

HP Internet Advisor — LAN Internet Advisor 8.0

Significant enhancements to the HP Internet Advisor for LAN are included in the 8.0 software release.

Internet Advisor 8.0

HP Internet Advisor 8.0 transforms data into meaningful diagnostic information. Constantly monitoring the traffic on your Ethernet, Token-Ring or FDDI LAN, the Internet Advisor 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. And it does this for each protocol stack you have running, all in real time — as events actually occur.

Internet Advisor 8.0 provides an instantaneous, graphical representation of your network's health. On a single screen, you'll see summaries of all the important network parameters — displays results of Vital Signs, Protocol Statistics, Expert Commentator and Node Discovery measurements, plus a continuous plot over time of network utilization and network health. Internet Advisor lets you use this information to identify network problems quickly - and to drill down directly to the data you need to resolve these problems.

Internet Advisor 8.0 displays network health and utilization, plotted

graphically over time. Network health — a quick, visual indicator of the health of the LAN — is measured by tracking warning events, alert events and errored frames as they are observed on the network. A perfect network would have a health rating of 100 percent. On a real network, each error, warning and alert event reduces the network health percentage by a user-defined weighting factor.

HP Internet Advisor—LAN problem solving series — No. 15

Observing network health and comparing it to the instantaneous utilization over time allows you to spot network performance problems at a glance. Normally, as network utilization rises, network health will decreases onewhat. If network health decreases dramatically or decreases during times of low utilization, your network probably has a significant problem. The Internet Advisor alerts you immediately if network health ever falls below the user-defined threshold.



Internet Advisor 8.0 continuously monitors each protocol stack running on your Ethernet, token-ring, or FDDI LAN and provides an instantaneous, graphical representation of your network's health.

Internet Advisor 8.0 tracks event summaries and categorizes them by protocol stack, so that you can quickly isolate problems to specific protocols. Yet this network performance summary is just the beginning. Drill down capability lets you "zoom in" on any area of interest, leading you quickly to the source of the problem. To drill down, simply double click on a specific param-Internet Advisor immediately presents additional, important information. For example, drilling down on the "Network Total" provides information on all observed events, while drilling on specific protocols automatically filters to data relevant to that protocol stack.

Suppose network health suddenly drops and the number of warnings for the IP protocol stack increases. Just double click on the field for IP warnings and Internet Advisor quickly drills down into the Expert Commentator measurement which generated those alerts. From there, you can drill down further to a detailed listing of each event, an explanation of what caused the event, suggestions for corrective actions, and even to detailed decodes of the frames in question to determine precisely what happened.

Internet Advisor 8.0 and its drill down capabilities provide an easyto-use and comprehensive platform for quickly isolating most network problems. Of course, the Internet Advisor for LAN offers many other powerful troubleshooting tools, including complete seven-layer protocol decodes, active stimulus/response tests and a large collection of network performance statistics. But in most situations, the drill down capability is all you need to identify the cause of the problem - and resolve it quickly.

Drill down to isolate problems quickly

Internet Advisor 8.0's drill down capability leads you quickly to the source of problems by simply double clicking on areas of interest, as can be seen in the guided sequence shown below.

	Ethern	et Expert Advi	sor	
Control Config D	isplay files	Print Help		8
Network Health Network Utilizati	\$ 0100 on \$ 020	%	es low 0% es high 49 %	latest 91% latest 14%
- PH - F - F - F	الشندي لم	III	<u> </u>	
				, Til
Protocols	Frames	Stations	Warnings	Alerts
Protocols Network Total	Frames 5445699	Stations 670	Warnings 807	Alerts
Protocols Network Total Appletalk Banyan	Frames 5445699 84	Stations 670 0	Warnings 807 Ø	Alerts 122 0
Protocols Network Total Appletalk Banyan DECnet	Frames 5445699 84 106	Stations 670 0	Warnings 807 0	Alerts 122 0
Protocols Network Total Appletalk Bangan DECnet IP	Frames 5445699 84 106 2578614	Stations 670 0 0 581	Warnings 807 0 0 694	Alerts 122 0 0 119
Protocols Network Total Appletalk Banyan DECnet IP Novell OSI	Frames 5445699 84 106 2578614 265514	Stations 670 0 0 581 38	Warnings 807 0 694 11	Alerts 122 0 119 3
Protocols Network Total Appletalk Bangan DECnet IP Novell OSI Other Protocols	Frames 5445699 84 106 2578614 265514 2601378	Stations 670 0 2 581 38 38 51	Warnings 807 0 0 694 11	Alerts 122 9 119 3
Protocols Network Total Appletalk Banyan DECnet IP Novell OSI Other Protocols MAC Level	Frames 5445699 84 106 2578614 265514 265514	Stations 670 0 0 0 0 38 51 0	Harnings 807 0 694 11 96	Alerts 122 0 0 119 3 3 0
Protocols Network Total Appletalk Banyan DECnet IP Novell Novell Other Protocols MAC Level Routers	Frames 5445699 84 106 2578614 265514 2601378	Stations 670 0 0 0 0 0 38 38 51 4 4	Harnings 807 0 694 11 96 6 6	Alerts 122 0 119 3 3 0 0 0 0 0 0

Each warning event is time-stamped and detailed, so you'll know exactly which stations were involved and what caused the error.



By double-clicking on the frame number(s), you'll view in detail the actual data frames that caused the event.

This example illustrates Internet Advisor 8.0's point-and-click drill-down process by showing one of many potential drill-down paths.

F			Network Total Warning Event Summary
	Count	Prot	Description
:	(397)	I CMP:	Destination Unreachable
1	(235)	ICMP:	Redirect
1	(32)	MAC:	Misaligns Count exceeded the threshold.
1	(32)	MAC:	Bad FCS Count exceeded the threshold.
۲.	(32)	MAC:	Runt Count exceeded the threshold.
•	(30)	ICMP:	Time To Live Expired
1	(27	TCP:	Reset Connection
٠	(11)	NOU:	Delay - Dup. Service Reg.
1	(6)	OSPF:	Router Change
1	(5)	TCP:	Excessive Retransmissions

By drilling down on warning events, you can focus on inefficiencies that could be impacting network performance.



To identify and solve the problem, just double click on the event description. You'll get an explanation of how that event was detected, its likely causes, and what to check next to resolve it quickly.

Configuring Internet Advisor for your network

Customize Internet Advisor 8.0 to your network, or even specific segments within your network. Statistical thresholds and other configurable parameters for the underlying measurements can be modified through the configure pulldown. Customized configurations can be saved and re-used whenever needed.

Configure For: Ethernet Expert	Advisor
Done <u>C</u> ancel Defaul <u>t</u> s Cr <u>e</u> ate <u>R</u> un <u>P</u> age <u>H</u> elp	
Done Cancel Defaults Greate Run Page Help Page 2 offs Moret I Moret I TCP/IP Events I I I I Stop all on selected events: I <th>TCP/1P Events IP: Low Time-To-Live PP: Zero Time-To-Live IP: Broadcast Storm IP: Duplicate Address TCP: Low Window TCP: Reset Connection TCP: Close Connection TCP: Close Connection TCP: Excessive Retx RIP: Routing Info Reply RIP: Routing Info Reply RIP: Router Identified RIP: Router Identified IGRP: Router Identified IGRP: Router Identified OSPF: Incorrect Hello T OSPF: Designated Router OSPF: Neighbor Change OSPF: Router Change</th>	TCP/1P Events IP: Low Time-To-Live PP: Zero Time-To-Live IP: Broadcast Storm IP: Duplicate Address TCP: Low Window TCP: Reset Connection TCP: Close Connection TCP: Close Connection TCP: Excessive Retx RIP: Routing Info Reply RIP: Routing Info Reply RIP: Router Identified RIP: Router Identified IGRP: Router Identified IGRP: Router Identified OSPF: Incorrect Hello T OSPF: Designated Router OSPF: Neighbor Change OSPF: Router Change
More↓ Press Enter to enable (checkmark) or disable. Or press F3, highlight an item, and press Enter.	

Warning and alert events and their thresholds can be customized to your network, and stored away for future use.

Tracking network events over time

All Commentator warning and alert events, along with any statistical thresholds that have been exceeded, can be timestamped and recorded in the event log, providing a chronological history that can be correlated with fluctuations in observed network performance. The event log can store approximately 24 hours of these events on a reasonably well running network. The event log can be printed along with the individual results from the underlying measurements.

-	All Events Browser						
<u>A</u> ck	nowledge	<u>V</u> iew <u>P</u> rint	lelp				
	Date	Time	Туре	Descr	iption		
A	10/05/95	12:02:11.21	Proto	IP:	Duplicate Address	(15.6.76.2
A	10/05/95	12:02:35.71	Proto	IP:	Duplicate Address	- (15.6.76.8
W	10/05/95	12:03:00.59	Proto	I CMP:	Destination Unreachable	(15.6.73.1
A	10/05/95	12:03:06.36	Proto	IP:	Duplicate Address	- (15.6.73.1
A	10/05/95	12:03:23.27	Proto	IP:	Duplicate Address	(15.6.76.2
W	10/05/95	12:07:26.76	Proto	TCP:	Excessive Retransmissions	(15.10.88.
W	10/05/95	12:07:27.47	Proto	TCP:	Excessive Retransmissions	(15.10.88.
A	10/05/95	12:15:55.70	Proto	IP:	Duplicate Address	•	15.6.76.2
W	10/05/95	12:19:51.33	Proto	TCP:	Excessive Retransmissions	(15.10.88.
W	10/05/95	12:24:40.84	Proto	I CMP:	Destination Unreachable	(15.6.73.1
W	10/05/95	12:24:42.38	Proto	I CMP:	Destination Unreachable	(15.6.73.1
A	10/05/95	12:26:34.37	Proto	IP:	Duplicate Address	•	15.6.76.2
W	10/05/95	12:26:38.33	Proto	I CMP:	Destination Unreachable	(15.6.73.1
A	10/05/95	12:28:12.74	Proto	IP:	Duplicate Address	(15.6.72.1
W	10/05/95	12:29:14.42	Proto	I CMP:	Destination Unreachable	(15.6.73.1
A	10/05/95	12:33:09.01	Proto	IP:	Duplicate Address	- (15.6.72.5
W	10/05/95	12:34:53.59	Proto	I CMP:	Destination Unreachable	(15.6.73.1
A	10/05/95	12:38:56.30	Proto	IP:	Duplicate Address	(15.6.76.5
W	10/05/95	12:40:11.77	Proto	TCP:	Reset Connection	(15.6.72.6
W	10/05/95	12:42:07.39	Proto	I CMP:	Destination Unreachable	(15.6.73.1
W	10/05/95	12:45:14.58	Proto	I CMP:	Destination Unreachable	(15.6.73.1
W	10/05/95	12:45:55.94	Proto	I CMP:	Destination Unreachable	(15.17.162
N	10/06/95	14:07:12.72	Instr	Data	capture start.		
W	10/06/95	14:07:54.68	Proto	NOV:	Slow File Transfer	(file:NETS
W	10/06/95	14:07:55.39	Proto	NOV:	Slow File Transfer	(file:LOGI
W	10/06/95	14:09:34.09	Proto	TCP:	Reset Connection	0	15.42.104
						_	

The event log provides a chronological record of significant events and threshold crossings, which is extremely valuable when isolating intermittent faults.

_

Commentators and Vital Signs	AppleTalk Phase 2				
monsurements are added for	Commentator Events:				
Develop View Average Tollo Diseas 0	DDP Hop Count Exceeded				
Banyan vines, AppleTalk Phase 2,	DDP Destination Unreachable				
and OSI. These add to the already	ATP Excessive Retransmission				
existing measurements for TCP/IP,	ASP Session Opened, Rejected, Clos	sed. Slow Transfer Rate			
Novell and DECnet. The new	AFP Login. Logout				
commentator events and vital	ADSP Connection Open. Denied. Cl	osed. Slow Transfer Rate.			
signs noremotors for each stack	Excessive Retransmission Low	w Window			
signs parameters for each stack	RTMP Router Change, Router Identified PAP Open Connection, Close Connection, Printer Busy ZIP Zone Diameter Exceeded				
are listed on this page.					
	Vital Sign Statistics:				
	Vital Sign Statistics.	Natural Utilization Declasts			
	DDD Litilization, Percent	DDD De electr			
	DDP Utilization, Percent	DDP Packets			
	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			
	Vital Sign Statistics:				
	Network Utilization, Percent	Network Utilization, Packets			
	VIP Utilization, Percent	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				
	OSI:				
	Commentator Events:				
	CLNP Low Lifetime	CLNP Zero Lifetime			
	CLNP Error PDU	TP Error PDU			
	TP Connection Initiated Rejected	Aborted and Closed			
	TP Excessive Potransmissions	TP Low Crodit			
	TP Low Credit Recovered	TP Slow Transfer			
	FS IS Podiroct	IS IS Lovel 1 Pouter Hello			
	EG-10 NEUHEUt DC IC Int Custom Identified	IS IS Level 1 Nouter Hello			
	ES-IS Int System Identified	IS-IS Level 2 Router Hello			
	ED-ID LOW HOLDING THILE	IS IS Uigh Holding Time			
	ES-15 High Holding Time	IS-IS High Holding Time			
		IS-IS Router Identified			
	Vital Sign Statistics:				
	Network Utilization, Percent	Network Packets			
	CLNP Utilization, Percent	CLNP Packets			
	CLNP Packet Size	CLNP Error PDUs			
	CLNP Data PDUs	CLNP Low Lifetime			
	TP Error PDUs	TP Low Credit			
	TP Fragments	Missed Frames			
	In addition, the following routing events	are added to the TCP			
	Commentator:				
	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			
		-			

Summary Statistics

Summary Statistics' new drill down capability improves access to most statistical measurements in the Internet Advisor for LAN. Starting from Summary Statistics, other statistical measurements can be started simply by doubleclicking on the area of interest in Summary Statistics. For example, double-clicking on the Protocols Pie Chart in Summary Statistics starts the Protocol Statistics measurement, which provides more detailed protocol statistics, or double-clicking on the **Collisions Gauge starts Ethernet** Vitals which provides more detailed collision statistics.

Connection Statistics

Connection Statistics keeps track of conversation pairs by MAC address, network address, or subnets. All common network addresses and subnet types are supported, including IP, Novell IPX, DECnet, AppleTalk, Banyan or OSI. In addition, IP can be configured for user-defined subnets. Using the Connection Statistics measurement, you can track errors and bandwidth utilization (by frames or by kbytes) by connection pair, and display the results in either bar-chart or piechart format.



Simply by double-clicking on a portion of the Summary Statistics screen, you will launch more detailed statistical measurements.

-	Ethernet Co	onnection	n Stats			
<u>Control</u> Config D	isplay <u>Files</u> <u>H</u> elp					
	Connection Bar Cl	nart Disj	alay Fo	rmat		
Stn 1 IP Addr.	Stn 2 IP Addr.	Frames	Butes	Errors	Stn1Fr	Stn2Fr
Network Total	E Contraction of the second se	174	18556	Ø	107	67
15.6.73.137	15.6.79.79	20	2408	õ	10	10
15.6.72.198	15.17.162.181	6	456	Õ	6	Ø
15.6.72.1	224.0.0.5	3	246	0	3	Ø
15.6.72.139	15.6.72.198	3	192	0	3	0
15.17.161.52	15.6.72.198	3	192	0	3	0
15.17.161.20	15.6.72.198	3	192	0	3	0
15.58.98.152	15.6.72.63	2	204	0	1	1
15.6.73.137	15.6.73.153	2	204	0	1	1
15.6.73.137	15.6.74.65	2	204	<u>N</u>	1	1
15.6.73.137	15.6.74.26		204	N N	1	
15.6.73.129	15 6 75 404		204	8	4	8
15 6 73 137	15 6 76 226		204	8	4	
15 6 79 197	15 6 76 125		204	8	+ +	+
15 6 73 137	15 6 73 71	2	204	Ä	1	1
15.6.73.137	15.6.76.188	2	204	ă	1	1
15.6.73.137	115.6.79.71	2	204	Ă	1 î	1
15.58.98.152	15.6.72.118	2	204	ŏ	Î	1
15.6.73.137	15.6.76.158	2	204	Õ	ī	1
15.58.98.152	15.6.77.56	2	204	Ø	1	1
Run started on A	ug 22, 1995 @ 13:2	6:56			Ø fram	es lost

By monitoring traffic by connections, you will know which conversations are consuming the most bandwidth.

Network and application layer filtering

Filtering allows you to use both the data capture buffer and your own time more efficiently by presenting only those frames that are related to the problem at hand.

Internet Advisor 8.0 makes several significant enhancements to the filtering capabilities. The high performance data acquisition hardware of the HP Internet Advisor for LAN allows you to filter by:

- MAC level station addresses
- network level address (IP, Novell IPX, DECnet DRP, AppleTalk DDP or Banyan Vines VIP)
- source or destination
- socket or port
- hop count
- time-to-live value or TCP window size
- frame attributes
- frame type
- any user-specified data field.

In addition, MAC layer filters can now be configured to capture multicast frames only.

Bas	ic Ethernet TCP Capture	Filter
<u>D</u> one <u>C</u> ancel Defaul <u>t</u> s <u>P</u> ag	ge Sa <u>v</u> e <u>F</u> ormat <u>H</u> elp	
Page 1 of 2		Stn1 TCP Dest Port# :
Encapsulation	Ethernet/IP/TCP	Don't Care
IP Station Address:		FTP-DATA 21
Station 1 Address	15.6.72.1	TELNET 23 SMTP 25
Station 1 Addr Mask	255.255.248.0	DNS 53 TFTP 69
Station 2 Address	15.10.88.8	FINGER 79
Station 2 Addr Mask	255.255.248.0	WWW 80
Traffic Mode	BETWEEN Stn 1 & Stn 2	
Frame Attributes		
Filter Action	Capture matched frames	
IP Time To Live < :	256	
Stn1 TCP Src Port# :	00-14	
Stn1 TCP Dest Port# :	00-114	
TCP Window <= :	6655 More+	
Type your choice and pres Or press F3, highlight ar	ss Enter. n item, and press Enter.	

High performance capture filters allow you to focus on data traffic that is related to the problem at hand.



The Protocol Statistics measurement shows you how your network bandwidth is being consumed by each of the various protocol stacks (IP, Novell, DECnet, AppleTalk, Banyan Vines or OSI).

Other revision A.08 enhancements

In addition to supporting IP and Novell IPX, the Protocol Statistics measurement is enhanced by adding DECnet, OSI, Banyan Vines, and AppleTalk (Phase 1 and Phase 2) protocol stacks.

Measurements available for testing FDDI interfaces have been enhanced and now include Expert Advisor, FDDI Top Talkers, and network/application layer filtering.



HP Sales and Support Offices

For more information on Hewlett-Packard Test and Measurement products, applications or services please call your local Hewlett-Packard sales offices. A current listing is available via Web through AccessHP at http://www.hp.com. If you do not have access to the internet please contact one of the HP centers listed below and they will direct you to your nearest HP representative.

United States:

Hewlett-Packard Company Test and Measurement Organization 5301 Stevens Creek Boulevard Building 51L-SC Santa Clara, CA 95052-8059 1 (800) 452-4844

Canada:

Hewlett-Packard Canada Ltd. 5150 Spectrum Way Mississauga, Ontario LAW 5G1 (905) 206-4725

Europe:

Hewlett-Packard European Marketing Centre P.O. Box 999 1180 AZ Amstelveen The Netherlands

Japan:

Yokogawa-Hewlett-Packard Ltd. Measurement Assistance Center 9-1, Takakura-Cho, Hachioji-Shi Tokyo 192, Japan (81) 426-48-3860

Latin America:

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

Australia/New Zealand: Hewlett-Packard Australia Ltd. 31-41 Joseph Street Blackburn, Victoria 3130 Australia 131 347 ext. 2902

Asia Pacific:

Hewlett-Packard Asia Pacific Ltd. 17-21/F Shell Tower, Times Square, 1 Matheson Street, Causeway Bay, Hong Kong (852) 2599 7070

Data Subject to change Printed in U.S.A. 1/96 © Copyright Hewlett-Packard Company 1996

