Agilent NetMetrix Enterprise Manager

Product Brief

Agilent Technologies
Innovating the HP Way

Agilent NetMetrix: Keeping networks moving at the speed of today's business.

For many businesses the network is their lifeline – for others, the network plays a less visible role, yet it has a direct impact on the company's bottom line. Despite the importance of the network, most companies have limited information regarding the performance and usage of this critical business asset. For many companies, what happens on the network remains a mystery and network problems are handled reactively rather than proactively.

Agilent NetMetrix Enterprise Manager takes the mystery out of network operations so that network problems can be quickly isolated and potential bottlenecks eliminated before they affect end-user productivity.

NetMetrix Enterprise Manager helps:

- increase network availability
- improve network performance
- manage network services
- reduce and control network costs and justify network expenditures
- capture detailed information on network traffic and performance
- extend the power of HP OpenView Network Node Manager.

Increase Network Availability

Today's networks have become integral to business success and can provide a competitive advantage for the overall business. These business-critical networks are used to generate revenue, electronically order materials, issue payments to vendors, and facilitate internal and external communications. In short, they are essential to the daily operation of the business. Increased network dependency makes it imperative that network problems be minimized and resolved quickly. Agilent NetMetrix provides the tools to quickly isolate and resolve network problems before they affect a vital business service.

Quick identification of network problems. Real-time network traffic views provide timely information needed to isolate the cause of network problems.

Rapid resolution through prioritization. At-a-glance reports quickly identify which network segments (LAN/WAN/ATM) are outside acceptable performance levels, helping Information Technology (IT) administrators prioritize and focus their attention on the most critical problems.

Network-wide visibility from a central console. Visibility of the entire enterprise network from a single point enables informed network management of local and remote sites.

Diverse views for root cause identification. A variety of views of the state of the network help identify the root cause of network problems at local and remote sites. Views include network availability, responsiveness, performance, top network applications, top network consumers, and many others.

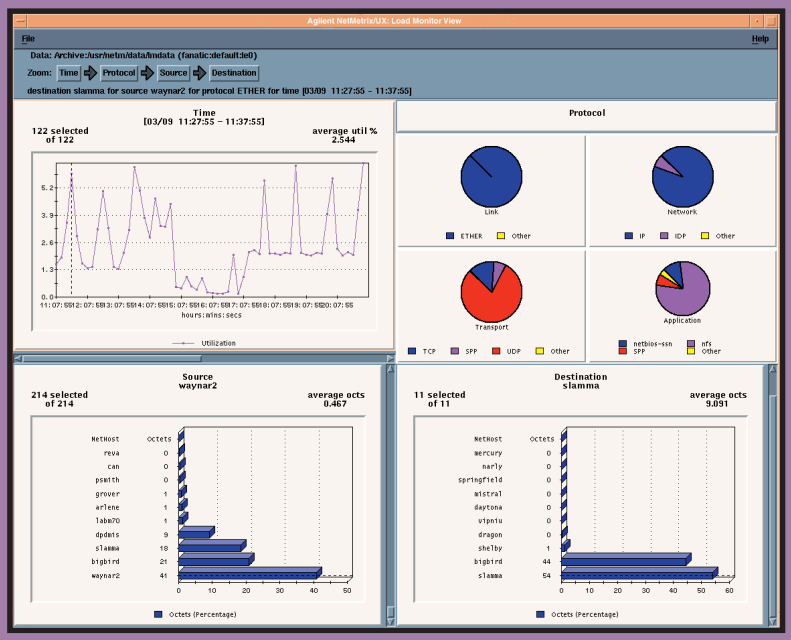

Figure 1. NetMetrix Enterprise Manager's ZOOM correlation capability (multiple correlated views of network data) allows rapid identification of the root cause of a problem.

Powerful correlation of network information. The unique and powerful correlated network views (ZOOM correlation) simultaneously display the interrelationship of multiple views of network data. By clicking on a particular time, for example, on the time-utilization graph, all views are automatically updated to reflect the network conditions at that time. This gives network administrators a powerful means of isolating network problems, see Figure 1.

Detailed protocol analysis. To help analyze the more complicated network problems, NetMetrix includes a built-in protocol analyzer that automatically captures over 200 different protocols. NetMetrix can decode and display all seven protocol layers in real time or from historical data. This eliminates the need to decide in advance which protocols are necessary to identify the cause of a problem on heavily utilized networks. It also provides the level of detail needed to discover and solve those hard to find network problems.

24X7 monitoring. 24 hours a day, 365 days a year, NetMetrix records the activity across the network and stores the data in an easily accessible database (does not require a database administrator), providing a history of all that happened on the network. This information helps IT more easily and quickly identify network trends and baselines.

Improve Network Performance

With today's increased dependency on networks, a poorly performing network is as disruptive to corporate productivity as a network that is down. Agilent NetMetrix can help network administrators become more proactive by taking corrective actions before performance levels adversely affect end-users.

NetMetrix improves overall network performance by:

- identifying potential bottlenecks and providing trending information
- helping tune the network
- predicting the impact of deploying a new networked application on the production environment
- providing visibility into the performance of switched networks

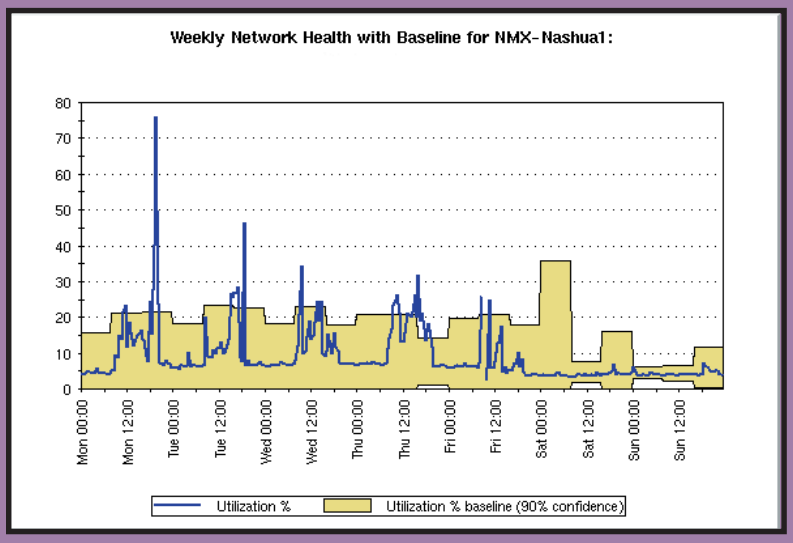

Figure 2. Baselines provide a record of the typical operational range of the network over time, allowing you to quickly see how current performance compares with the past.

Identify potential bottlenecks and network performance trends. Performance management begins with a clear picture of normal network activity levels. NetMetrix automatically generates network baseline graphs that record the typical operational range of the network during the collection period. Current utilization is superimposed over the baseline to show how current performance compares with past performance helping IT determine network utilization growth, normal operating conditions, and abnormal events, see Figure 2.

Once the baseline conditions are clearly established, on-going monitoring is necessary to ensure that the level of network performance is consistently met. NetMetrix monitors network availability, responsiveness, and performance, and immediately notifies IT when thresholds have been exceeded. Automatically generated exception reports help IT determine where to focus their time.

Additional reports provide detailed network information such as network (LAN/WAN/ATM) utilization, top users, top sources, and top conversation-pairs. These help identify the major consumers of network resources so network balance can be restored more rapidly. These reports can be delivered via the Web, e-mail, a printer or on-screen.

Simplify network tuning. Network tuning relies on accurate network data to draw crucial conclusions about future network performance. NetMetrix provides information on the type and amount of traffic flowing across the network to help IT determine the current utilization of each part of the network infrastructure. With this information, IT can quickly identify opportunities to better balance network traffic.

With drag and drop simplicity, NetMetrix's "what-if" analysis allows nodes and network segments to be added or moved to anticipate the impact of basic network changes before committing resources of time and money. This information dramatically reduces the likelihood of unexpected performance problems as a result of network changes.

Predict the impact of deploying an application on the network. NetMetrix helps determine the network resource usage of current applications in the production environment. Data is gathered by testing the new or expanded application in a test bed environment. The information gained can be used to project the impact of the change on the current production environment before it is actually deployed.

Monitor the performance of switched networks. Today's switched network environments have made it more difficult to get a clear picture of what is happening on the network.

NetMetrix significantly increases the visibility into switched network performance with the following capabilities.

- Captures RMON statistics for all switches whose vendors implemented RMON according to the RMON standard.
- Captures and reports on all Cisco Catalyst 5000 and 5500 RMON statistics.
- Provides full seven-layer monitoring and analysis of Cisco's Catalyst 5000 and 5500 switch ports by using NetMetrix to steer (mirror) any port conversation in real-time to a NetMetrix Extended RMON probe attached to the switch's monitoring port.
- Comprehensive support of IEEE 802.1Q (VLAN support) and Cisco's Virtual LANs (VLANS) provides the same monitoring, analysis, and reporting functionality for the virtual network as for the physical network.
- Complete decode of Cisco's Interswitch Link (ISL) protocol headers for detailed network traffic analysis between switches.
- NetMetrix's Fast Ethernet LanProbe and High Speed Serial Interface (HSSI) probe provides visibility into the switch's uplink traffic.
- NetMetrix's FDDI and ATM Probes provide visibility into the traffic flowing across these highly utilized network backbones, commonly used in switched environments.

Managed Network Services

The rapid evolution of the networked computing environment has caused a shift in focus for the IT organization from technology adoption and implementation issues to the IT management activities necessary to support business-critical services. This new management strategy, known as IT service management, has elevated the role of the IT organization in the business. Focusing on the network as a service delivery vehicle requires IT to define, deploy, monitor, and maintain agreed-upon levels of IT service to business users throughout the enterprise.

Service management for the network includes a process for defining the level of service to be provided. These service requirements are captured in a Service Level Agreement (SLA). This process requires a collaboration between IT and business users in addition to the network management technology needed to make the SLA achievable and maintainable. Agilent NetMetrix provides the management tools necessary to define, monitor, and maintain network service levels.

Define a Service Level Agreement. The first step toward service management is to define a Service Level Agreement. As described earlier NetMetrix automatically generates network performance baselines that provide valuable information in describing the network's weekly or monthly performance profile. This information is an excellent place to start in developing a realistic service level agreement. This information also helps determine whether the current level of network performance is adequate to meet the business unit's service requirements.

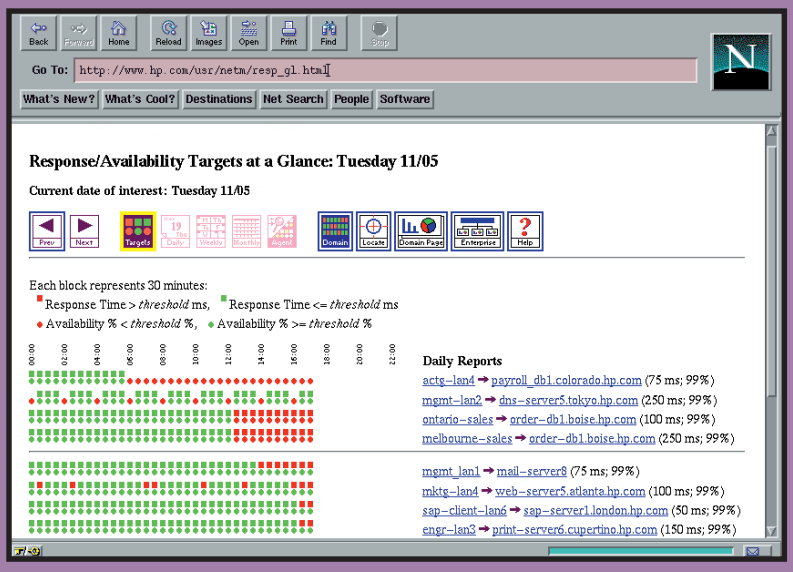

Figure 3. NetMetrix provides response time, service availability and performance information.

Network trending information stored in NetMetrix database provides historical network data such as network availability and response, network utilization growth, performance trends, and top network consumers. This information, along with a network baseline, provides IT the data needed to negotiate an achievable service level agreement.

Monitor and maintain a Service Level Agreement. Once the service level agreement is established, NetMetrix monitors the availability and responsiveness of the network from an end-user's perspective, providing an accurate assessment of the end-user's experience.

Web-based, at-a-glance service level reports display this information in a graphical format that makes it easy to see how well the network is performing compared to the agreed upon service level objectives, see Figure 3. Web page hot-links provide "drill down" capabilities for more detailed performance information.

Automatic exception-based reports and threshold alarming notify IT when a threshold is exceeded. IT staff can make adjustments before a more serious network problem occurs. Reports can be generated based on a single infraction or a repeated number of consecutive events within a given

time period. These can be delivered on-screen, to a printer, by e-mail, or via the Web allowing the highest degree of flexibility in communicating the network status to management and end users.

In addition, NetMetrix leverages HP OpenView Network Node Manager's SNMP Collect process to provide health reports for any SNMP managed network component. This includes devices such as routers, switches and hubs, with reports generated on any SNMP MIB variable collected by these devices. This device information, along with NetMetrix's network performance information, provides a powerful view into what is happening on the network.

Together, these features enable proactive network management that helps the IT organization successfully deliver network services.

Reduce and Control Network Costs

The cost of network changes and WAN services takes a significant toll on the IT budget. For example, WAN costs are typically the third largest expenditure in the IT budget, just behind payroll and capital expenses. Controlling these costs is an ongoing business challenge.

How can IT organizations keep network costs down while continuing to expand the network to meet increasing business needs? How can IT administrators be sure that network expansion will provide the maximum return on investment? The same market-leading technology, described earlier, that helps isolate network problems and allows close monitoring of network performance also helps IT optimize network budget dollars and justify network expenditures to upper management.

Reduce WAN costs. WAN accessibility is vital to successful business operations, however most organizations lack the tools to determine their actual WAN utilization. To be safe, IT typically purchases 20%-50% more capacity than is needed to ensure there is sufficient bandwidth for end-user services.

NetMetrix provides visibility into actual WAN usage to help bring the level of service purchased from WAN service providers more in line with actual utilization needs.

- Utilization is monitored by Permanent Virtual Circuit (PVC) and relative to Committed Information Rate (CIR) for Frame Relay over V-Series, T1, E1, T3, E3 and HSSI and by PVC and Switched Virtual Circuit (SVC) over ATM DS-3, E3, OC-3 and OC-12.

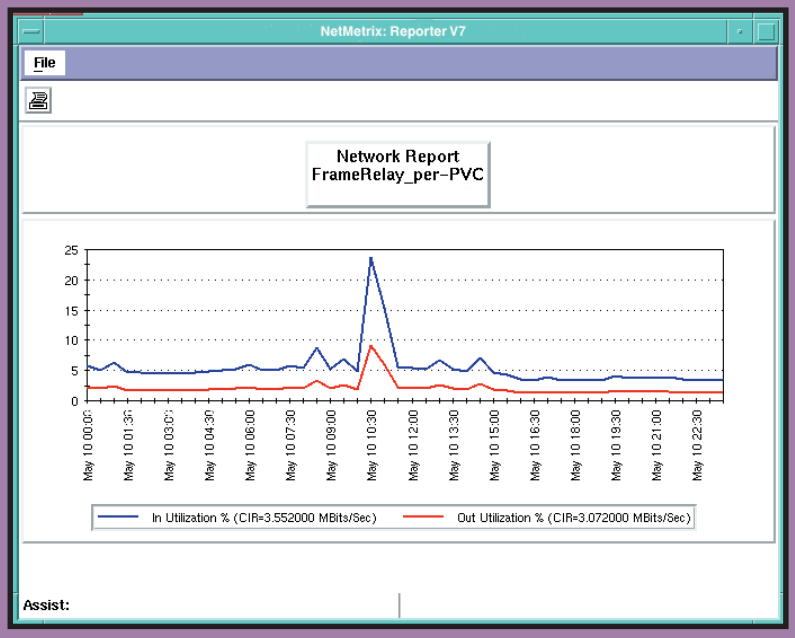

Figure 4. Utilization to the PVC level helps align WAN service with utilization needs.

- NetMetrix baselines typical WAN utilization and monitors WAN bandwidth trends to help anticipate changes in WAN requirements before packets are lost.
- Automatic notification when WAN utilization exceeds the acceptable operating range.
- Easy identification of top WAN consumers and the applications used ensure that this expensive service is properly used.

Maximize your network assets.
Agilent NetMetrix provides monitoring, analysis, and reporting on the performance of the entire network–LAN, WAN and ATM–all in one product.

- Network administrators stay informed and quickly diagnose LAN, WAN and ATM problems right from their desktop or web browser—whether the network is in the local domain or across the globe.
- Under-utilized portions of the network are readily identified, helping IT quickly balance the network load and get the most from the network investment.
- Increased network administrator efficiency with a shift to proactive network management rather than operating in a costly reactive mode.

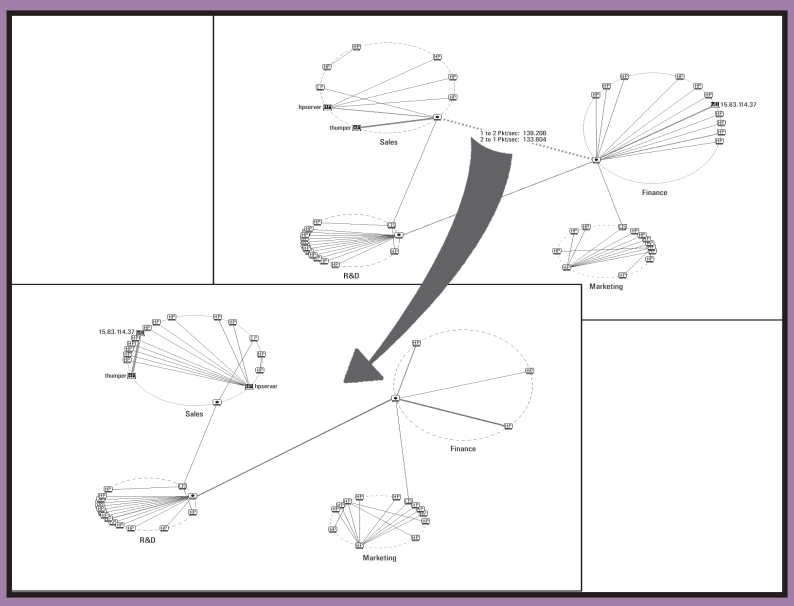

Figure 5. NetMetrix provides the ability to test the impact of network architecture changes on network traffic with "what-if" analysis for justification of network expenditures.

Anticipate network needs and justify network expenditures. NetMetrix identifies over-utilized parts of the network and produces informative reports, giving IT staff the hard data needed to propose network changes to management. As business needs continue to grow, NetMetrix network utilization trend monitoring, which was described earlier, shows network usage over weeks and months, enabling IT to anticipate network changes across the global network before network responsiveness is affected.

NetMetrix's traffic profiling with "what-if" analysis, described earlier, allows you to anticipate the impact and value of proposed changes to the network before incurring the cost of the change, see Figure 5.

Capture Detailed Information on Network Traffic and Performance

Generating the in-depth network visibility described in the preceding sections requires a wide variety of data collection devices. These collectors capture information about the data flowing through the network and forward this information to the NetMetrix applications and database. NetMetrix offers two classes of data collectors–dedicated probes and software agents.

Dedicated probes. NetMetrix offers the broadest range of media-specific probes in the industry. Our T1, T3 and E1, E3 probes attach directly to the teleco side of the CSU/DSU, providing visibility into the "quality-of-the-line" statistics along with robust network traffic visibility. NetMetrix probes are high–performance devices dedicated to passively collecting network traffic statistics. Each probe uses a state-of-the-art, no-compromise design to provide the highest performance in rate solution for the given media, ensuring that data is always collected–even during times of network saturation.

Each probe has a dedicated high-speed processor with 32MB of memory (expandable to 128MB) to process and store the information it captures. NetMetrix probes capture all the data all the time and recognize over 175 different protocols with such high fidelity that the information collected is used as input for NetMetrix's built-in protocol analyzer. In addition, probes offer the following capabilities:

- Support the most popularly deployed media, including Ethernet, Fast Ethernet, token ring, FDDI, Frame Relay, T1, E1, HSSI, T3, E3, ATM OC-3, ATM OC-12, ATM DS3, ATM E3, with more in development.
- Most probes are available in single and multi-port configurations.
- All probes implement the RMON MIB according to RFC 1757, and RMON2 MIB according to RFC 2021 and RFC 2074.
- All probes support HP's Extended RMON that provides greater protocol detail and information for correlating time, hosts, and protocol statistics.
- All probes are rack-mountable, reducing the footprint required to monitor a complex network.
- Most probe configurations also include a telemetry port that allows a separate monitoring network to be created so the network can be monitored without using any operational network bandwidth.

Software agents. Software agents run on workstations or servers. These agents capture information that increases visibility into the network activity between devices.

For example, Internetwork Response Agents (IRAs), provide availability and response management for IP and IPX networks. IRAs determine infrastructure availability and responsiveness from an end-user perspective, providing a more accurate determination of the end-user's experience.

Extending the Power of HP OpenView Network Node Manager

Agilent NetMetrix and Network Node Manager are the industry's leading network management solutions in their respective areas. When combined, they provide the most powerful integrated network management solution available in the industry today from a single vendor.

This integrated solution offers detailed visibility into network devices and topology, device availability tracking, monitoring and prioritization of events, and network traffic monitoring. In addition the top network consumers and top application usage can be identified, utilization trends can be tracked, and network availability and responsiveness can be closely monitored. Network problems can be identified and analyzed through a drilldown user interface and reports can be generated to display this status information, see Figure 6.

To offer this solution, NetMetrix integrates with Network Node Manager to provide a single network management console from which the functions of both products can be performed. Examples of the integration between these two products includes the following:

- NetMetrix automatically integrates with Network Node Manager's menu system upon installation, allowing NetMetrix to be launched from a number of different points within Network Node Manager's menu system.

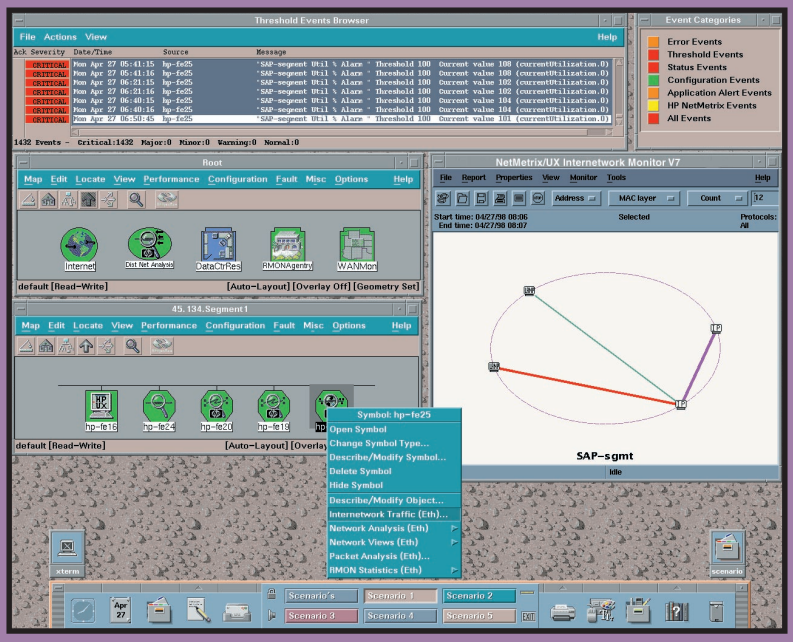

Figure 6. Integrated with HP OpenView Network Node Manager, PerfView, and IT/Operations, NetMetrix provides visibility into what's happening on the network.

- All NetMetrix data collectors, whether a dedicated probe or an agent, are automatically discovered and displayed as icons in Network Node Manager's network map displays. NetMetrix can be launched in context directly from these icons to obtain the information collected by the agent.
- NetMetrix alarms are forwarded to Network Node Manager's event subsystem, providing a consolidated location for events. Further, NetMetrix can be launched from any of the posted NetMetrix alarms.
- The NetMetrix reporter can generate network device health reports from any SNMP MIB variable collected by Network Node Manager.

System Requirements

Agilent NetMetrix is supported on HP 9000 Workstations and Business Servers (HP-UX 10.20 and 11.00), and Sun SPARC (Solaris 2.5 and 2.6). Some exceptions may apply. See the Agilent NetMetrix Enterprise Manager Technical Evaluation Guide for more details (publication #5980-0014E).

Network Performance Management Suites

Agilent NetMetrix Enterprise Manager

Our most comprehensive network performance management solution. Includes all applications listed in this section plus zoom correlation and protocol analysis. Focused on the enterprise–LAN/WAN/ATM–it can help manage all the network challenges described in this product brief.

Agilent NetMetrix Domain Manager

This suite of products is focused on resolving network problems in real time on the local domain. Provides visibility into who's doing what on the network and troubleshooting to the protocol level. Includes zoom correlation and protocol analysis.

Agilent NetMetrix Load Monitor

This low cost suite of products is focused on resolving network problems in real time on the local domain. Provides visibility into who's doing what on the network. Includes zoom correlation.

Network Performance Management Applications

J3437A Agilent NetMetrix Reporter

Provides internetwork service-level reports with effortless collection, storage, and presentation of network performance information. Reports are generated and delivered with easy-to-interpret graphics.

The web-based reporter capability enables global distribution of internetwork service-level performance information with a web-browser interface. Navigation through reports from the enterprise perspective to the segment view is quick and easy.

J3433A Agilent NetMetrix Internetwork Response Manager (IRM)

IRM performs distributed measurement of node status and connectivity latency (response time) over LAN links in cooperation with Agilent LanProbes and Internetwork Response Agents.

J3435A Agilent NetMetrix Internetwork Monitor

Internetwork Monitor gathers and correlates traffic data across the internetwork and integrates the information into a single, comprehensive view. 'What-if' analysis is available with the built-in Traffic Profile Modeler, with client-server placement analysis.

J3434A Agilent NetMetrix Internetwork Response Agent (IRA)

IRA is an intelligent software agent performing multiprotocol status and response measurements of network-addressable objects, including computer systems and interconnect devices.

Additional Literature

For more information on the Agilent NetMetrix product, see the following literature pieces:
Agilent NetMetrix Enterprise Manager Technical Evaluation Guide (publication number 5980-0014E).

www.agilent.com/comms/netmetrix
800 452 4844

Sales Offices

United States:
(tel) 1 800 452 4844

Canada:
(tel) 1 877 894 4414
(fax) (905) 206 4120

Europe:
(tel) (31 20) 547 2000

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
(tel) (305) 267 4245
(fax) (305) 267 4286

Australia:
(tel) 1 800 629 485
(fax) (61 3) 9272 0749

New Zealand:
(tel) 0 800 738 378
(fax) (64 4) 495 8950

Asia Pacific:
(tel) (852) 3197 7777
(fax) (852) 2506 9284

Product specifications and descriptions in
this document subject to change without notice.

Printed in U.S.A. 4/00

Part Number 5980-0499E

Agilent Technologies
Innovating the HP Way