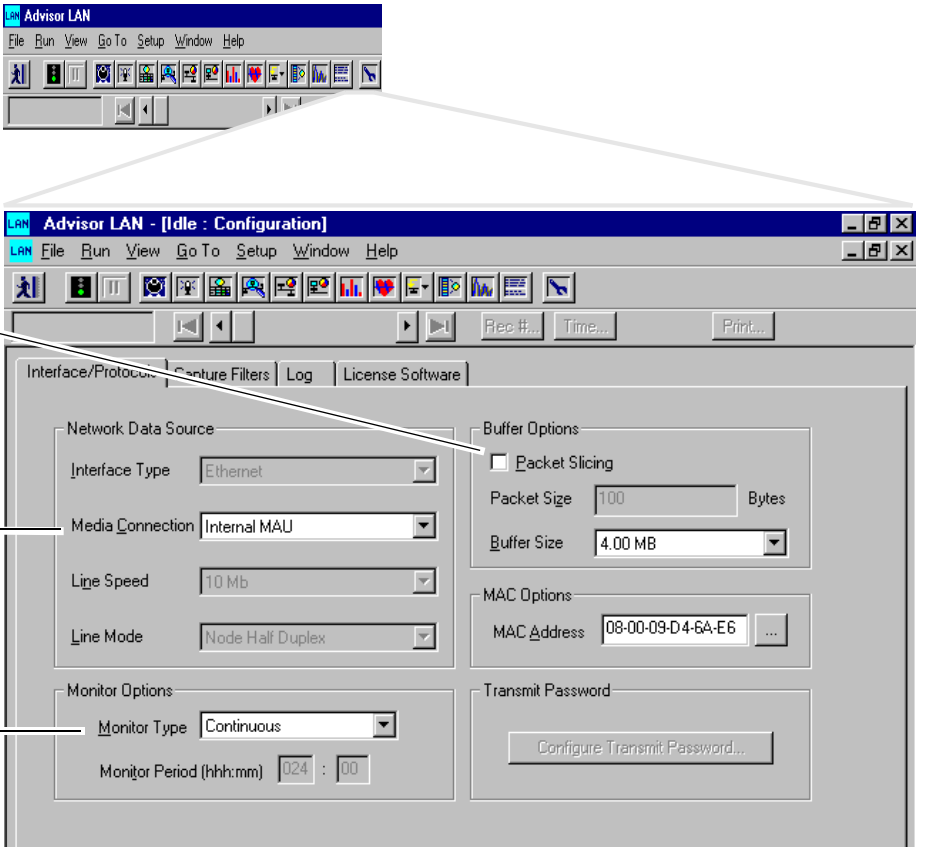


Configuring the Instrument

Before you run a measurement, you need to configure the Advisor.

You can configure Interface/Protocols, to determine which test port you are connecting to and how you want the capture buffer to operate.

You can create Filters/Counters, to control which frames are stored in the capture buffer. And, you can Log or store measurement results over a long period of time.



To display online help for a measurement window or configure dialog, open the window or dialog and press F1.

Do you want to capture each entire frame, or only a portion of each frame?

Which test port are you connecting to?

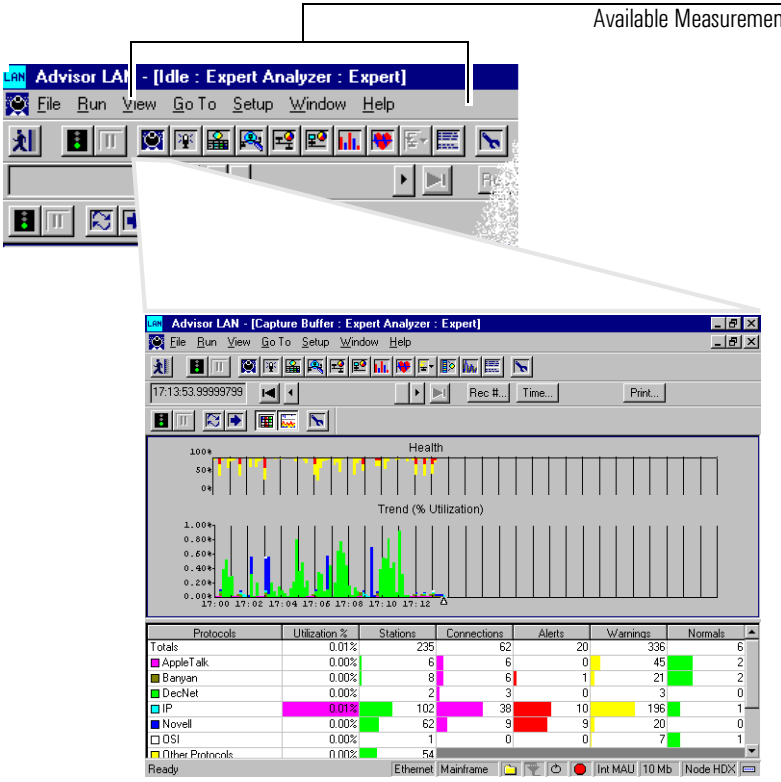
How do you want the capture buffer to operate?

Selecting a Measurement

The Advisor has several measurements that can show different parameters about how your network is operating. You can open a measurement with the buttons on the toolbar or with items in the File | Open Measurement menu.

The toolbar buttons are the quickest way to open a measurement. Position the cursor over a toolbar button to display the measurement name.

More than one measurement can be open and running at a time.



To display online help for a measurement window, open the window and press F1.

Configuring a Measurement

Before you run a measurement, you can customize the measurement by selecting parameters to control how the measurement operates.

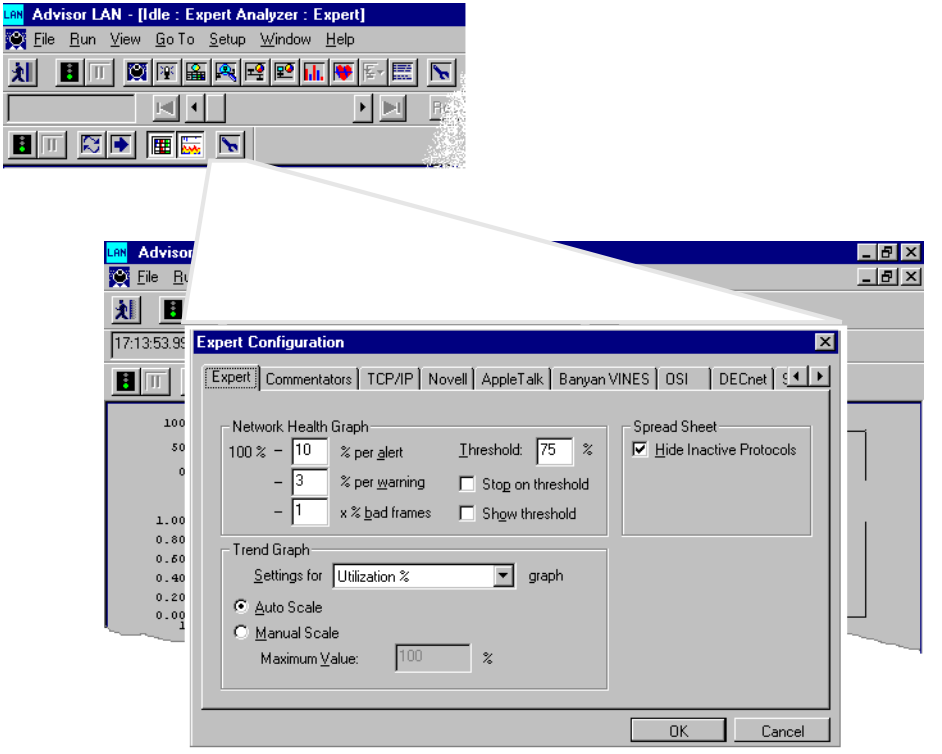
If the Expert Analyzer measurement is open, the configuration button for some measurements does not display.

What display update interval do you want to use?

Do you want to set thresholds to determine what to count?

Do you want to select which protocol messages to count or ignore?

To display online help for a measurement window or configure dialog, open the window or dialog and press F1.



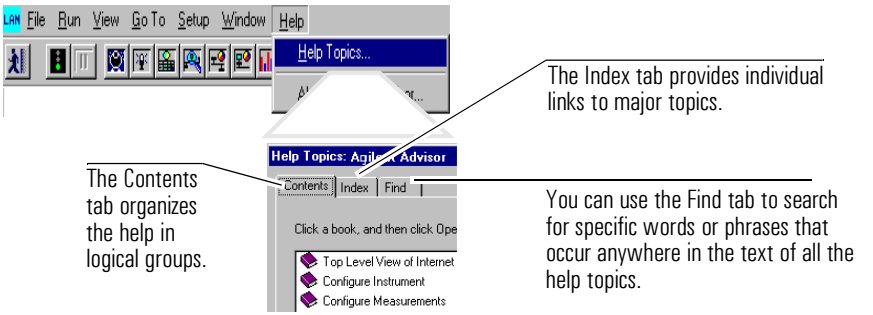
Finding More Information

LAN Online Help

Online help is built into the LAN application. You can access help from the menu bar at the top of the application window or by using the **F1** key.

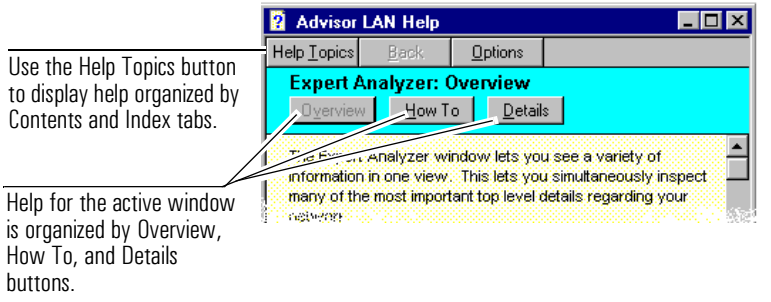
Online Help Menu

The Help menu item opens the general LAN help window so that you can choose from three different ways to find the help you want.



Context Sensitive Online Help

You can quickly find information about the currently selected Advisor window by pressing **the** F1 key.



Sample Tests

The next chapter in this book describes examples for using the Advisor to measure your network.

Other Advisor Books

Each of the different technologies tested with the Advisor has a separate Getting Started manual. Use the appropriate Getting Started manual when you go to test another network technology.

Windows Online Help

You can find information on general Windows operation from the online Help tutorial - About Windows. If you are not familiar with the Windows 98 operating system, it is a good idea to spend a few minutes learning the basic functions and terminology associated with the Windows environment.

***Operating System Guide* manual**

The manual, *Operating System Guide*, is shipped with each Advisor to help you get up and running quickly.

3

- Troubleshooting a Slow Ethernet Network, page 3-3
- Tracing a Conversation Between Two Ethernet Stations, page 3-13
- Export to CSV, page 3-20
- Import a CSV File Into a Spreadsheet, page 3-23

Sample Tests

Sample Tests

This chapter illustrates a sample test examples to lead you quickly through using the Advisor to solve common LAN testing problems:

- Troubleshooting a slow Ethernet network
- Tracing a conversation between two Ethernet nodes (filtering)
- Saving a measurement data to CSV format
- Importing a CSV file into a spreadsheet

Example file

The traffic used in some of the example tests is available in a file. You can just read the following pages, or, you can use the same data file and perform the example steps with your own Advisor.

The data file for this example is included with the Advisor in location:
C:\ADVISOR\LAN\DATA\DEMO_1.DAT

To learn more...

For more information about how to use the features of the Advisor, refer to the online Help. You can press F1 while in the Advisor LAN application to get specific information about the currently active window, measurement view, or dialog box.

Troubleshooting a Slow Ethernet Network

Your network is running slowly, you suspect someone in the office is spending too much time on the internet. Things you may want to know include:

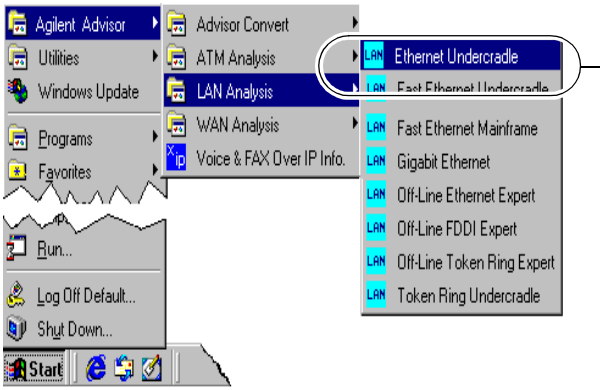
- what station address is using the internet
- to what server is the user connecting
- how much data is being transferred
- what protocols are being used
- what errors are being generated

Example equipment and menu choices

The Agilent Advisor LAN used in this example has the standard Ethernet interface. You can use this interface or you can also use a Fast Ethernet interface for Advisor LAN.

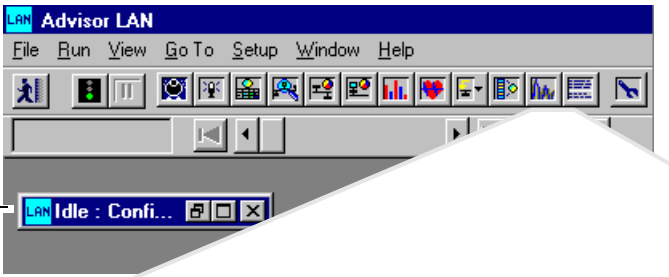
Several menu choices are made to configure the Advisor for this example. These choices are usually the default selection or have been made for the easiest configuration. You can make these same choices or you can make different choices to observe how the Advisor responds.

① **Start the Advisor LAN application.**

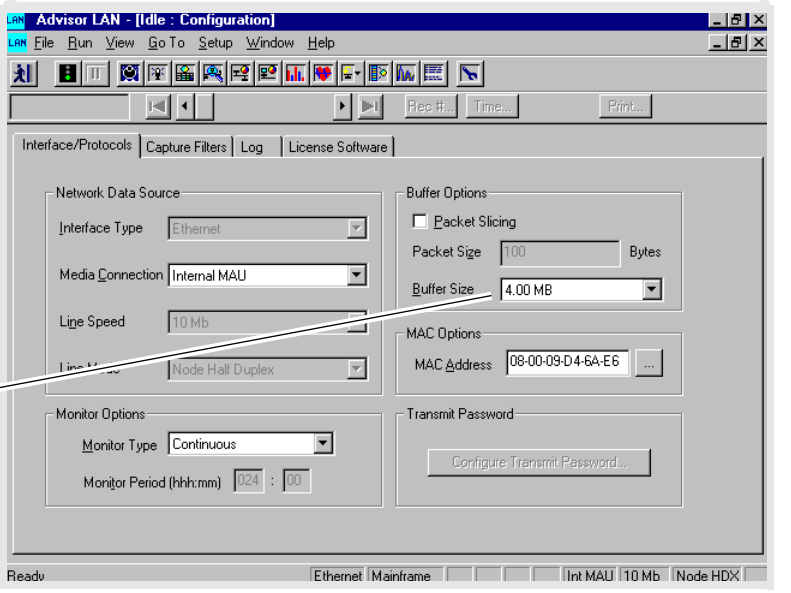


The Ethernet and Fast Ethernet hardware on your Advisor displays in this cascaded menu.

② **If the Configure Instrument view is not open (the view is minimized), click the Configure Instrument button on the toolbar.**



Configure Instrument view minimized.



③ **Configure the Advisor.**

Since this example is running from a a data file loaded into the capture buffer, no Media Connection or Monitor Type selection is required.

For this example, let's ignore filtering and logging.

④ **Set the capture buffer size to at least 4 MBytes to display the following example's values.**

5 **If you are going to use the Demo_1.dat file and follow this example on your own Advisor, load the file now.**

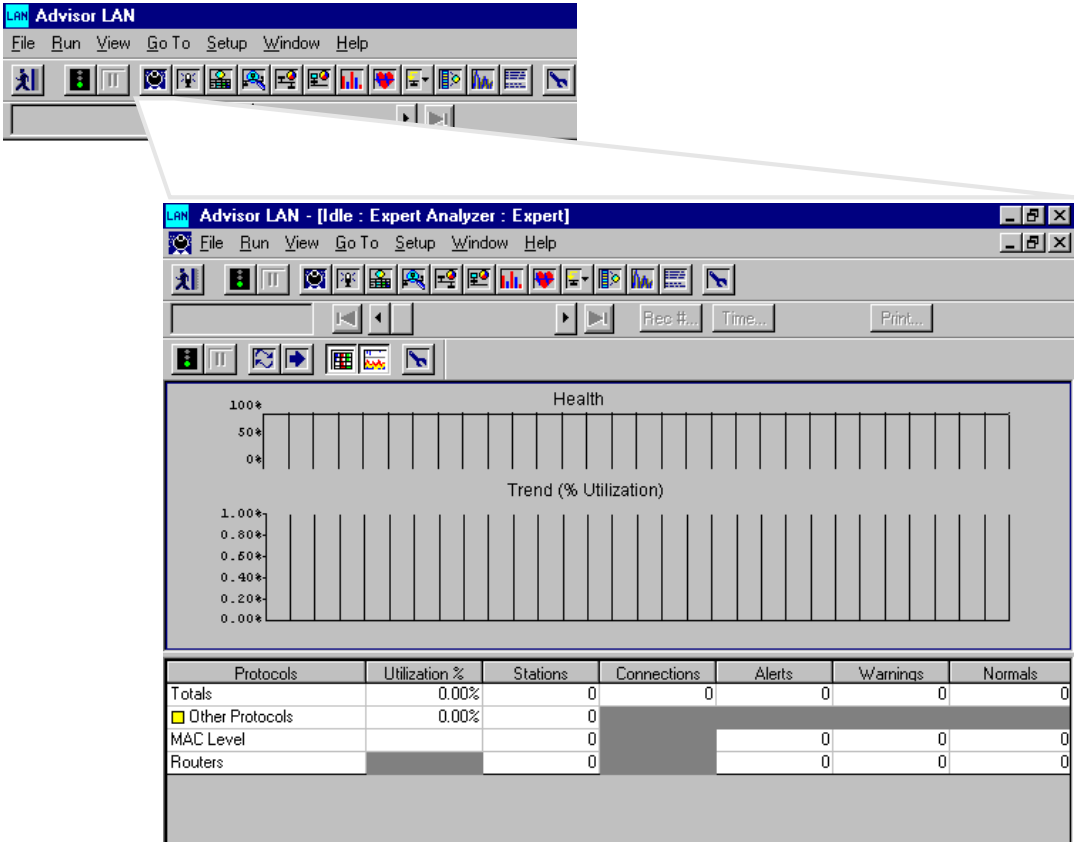
a. Use File | Open (Load Data) and the path:C:\ADVISOR\LAN\DATA\DEMO_1.DAT.

b. Click OK.

c. The Advisor loads the file into the capture buffer and automatically opens the Decode measurement to display the file. This takes a few seconds, depending on the type of Advisor you have.

d. Close the Decode measurement.

6 **Open the Expert Analyzer measurement.**



⑦ **Click the Run From Capture Button.**

At the prompt, select Run All Frames.

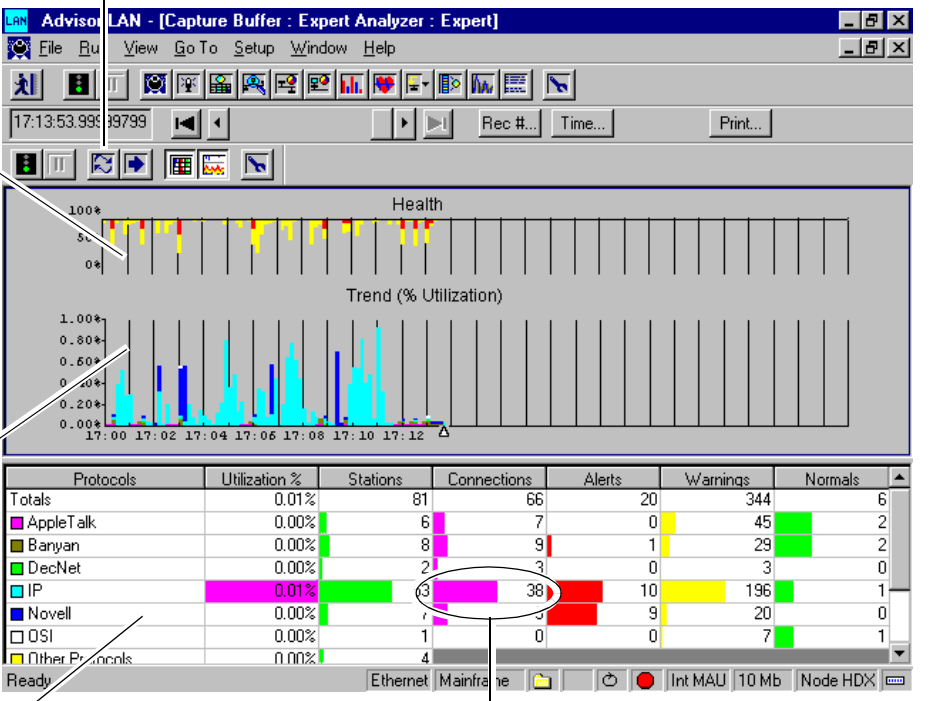
⑧ Wait several minutes while the Advisor reads the capture buffer (a Run from Capture Buffer dialog closes when the buffer is processed.)
Notice there are many IP Connections (Internet traffic uses IP connections) and a large number of IP Warnings

The Expert Analyzer shows three types of information:

Health -- shows quality of Alarm, Warning, and DLL frame events. When you see yellow or red on this graph, it means the Commentator and Vital measurements will have more information about what the problem is.

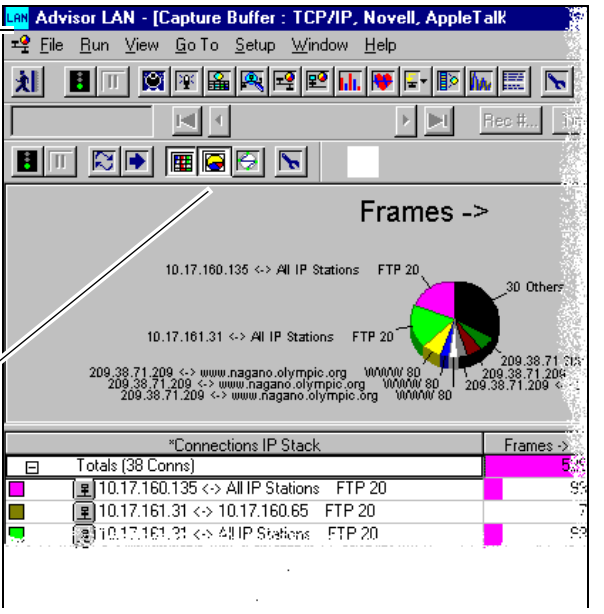
Trends -- shows history of network utilization as a default measurement. Click the right mouse button to display frame counts, errors, broadcasts, or other counts in this graph.

Spreadsheet -- shows summary counts for several network indicators.

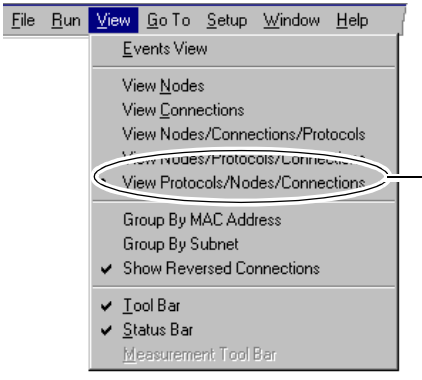


⑨ **Double click the IP / Connections cell to display more details about the connections for the IP protocol.**

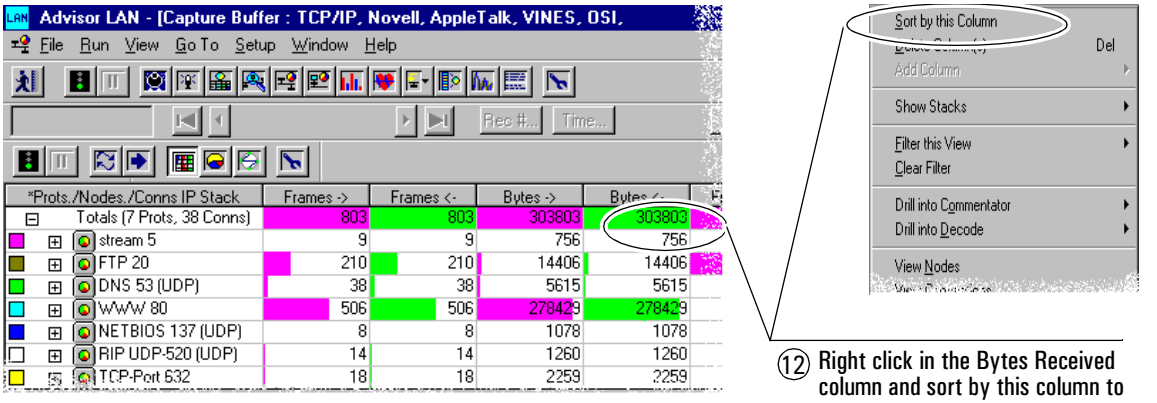
Step 9 drills down to this Connection Statistics measurement view. The Connection Statistics view displays a pie graph and spreadsheet of the connections by default.



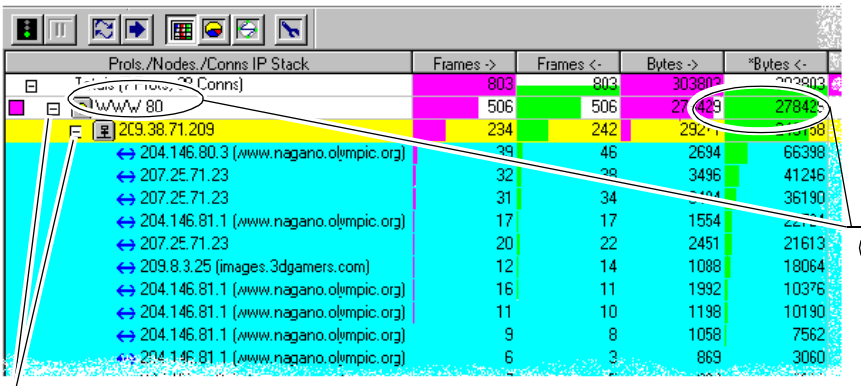
⑩ **Remove the pie graph to focus on the spreadsheet.**



⑪ **Change the view to show which protocols, which nodes, and which connections are using the most bandwidth.**



⑫ Right click in the Bytes Received column and sort by this column to sort the data by the protocol with the most bytes received.



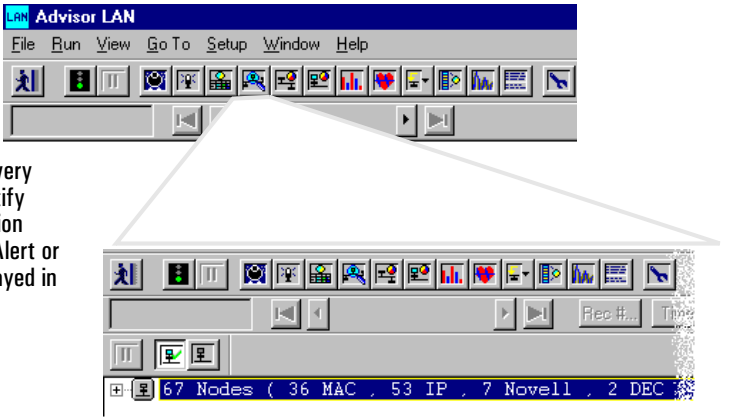
13 Notice that protocol WWW 80 has the highest Bytes Received traffic.

14 Expand the WWW 80 protocol and the IP address 209.38.71.209.

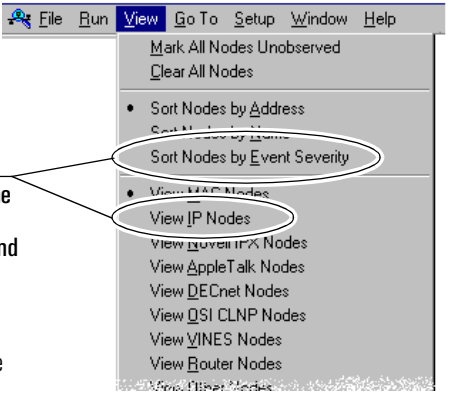
Notice 209.38.71.209 is connected to several addresses, including www.nagano.olympic.org.

Conclusions:

- Station 209.38.71.209 is using the internet.
- It is connecting to servers in Nagano, Japan.
- During this measurement, station 209.38.71.209 has received a large amount of data.
- Protocol WWW 80 is being used in the heaviest traffic connection.



⑮ **Open the Node Discovery measurement to identify whether this connection produced any of the Alert or Warning counts displayed in the Expert Analyzer measurement.**

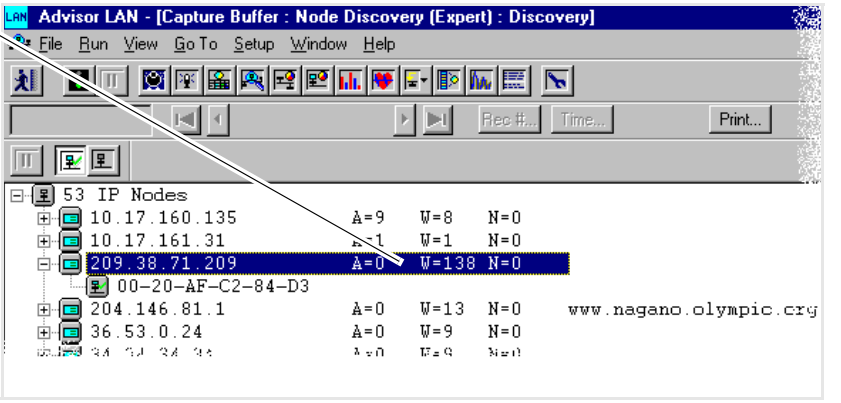


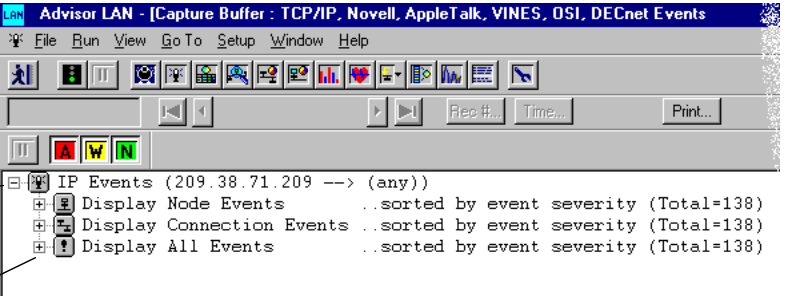
⑯ **Use the View menu to show the nodes sorted by event severity (Alert, Warning, and Normal) and to view the nodes by their IP protocol address.**

You can also display these selections by right clicking on the node list.

Notice node 209.38.71.209 has the most Warnings.

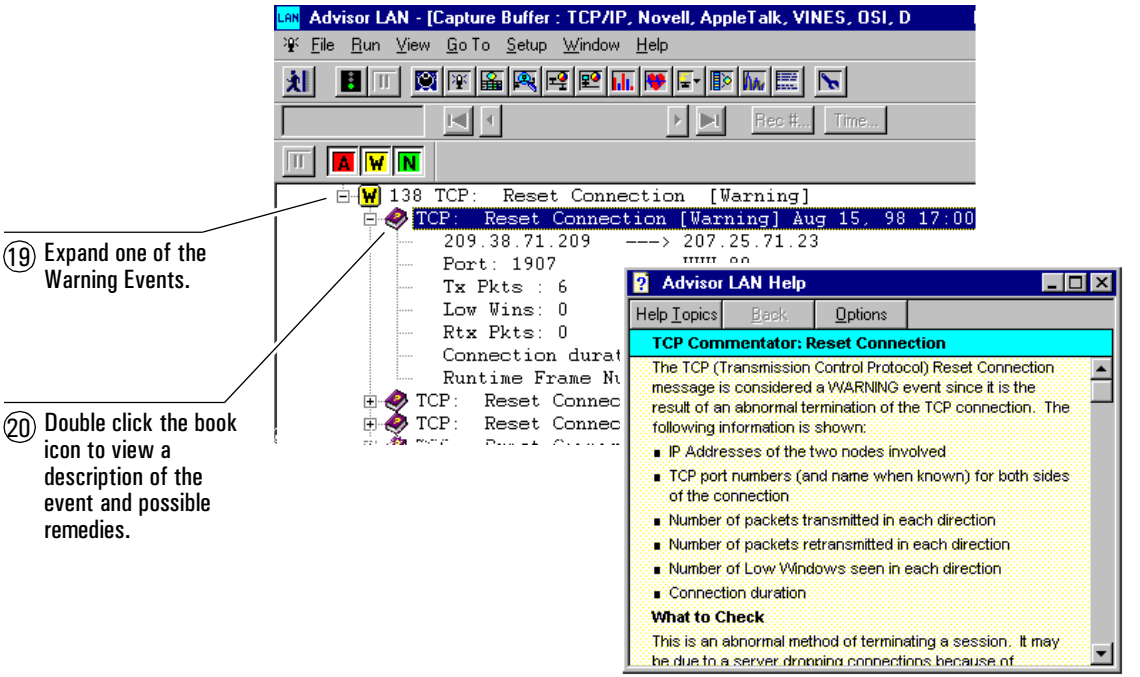
⑰ **Double click the 209.38.71.209 IP address to open the Commentator measurement with filtering on the selected address and display the Warning events.**





Notice the Commentator view is filtered on the address you drilled from in the Node Discovery measurement.

⑱ **Expand the Display All Events branch.**



Conclusions:

- Excessive Reset Connection events occurring for this IP address can slow the network response time.

Tracing a Conversation Between Two Ethernet Stations

You know messages are occurring between two stations. You want to see the actual frames being exchanged so you can view the frame details. Things you want to know may include:

- what ports or sockets are being used
- what frame sizes are occurring
- what are the field values in the frame header

Example equipment

The Advisor LAN used in this example has the standard Ethernet interface. You can use this interface or you can also use a Fast Ethernet interface for Advisor LAN.

About filtering

To use filtering, you have to know some information about the traffic you want a filter to match. From the example test, Troubleshooting a Slow Network, you know the IP address of a station on your network that is responsible for a large amount of internet traffic from the Olympic site at Nagano, Japan. The TCP WWW 80 port (well-known port #80) is used for http traffic on the internet.

Capture filters control what frames are saved in the capture buffer. You can use display filters to view only selected frames already in the capture buffer. Display filtering does not affect the frames in the capture buffer, it only controls what frames are displayed.

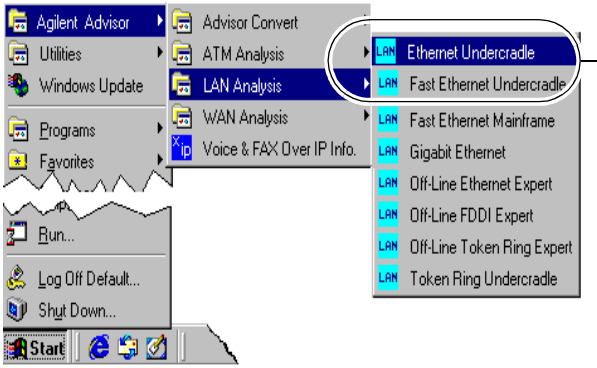
You can filter on protocol characteristics such as a protocol suite. You can filter on specific packet types or messages within a protocol suite. You can filter on station addresses for frames going to or from a particular address. You can filter on frames between two specific station addresses.

For example, if you are looking for frames occurring on the internet, you would check to see if the TCP WWW 80 port is being used by any station.

This example uses the same data file as the Troubleshooting a Slow Network example. Since this example test is using a data file, only display filtering is demonstrated. The same filter concepts apply for capture filtering and search filtering.

① **Start the Advisor LAN application.**

If you are continuing from the previous sample test, you need to exit the application and restart it again to exactly repeat this sample test.



The Ethernet and Fast Ethernet hardware on your Advisor displays in this cascaded menu.

② **If you are going to use the Demo_1.dat file and follow this example on your own Advisor, load the file now.**

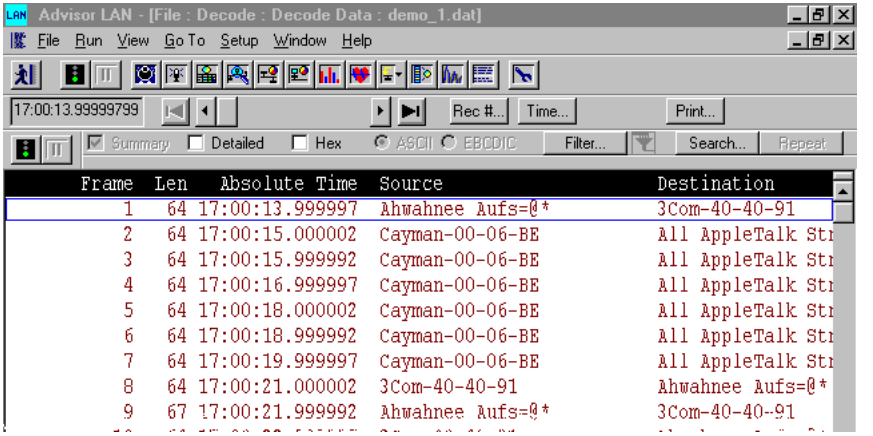
a. Use File | Open (Load Data) and the path:C:\ADVISOR\LAN\DATA\DEMO_1.DAT.

b. Click OK.

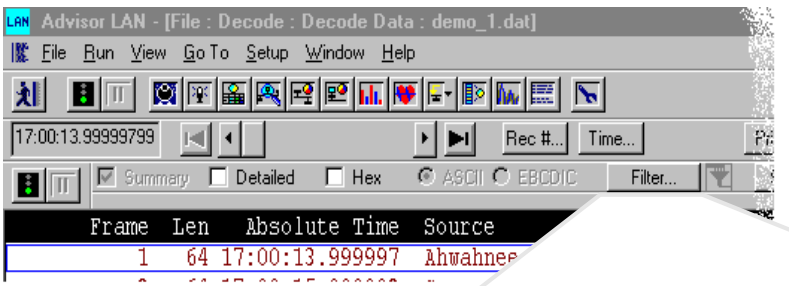
c. The Advisor loads the file into the capture buffer and automatically opens the Decode measurement to display the file. This takes several seconds, depending on the type of Advisor you have.

The Decode measurement displays all frames in the sequence they were captured in the data file.

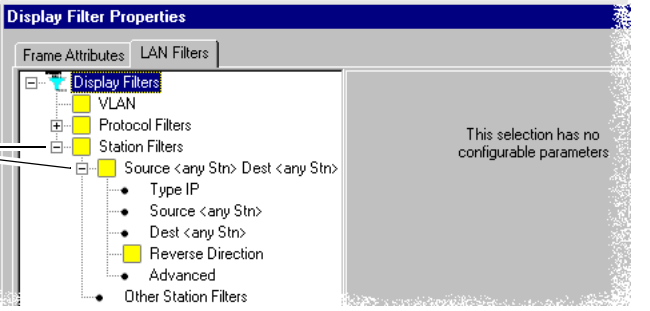
All source and destination addresses display.



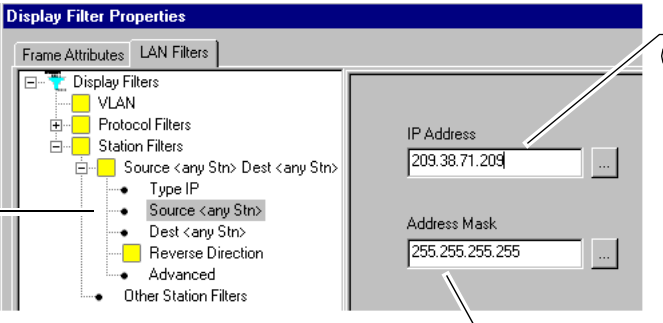
Frame	Len	Absolute Time	Source	Destination
1	64	17:00:13.999997	Ahwahnee Aufs=@*	3Com-40-40-91
2	64	17:00:15.000002	Cayman-00-06-BE	All AppleTalk Str
3	64	17:00:15.999992	Cayman-00-06-BE	All AppleTalk Str
4	64	17:00:16.999997	Cayman-00-06-BE	All AppleTalk Str
5	64	17:00:18.000002	Cayman-00-06-BE	All AppleTalk Str
6	64	17:00:18.999992	Cayman-00-06-BE	All AppleTalk Str
7	64	17:00:19.999997	Cayman-00-06-BE	All AppleTalk Str
8	64	17:00:21.000002	3Com-40-40-91	Ahwahnee Aufs=@*
9	67	17:00:21.999992	Ahwahnee Aufs=@*	3Com-40-40-91



③ Select the Filter button to open the dialog for specifying a display filter.



④ Expand the Station Filters branch and then expand the Source branch to access the filter parameters.



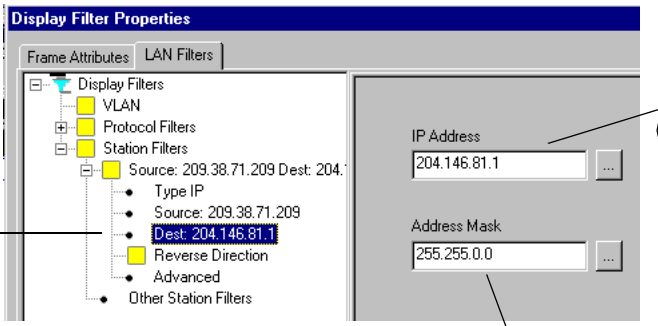
⑤ Choose the Source line to open the advanced filter pane on the right.

⑥ **Enter/type the IP Address, 209.38.71.209.**

This is the address of the local node whose traffic you want to view.

⑦ **Leave 255.255.255.255 in the Address Mask field.**

This mask will compare against all bits in the IP address field.



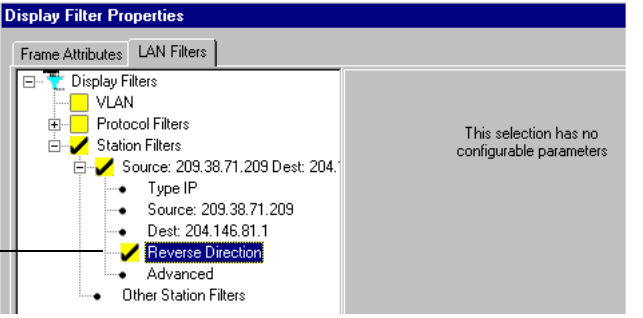
(8) Select the Dest line to open the advanced filter pane on the right.

(9) Type the IP address 204.146.81.1.

This is the IP address of one of the Olympics servers.

(10) Type 255.255.0.0 in the Address Mask field.

This mask will compare against the 204.146 network and subnet portion of the IP address above. The .0.0 portions of the mask are "don't cares" which means that any subnet and station address in those positions will be accepted.



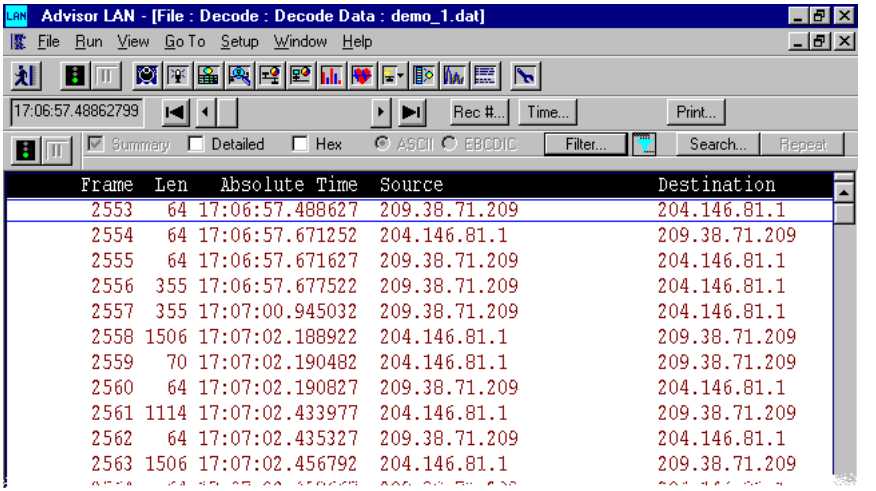
(11) Select the Reverse Direction line.

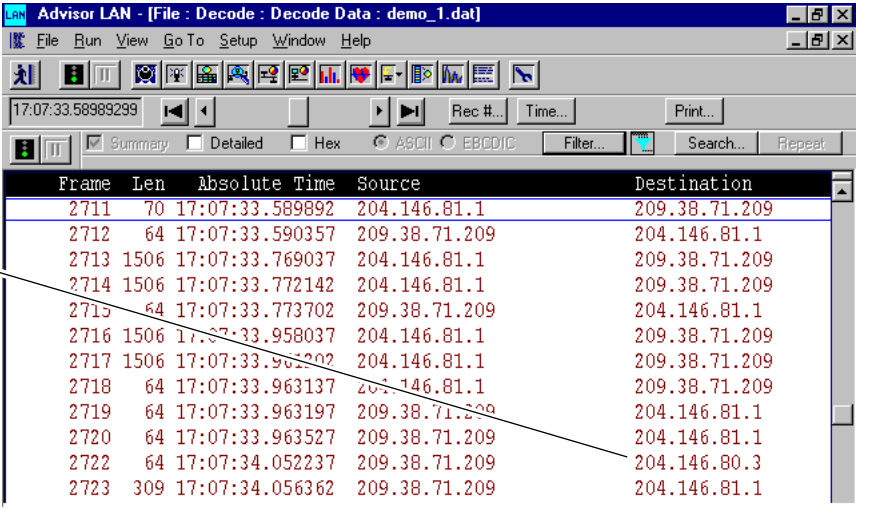
This makes the filter look for frames going
From 209.38.71.209 To 204.146.X.X
AND
From 204.146.X.X to 209.38.71.209.

Selecting the Reverse Direction line also enables (checkmark) the Station Filters branch of the Display Filter.

(12) Click OK to accept the Display Filter filter definition.

The Decode view now shows only frames with Source and Destination addresses that match the filter.

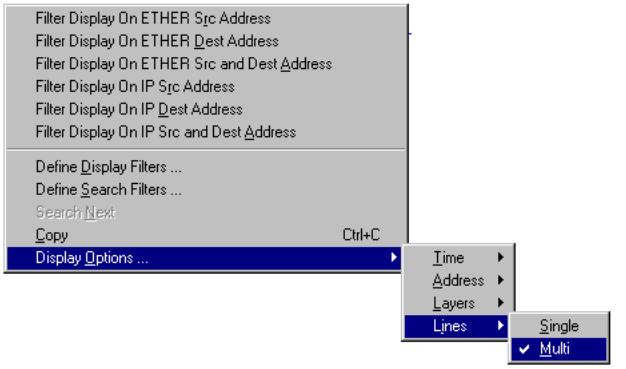




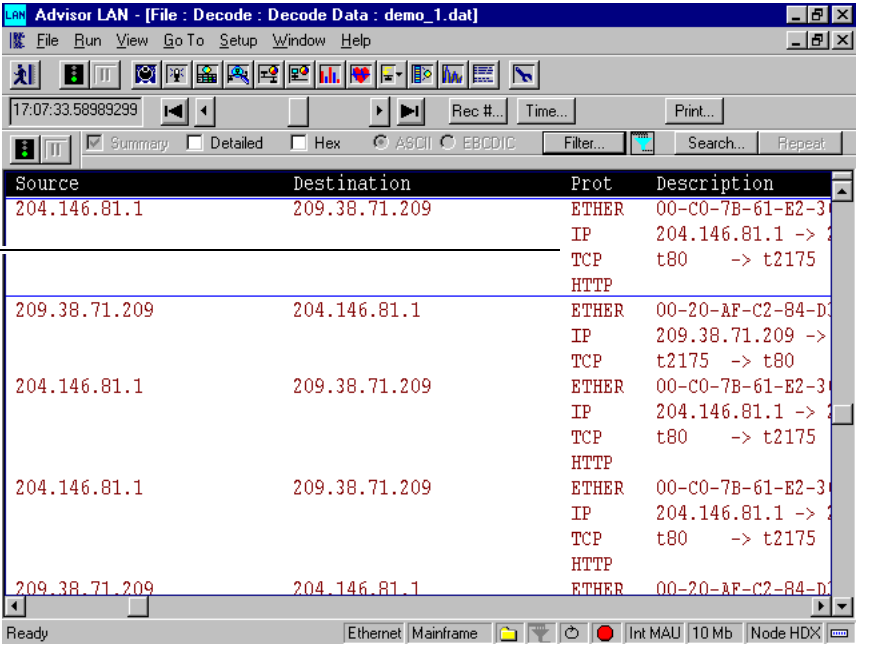
⑬ **Use the PgDn key to scroll the list until you see the IP address 204.146.80.3.**

The Address Mask used in step 10 displays all Nagano server addresses at 204.146.x.x.

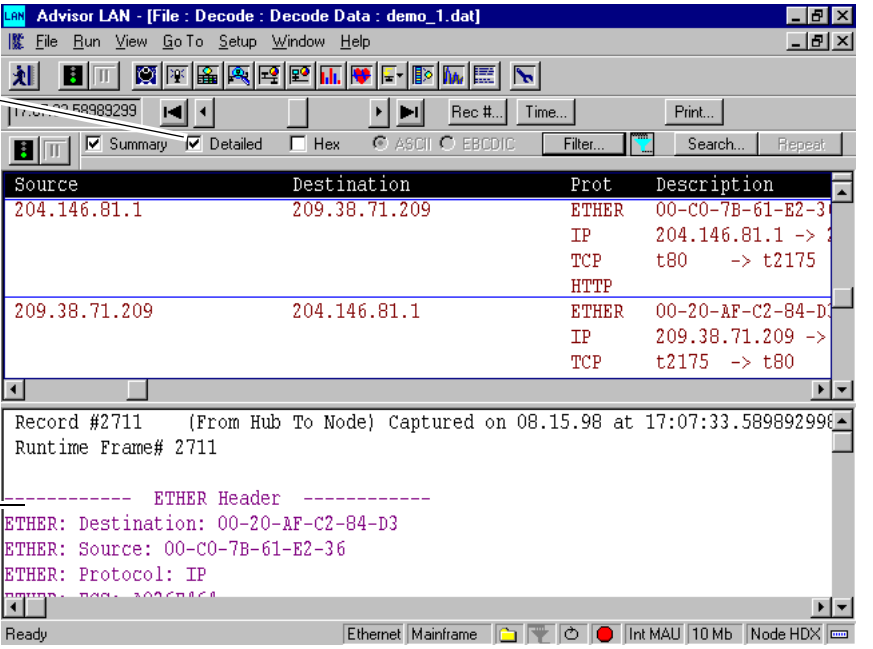
⑭ Right click the mouse anywhere in the Decode view and select Display Options | Lines | Multi.



⑮ Notice that the protocols used in each frame are now more easily viewed.



⑯ Display the Detailed measurement view.



This view shows the contents of each field in the frame highlighted in the Summary view.

Conclusion:

- By using a display filter, you can view only the frames in the capture buffer that are of interest to you.
- You can filter on source and/or destination addresses.
- By using an address mask, you can filter on an entire IP address or only on portions of the IP address.

Export to CSV

You can save the Advisor LAN measurement data to a Comma Separated Values (CSV) format file.

Then, you can import this CSV file directly into a spreadsheet (Excel or Lotus 1-2-3), or easily process the file with a text processing program written in a programming language such as Pearl, AWK, Basic, or C. This gives the capability of generating statistics or graphs that are not shown in the Advisor.

Example equipment

The Advisor used in this example has the Ethernet interface. You can also use a Fast Ethernet, FDDI, or Token-Ring interface.

About exporting in CSV format

In this sample test, we are using data captured from a network. You can export to CSV from the following Advisor LAN measurements:

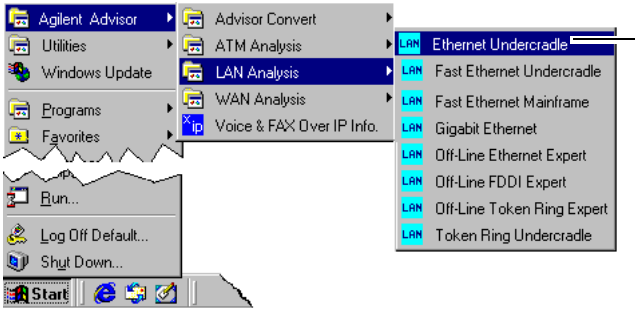
- Expert AnalyzerProtocol Statistics
- CommentatorMAC Node Statistics
- Connection StatisticsProtocol Vitals
- Line Vitals

1 Connect to a network.

See chapter 2 for information about connecting the Advisor to your network.

2 Start the Advisor LAN application.

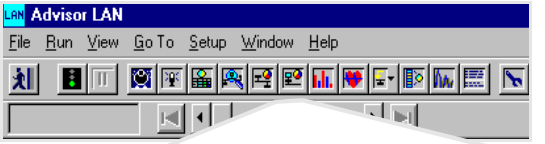
Choose the LAN interface menu item appropriate for your system.



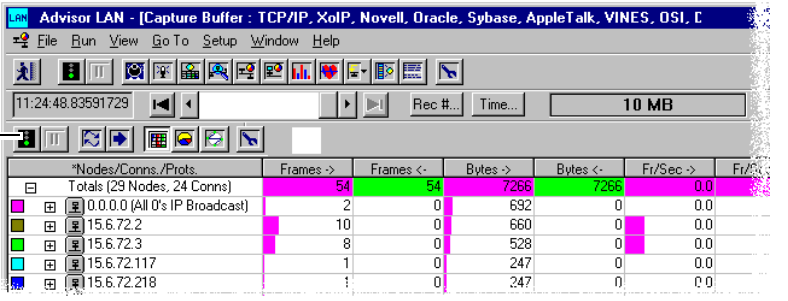
The Ethernet undercradle is selected in this sample test.

3 Select a measurement.

In this sample test, Connection Stats is selected.



4 Use the Start / Stop button to capture some frames and then stop the measurement.



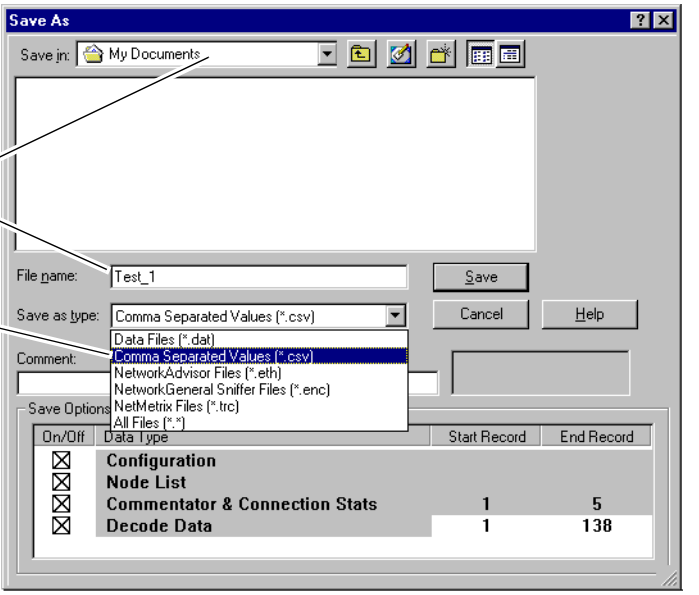
⑤ Select the File | Save (Data) menu item.

⑥ Select a path and file name.

⑦ Select .CSV as the file type.

Use "Comma Separated Values (*.csv)".

⑧ Select the Save button.



Tip:
In the Advisor LAN application's online Help, see "CSV export format" in the index for a description of the CSV file format.

Import a CSV File Into a Spreadsheet

You can import Advisor LAN measurement data saved as a .CSV file into a spreadsheet (Excel or Lotus 1-2-3).

You can also process the file with a text processing program written in a programming language such as Pearl, AWK, Basic, or C. This gives the capability of generating statistics or graphs that are not shown in the Advisor.

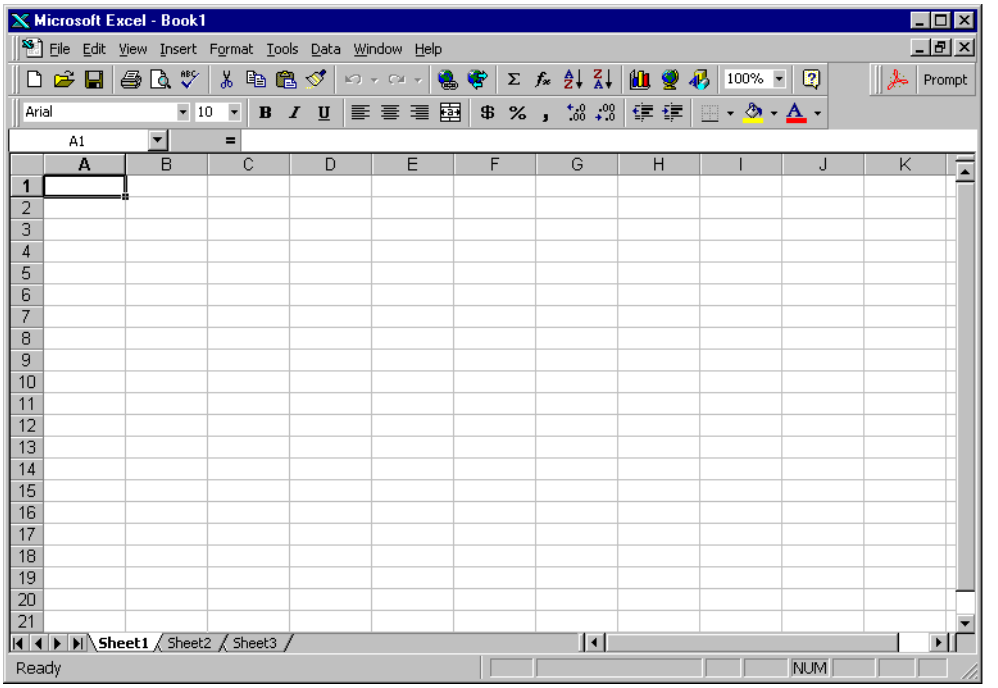
About importing CSV format

In this sample test, we are using data captured from a network and saved to a CSV file.

This example uses the Microsoft Excel spreadsheet to import an Advisor data file saved in CSV format.

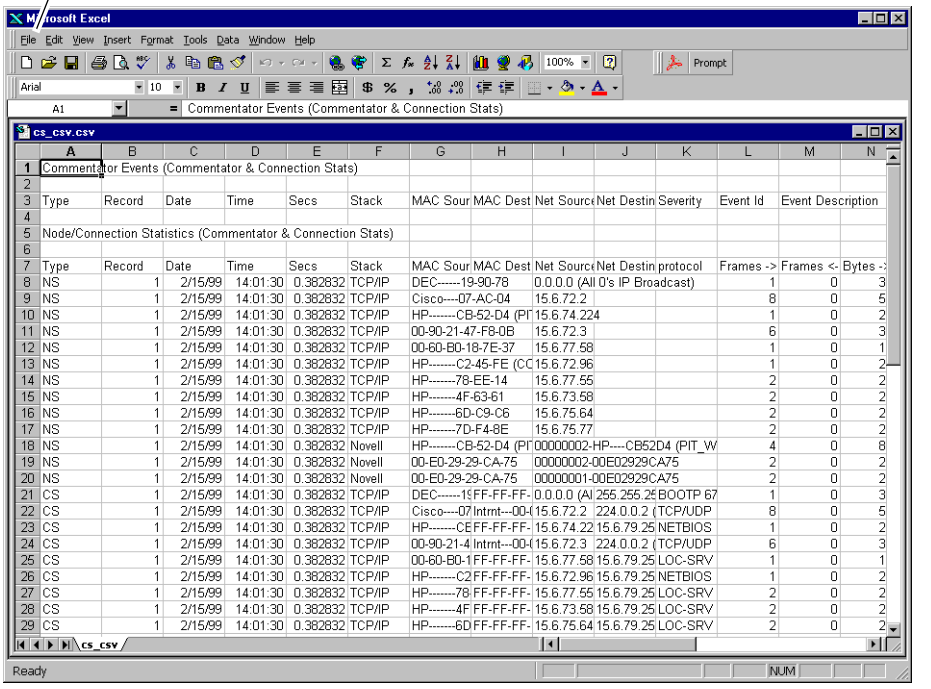
1. See the previous sample test to see how to save Advisor LAN measurement data to a .CSV file.

2. Start the Excel application.



③ Select the File | Open menu item and then use the Browse feature to find and open your .CSV file.

④ Scroll the display to see data stored in each sample interval record.



Tip:
In the Advisor LAN application's online Help, see "CSV export format" in the index for a description of the CSV file format.

C
Commentator, 1-8
configure
  instrument, 2-3, 2-19
  measurement, 2-4, 2-21
connect
  in Ethernet monitor thru mode, 2-7
  in Ethernet node mode, 2-7
  to FDDI network, 2-10
  to Token-Ring network, 2-18
  using copper twisted pair cable, 2-12
connect to the network, 2-3
copper twisted pair connection, 2-12
CSV
  file export, 3-20
  import to a spreadsheet, 3-23

D
Decodes, 1-10
Decoding Frames on Your Network, 1-10
Discovering What Nodes Are on the Network, 1-9

E
errors, 1-8
Ethernet
  network connection, 2-7
Ethernet node connection, 2-7
Examining Physical Layer Activity, 1-5
Examining Protocol Errors, 1-8
Examining the Top Talkers, 1-6
Expert Analyzer, 1-4
export
  CSV format, 3-20

F
FDDI
  network connection, 2-10
filter
  sample test, 3-13
frame decoding, 1-10, 3-14

G
Getting Started, 2-2

I
installation, 2-2
  hardware, 2-5
  software, 2-5
instrument configure, 2-19

L
Line Vitals, 1-5

M
measurement
  Commentator, 1-8
  configure, 2-4, 2-21
  Connection Statistics, 1-6
  Decode, 1-10, 3-14
  Expert Analyzer, 1-4
  Line Vitals, 1-5
  Node Discovery, 1-9
  select a measurement, 2-4, 2-20
monitor thru connection, Ethernet, 2-7

N
network connection
  Ethernet, 2-7
  FDDI, 2-10
  Token-Ring, 2-18
Node Discovery, 1-9
node list, 1-9

O
online help, 2-22

P
physical layer, 1-5
product support, ii
protocol Errors, 1-8

S
sample file, 3-2, 3-5, 3-14
sample tests
  Export to CSV, 3-20
  Import CSV into a Spreadsheet, 3-23
  introduction, 3-2
  Tracing a Conversation Between Two Stations, 3-13
  Troubleshooting a Slow Network, 3-3
select a measurement, 2-4, 2-20

slow network, 3-3
spreadsheet
    import CSV file, 3-23
start
    LAN in Windows, 2-2
    LAN in Windows application, 2-6
starting
    with Expert Analyzer, 1-4
    with Troubleshooting Guider, 1-3
Starting with the Quickstart Expert Guide, 1-3

T

Token-Ring
    network connection, 2-18
tool bar
    measurement, 2-20
    top level, 2-20
top talkers, 1-6
Tracing a Conversation Between Two Stations, 3-3, 3-13
troubleshooting
    slow network, 3-3
    Tracing a Conversation Between Two Stations, 3-3
troubleshooting guide, 1-3

U

Using Online Help, 2-22

V

version, ii

W

warranty, ii
Windows help, 2-22