

Agilent Technologies

Agilent Advisor – WAN

Product Overview



Solve Complex Internetworking Problems the First Time

The Agilent Advisor is designed with one goal in mind: to make you more effective when isolating and solving problems on wide area and local area networks the first time you connect. The Advisor lets you connect anywhere on the network, capture all the necessary data, and comprehend that information as it reveals problems and suggests solutions.

WAN Testing Made Easy

To install, maintain, or troubleshoot a wide area network, you need to test for many things: physical errors, equipment interoperability, and traffic problems. The Advisor WAN offers integrated WAN and LAN protocol analysis capabilities, along with BERT (bit error rate testing), stimulus and response measurements, and statistical analysis capability — everything you need in a powerful, cost-effective test instrument.

No matter what the traffic level, the Advisor WAN captures every frame on your network. It non-intrusively monitors and decodes WAN, LAN, and ATM data at full line speed, without missing a bit. In addition, it can simulate either direction of a line under test, and process previously captured data from the buffer or from a file. The analyzer doesn't just capture traffic when the network is working; it gives you information when you need it the most: when the network is broken.



Support for all Major Technologies

The Advisor WAN allows you to monitor all major WAN and ATM communications protocols, as well as all major LAN protocols running over the wide area network. All major WAN interfaces are already built into the platform. Others are available via slide-in modules and undercradles.

Platform Specifications

- 400 MHz CPU with 256 Mbytes of memory.
- 26.4 cm (10.4 in) diagonal active matrix 800X600 SVGA standard.
- 6 Gbyte hard drive.
- 1.4 Mbyte 3.5 inch floppy disk drive.
- Two Type I/II PCMCIA slots or one Type III slot.
- Built-in tracking device or external mouse.
- 9-pin serial and 25-pin parallel port.
- VGA or SVGA external monitor port.
- Windows® 98 and MS-DOS®
- Expansion slots provided via the undercradle.

Extensive Test Capabilities Help You Uncover and Solve Even the Most Subtle WAN Problems

No matter how complex your network is, the Advisor WAN has you covered. It provides comprehensive testing capability for all major WAN technologies, including:

- Frame relay, X.25, ISDN, HDLC, SNA/SDLC, PPP, SMDS, and Packet over SONET/SDH.
- Encapsulated LAN protocols are supported.
- You can add LAN and ATM testing capability easily.
- Built-in interfaces include RS232/V.24, RS449/422/423, V.10/11, V.35/V.36, RS530, V.35 up to 8.192 Mbps.
- DDS 4-wire, full and fractional T1 and E1, ISDN BRI and PRI, X.21, G.703 at 64 kbps, J2, E3/DS3, ATM25, STM-1e, STM-1/OC-3c, UTP155, and STM-4c/OC-12c are available as options.

The Advisor offers a host of powerful test and analysis capabilities that help you track down even the most subtle protocol problems:

- Decodes for the upper and lower layers of all major protocol stacks at speeds of 50 bps to 622 Mbps.
- Statistics, including LAN traffic analysis over WAN, and logging of statistics to disk.
- Extensive real-time data filtering (both capture and display filtering).
- Counting and statistics of user-definable events.
- Line status monitoring and statistics.
- Comprehensive bit error ratio testing.
- Simulation and emulation capability.

Networking Technologies Supported by the Agilent Advisor

LAN	WAN	ATM
10 Mbps Ethernet	Frame Relay	E1/DS1
Fast Ethernet	ISDN	J2
Gigabit Ethernet	X.25	E3/DS3
Switched Ethernet	Encapsulated LAN over WAN	ATM25
Token Ring	SDLC/HDLC	STM-1e
FDDI	Async/Sync PPP	STM-1/OC-3
	Packet over SONET/SDH	UTP155
		STM-4/OC-12

Monitor and Decode Upper and Lower Layer Protocols in Real Time

The Advisor WAN monitors your network, captures data, and decodes it in real time. The analyzer can selectively capture data using its 16 capture filters, so that the memory buffer contains just the information you want. In addition, you can use the analyzer's display filters to search the buffer for specific values, patterns, or addresses.

The Advisor fully decodes frames and cells and displays all fields in configurable summary, detail, or hexadecimal format (see figure 1). In addition, the multitasking Microsoft

Windows-based interface lets you view different protocol decodes, Vitals, statistics, and other displays simultaneously. The various data can be printed, or stored to a file and retrieved for later analysis.

With the Advisor's extensive statistics software, you won't need to spend much time decoding individual protocol frames. But when you do, the protocol decodes will let you dig as deeply into the data as you need to go, quickly and easily. For example, the analyzer extracts and decodes encapsulated LAN data automatically, without the need to specify cumbersome offsets or know exactly which LAN protocol stacks are present on the link.

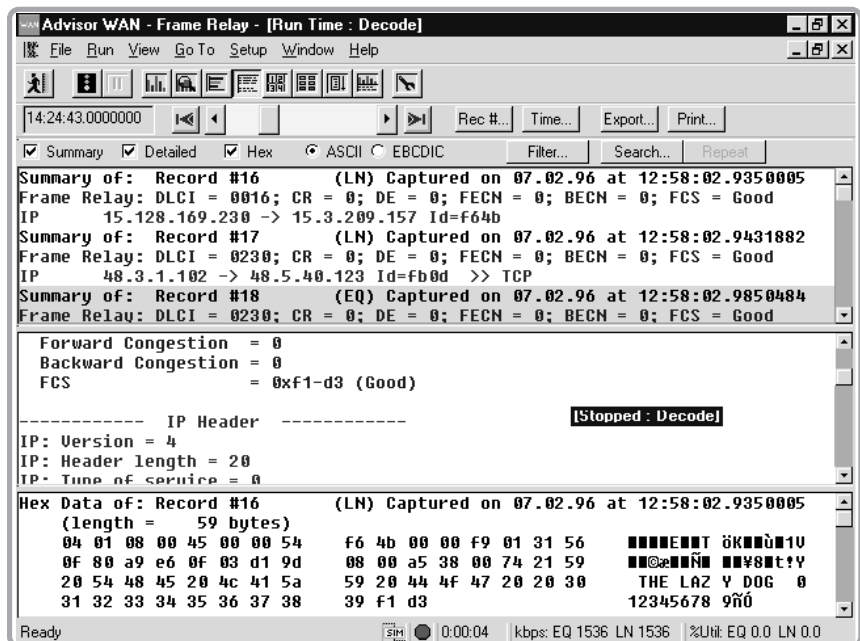


Figure1. The Advisor fully decodes frames and cells, and displays all fields.

Post Processing and Analysis

You can use the Advisor's post-capture analysis capability to view the contents of captured data files, one frame at a time. Post-processing display filters let you quickly zoom in on selected criteria, from the traffic passing between specific devices to individual conversations. With post-processing you can:

- Search through the data by record or by time stamp
- Search for events or strings
- Verify event-to-event timing
- View protocol errors
- Print the current display or the entire buffer
- Export data to other programs
- Analyze statistics from the buffer data

You'll spend less time searching through frames, and more time focusing on problems.

Simulation and Emulation

To help you isolate protocol implementation problems the Advisor's high-level simulation language, or one of the many pre-written tests, allow you to create normal or abnormal protocol behavior on demand. A pre-written test, for example, will help you send a frame relay PING. You simply enter the IP address and the software does the rest by creating an IP/ICMP frame that uses the IP address to test network operation and connectivity.

Network Vitals

Isolating a protocol error or tuning a network often requires searching through hundreds or thousands of captured frames to decide what is important. Even a highly skilled troubleshooter can be quickly overwhelmed. The Vitals feature saves valuable time by automating this process.

Vitals provides real-time measures of network conditions that provide a statistical picture of what is happening on the network links. Working simultaneously with decodes, filters, and other measurements, Vitals interprets data traffic as it occurs (see figure 2). This feature can be used to identify network problems or to assist you in optimizing the configuration of network components and software.

Values in the Vitals display are given in tabular form and are cumulative from the start of a test. An exception is instantaneous utilization, which is also displayed in graphical format for a quick look at overall usage of the network. Vitals data are provided for both the line (network) side and the equipment (subscriber) side and include such statistics as average utilization in percent, instantaneous utilization in percent, total bytes, total frames, FCS errors, code violations, frame alignment errors, and many more.

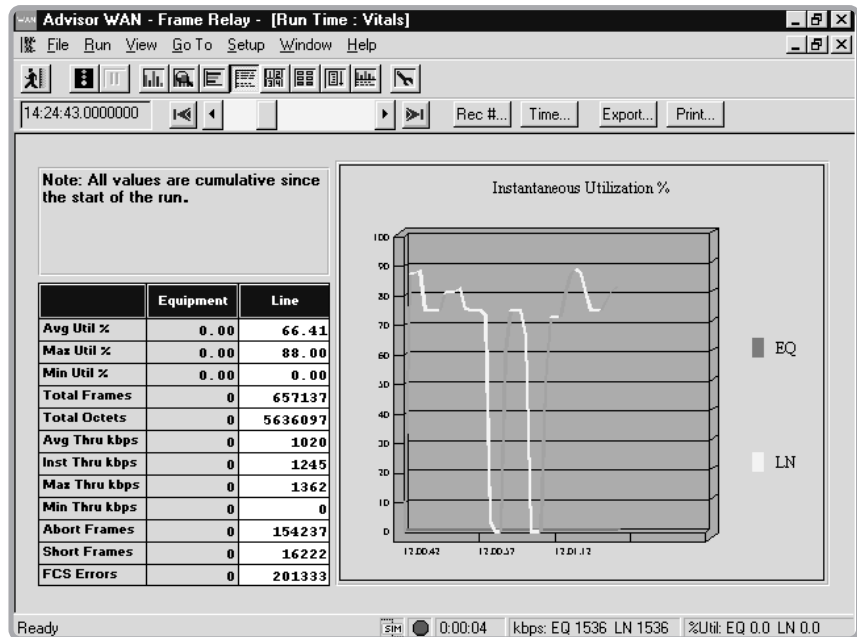


Figure 2: Vitals provides real-time measures of network conditions.

Stimulus/Response Tests

To maximize your productivity, the Advisor WAN combines protocol decoding and statistical performance measurement with powerful active testing capability.

You can execute any of the stimulus/response tests and simultaneously monitor their effect on the network. The analyzer will continue to capture data traffic and monitor network performance with the statistical measurements to ensure that you do not miss a network event. Pre-written stimulus-response tests included with the Advisor can be used, for example, to activate a link, to establish calls from the network or subscriber side, and to generate data packets.

BERT (Bit Error Rate Testing)

Many times problems on the network can be attributed to the transmission medium. Although the physical medium may be good for normal data transmission, it may not be able to handle high speed WAN data. That is why the Advisor WAN has a powerful built in BERT.

Traffic Generation

Network faults related to traffic levels are often difficult to isolate. With the Advisor WAN, you never miss a frame, no matter what the data rate. Users can generate traffic and make measurements simultaneously, so that you can recreate problems and analyze them for solutions. Powerful traffic generation capability in the Advisor WAN lets you transmit virtually any type of message or cell onto the network one time, a specified number of times, or continuously. To generate traffic for network simulation, you can leverage the many testing scenarios already defined in the analyzer. Previously captured frames in the capture buffer can be used to duplicate events or to create complex messages, and a library of test scripts is available for building commonly used message types.

The Advisor, with its powerful multi-tasking operating system, lets you increase the traffic load while measuring network performance, or reproduce a particular data sequence while monitoring the effect on other conversations. By simultaneously generating traffic and monitoring the network, you'll be able to measure the effect of adding other devices on overall network performance.

Use the Agilent Advisor for all your WAN testing applications

LAN over WAN Testing

LAN over WAN testing typically checks router and bridge configurations for problems, and determines such things as the types of LAN traffic being routed over the WAN, how much bandwidth is available, and how bandwidth is being used.

The Advisor WAN automatically extracts and decodes encapsulated LAN data, without the need to specify offsets or know exactly what protocol stacks are present on the link. Even complex protocols are supported, such as RIP, UDP, and IP within X.25 inside Frame Relay, (ANSI T1.617a, Annex G).

All major LAN protocols are supported on the Advisor WAN, including those for:

- TCP/IP
- AppleTalk
- Microsoft LAN Manage
- Banyan/Vines
- DECnet
- OSI
- XNS
- SUN
- IBM/SNA
- CDPD
- H.323
- IETF SIP
- IETF S/MGCP
- T.38

Additionally, the analyzer is programmed with filter templates for commonly used applications, including Application Layer LAN and Network Layer LAN protocols.

Frame Relay Testing

For frame relay testing, the Advisor WAN provides functionality for automatic DLCI discovery with drill down capability, DLCI statistics and Vitals, and real-time decoding capability for all layers of the frame relay protocol according to relevant RFC 1490/2427, ITU-T Q.933 Annex A, ANSI T1.617 Annex D and the original Frame Relay consortium specifications (see figure 3).

Using the Advisor's display filters, you can turn the following functions on or off:

- Any part of the Frame Relay header or payload
- Line status information
- LAN information
- Annex A LMI information
- Annex D LMI information
- Original LMI information

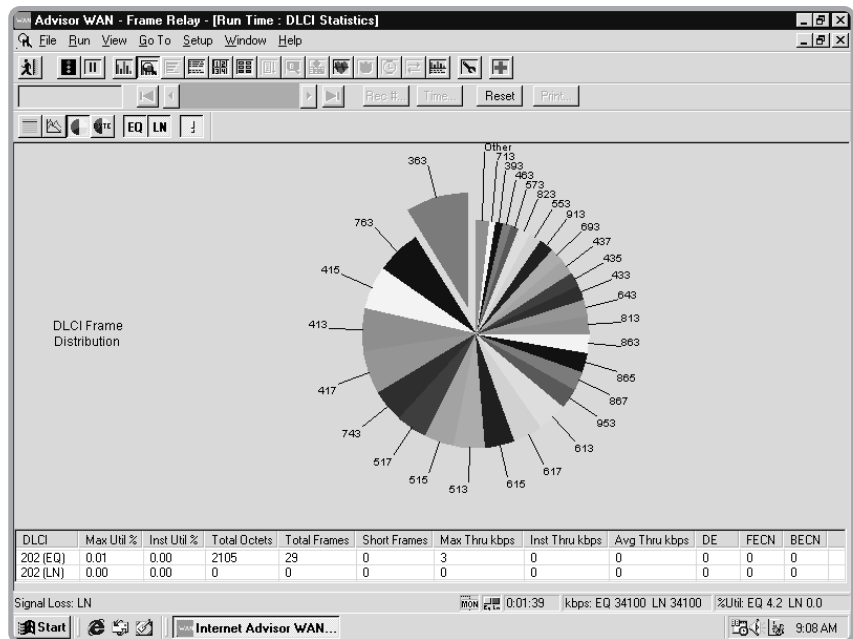


Figure 3: DLCI statistics.

Packet over SONET/SDH Testing

Packet over SONET/SDH (PoS) is a relatively new technology, especially for use in the access network. The Agilent Advisor WAN now has the capability to analyze PoS traffic at 155 Mb/s using the same modules until now used only for ATM. All common variants of PoS are supported (old and new versions of the IETF PPP in HDLC-like Framing and Cisco HDLC). Full rate capture of PoS with packets as small as 6 bytes (shorter than ever found in real networks) is provided with full decoding of higher layer protocols, including those for 3G and Mobile-IP.

PoS is supported on the OC-3/STM-1 optical interface and STM-1e/EC-3 75 Ohm electrical interface; physical layer and link layer statistics are provided, as well as optical power and electrical pulse amplitude measurements, as appropriate.

SNA/SDLC Testing

In an SNA network, the Advisor WAN monitors, decodes, and processes SNA and SDLC protocols, including:

- LAPB address
- Frame type
- Transmission headers
- Request/response headers
- Path control
- Transmission control
- Data flow control
- Management services, and more

Filters and counters for SDLC layer 2 statistics included.

X.25/HDLC Testing

The Advisor WAN can be used as an end station, a node on the network, or a passive monitoring device in an X.25 network to provide a range of functionality. In addition to the analyzer's general capabilities, it also offers:

- Automatic LCN discovery with drill down capability
- LCN statistics and vitals
- Decodes for all three layers of the X.25 protocol according to CCITT X.25-1988
- X.25 filters and counters
- X.25 emulator with full layer 2 and partial layer 3 emulation

ISDN Testing

The Advisor WAN has a number of capabilities for maintaining and troubleshooting ISDN connections on Basic and Primary Rate ISDN circuits.

- Monitoring, decoding and post-processing of ISDN and upper layer protocols, including X.25 on the D-channel
- Statistical analysis of B and D channel activity
- Emulation, traffic generation, and stimulus response tests, including BRI and PRI tests
- Call placement and BERT
- Support of Basic Rate S, T and, U interfaces and Primary Rate Interface
- Extensive B-channel traffic statistics as voice and data call tracking for all channels.

Sync/Async PPP Testing

The Advisor WAN provides monitoring, decoding, and post-processing of synchronous and asynchronous PPP protocols. Decodes include HDLC header (address, frame type, and FCS), PPP header (protocol ID and CP code), LCP, NCP/NSCP (including IPCP, IPXCP, CCP, and NetBios CP), PAP, and CHAP. PPP data filters allow you to turn on or off any part of the PPP header or payload, line status information, BOP information, or LAN information.

SMDS Testing

For SMDS networks, the Advisor WAN monitors SMDS DXI data on V.35, RS-449, RS-232, T1 and E1 circuits. The analyzer provides run-time and post-run-time examine summaries and a detailed display of the Layer 1 PLCP decode, the Layer 2 PDU decode, and the Layer 3 SMDS header decode according to Bellcore specifications. It also decodes encapsulated protocols, including IP and SNAP.

Remotely gather MIB statistics from around your network

Switch Advisor gives you the capability to trend switch port utilization and other vital statistics without leaving your chair. Simultaneously monitor a suspect WAN link and any other Management Information Base (MIB) supported device to correlate problems between the two. Discover switches and other MIB supported devices via user directed search or directly enter device management IP address and graphically view current port utilization levels. Switch Advisor sends SNMP messages over your ethernet connection and gathers MIB data including utilization, packet information and errors.

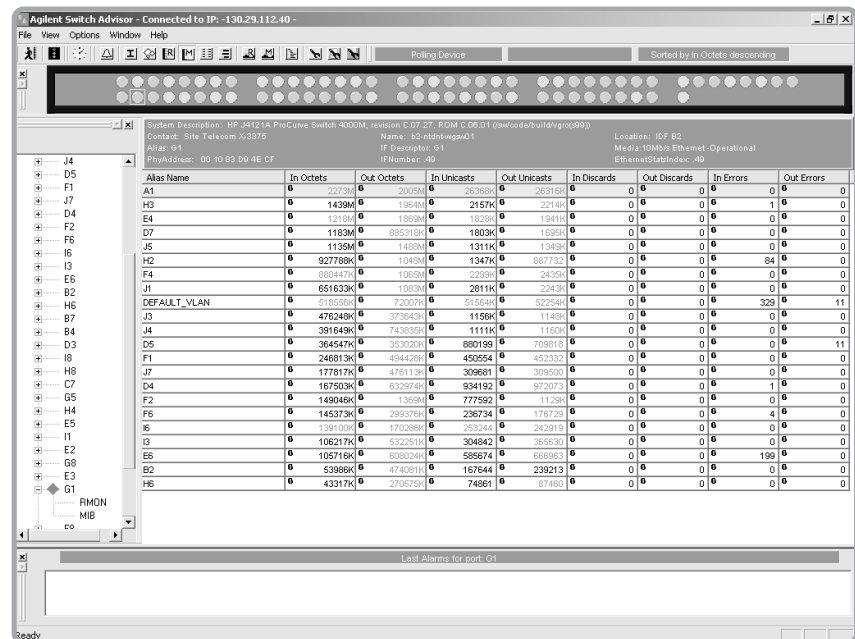


Figure 4: DLCI statistics.

This raw data is correlated and displayed on an easy to understand Graphical User Interface. Five separate views organize the MIB device data, allowing the user to concentrate on the data of interest, presenting pertinent statistical and graphical information (see figure 4) needed to assess the health of the data being processed by the switch. Select which port to monitor via the “explorer” navigation menu or “clicking” on the port of interest.

- Management – Displays System information including switch part number, location, designated name and site contact information. Displays each port # by customizable “Alias” name with Interface description, associated Media type and whether RMON capability is supported, per interface.
- MIB Statistics – Displays per port statistics including In/Out Octets, Unicasts, Discards and errors.

- Port Usage – Graphically displays switch-port utilization, per port, over time. Also, allows same measurements to be taken during a user-initiated test.
- Single Port Statistics – Displays per-port information including graphical representation of “In” and “Out” port utilization, Octets, Unicasts, Broadcasts, Discards, and Errors. Also, allows same measurements to be taken during a user-initiated test.
- MIB Browser – Allows user directed MIB data collection.

Operate Your Test System Remotely

Remote capability lets you connect the Advisor WAN to other Advisors or to PCs using standard Microsoft Windows remote operation software, such as pcANYWHERE. With remote operation, you can monitor and troubleshoot WAN networks from a local console, bringing problem-solving expertise normally available only at the central management site to a remote location.

Leading-Edge Solutions When You Need Them

Because of its modular design, the Advisor can grow with you as your network evolves and your testing needs change. As new applications and faster hardware come to market, we'll continue to enhance Advisor capabilities. Subscribing to the Advisor Software Update Subscription Service assures that you always have the latest software releases.

Training and Consulting Customized to Help Bridge the Knowledge Gap

We know that it takes more than the best tools to keep your network healthy. That's why we offer training and education services to help you increase your troubleshooting effectiveness, as well as on-line technical support and consulting when you need them. We're here to help you succeed.

Related Literature

Agilent Advisor LAN	Product Overview	5980-0990E
Agilent Advisor ATM/WAN	Technical Specifications	5980-0786E
Agilent Advisor ATM	Product Overview	5968-1437E
Agilent Advisor	Brochure	5988-4329EN

Warranty

Hardware: 3 years (optional 5-year).
Software: 90-day replacement only

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Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

Agilent Ordering Information

J2300E	Agilent Advisor - WAN
Undercradle	
J2900A	High Speed Acquisition undercradle
Modules	
J2294D	E1/T1 DB-9/RJ-45 interface module
J2296D	E1 BNC 75 Ohm interface module
J2298D	E1/T1 RJ-45/RJ-48C/ mini-bantam interface
J2905B	ISDN BRI S/T and U interface module
J2908A	DDS 4-wire module
J3759B	WAN-DS3/E3 cells and frames module
J3762B	WAN-HSSI module
J5457A	High Speed V-series interface
Software	
J3307A	Agilent Advisor Reporter WAN/LAN/ATM
J6848A	Report Center
Accessories	
J2300E-005	Add combination 56K modem/10/100 NIC card
J2305A	Agilent Advisor Soft Carrying Case
J2514A	Agilent Advisor Wheeled, Hard Transit Case
J2927A	CD-ROM player
Cables	
J2274A	V.35 Interface Y-cable
J2276A	RS-449 Interface Y-cable
J2277A	RS-449 Interface 15-pin Y-cable
J2278A	RS-530 Cable Adapter
J2280A	RS-232/V.24 (5-foot) Interface Y-cable
J2281A	T1 Mini-bantam cable set
J2283A	CEPT-E1, E3 and DS-3 BNC cable set
J2285A	T1 RJ-48 cable set
J2286B	DB-9 to dual Siemens 3-pin cable set
Education	
J1998A	Network Troubleshooting book
J1999A	Network Troubleshooting CD
H7211A-211	Wide Area Network Analysis
H7211A-212	Frame Relay Network Analysis
H7211A-403	TCP/IP Troubleshooting

Warranty and Support Services

Hardware	1 year Agilent Instrument Warranty and Service Plan Agilent Phone Support Products Agilent Software Support Products
Software	90 day media replacement warranty

You can also contact one of the following centers and get assistance with all your test and measurement needs.

Argentina	+54 11 5811 7115
Australia	1 800 629 485
Austria	+43 (01) 25 125 7006
Belgium	+32 (0) 2 404 9340
Brazil	+55 11 4197 3600
Canada-English	877 894 4414
Canada-French	877 894 4414
China	800 810 0189
Denmark	+45 70 13 15 15
Finland	+358 (0) 10 855 2100
France	+33 (0) 825 010 700
Germany	+49 (0) 18 05 24 63 33
Hong Kong	800 930 871
India	1600 112 929
Ireland	+353 1890 924 204
Israel	+972 3 6892 500
Italy	+39 02 92 60 8484
Japan	0120 421 345
Luxembourg	+32 (0) 2 404 9340
Malaysia	1800 888 848
Mexico	+52 01800 506 4800
Netherlands	+31 (0) 20 5472111
Norway	+47 23 25 3720
Philippines	1800 1651 0170
Poland	+48 22 723 0066
Russia	+7 095 797 3963
Singapore	1800 375 8100
South Korea	080 769 0800
Spain	+34 91 631 3300
Sweden	0200 88 22 55
Switzerland-German	+41 (0) 1 735 9300
Switzerland-Italy	+39 (0) 2 92 60 8484
Switzerland-French	+33 (0) 825 010 700
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United Kingdom	+44 (0) 7004 666666
USA	800 452 4844

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