

HP Internet Advisor LAN makes it easier and more efficient for you to isolate and solve problems on your Ethernet, Token-Ring or FDDI local area networks. With HP Internet Advisor LAN, you can connect anywhere on the network, capture exactly the data you need, and clearly see and comprehend the actions you need to take. You'll be able to find it, and fix it fast, like never before.

LAN testing made easy

HP Internet Advisor lets you connect anywhere on the network, capture all the necessary data, and with its exclusive Expert Analysis feature, comprehend that information as it isolates problems and provides solutions. HP Internet Advisor LAN troubleshooting tools include seven-layer protocol decodes, active stimulus/response tests, and a large collection of network performance statistics. Its most powerful capability—drill down—makes troubleshooting your network as simple as using a computer mouse. It's very often the only tool you'll need to identify the cause of the problem—and resolve it the first time you connect.

No matter what the traffic level, HP Internet Advisor LAN transforms data into meaningful diagnostic information, constantly monitoring the traffic on your Ethernet, Token-Ring or FDDI local area network. HP Internet Advisor LAN reduces thousands of frames to a handful of significant events. It watches continuously for router misconfigurations, slow file transfers, inefficient window sizes, connection resets, and many other problems. It does this for each protocol stack you have running, all in real time — as events actually occur.

Key Features

HP Internet Advisor LAN combines uncompromised monitoring and analysis and powerful, complete PC capabilities — all in a lightweight, easy-to-carry package.

- Network Vitals help you anticipate many network problems
- Commentators help you solve network problems quickly and easily using Expert Analysis
- Comprehensive test and analysis solutions for 10/100 Mbps Ethernet, 10/100 Mbps Switched Ethernet, 10/100 Mbps full-duplex Ethernet, Gigabit Ethernet, 4/16 Mbps Token-Ring, and FDDI
- All major protocol stacks on all media
- More than 100 statistical parameters measured
- All media interfaces have hardware filtering and RISC analysis processors for uncompromised data-capture performance

Specifications—Hardware

HP Internet Advisor LAN offers versatility and flexibility, with a combination of mainframes and attachable undercradles that provide additional data acquisition systems to allow you to configure the precise tool for your needs.

HP Internet Advisor Mainframe

For Ethernet and Fast Ethernet

HP Internet Advisor LAN – Fast Ethernet (HP J3446D)

Analysis system:

AMD 29040 at 40 MHz with 32 MB memory

PC system:

- 300 MHz CPU with 128 Mbytes of memory
- Monitor: 26.5 cm (10.4 in) diagonal active matrix TFT color SVGA (standard)
- 3 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® and MS-DOS®
- Expansion slots provided via the undercradle

HP Internet Advisor Undercradles

For Ethernet

HP Internet Advisor LAN – Ethernet (HP J2306B)

HP Internet Advisor LAN – Ethernet and Token-Ring (HP J2309B)

Analysis system:

AMD 29030 at 16 MHz with 16 MB of memory

For Ethernet and Fast Ethernet

HP Internet Advisor LAN - Fast Ethernet (HP J3444A)

- Data rate: 10/100 Mbps with auto-negotiation capability
- Full duplex analysis capability

Analysis system:

AMD 29040 at 40 MHz with 32 MB of memory

Test interfaces

Ethernet:

- AUI connector
- RJ-45 for 10Base-T
- Second RJ-45 allows testing in switched Ethernet environment

Fast Ethernet:

- MII connector
- RJ-45 for 100 Base-TX
- Second RJ-45 allows testing in switched Fast Ethernet environment
- HP J3445A 100 Base-FX interface (for HP J3444A), HP J3447A 100 Base-FX interface (for the HP J3446C)
- 2 SC type connectors
- Multimode fiber
- 1300 nm wave length

Specifications—Hardware, *continued*

For FDDI

HP Internet Advisor LAN — FDDI interface (HP J2524A)

Analysis system:

AMD 29030 at 20 MHz with > 26 MB of memory

FDDI chip set:

Motorola with 68332 processor for SMT

Data capture capability: >450,000 fps, 100% network load

Data transmit capability: >450,000 fps

Test interfaces

Dual fiber MICs for A/S/M and B

DB-9 for STP

RJ-45 for UTP

6 pin mini DIN compatible with AMP-Lytel part no. 501916-6
bypass switch

Status Indicators

Front panel LEDs: current line state, A and B ports

(idle, active, halt, master, noise, or quit)

Status Icons Information

Station type (DAS, SAS, etc.)

CMT port status for both ports:

(OK, ISO [isolated], or WP [wrapped])

For Token-Ring

HP Internet Advisor LAN -- Token-Ring (HP J2307A)

HP Internet Advisor LAN -- Ethernet and Token-Ring (HP J2309B)

Analysis system:

AMD 29030 at 16 MHz with 16 MB of memory

Test interfaces

Token-Ring:

- DB-9 at 4 or 16 Mbps

Specifications—Protocol Decodes

MAC and LLC Decodes for Ethernet/Fast Ethernet, and Token-Ring:

802.2	■ ○
Ethernet/802.3	■
Token-Ring/802.5	○
SNAP (Subnet Access Protocol)	■ ○
ELAP (EtherTalk Link Access Protocol)	■
TLAP (TokenTalk Link Access Protocol)	○

Throughout the Specifications listings in this booklet, you may see the following symbols used to denote network types when certain specs apply to more than one.

MAC and LLC Decodes for FDDI only:

Full MAC layer decode showing

- Preamble length
- Frame control field
- Source and Destination addresses
- Frame status indicators include:
 - Valid frame check sequence
 - Error in preamble or frame length
 - Error in info field or frame termination
 - Receipt of specific violation symbols
 - Count of symbols in control indicator field

Full SMT decode of 6.2 and 7.2 SMT frame types

- Frame class and types
- NIF, SIF ECF, RAF, RDF, SRF, PMF, ESF
- Version, transaction and station ID
- Info field length and parameters

TCP/IP Protocol Stack

ARP (Address Resolution Protocol) RFC826	■ ○ ▲ ▼
BGP (Border Gateway Protocol) RFC1105	▼
BGP-4 (Border Gateway Protocol version 4) RFC1771	▼
BOOTP (BOOT Protocol) RFC951	■ ○ ▲ ▼
DHCP (Dynamic Host Configuration Protocol)	▼
DNS (Domain Name Service) RFC1035	▼
EGP (Exterior Gateway Protocol) RFC904	▼
FINGER (Finger User Information) RFC1196	▼
FTP (File Transfer Protocol) RFC959	■ ○ ▲ ▼
GGP (Gateway to Gateway Protocol) RFC823	▼
HTTP (Hypertext Transfer Protocol)	■ ○ ▲ ▼
HTTP 1.1 (Hypertext Transfer Protocol 1.1)	▼
ICMP (Internet Control Message Protocol) RFC792	■ ○ ▲ ▼
IGMP (Internet Group Management Protocol)	■ ○ ▲ ▼
IGRP (Internet Gateway Routing Protocol)	■ ○ ▲ ▼
IP (Internet Protocol) RFC791	■ ○ ▲ ▼
IPv6 (Internet Protocol v.6)	▼
NetBios (NetBios)	▼
NTP (Network Time Protocol) RFC1119	▼
OSPF (Open Shortest Path First) RFC1247	■ ○ ▲ ▼
Routed (Route Daemon Protocol) RFC1993	▼
RARP (Reverse Address Resolution Protocol) RFC903	■ ○ ▲ ▼
REXEC (Remote Exec)	▼

Symbol use:

Ethernet/Fast Ethernet (ST)	■
Token-Ring (ST)	○
FDDI (ST)	▲
Ethernet/Fast Ethernet (LinW)	▼

Specifications—Protocol Decodes, *continued*

RIP (Routing Information Protocol)	■ ○ ▲ ▼
RIP-2 (Routing Information Protocol version 2)	▼
RLOGIN (Remote Login) RFC1282	▼
RPRINT (RLPR) Remote Print	▼
RSHELL (Remote Shell)	▼
RWHO (Remote Who) RFC954	▼
SMB (Server Message Block)	▼
SMTP (Simple Mail Transport Protocol) RFC821	▼
SNMP (Simple Network Management Prot.) RFC1157	■ ○ ▲ ▼
SNMP-II (SNMP Version 2)	▼
TCP (Transmission Control Protocol) RFC793	■ ○ ▲ ▼
TCP/IP compression Van Jacobsen Compression	▼
TELNET (Telnet) RFC854	■ ○ ▲ ▼
TFTP (Trivial File Transfer Protocol) RFC783	▼
TIMED (Time Daemon Protocol)	■ ○ ▲ ▼
UDP (User Datagram Protocol) RFC768	■ ○ ▲ ▼
XWIN (XWindows)	▼

AppleTalk Protocol Stack

AARP (AppleTalk Address Resolution Protocol)	■ ○ ▲ ▼
AEP (AppleTalk Echo Protocol)	■ ○ ▲
ADSP (AppleTalk Data Stream Protocol)	■ ○ ▲ ▼
AFP (AppleTalk Filing Protocol)	▼
ASP (AppleTalk Session Protocol)	▼
ATP (AppleTalk Transaction Protocol)	■ ○ ▲ ▼
DDP (Datagram Delivery Protocol) Phase 1 and 2	■ ○ ▲ ▼
ELAP (Ethernet Link Access Protocol)	■ ○ ▲ ▼
NBP (Name Binding Protocol)	■ ○ ▲ ▼
PAP (Printer Access Protocol)	▼
RTMP (Routing Table Maintenance Protocol)	■ ○ ▲ ▼
SoftTalk (SoftTalk Session layer protocol)	▼
ZIP (Zone Information Protocol)	■ ○ ▲ ▼

Banyan/Vines Protocol Stack

AS (Applications Services)	▼
Matchmaker (Program to Program Communications)	▼
VARP (Banyan Vines Address Resolution Protocol)	■ ○ ▲ ▼
VECHO Banyan (Vines Echo Protocol)	▼
VICP (Internet Control Protocol) like ICMP	■ ○ ▲ ▼
VIP (BanyanVines Internet Protocol)	■ ○ ▲ ▼
VIPC (Vines Interprocess Communications Protocol)	■ ○ ▲ ▼
VRTP (Banyan Vines Routing Protocol)	■ ○ ▲ ▼
VSMB Server Message Block	▼
VSPP (Vines Sequence Packet Protocol)	■ ○ ▲ ▼

DECnet and DECnet Phase IV Protocol Stack

CTERM (Command Terminal)	▼
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Symbol use:

Ethernet/Fast Ethernet (ST)	■
Token-Ring (ST)	○
FDDI (ST)	▲
Ethernet/Fast Ethernet (LinW)	▼

Specifications—Protocol Decodes, *continued*

DAP (Data Access Protocol)	■ ○ ▲ ▼
DNS (Distributed Name Services)	▼
DRP (DECnet Routing Protocol)	■ ○ ▲ ▼
FOUND (Found)	▼
LAT (Local Area Transport Protocol)	■ ○ ▲ ▼
MOP (Maintenance Operations Protocol)	▼
NICE (Network Information and Control Exchange)	▼
NSP (Network Services Protocol)	■ ○ ▲ ▼
SCP (Session Control Protocol)	■ ○ ▲ ▼

IBM PC LAN

NetBIOS	■ ○ ▼
SMB (Server Message Block)	■ ○ ▼

IBM/SNA

BPDU (Bridged Protocol Data Unit) 802.1 Spanning tree	▼
Data Flow Control (Session layer)	▼
DIAP (Document Interchange Arch. Protocol)	▼
DCAP (Document Content Arch. Protocol)	▼
DSP (Distributed Services Protocol)	▼
Function Management (Function Management)	▼
FSP (File Services Protocol)	▼
General Data Stream (General Data Stream)	▼
LLC (Logical Link Control)	■ ○ ▲ ▼
Management Services (Management Services)	▼
NCP (Network Control Protocol)	▼
NetBIOS Session layer	■ ○ ▲ ▼
Path Control (Network layer)	▼
SCP (Session Control Protocol)	▼
SDLC (Synchronous Data Link Control)	▼
SNA (Systems Network Architecture)	■ ○ ▲ ▼
SMB (Server Message Block)	■ ○ ▲ ▼
Transmission Control (Transport layer includes FID0, 2, 3, 4, F)	▼

ISO Protocol Stack

ACSE (Association Control Services) ISO 8650	▼
ASN.1 (Abstract Syntax Notation)	▼
CLNP (Connectionless Mode Network Prot.) ISO 8473	■ ○ ▲ ▼
CMIP (Common Management Information Protocol)	▼
CMIP GDMO (Common Management Information Prot. GDMO)	▼
CMISE (Common Mgt Information Service Element)	▼
ES-IS (End System-Intermediate System)	■ ○ ▲ ▼
IS-IS (Intermediate System-Interm. Syst.) ISO 10589	■ ○ ▲ ▼
ISO PP (ISO Presentation ISO 8823, X.226)	▼

Symbol use:

Ethernet/Fast Ethernet (ST)	■
Token-Ring (ST)	○
FDDI (ST)	▲
Ethernet/Fast Ethernet (LinW)	▼

Specifications—Protocol Decodes, *continued*

ISO SP (ISO Session ISO 8327)	▼
ROSE (Remote Operation Service Element) ISO9072	▼
RTSE (Reliable Transfer Service Element) ISO9066	▼
SMB (Server Message Block Protocol)	■ ○ ▲
TP0 (Transport Protocol Class 0) ISO 8073	▼
TP1 (Transport Protocol Class 1) ISO 8073	▼
TP2 (Transport Protocol Class 2) ISO 8073	▼
TP3 (Transport Protocol Class 3) ISO 8073	▼
TP4 (Transport Protocol Class 4) ISO 8073	▼
X.400 Electronic Mail X.400 ISO 10021	▼
X.500 Directory Services X.500 ISO 9594	▼

Novell Protocol Stack including rev. 3.2 and 4.0

Diagnostic (Diagnostic)	▼
Echo (XNS protocol over IPX instead of IDP)	▼
Error (XNS protocol over IPX instead of IDP)	▼
IPX/IDP (Internet Packet Exchange)	■ ○ ▲ ▼
NetBIOS (NetBIOS)	■ ○ ▲ ▼
NCP 2.x (Netware Core Protocols version 2.x)	■ ○ ▲ ▼
NCP 3.x (Netware Core Protocols version 3.x)	▼
NCP 4.x (Netware Core Protocols version 4.x)	▼
NLSP (Netware Link Services Protocol)	▼
Packet Burst (Packet Burst)	▼
PEP (Packet Exchange Protocol)	▼
RIP (XNS protocol)	■ ○ ▲ ▼
SAP (Service Advertising Protocol)	■ ○ ▲ ▼
SPX/SPP (Sequence Packet Exchange)	■ ○ ▲ ▼

Microsoft LAN Manager

DS (Datagram Services) RFC 1001	▼
NetBIOS (NetBIOS) RFC 1001/1002	▼
SS (Session Services) RFC 1001	▼
NS (Name Services) RFC 1001	▼
SMB (Server Message Block)	▼

Media

Ethernet/802.3 (Ethernet Data Link Control)	■ ○ ▲
Token Ring/802.5 (Token Ring MAC layer)	■ ○ ▲
FDDI (FDDI)	■ ○ ▲
FDDI SMT (FDDI SMT)	■ ○ ▲
LLC Logical (Link Control)	■ ○ ▲ ▼
SNAP (Subnetwork Access Protocol) RFC1042	■ ○ ▲ ▼

Symbol use:

Ethernet/Fast Ethernet (ST)	■
Token-Ring (ST)	○
FDDI (ST)	▲
Ethernet/Fast Ethernet (LinW)	▼

SUN Stack

BOOTPARAM (Boot Parameters)
MOUNT (Mount)
NFS (Network File System) RFC 1094
NIS (Network Information Services) formerly YP
PCNFSD (PC Network File System)
PMAP (Port Mapper)
RLOCK (RLOCK)
RPC (Remote Procedure Call) RFC1057
RSTAT (Remote Statistics) YP Yellow Pages



Symbol use:

Ethernet/Fast Ethernet (ST) ■
Token Ring (ST) ○
FDDI (ST) ▲
Ethernet/Fast Ethernet (LinW) ▼

XNS

Echo (Echo)
Error (Error)
IDP (Internet Datagram Protocol)
PEP (Packet Exchange Protocol)
RIP (Routing Information Protocol)
SPP (Sequenced Packet Protocol)



Cisco

DLSw ((Data Link Switching)
IGMP (Internet Group Management Protocol)
IEEE 802.1p (VLAN - GARP, GVRP, GMRP)
IEEE 802.10
IEEE 802.1Q
IGRP (Internet Gateway Routing Protocol)
ISL (Cisco Inter-Switch Link Protocol)



3Com Protocol Stack

3COM-NBP (Name Binding Protocol)
3COM-NetBIOS (NetBIOS)



Application Level

Oracle
Sybase



Other

Apollo



Specifications—Network Performance Statistics

For Ethernet/Fast Ethernet

Ethernet/Fast Ethernet Vitals

Utilization	Runts (with good FCS)
Frames	Jabbers
Local Collisions	Noise Delays
Remote Collisions	Dribble Frames
Late Collisions	Broadcast Frames
Remote Late Collisions	Multicast Frames

Dashboard Display

Utilization (percent vs. time)
Collisions (gauge)
Errors: Sum of Jabbers, Runts, Misaligns, and Bad FCS (gauge)
Broadcasts, Multicasts, Unicasts (pie chart)
Layer 3 Protocol Mix (pie chart)
Node Count (gauge)
Bytes/Frame (gauge)
User selected node activity for 7 nodes
(horizontal bar chart of frame count)

Trends Display (graphical or tabular)

Any four of the following measurements can be time correlated:
Utilization (percent, frames/sec or Kbytes/sec vs. time)
Collisions (count vs. time)
Errors: Jabbers, Runts, Misaligns and bad FCS (count vs. time)
Broadcasts, Multicasts, Unicasts (count vs. time)
Any protocol (up to 5) in pie chart (frame count vs. time)
Node Count (up to 7 nodes, frames/sec vs. time)
Bytes/Frame (count vs. time)
Any User-Selected Node (frame count vs. time)

Specifications—Network Performance Statistics, *continued*

For Token-Ring

Token-Ring Vitals

Utilization	Line Errors	Claim Tokens (count vs. time)
Frames	Soft Errors	Soft Errors (count vs. time)
Code Violations	Beacons	Bytes/Frame (count vs. time)
Aborts	Claim Tokens	Stations Inserted in Ring (count vs. time)
Receiver Congestion	Ring Purges	Broadcast Frames (count vs. time)
Burst Errors	Missed Frames	Multicast Frames (count vs. time)

Dashboard Display

Utilization (percent vs. time)	Routing: Local to Remote (frame count vs. time)
Ring Purges (gauge)	Routing: Local to Local (frame count vs. time)
Soft Errors (gauge)	Routing: Remote to Local (frame count vs. time)
Claim Tokens (gauge)	Routing: Remote to Remote (frame count vs. time)
Beacons (gauge)	Line Errors (count vs. time)
Station Count (gauge)	Internal Errors (count vs. time)
Source Routing mix (pie chart)	Burst Errors (count vs. time)
Layer 3 Protocol Mix (pie chart)	A/C Errors (count vs. time)
User selected node activity for 7 nodes (horizontal bar chart of frame count)	Abort Errors (count vs. time)

Trends Display (graphical or tabular)

Any four of the following measurements can be time correlated:

Node Count (up to 7 nodes, frames/sec vs. time)	Lost Frame Errors (count vs. time)
Any protocol (up to 5) in pie chart (frame count vs. time)	Receiver Congestion Errors (count vs. time)
Utilization (percent, frames/sec or Kbytes/sec vs. time)	Frame Copy Errors (count vs. time)
MAC Frames (count vs. time)	Frequency Errors (count vs. time)
MAC Bytes (count vs. time)	Token Errors (count vs. time)
Tokens (count vs. time)	
Ring Purges (count vs. time)	
Beacons (count vs. time)	

Specifications—Network Performance Statistics, *continued*

For FDDI

Dashboard Display

Utilization (% over time)	Frame rate (frames/sec)
Byte counts	Frame types (pie chart)
Tokens	LLC frames
Stripped frames	MAC frames
Other (SMT and void frames)	
Token rotation time (current value)	

Error condition count

Bad FCS	Beacons (gauge)
E-bit set	Violations
PDU too long	Claim frames (gauge)

Destination Addresses (pie chart):

Broadcasts, Multicasts, Unicasts

Layer 3 Protocol Mix (pie chart)

User selected node activity for 7 nodes
(horizontal bar chart of frame count)

Frame type (pie chart):

Tokens, LLC Frames, Stripped frames, MAC, SMT, and void frames

Token rotation time (current value)

Byte counts, frame rates

Trends Display (graphical or tabular)

Any four of the following can be time correlated:

Utilization (percent, frames/sec or Kbytes/sec vs. time) Tokens
(count vs. time)
LLC Frames (count vs. time)
Stripped Frames (count vs. time)
Data Bytes (count vs. time)
Token Rotation Time (present value)
Bad FCS Frames (count vs. time)
Violations (count vs. time)
E-bit Set (count vs. time)
Preamble too short (count vs. time)
PDU too long (count vs. time)
Claim Frames (count vs. time)
Beacon Frames (count vs. time)
MAC Frames (count vs. time)
SMT Frames (count vs. time)
Broadcast Frames (% vs. time)
Multicast Frames (% vs. time)
Unicast Frames (% vs. time)
Selected Stations (% vs. time)

When the Internet Advisor for FDDI is in the participating mode, the node-card SMT software maintains node specific counts for the analyzer itself. It records:

- MAC ring op count
- Link error monitor (LEM) count
- LEM reject count
- SMT transmitted errors

Specifications—Node Statistics/Node Discovery

The following measurements are representative of those made and tracked for each network node/station.

The top 20 nodes on the network contributing to the following categories are displayed in either bar, tabular or pie chart: (**Note:** Data-capture filters can optionally be set while running these measurements, so that only a specific set of nodes are included.)

For Ethernet/Fast Ethernet, FDDI

Frames sent by a node
Frames received by a node
Bytes sent by a node
Bytes received by a node
Broadcast frames sent by a node
Multicast frames sent by a node
Errored frames sent by a node

For Token-Ring

Frames sent by a station
Frames received by a station
Bytes sent by a station
Bytes received by a station
Errors reported by a station
All-stations broadcast frames sent by a station
Frames sent to functional addresses by a station
Source routed broadcast frames sent by a station
Source routed frames sent by a station
Source routed frames received by a station
Line errors reported by a station
Internal errors reported by a station
Burst errors reported by a station
A/C bit errors reported by a station
Abort delimiters sent by a station
Isolating error reserved count sent by a station
Lost frames reported by a station
Receiver congestion reported by a station
Frame copy errors reported by a station
Frequency errors reported by a station
Token errors reported by a station
Non-isolating error reserved count sent by a station
Beacons sent by a station
Claim token frames sent by a station
Ring purge frames sent by a station
Report Soft Error frames sent by a station

MAC frames sent by a station
MAC frame bytes sent by a station
All-route broadcast frames sent by a station
Single-route broadcast frames sent by a station
Source routed frames sent by a station to a local address
Source routed frames sent by a station to a remote address
Source routed frames received by a station from a local address
Source routed frames received by a station from a remote address

Specifications—Protocol and Frame Length Statistics

For Ethernet/Fast Ethernet, Token-Ring, FDDI

Frame length statistics are gathered for the network and up to 20 different protocols simultaneously. HP Internet Advisor LAN shows frame length statistics for all frames on the network and one protocol selected by the user. The selected protocol can be changed at any time using a single key. All frame length statistics for all protocols are logged to disk in CSV format. The frame length buckets for:

Ethernet protocols	Token-Ring protocols	FDDI protocols
<64 bytes	<64 bytes	<64 bytes
64...127 bytes	64...127 bytes	64...127 bytes
128...255 bytes	128...255 bytes	128...255 bytes
256...511 bytes	256...511 bytes	256...511 bytes
512...1023 bytes	512...1023 bytes	512...1023 bytes
1024...1518 bytes	1024...2047 bytes	1024...2047 bytes
>1518 bytes	2048...4095 bytes	2048...4095 bytes
	4096...8191 bytes	4096...4500 bytes
	8192...16383 bytes	>4500 bytes
	>16383 bytes	

Protocol and frame length statistics measurements are run continuously with sample intervals as often as every 10 seconds. The resulting data, when plotted with HP Internet Reporter, shows detailed variations over time of frame length and protocol usage.

Since HP Internet Advisor LAN filters are designed into hardware and are independent of any measurement, the filters can be used to run protocol and frame length measurements on an isolated node or to generate frame length statistics on an unsupported protocol family.

Specifications — Vitals and Commentators

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

AppleTalk Phase 2

Commentator Events:

- DDP Hop Count Exceeded
- DDP Destination Unreachable
- ATP Excessive Retransmission
- ASP Session Opened, Rejected, Closed, Slow Transfer Rate
- AFP Login, Logout
- ADSP Connection Open, Denied, Closed, Slow Transfer Rate, Excessive Retransmission, Low Window
- RTMP Router Change, Router Identified
- PAP Open Connection, Close Connection, Printer Busy
- ZIP Zone Diameter Exceeded

Vitals:

Network Utilization (%)	Network Utilization, Packets
DDP Utilization (%)	DDP Packets

Specifications—Vitals and Commentators, *continued*

DDP Hop Count Exceeded Packets	DDP Packet Size
AARP Packets	ADSP Fragments
ATP Fragments	ATP Tickle Packets
Missed Frames	

Banyan Vines

Commentator Events:

VIP Low Hop Count	VIP Duplicate Address
VIP Broadcast Storm	VIPC Excessive Retransmissions
VSPP Excessive Retransmissions	VIPC Connection Closed
VSPP Connection Closed	VRTP Router Change
VSPP Low Window	VRTP Router Identified
VICP Exception Notification	VICP Metric Notification

Vitals

Network Utilization (%)	Network Utilization, Packets
VIP Utilization (%)	VIP Packets
VIP Packet Size	VIP Hop Count Exceeded
VIPC Fragments	VIPC Datagram Packets
VSPP Fragments	VSPP Low Window
VARP Packets	VRTP Redirects
Missed Frames	

Novell

Commentator Events

Burst Mode: Connection Reply, Connection Request, File Close,
File Read, File Write, Transfer rate
File: Create, Open, Read, Reading, Writing, Transfer rate
Create Service Connection Delay/Busy Server
Destroy Service Connection Down File Server
Watchdog Request/Reply Packets Failed Reply Packet
Negotiate Buffer Size Transaction Tracking
Routing Information Request/Reply Packets
Service Advertising Request/Reply Packets

Vitals

Network Utilization (%)	IPX Utilization
Network Packets	IPX Packets
Local Tx Rate	Remote Tx Rate
Burst Mode	RIP Packets
SAP Packets	Read Request Packets
Write Request Packets	Busy Server

OSI

Commentator Events:

CLNP Low Lifetime	CLNP Zero Lifetime
CLNP Error PDU	TP Error PDU
TP Connection Initiated, Rejected, Aborted, and Closed	
TP Excessive Retransmissions	TP Low Credit
TP Low Credit Recovered	TP Slow Transfer
ES-IS Redirect	IS-IS Level 1 Router Hello
ES-IS Int System Identified	IS-IS Level 2 Router Hello
ES-IS Low Holding Time	IS-IS Low Holding Time

Specifications—Vitals and Commentators, *continued*

Vitals

Network Utilization (%)	Network Packets
CLNP Utilization (%)	CLNP Packets
CLNP Packet Size	CLNP Error PDUs
CLNP Data PDUs	CLNP Low Lifetime
TP Error PDUs	TP Low Credit
TP Fragments	Missed Frames

TCP/IP

Commentator Events

IP: Broadcast Storm, Low Time-To-Live, Zero Time-To-Live, Duplicate Address	
TCP: Low Window, Excessive Retransmission, Close Connection, Open Connection	
RIP: Router Identified, Routing Information Reply, Routing Information Request	
IGRP: Router Identified	
OSPF: Router Identified	
RIP Router Change	IGRP Router Change
OSPF Designated Router Change	IGRP Router Identified
OSPF Incorrect Hello Time	OSPF Neighbor Change
OSPF Router Identified	OSPF Router Change

Vitals

Network Utilization (%)	IP Utilization
Network Packets	IP Packets
IP Broadcasts	IP Fragments
ICMP Redirects	ICMP Unreachables
Low TTL	IP Packet Size
SNMP Packets	DNS Packets
ARP Packets	Low Window
Routing Packets	

For Ethernet/Fast Ethernet and FDDI only

DECnet

Commentator Events

Level 1 and 2 Router Message	Router Identified
Ethernet Router Hello Message	High Visit Count
Level 1 and 2 Change Message	Return to Sender Packet
Duplicate Network Address	Incorrect Hello timer
Excessive Retransmitted Connect Initiates	
Excessive Retransmission	
Excessive LAT Retransmission	DAP Slow File Transfer
Connection Initiated, Rejected, Aborted, and Closed	
Flow Control Stop and Resume Data Messages	
LAT Virtual Connection Initiated, Aborted, and Closed	
LAT Service Connection Initiated, Aborted, and Closed	
DAP File Open/Create, Open Error, Close, and Close Error	
DEC V Low and Zero Lifetimes	
DEC V Connection Initiated, Rejected, Closed, and Aborted	
CLNP and TP Error PDUs	
DEC V Low Credit and Low Credit Recovered	
DEC V Excessive Retransmission	

Specifications—Vitals and Commentators, *continued*

DECnet, *continued*

Vitals

Network Utilization (%)	DRP Utilization (%)
LAT Utilization (%)	MOP Utilization (%)
LAVC Utilization (%)	Packet Count
DRP Packet Size	DRP Data Messages
DRP Control Messages	DRP RTS Packets
DRP High Visit Count Packets	NSP Fragments
NSP Retransmission Connect Initiates	DEC V Utilization (%)
DEC V Packet Size	CLNP Error PDU
DEC V Data PDU	DEC V Low Lifetime
TP Error PDU	DEC V Low Credit
DEC V Fragments	Missed Frames

For Ethernet/Fast Ethernet only

Ethernet/Fast Ethernet

Commentator Events (ICMP Network)

Unreachable Networks	Unreachable Hosts
Protocol Not Supported	Unattainable Port
Fragmentation Needed	Bad Source Route
Destination Network Unknown	Destination Host Unknown
Source Host Isolated	Congested Device
Time-To-Live Count Exceeded	Fragment Lost
Parameter Problem	Required Option Missing
Destination Network Administratively Prohibited	
Destination Host Administratively Prohibited	
Network Unreachable for Type of Service	
Host Configured with Poor Network Route	
Host Configured with Poor Host Route	
Poor Type of Service and Network Route	
Poor Type of Service and Host Route	
Substantial Subnet Mask Requests	
Excessive Ping and Ping Replies	
Substantial Timestamp Requests	

Vitals

Network Utilization (%)	Frames
Local Collisions	Remote Collisions
Late Collisions	Remote Late Collisions
Runts with good FCS	Jabbers
Jabbers with bad FCS	Dribble Frames
Broadcasts	Multicasts

Specifications—Vitals and Commentators, *continued*

For Token-Ring only

Token-Ring

Commentator Events

Ring Purge	Active Monitor Error
Inserting Station	NAUN Change
Successful Insertion	Ring Purging
Station Removal	Beacon
New Active Monitor	Streaming Beacons
Beaconing	Request Station Removed
Isolating Soft Errors	Monitor Contention
Non-Isolating Soft Errors	Failed Insertion
Ring Resetting	Catastrophic Error
Neighbor Notification Failure	

Vitals

Network Utilization (%)	Frames
Code Violations	Aborts
Receiver Congestion	Burst Errors
Line Errors	Soft Errors
Beacons	Claim Tokens
Ring Purges	

IBM LAN Manager

Commentator Events

Report Ring Error Monitor Status	Error Rate Decaying
Receiver Congestion	Receiver Congestion Ended
Report Bridge Status	Bridge Counter Report
Remote Ring Soft Error - Pre-Weight Exceeded	
Remote Ring Soft Error - Weight Threshold Exceeded	
Remote Non-Isolating Soft Error - Threshold Exceeded	
Beaconing Condition on the Ring	
Beaconing Condition Recovered	
Bridge Performance Threshold Exceeded	
Single Route Broadcast Status Change	
List NetBIOS Stations	
List Novell Stations	
List Ring Error Monitors	
List Ring Parameter Servers	

Specifications—Stimulus and Response Testing

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

Following are examples of pre-written stimulus/response test sequences:

Media Tests

Ethernet/Fast Ethernet
Ethernet cable integrity test

Token-Ring
Token-Ring lobe test
Token-Ring ring length

FDDI
N/A

Response Time Measurements

Ethernet/Fast Ethernet
ICMP Ping
ARP Request
RARP

Token-Ring
ICMP Ping
ARP Request
RARP
Active station list
Request station ID (LLC XID)
(local or source-routed)
Station adapter status

FDDI
ICMP Ping
ARP Request
RARP

Novell network tests

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

Server Query (test server reachability)
Find nearest server (in time, or nearest server of a specific type)
Server List (list all active Novell Servers)
View Nodes (list all Novell clients)
Node Ping (test client reachability)
Determine connected networks
(addresses and names of remote networks)

Token-Ring topology tests

For Token-Ring only

List the station address, NAUN, physical location, group, station function, and function address for each of the following:

- Identify Active Monitor
- List all bridges
- List all stations
- List Configuration Report Servers
- List LAN Managers
- List NetBIOS Stations
- List Novell Stations
- List Ring Error Monitors
- List Ring Parameter Servers

Specifications—Filtering

Filter by Address

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

Either one or two MAC, IP, or IPX addresses can be specified for each filter. These addresses can be combined in any of the following modes:

- traffic from station 1
- traffic to station 1
- traffic to or from station 1
- traffic from station 1 to station 2
- traffic from station 2 to station 1
- traffic between station 1 and station 2

Filter by Frame Attribute

Frames can be filtered by frame attribute. The various frame attributes available are network dependent, and include the following:

Ethernet/Fast Ethernet

- Good frames
- Bad FCS frames
- Runts (collisions)
- Jabbers
- Dribbles

Token-Ring

- Good frames
- Bad FCS frames
- Ring Purge
- Claim Token
- Beacon
- Remove Ring Station
- Active Monitor Error
- Abort Delimiters
- Incomplete Neighbor Notification
- Soft Error
- Source Routed
- Non-Source Routed
- No End Delimiter
- Priority Frames
- E-bit Set
- Token
- All MAC frames

FDDI

- Good frames
- Bad FCS frames
- Broadcast frames
- Stripped frames
- Frame Error
- Copied frames
- Address Recognized frames
- Non-restricted Token
- Restricted Token
- Async frames
- Sync frames
- MAC frames
- Beacon frames
- Claim frames
- LLC frames
- Void frames
- SMT frames
- Neighbor Information frames
- Station Information frames
- Configuration SIF
- Operation SIF
- Echo frames
- Resource Alloc frames
- Request Denied frames
- Status Report frames
- Parameter Mgmt frames
- Get PMF
- Change PMF
- Add PMF
- Remove PMF
- Assert PMF
- Extended Services frames
- Reserved frames

Filter by Data

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

Up to 48 bytes may be specified in the data field following the MAC source and destination addresses as filter criteria (or network layer for IP and IPX network filters).

Specifications—Filtering, *continued*

Multiple Filters

For Ethernet/Fast Ethernet, Token-Ring, and FDDI

Up to 16 filters can be active simultaneously. Multiple active filters are logically Or-ed.

Specifications—Traffic Generator

Ethernet/Fast Ethernet

Load Specification

- 1 to 99 %
- 1 to 4,000 milliseconds, interframe spacing

Iterations (number of times a group of frames is transmitted):

- 1 to 100,000,000 or continuous

Number of defined messages:

- 1 to 32

Pre-defined messages

- (templates):
- TST Command
- XID Request
- AppleTalk Echo Request
- ARP Request
- Fox Message
- ICMP Addr Request
- ICMP Echo Request
- Novell RIP
- Ethernet ARP Request
- Ethernet DEC Request Sys ID
- Ethernet ICMP Addr Request
- Ethernet ICMP Echo Request
- Ethernet Loopback CTP
- Ethernet XNS Echo Request

Message length range

- (length includes FCS)
- 19 to 3,998 bytes

Frame Copy

- Copy from another message
- Copy from capture buffer

Frame Formats

- Ethernet, IEEE 802.3

Number of user-defined bytes per message

- (includes address fields):
- 78 bytes

Pre-defined data patterns

(for data field bytes 15 to 78 of message):

- 0x00, 0x01, 0x10, 0x55, 0xAA, 0xFF, plus random data

Frame padding selected from these options:

- User-defined:
 - any one byte value 0x00 to 0xFF
- Incremental:
 - pattern increments from 0x00 to 0xFF, then repeats
- Random:
 - data pattern is random

FCS Selection

- Good: automatically calculated
- Bad: user-definable

Errors: Runts, Jabbers, Bad FCS

Ethernet

Interframe spacing (minimum)

- 20.0 uS with frame length <64 bytes
- 13.2 uS with frame length >= 64 bytes

Frames per second (maximum)

- 24,000 fps with 19 byte frames
- 14,100 fps with 64 byte frames
- 810 fps with 1518 byte frames
- 310 fps with 3998 byte frames

Percent utilization (maximum)

- 37.0% with 19 byte frames
- 72.5% with 64 byte frames
- 98.5% with 1518 byte frames
- 99.5% with 3998 byte frames

Specifications—Traffic Generator, *continued*

Token-Ring

Load Specification

1 to 99 %

1 to 4,000 milliseconds, interframe spacing

Iterations (number of times a group of frames is transmitted):

1 to 100,000,000 or continuous

Number of defined messages:

1 to 32

Pre-defined messages

(templates):

LLC Fox Message

LLC Request Test

LLC Request XID

MAC Remove Ring Station

MAC Request Ring Station

Address

MAC Request Ring Station

Attachments

MAC Request Ring Station State

Message length range

(length includes FCS)

19 to 4,100 bytes (4 Mbps)

19 to 18,000 bytes (16 Mbps)

Frame Copy

Copy from another message

Copy from capture buffer

Frame Formats:

MAC, LLC

Frame Priority: 0 to 6

Number of user-defined bytes per message

(includes address fields):

78 bytes

Pre-defined data patterns

(for data field bytes 15 to 78 of message):

0x00, 0x01, 0x10, 0x55, 0xAA, 0xFF, plus random data

Frame padding selected from these options:

User-defined:

any one byte value 0x00 to

0xFF

Incremental:

pattern increments from 0x00 to 0xFF, then repeats

Random:

data pattern is random

FCS Selection:

Good: automatically calculated

Bad: user-definable

Errors: Bad FCS

Performance Specifications

(4 Mbps) +/- 2%

Interframe spacing (minimum)

286 uS with frame length

= 19 bytes

150 uS with frame length

= 75 bytes

55 uS with frame length

= 132 bytes

Frames per second (maximum)

3300 fps with 19 byte frames

480 fps with 1000 byte frames

120 fps with 4100 byte frames

Percent utilization (maximum)

12.5% with 19 byte frames

96% with 1000 byte frames

98% with 4100 byte frames

Performance Specifications

(16 Mbps) +/- 2%

Interframe spacing (minimum)

286 uS with frame length

= 19 bytes

161 uS with frame length

= 500 bytes

48 uS with frame length

= 954 bytes

Frames per second (maximum)

3300 fps with 19 byte frames

1800 fps with 1000 byte frames

480 fps with 4100 byte frames

100 fps with 18000 byte frames

Percent Utilization (maximum)

3% with 19 byte frames

90% with 1000 byte frames

97% with 4100 byte frames

98% with 18000 byte frames

Specifications—Traffic Generator, *continued*

FDDI

Load Specification

1 to 446,000 frames/sec

Iterations (number of times a group of frames is transmitted):

1 to 100,000,000 or continuous

Number of defined messages:

1 to 32

Pre-defined messages

(templates):

LLC Fox Message

LLC Request Test

LLC Request XID

MAC Remove Ring Station

MAC Request Ring Station

Address

MAC Request Ring Station

Attachments

MAC Request Ring Station State

Message length range

19 to 4500 bytes

Frame Copy

Copy from another message

Copy from capture buffer

Pre-defined data patterns

(for data field bytes 15 to 78 of message):

0x00, 0x01, 0x10, 0x55, 0xAA, 0xFF, plus random data

FCS Selection:

Good: automatically calculated

Bad: user-definable

Frame padding selected from these options:

User-defined:

any one byte value 0x00 to 0xFF

Incremental:

pattern increments from 0x00 to 0xFF, then repeats

Random:

data pattern is random

Errors: Claims and Beacons

Notes

Notes



Expanding Possibilities

Ordering Information

HP J2300D	HP Internet Advisor WAN
HP J3446D	HP Internet Advisor LAN — Fast Ethernet
HP J3447A	HP Internet Advisor LAN — 100 Base FX interface module for J3446C
HP J2306B	HP Internet Advisor LAN — Ethernet
HP J2307A	HP Internet Advisor LAN — Token Ring undercradle
HP J2309B	HP Internet Advisor LAN — Ethernet/Token Ring undercradle
HP J2524A	HP Internet Advisor LAN — FDDI undercradle
HP J3444A	HP Internet Advisor LAN — Fast Ethernet undercradle
HP J3445A	HP Internet Advisor LAN — 100 Base FX Interface for the J3444A
HP J2901A	HP Internet Advisor LAN — Gigabit Ethernet undercradle
HP J3710A	Oracle Commentator software
HP J3710B	Oracle Commentator software for LAN in Windows
HP J3711A	Sybase Commentator Software
HP J3307A	Internet Reporter LAN/WAN/ATM software

Related Literature

HP Internet Advisor LAN	Product Overview	5966-0828E
HP Internet Advisor LAN in Windows	Product Overview	5967-5562E
HP Internet Advisor LAN — Gigabit Ethernet	Technical Specifications	5968-2747E
HP Internet Advisor LAN — Oracle Commentator Software (HP J3710A)	Product Overview	5968-0415E
HP Internet Advisor LAN — Oracle Commentator Software for LAN in Windows (HP J3710B)	Product Overview	5968-0414E
Sybase Commentator Software (HP J3711A)	Product Overview	5966-0132E
HP Internet Advisor WAN	Product Overview	5967-5566E
HP Internet Advisor WAN	Technical Specifications	5968-3279E
HP Internet Advisor ATM	Product Overview	5968-1437E
HP Internet Advisor ATM	Technical Specifications	5968-1436E
HP Internet Reporter	Technical Specifications	5968-6188E
HP Internet Reporter	Application Note	5964-2373E
HP Internet Advisor	Brochure	5968-6076E

Services

HP J2899A Software Upgrade and Subscription Service	Product Overview	5965-5815E
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For hardware - three year warranty
For software - 90 day replacement warranty only

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Measurement Assistance Center
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Fax: (81) 426 56 7840

Latin America:

Hewlett-Packard Company
Latin American Region Headquarters
5200 Blue Lagoon Drive 9th Floor
Miami, Florida 33126
U.S.A.
Tel: (305) 267-4245/4220
Fax: (305) 267-4288

Australia/New Zealand:

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130 Australia
Tel: 1 800 629 485 (Australia)
Tel: 1 800 738 378 (New Zealand)
Fax: (61 3) 9210 5489

Asia Pacific:

Hewlett-Packard Asia Pacific Ltd.
17-21/F Shell Tower, Times Square,
1 Matheson Street, Causeway Bay,
Hong Kong
Tel: (852) 2599 7777
Fax: (852) 2506 9285

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