

# DA-3400/DA-3600A Ethernet Analysis Real-Time Monitoring and Testing

- Key Features
- 10/100/1000 Mb/s Ethernet analysis in one instrument
  - Seven layer problem identification decoding and event notification
  - VoIP call quality and signaling analysis
  - Routing protocol analysis
  - Real-time application response time measurements
  - Support for stacked VLAN and MPLS labels
  - On-demand and automated report generation
  - Real-time QoS monitoring

The explosive growth of Internet-based applications and distributed business network services has made network performance and reliability vital to the success of today's businesses. For years, Ethernet has been the dominant architecture for local area networks (LANs) and departmental workgroup networks. Since the deployment of Gigabit Ethernet, though, Ethernet has also become a key technology for service providers delivering extended LAN services. This new application for Ethernet has afforded service providers with the ability to offer high-revenue and low-cost services for customers demanding increasing amounts of bandwidth. Preventing downtime on these networks requires new tools and processes that allow network engineers to quickly identify the root causes of problems affecting network performance.

The JDSU DA-3400 and DA-3600A Data Network Analyzers, along with JDSU Ethernet Analysis Software, allow for fast identification and troubleshooting of difficult higher-layer data problems and enable network operations personnel to solve complex data network and service problems more easily during turn-up, troubleshooting, and baseline testing of network services. JDSU Ethernet Analysis Software provides extensive troubleshooting capabilities and expert tools for maintaining uptime on Ethernet networks, isolating VoIP call quality and set-up issues, and identifying customer traffic anomalies.

In addition to Ethernet Analysis Software, JDSU also offers high-speed WAN and ATM analysis software for both the DA-3400 and DA-3600A and Packet over SONET (POS) software for the DA-3600A.

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Global Communications Test & Measurement Company of the Year Award													

# Features

# 10/100/1000 Ethernet in One Instrument

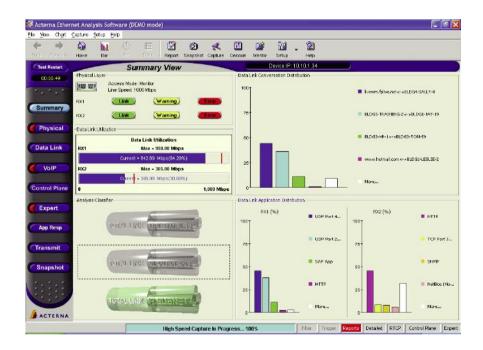
With 10/100/1000 Base-T and SX/LX Gigabit support in one interface module, the DA-3400 and DA-3600A each provide an all-in-one test tool for Ethernet troubleshooting. Network connections may be through Ethernet switch SPAN ports, network TAPs, or in-line monitoring.

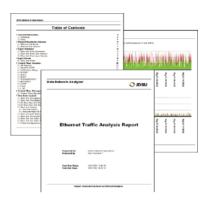
### **VoIP Analysis Option**

Accurate at full line rate, the VoIP analysis option for the DA-3400 and DA-3600A provides detailed quality statistics and signaling message exchanges. The patented problem segmentation feature reduces the time it takes to locate the source of VoIP problems.

# **Combined VoIP and Data Analysis**

The Ethernet Analysis Software performs VoIP and data analysis simultaneously. Technicians can quickly identify issues of resource contention, conflicting priority settings, and a wide variety of other problems that can result in poor network performance and dissatisfied users.





# **Event Identification and Notification**

Fully integrated expert analysis software identifies and notifies technicians of events through all seven protocol layers. Automated e-mail notification and SNMP trap generation are independently configurable for each network event. Additionally, expert events can be utilized to automatically generate capture files for later analysis.

# Reporting

Professional customizable reports can be created quickly and easily. The output format can be fully formatted for printing. In addition, the output format is compatible for use with database applications.

# **Control Plane Analysis**

The Ethernet Analysis Software provides a view for control plane protocols that are related to routing, signaling, and authentication. Protocols statistics and display filters allow technicians to focus on specific message exchanges. Full decodes are available in real time for any control plane protocol.



### VLAN, Subnet, and MPLS Analysis

The Ethernet Analysis Software automatically classifies traffic by its VLAN, subnet, or MPLS label. These classifications provide technicians with the ability to quickly identify bandwidth consumption, application distribution, and other relevant parameters within these traffic groupings.

# **Application Response Time Measurement**

The application response time option provides details of DNS lookup time, clientto-server network latency, and server response time, along with details on MTU, retransmissions, and other transport parameters. This allows technicians to quickly identify specific problem areas that are the source of poor network and application response times.

### **History Mode**

The test instrument's History mode allows technicians to view network traffic, applications, station statistics, and events for set periods of time. Defining the time period is accomplished using a graphical window that is integrated with a network utilization graph.

# **Remote or Local Operation**

Using IP networks or dial-up connections, technicians can control the DA-3400 or DA-3600A remotely. For portable applications, a direct PC connection is also supported. Once initiated, network monitoring continues without the need to maintain the connection.

# **Real-Time Decodes**

Protocol decodes, including summary, detailed, and hex displays, are displayed in real time. Packets streamed to the technician's PC can be saved onto a disk for subsequent analysis. Full filtering is supported, displaying only the frames of interest.

### **Tunneling Support**

Support for tunneled traffic allows technicians to monitor the tunnels or the traffic within the tunnels.

Geok Frankri	Home For	C E Pis Table	Report Shappin	et Capture Deca	
Test Restart			ane Analysis		Davice IP: 10.10.1.34:
00:01:26	Statistics	Messages			
	View Filters: All F	Protocols 💌			<ul> <li>Alladdresses</li> </ul>
	Absolute Time	DeltaTime	Destination	Source	Interpretation
and anterior strength	12:16:44.141070	0.000000	198.85.38.106	198.85.38.81	H.225.0 CONNECT IEE-Bearer Capability User_Msg_Type=Connect H.245_Addr=198.85.38.81 P
Summary	12:16:45.897448	1.756378	224.0.0.5		CSPF Link State Acknowledgement Router_ID=192.128.21.10 Area_ID=0.0.0.015_Type=Netwo
	12:16:45.897449	0.000001	L.12.12.39		H.225.0 FACILITY JEI-Facility IEI-Display JEI-User-User User Msg Type-Facility Facility Reason
	12:16:46.522261	0.624812	192.0.18.2	192.0.18.4	SIP INVITE Ver=SIP/2.0 To=sip:7000@migl.ne.tp From=sip:7000@richman Cal_JD=010464valcer
Physical	12:16:46.779389	0.257128	10.110.1.102	10.10.1.101	SCCP (Cisco) Off Hook
and the second	12:16:46.779395	0.000006	172.18.194.34	172.18.194.32	RAS (H.225.0) RRQ GateliceperID=stret-3660-1 RequestSeq11.m=3874 TTL=33569538
	12:16:47.912456	1.133061	172.18.72.79	172.18.72.86	H.245 Response Mag=Terminal Capability Set Ack Seq=1
Data Link	12:16:49.306403	0.893947	10.10.1.101	10.110.1.102	SOCP (Clisto) Display Text
	12:16:49.682341	0.875938	161.44.24.101	172.18.16.154	H.225.0 ALERTING EEI=Progress Indicator Location=User Liser_Msg_Type=Alerting H.245_Addro
	12:16:49.682342	0.000001	192.0.18.2	192.0.18.4	SIP ACK Ver-SIP(2.0 Te-sip:70000gmig.ne.jp From-sip:70000gvichman Call 1D-010464volcemar
A CONTRACTOR OF T	12:16:50.636318	0.953976	30,30,30,2	30.30.30.1	EIGRP Update AS=1 SN=5 Ack=8 IP Int IP Ext IP Ext
VolP	12:16:50.692346	0.056028	198.85.38.81	198.85.38.106	H.225.0 DISCONNECT IEL-Bearer Capability User Msg. Type-Setup Conference. Goal-Create Pr
	12:16:50.692347	0.000001	137.28.108.11	128.52.46.33	MEGACO (H.248) (BETA) Transaction Response Ack Transaction 1D=2 Seg=1 Error Code=3 Erro
	12:16:51.377188	0.684841	10.10.1.101	10.110.1.102	SCCP (Cisco) Start Tone
Control Plane	12:16:51.431215	0.054027	10.110.1.102	10.10.1.101	SCCP (Cisco) Keroad Button
	12:16:52.345172	0.913957	200.201.1.102	200.201.1.57	RADDUS (IETF) Access-Request User Name=Acterne NAS Port=10(19
	12:16:52.413206	0.069034	198.85.38.81	198.85.33.106	H.225.0 SETUP IEI-Bearer Capability User_Msg_Type-Setup Conference_Goal-Oreste Port+17.
Expert	12:16:52.441220	0.028014	1.12.12.39	1.12.12.48	H.225.0 DISCONNECT IEI-Bearer Capability User JMsg. Type-Setup Conference, Goal-Create Pr
Expert	12:16:53.232116	0.790396	161.44.24.101	172.18.16.154	H.225.0 CONNECT JEL-Bearer Capability User Msg. Type=Connect H.245. Addr=172.18.16.154
	12:16:55.715357	2.483241	192.128.21.2	192.128.21.10	OSPF Link State Request Router: ID=192,128,21,10 Area, ID=0.0.0.015, Type=Router LSA, ID=
1.	12:16:55.715363	0.000006	198.85.38.106	198.85.33.81	H.225.0 PROGRESS IEI-Bearer Capability User Msq. Type-Setup Conference. Goal-Create Port
Transmit	12:16:56.413206	0.697843	138.203.242.33	138,203.242,32	MGCP Create Connection (CRCV) TID=246 Endpoint_Name=ACgx6@138.203.242.33 C=21 X=F4
	12:16:58.539269	2.126063	192.0.18.2		SIP OPTIONS Ver=SIP/2.0 To=sp:7000@migl.ne.jp From=sp:7000@richman Call ID=010464vas
	12:16:58.539271	0.000002	30.30.30.2	30.30.30.1	EIGRP Request AS=777 SN=3716 Ad=8 IP_Int
Snapshot	12:17:00.729364	2.190093	172.18.72.79	172.18.72.86	H.245 Request Msg=Conference Request Conference_Request=Drop Terminal
- And	12:17:00.729071	0.000007	137.28.108.11	128.52.46.33	MEGACO (H.248) (BETA) Frame Fragmented Transaction Request Transaction_ID=5 Error_Code=
	12:17:02.983491	2.254120	138.203.242.33		MGCP Modify Connection (MDCX) TID=246 Endpoint_Name=ACgx6@138.203.242.33 C=21 X=Fr
	12:17:02.983492	0.0000001	172.18.194.34		RAS (H.225.0) URQ Endpoint3D=61782F3C0000001 RequestSepNum=3879
	12:17:03.361180	0.377688	198.85.38.106	198.85.38.81	H.225.0 ALERTING IEI-Bearer Capability User_Mag_Type=Setup Conference_Goal=Create Port+
	12:17:05.813406	2.452226	172.18.72.79	172.18.72.86	H. 245 Researce Many-Date Locky Channel Adv
	Total Unfiltered Mas		Total Aged Out: 0		Resume View



# **Applications**

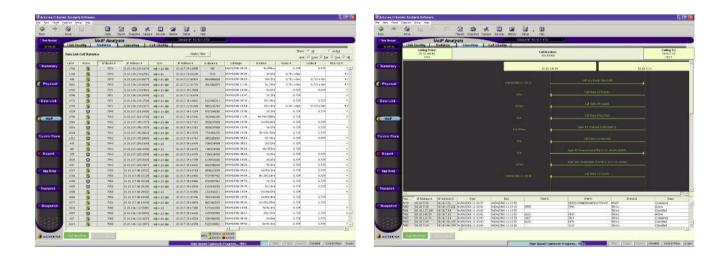
# **VoIP Quality Analysis**

Monitoring and troubleshooting quality problems on VoIP networks presents a unique set of issues. The VoIP Analysis option for the Ethernet Analysis Software provides technicians with displays of overall call load, multiple call statistics, and single call details. This allows technicians to evaluate the overall VoIP quality, identify trends, and troubleshoot single call related issues. Expert events detail problems and reduce the time it takes to resolve issues.

VoIP monitoring is performed using custom hardware to ensure absolutely accurate statistics, including jitter, packet loss, and MOS, on fully utilized Ethernet circuits with up to Gigabit speeds.

### **VoIP Signaling Analysis**

Troubleshooting VoIP signaling can be time consuming. The VoIP Analysis option provides a display of signaling message exchanges for individual calls. This display includes information on timing and result codes, allowing technicians to identify problems quickly.



### **Quality of Service Monitoring**

VLAN priorities and IP DiffServ code points are used to set the quality of service (QoS) levels for different types of traffic. The Ethernet Analysis Software displays the QoS settings for all data and VoIP connections on the network, allowing technicians to quickly identify and resolve configuration issues related to the QoS parameter settings.

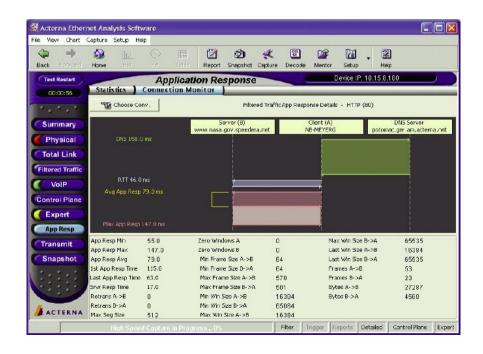
# **Control Plane Analysis**

Routing, signaling, and authentication protocols are used to define routing paths and validate users. Problems with packet exchanges can result in poor network performance, connection failures, and other issues.

The Control Plane Analysis feature supports real-time monitoring of RIP, BGP, OSPF, RSVP, EIGRP, LDP/TE, SigTran, IGMP, RADIUS, H.323, SIP, MEGACO/H.248, CiscoSCCP, and MGCP/NCS.

### **Application Response Analysis**

Slow network response time is a common user complaint. Network latency, DNS lookup time, server request processing time, MTU size, and other factors directly impact the user experience and their perception of network performance. The Application Response Time option quickly identifies problems with the application design, client/server configuration, router configuration, or network packet transport. This allows technicians to optimize applications and quickly determine if problems are within the network, the client/server equipment, or the application.



### **Security Analysis**

Computers that become compromised by worms or virus can inflict damage on the network. The Ethernet Analysis Software can monitor for hosts generating traffic profiles that indicate a compromised host. JDSU makes available, via the Internet, a variety of different filter files that are designed to identify traffic patterns generated by specific worms and viruses.

### **Network Baselining**

Baselining is the process of monitoring long-term trends, applications, and user patterns for the purpose of profiling the network. This information can then be used as a reference to ensure that new applications can be supported, identify the impact of new applications, isolate problems, and generate general performance overviews. The Ethernet Analysis Software provides long-term monitoring and reporting capabilities that are specifically designed to provide technicians with this valuable information.

### Filter, Capture, and Decode

With its one Gigabit capture buffer, the DA-3400 and DA-3600A can capture and decode millions of frames. To reduce the amount of traffic that must be analyzed, the Ethernet analysis hardware filters are designed to be the most powerful in the industry. Multiple filters can be defined based on parameters such as VLANs, IP addresses, or subnets. More specific parameters, such as DiffServ code points or IP options, are also available. Pattern match filters identify packets containing specific data strings. Technicians can be assured that the captured traffic contains only those packets that match the filter settings.

Named Filter Setup			
Name: New Filter			
🖾 Filter 🔽 Trigger 🗖 Trend	I .		
	Dst Address		7
Label 1 CoS 1	Src Address	ToS Flags Prtcl	Src Dst Flags
Label 2 CoS 2	VLAN ID 1	Src Dst	
	VLAN ID 2		
/ MPLS Layer	Link Layer	IP Layer	
	Custom Patterns:	1 2	
	_		
Filter Information:			
Max Filter Words: 4 Words Us	ed: 3 Words Availabl	<b>e:</b> 1	
ToS/DSCP: 0x2c IP Src: 10.21.115.48 S	rc Port: 80		
	Clear Ok	man I un	1
_	Clear Ok	Cancel Help	



### **Technical Specifications**

#### DA-3400 and DA-3600A Mainframes **Physical Characteristics Overall dimensions** (w x l x d) 10.5 x 12.6 x 2.6 in (26.7 x 32 x 6.6 cm) Weight 7 lb (3.2 kg) Rack mount height 211 Environment Ambient temperature range +5°C to +40°C Storage and transport -10°C to +60°C Electrical Power supply 100 - 240 VAC, 50/60 Hz 70 W DA-3400 power consumption 90 W DA-3600A power consumption Safety UL 3111-1, CAN/CSA C22.2 No. 1010.1, IEC-61010-1, EN61010-1 Configuration/control/power connectors RJ-45 10/100 Ethernet console port Keypad with LCD for communication setup LED indicators for physical, link, error Dual cardbus slot RS-232 serial port 12 VDC power supply input **Minimum system requirements** Windows 2000, Windows XP Professional 800 MHz processor 128 MB RAM — 256 MB recommended 300 MB disk space

Order information					
Description	Part number				
Mainframe					
DA-3400 Data Network Analyzer	DA3400				
DA-3600A Data Network Analyzer	DA3600A				
Interface Modules					
Ethernet					
10/100 Base-T Ethernet (DA-3400 only)	DA3000M-10/100				
Dual RJ connectors					
10/100/Gigabit Ethernet	DA3000M-1G				
Dual RJ connectors					
Dual GBIC slots					
Optical SX GBIC	AC-GBIC-SX				
Optical LX GBIC	AC-GBIC-LX				
DS1/DS3 E1/E3 WAN/ATM/ISDN Interface	DA3000M-DS/E				
OC-3 STM-1 ATM interface					
OC-3 STM-1 Singlemode (DA-3400 only)	DA3000M-155-SM				
OC-3 STM-1 Multimode (DA-3400 only)	DA3000M-155-MM				
OC-3/12 STM-1/4 POS/ATM interface					
OC-3/12 STM-1/4 Singlemode	DA3000M-622-SM				
OC-3/12 STM-1/4 Multimode	DA3000M-622-MM				
OC-48c STM-16 POS interface					
OC-48c STM-16 Singlemode (DA-3600A only)	DA3000M-2.4G				
Software and Options					
DA-3400 and DA-3600A software					
Ethernet Analysis Software	DA3000S-Ethernet				
WAN Analysis Software	DA3000S-HSW				
ATM Analysis Software	DA3000S-ATM				
VoIP Analysis Software	DA3000T-VoIP				
VoATM Analysis Software	DA3000T-VoATM				
Application Response Time	DA3000T-APPRES				
DA-3600A advanced software					
Advanced (POS/Ethernet) Analysis Software	DA3600S-Advanced				
Streaming Application Software	DA3600S-Streaming				
Options					
Cardbus Hard Disk Drive	AC-018398				
Rack Mount Kit	RM-18006				
Gigabit Ethernet Upgrade (DA-3400)	DA3000T-1G				
622 ATM Upgrade (DA-3400)	DA3000T-622				
PVA-1000 VoIP Analysis and Playback	PVA-1000S-VOIPN				

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