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Test & Measurement

Complimentary Reference Material

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EtherScope[™] Series II

Network Assistant

With EtherScope Series II, you can:

- Solve gigabit Ethernet problems fast on copper and fiber optic networks – test at Gigabit speeds with the full-duplex 10/100/1000 twisted pair interface or optional SX, LX or ZX optical fiber interface.
- View wireless networks add the 802.11 a/b/g wireless network analysis option to troubleshoot today's mixed wired and wireless networks. A full suite of tests including detailed information about RF signal strength, access point and client configurations, and network utilization.
- **Discover switches fast** locate available interfaces, active ports, MAC, IP, SNMP name, and link speed.
- Capture detailed network information – locate, view, and store 1,000 network devices in the on-board database. Drill down on any device to see its configuration, addressing, and status.
- Analyze data instantly pinpoint duplicate IP addresses, network misconfigurations, frame errors, collisions, high-utilization segments, and cable problems.
- Identify vital network stats view Ethernet utilization, collisions and errors. Use the data to fine tune your network.
- Monitor client access troubleshoot the cause of 802.1X security authentication, dynamic addressing and WLAN association problems.
- Measure performance the Internetwork Throughput Option (ITO) enables IP performance testing for deployment and maintenance of enterprise networks. Verify the available bandwidth between two points in a network or simulate the impact of additional network users or applications.
- Grab and go easy to use and carry, featuring a small, lightweight ruggedized platform, a bright color touch-screen, intuitive user interface and context sensitive help.

You are working on one of many top-priority projects when you get the call. The network is down. Your company looks to you to bring its business-critical network back up quickly.

There's no time to waste. You grab your trusted assistant and rush off to solve the problem, confident you have the essential set of tools you need to analyze, isolate, and solve the problem... or at least prove it's not the network.





Helping first responders solve network problems fast.

Powerful vision into your network

Whether a copper, fiber optic or a wireless LAN, the EtherScope Series II Network Assistant delivers the information you need to quickly analyze, isolate and troubleshoot network problems. EtherScope excels at troubleshooting access network issues, with advanced diagnostics that simplify troubleshooting in switched environments. When problems require a visit to the user's work area, the switch closet or the equipment room, EtherScope is the portable tool you should bring with you. It is engineered to be small, lightweight and durable for field use. And it is packed with the features you need so you can leave your laptop PC back at your desk.

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Fiber Optic

Fiber Optic Meter

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Reference

Loss Limi

Verify cabling infrastructure quality

High-performance cabling is the backbone of a high-speed network. Do not let simple cabling problems bring your network down. Several built-in tools, like TDR fault location, wiremap and digital toning, help you troubleshoot common cabling issues.

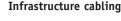
If your network includes gigabit links, you likely have multimode or singlemode fiber optic cabling. Verify the quality of these links by measuring the power from fiber optic NICS and the loss of optical fiber cables.

Copper
 Cipper

Cable verification

A speed or duplex mismatch is a common cause of collisions and errors. Easily observe the link negotiation signaling of PC NICs and network devices.

Emulate a powered device (PD) to troubleshoot problems with 802.3af Power over Ethernet (PoE) systems. Solicit and measure DC voltage on each pin.



- UTP/STP wiremap
- Fault location
- Toning

Fibe

Power level above reference value

Power level nearing loss limit

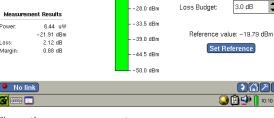
Power level exceeding loss limit

O Copper

Power level good

- Jack identification
- Fiber optic power/loss

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5.0 dBm

-0.5 dBm

-6.0 dBm

-115 dBm

-17.0 dBm

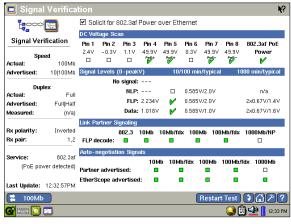
-22.5 dBm

Fiber optic power measurement

Connectivity and configuration

- Signaling
- PoE troubleshooting

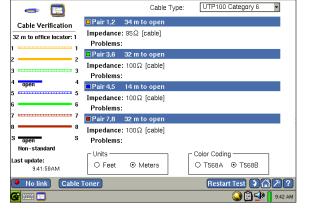
Ľ, DC Vo 100 Pin 3 Pin 1 Signal Verification 0m'v ΟmV 0mV 0m'v 0m∨ 0mV 0mV Om∨ M V V V V V V V 100Mb Signal Le Actual dvertised 10|100Mb No signal: --NLP: ----0.585V/2.0V n/a Duplex FLP: 1.568V 0.585V/2.0V 2x0.67V/1.4V V Ful Actual: Data: 0.784V V 0.585V/1.0V 2×0.67V/1.6V dvertised: FullHalf easured: (n/a) Link Part ner Signaling 802.3 10Mb 10Mb/fdx 100Mb 100Mb/fdx 1000Mb/NF **Rx polarity:** Normal FLP decode: Rx pair: 3,6 Auto-negotist 10Mb 10Mb/fdx 100Mb 100Mb/fdx 1000Mb ervice: ^{802.3} Partner advertised: EtherScope advertised: Last update: 10:39:58AM Restart Test 362 🔁 100Mb 🚰 🚥 💽 🌏 🖹 争 👖 10:40 AM



Power over Ethernet (PoE)

Set Reference **\$6}**2?

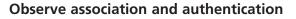




Validate signaling and connectivity







Monitor and record the client-network connection process: association (if wireless), security authentication and dynamic IP addressing (DHCP). Isolate problems to identify what needs repair.

Supported authentication types include IEEE 802.1X (more than 10 EAP types) for LAN and WLAN and WPA and WEP for WLAN.

Association and authentication

- WLAN association
- Security authentication

🗹 Default 🍀

Advanced Options

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DHCP addressing

🗖 Wireless Instrument Settings – Connection Log 🗖 Wireless Instrument Settings – Wireless Security 2 SSID: 🌞 FNET_Mrkt_Gpod 0.00 80211: Starting to scan for access points with ESSID: FNET_ 4.76 80211: Found AP: BSSID 00:14:bf:27:9e:76 CHAN 11 Security 4.78 80211: Sending Authentication Request: Open System Authentication Type: 802.1x TCP/IP TCP/IP 4.79 80211: Authenticated OK 4.83 80211: Sending Association Request 4.89 80211: Associated OK Wireless Security Mireless Security EAP Type: PEAP MS-CHAP-V2 -Connection Log Connection Log 4.91 DRIVER: Connected to AP: UNSECURE Radio Radio 7.58 DHCP: Sent Discover: Instrument Security Username Instrument Security 7.77 DHCP: Received Offer: IP 10.248.1.157 SERVER 10.248.1.30 N General General 7.77 DHCP: Requesting Address: IP 10.248.1.157 SERVER 10.248 Password: Authorization Authorization 7.92 DHCP: ARPing the offered address: 8.56 DHCP: Received Offer: IP 10.248.1.101 SERVER 10.248.1.19 N Wireless Proble Wireless Proble Advanced 9.41 DHCP: Server Acknowledged the Request: IP 10.248.1.157 S 10.03 IP Address set: IP 10.248.1.157 NETMASK 255.255.0 Alternate ID: Options Options 10.03 DHCP: ARP timeout, address is available: Version Version □ Validate authentication server's certificate using Scan 48a Report Scan 4b/g Apply Delete SSID Add SSID **(2) 🖂 1999** Q 🗟 🕩 👖 4:16 PM 🙆 📟 🔛 🚺

Wireless association

Discover what and where

Discover up to 1000 devices automatically as soon as you connect to the network. Extract switch port/slot and VLAN information showing you where users are connected. Save time troubleshooting connection and congestion issues.

Managing VLANs has never been easier. See the switch interfaces that comprise each VLAN. In addition,

"nearest switch discovery" speeds troubleshooting by identifying the slot and port to which you are con-

EXTREM-a20300

CISCO-0857ff

INTEL-cf1f4a

TYAN-27b729

CISCO-eeff33

DELL-dbb1ca

INTEL-52e91d

FLUKE-a03053

Report

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DELL -589f00

FLUKE-a02a4d

Discovery

Devices and details

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- Networks
- VLANs
- Switch interfaces and port stats

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nected while	e "r	netw	ork disc	overy"	organiz	es dev	ices b	y IP sul	onet a	nd d	omain.	
🔳 Device Dis	;co\	/ery					•	Find	ķ ?	E) '	VLAN Disco	very
			Name		IP Address	$\nabla \bullet_{\mathbf{Y}}$	MAC Ad	ddress		×	Ľŧ,	VLAN
			tac-dgw-0	1	010.248.001.	.001	CISCO-	7ee185	1			⊡ ٿ
All Devices			tac-aswSu	mmit–03	010.248.001.	.004	EXTREM	1-b71a10	=		VLAN 4	Ð
ध्-Total Devices			Cisco7200	VXR-bot	010.248.001.	.006	CISCO-	79d006		Swite	:hes/Routers:	- •
4. Iotal Devices	Devices 52	- 8	tac-agwL3	-01	010.248.001.	.008	CISCO-	da7c09			sw3550-02	⊕
Bouters	F	=	tac-asw35	50-02	010.248.001.	.009	CISCO-	3 e 9400		tac-d	sw4006-01	Ē
Switches	7		tac-dsw40	06-01	010.248.001.	.013	CISCO-	dde4ff				e E
1 Servers				Immit48 010.248.001.015 EXTREM-949e00		Inter	faces: 4	Ē.				

010.248.001.016

010.248.001.029

010/248/001/030

010.248.001.036

010.248.001.039

010.248.001.058

010 248 001 092

010.248.001.098

010.248.001.102

Add device

- G_pod_extreme

- 💷 tac-dsw4006-01

I WIN2KSERVER

E Cisco3800Bottom

______ _____010.248.001.058

ENET-3CD6B643

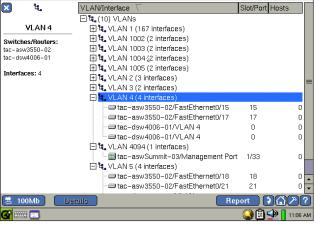
📕 Chris Davis's Desk

AC-SQL-01

FLUKE-1E8185F84 010.248.001.091

26

39



Device discovery

Show IP Address

O Show Switch Info

O Show Properties

O Show MAC

🗟 100Mb 🗎

& ====

NIB SNMP Agents

B Hosts

VLAN discoverv

802.1X authentication

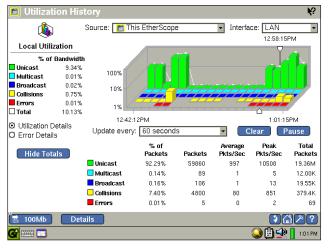
- Switch trace route



Monitor network health

Identify capacity trends and needs. Switch port statistics and trending show steady and bursty traffic, allowing you and your staff to pinpoint problems quickly.

See who the top bandwidth users are at a glance. Select specific frame types such as errors, broadcasts or multicasts. Then see the traffic displayed by protocol, such as IPV4, ARP, spanning tree, IPX and others. Drill-in on suspicious activity, identify the source, and quickly solve the problem.



📕 Top Tall	kers	 MAC(All) O Errors 	O Broadcasts O	D Multicasts 🛛 😽
1001011	ł	🛃 Name	Packets /	Octets
1001011		— G_pod_extreme	3227	787368
MAC (AI	I)	- 🗇 tac-dsw4006-01	2759	1091293
Packets	21.61K	- 📕 010.248.001.154	1642	114378
Octets	3.728M	- 🗏 testnet 123. testnetwork.com	1633	107855
% of Pkts	100%	- 📰 tac-agwL3-01	1527	119436
		- 💷 tac-asw3550-02	1116	446452
IP-V4	53.8%	- 🗇 tac-dsw4006-01	817	130532
ARP	31.1%	- 📰 Cisco3800Bottom	747	70609
Spanning Tree	8.1%	- 📰 tac-aswSummit-03	746	80414
Other	2.8%	- 🗐 TESTNT4	642	64083
IPX CDP	2.4%		608	39168
CDP Cisco VTP	0.7% 0.5%	- 📕 045.028.012.010	603	41000
NETBEUI	0.5%	🗐 WIN-2000-PRO	556	37438
EDP	0.4 %	- 🎚 WIN2KSERVER	488	87572
CDF	0.2.70	- 📰 Cisco7200VXR-bottom	443	59876
		🗐 010.248.001.127	403	77880
		- F_Pod_Summit48	343	43110
		- 📕 TESTNET	330	24690
😸 100Mb	Detai	lis Clear	Report	୲ୖୖୖୖ୲୷ୖ୵ୖ
G 📰 💽			<u></u>) 🗟 🐏 📔 11:25 AF

Utilization history

Top talkers

Measure network performance

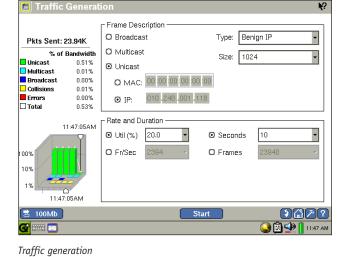
Test performance across your enterprise network. The Internetwork Throughput Option (ITO) enables IP performance testing for deployment and maintenance of enterprise networks. With this feature, you can verify the available bandwidth between two points in a network. Test at rates from 1 Kpbs to 1000 Mbps.

Performance

- Internetwork throughput
- Traffic generation

Understand how your network reacts to various stress levels. Simulate the impact of additional network users or applications by generating traffic.

🛅 Th	roughput			⊙ ⊤able	e 06	iraph 💦				
	È.	Upstream (local to remote) Results								
		Frame Size	Frames Recd	Rate (bps)	Percent Loss					
Test C	onfiguration	64	89.29M	8.927M	99.98M	90.00				
Remote Device		128	50.68M	5.067M	99.98M	90.00				
IP:	010.248.001.125	256	27.17M	2.717M	99.99M	90.00				
		512	14.10M	1.410M	100.00M	90.00				
Speed:	100Mb	1024	7.184M	718.5K	100.0M	90.00				
Duplex:	Full	1280	5.769M	577.0K	100.0M	90.00				
E	- D	1518	4.876M	487.7K	100.0M	90.00				
Frame Description Contents: PRB3		Downstream (remote to local) Results								
Size:	Sweep	Frame Size	Frames Sent	Frames Recd	Rate (bps)	Percent Loss				
Port:	3842	64	9.002M	9.002M	100.8M	0.00				
		128	5.113M	5.113M	100.9M	0.00				
Rate	and Duration	256	2.742M	2.742M	100.9M	0.00				
bps:	1.000G	512	1.421M	1.421M	100.8M	0.00				
Seconds:	60	1024	724.8K	724.8K	100.9M	0.00				
		1280	582.6K	582.6K	101.0M	0.00				
		1518	492.0K	492.0K	100.9M	0.00				
		Elaps	ed Time: 00:	07:26						
2 100	OMb	Co	nfig	Start	Report	>\$} ???				
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Health

- Switch port scanning
- Utilization history
- Protocol statistics
- Top talkers
- Key devices
- Problem log





802.11 a/b/g wireless analysis

Ensure that your network is secure by performing periodic wireless network audits. With the wireless option enabled, scan both 2.4 and 5GHz frequencies, providing the visibility you need to identify, locate and disable rogue access points and unauthorized ad-hoc networks. Wireless EtherScope lists the security settings of all discovered wireless devices and alerts you to potential security problems.

Wireless 802.11 a/b/g

- Channel analysis
- Device discovery
- Network discovery

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- Site survey
- Security scan
- Key devices

Troubleshoot RF coverage and performance issues. Measure key performance metrics such as signal to noise ratio, utilization and retry rates for all a/b/g channels.

🔳 WLAN CH		l de la companya de l	N?
1		Channel: 🖀 6b/g 💌	
		1 10	100
Channel 6b/	g	Signal Strength	
CrossTalk Current Peak	1% 20%	Noise	=
	63dBm 90dBm	Signal vs Noise	
BW Retry Rate	4% 4%	Signal to Noise Ratio	
Crosstalk Rate	1%	Good Packet Rate	
🖀 Access Points 🖾 Bridge Nodes	6 1	Error Packet Rate	
<i>≣</i> Mobile Clients I≓I AdHoc Clients	24 0	Retry Packet Rate	
		CrossTalk Packet Rate	
		Good Octet Rate	-
		Report	
G 📟 🗔		🔾 💭 🗒 🗉	🕑 🚺 10:08 AM

🗖 Security Scan 🛃 Name SSID 🔮 • - 🝠 Intel – 1 bb2... FNE... 🛝 Security Scan 📕 00166f434f... [unk... Å 🛥 cap-fp1-d... [hid... 💧 Total 16 -∎≓i Intel-3978... truc... 🛕 ∎≓i Intel-7cf8ff WD... 🛕 ⚠ Unauthorized 🌀 Intel-4478... phlu... 🚹 Access Points 🗐 Intel–5152... phlu... 🛓 0 🏾 🛲 Intel– 1 be8f5 phlu... 🛝 6 – 🝠 Intel– 1220... [unk... 🚹 – 🝠 Intel– 1bb2... FNE... 畣 i≓i AdHoc Clients 2 📷 Intel-3978... truc... 🗃 **G** Unprotected 🛃 Intel-7cf8ff WD... 🔒 - 3 Cisco-86c... phlu... a - 3 Cisco-86c... phlu... a - 3 testnet120... FNE... a - 2 LinkSy-27... FNE... a - 2 Cisco-de2... phlu... a 🖀 Access Points 1 Access Points 0 4 2 ľ≓ľ AdHoc Clients Report _ ?ຝ∕?? 🐊 🗟 🕩 🔋 4:12 PM 20 paga 🔁 🔽

Channel scan

Security scan



Network reports

Document your network with XML-coded reports. Record network attributes, baseline performance, device inventory, a problem log, and switch-port statistics - all in web-viewable files.

Network maintenance

Built-in tools let you review and edit device configurations. EtherScope includes Telnet, SSH Telnet, terminal emulator, FTP, TFTP, CDP Port Reporter and a web browser so you can leave your notebook PC on your desk.

Diagnose problems from anywhere via the web

EtherScope fully supports secure remote access and control. So no matter where the problem is, all you need is an active web browser to diagnose remote locations - just ship an EtherScope to that location and instruct a person on the other end to simply plug it in to the local network.

Future enhancements

EtherScope is designed for the future, with a robust processor, plenty of memory, a forward-looking Linux® operating system and a software update procedure that is a snap. As your network and your troubleshooting needs evolve, EtherScope grows with you. Your investment in EtherScope will serve you for years to come.

EtherScope[™] Series II Pro LAN Vision Suite

The EtherScope Series II Pro LAN Vision Suite gives you the fast troubleshooting power and portability of the EtherScope Series II Network Assistant. Teamed with OptiView[™] Console and OptiView[™] Protocol Expert, this suite provides portable network troubleshooting plus monitoring and protocol analysis capabilities.

OptiView Console network monitoring software quickly discovers and continuously monitors network devices while documenting their connectivity. With one look at the clearly organized data, you can quickly identify where the problem is and access the detailed information you need to resolve it quickly.

OptiView Protocol Expert software provides protocol analysis directly through the network interface card in the PC on which it is running. Its expert analysis feature pinpoints problems quickly and suggests corrective action. Extensive seven-layer decodes make it easy to identify and solve the toughest problems on switched segments.

Sep 3 09:09:36 2004							
Name	MAC Address	IP Address	Properties	Switch	Slot/Port	VLAN	
010.000.004.001	PRIMRY- 06c588	010.000.004.001					
tacvision2	LITEON- 1c7b1a	010.248.001.110		Catalyst 2800	9		
010.248.001.233	Linksy-580c95	010.248.001.233		TAC_C-pod	2	100	
WIN2KSERVER	INTEL-cf1f4a	010.248.001.030	DHCP,DNS	TAC_C-pod	2	100	
010.248.001.116	INTEL-cf17e1	010.248.001.116		Cisco1900_JT	1		
TESTNET	INTEL-cf13dd	010.248.001.106		TAC_C-pod	2	100	
WIN-2000-PRO	INTEL-bcc7a4	010.248.001.103		TAC_C-pod	2	100	
CONCORD	INTEL-9f00ce	010.248.001.134					
TAC-QGF330DGIE2	INTEL-751f5a	010.248.001.111		Catalyst 2800	10		
SIMULATION_SERV	INTEL-7505ab	010.248.001.089	MB	TAC_C-pod	9	100	
W2K3SERVER	INTEL-52e91d	010.248.001.098		TAC_C-pod	2	100	
NPIC63722	HP-c63722	010.248.001.099		TAC_C-pod	2	100	
Catalyst 2800	GrdJun-e82c53	010.248.001.195		TAC_C-pod	9	100	
010.248.001.100	FLUKE-c00074	010.248.001.100					

EtherScope™

Network reports

FLUKE

networks.



EtherScope Series II Pro LAN Vision Suite

Network SuperVision Gold Support

Sign up for our Network SuperVision Gold Support plan and you'll enjoy privileges to protect and add value to your equipment. These include unlimited 24x7 technical assistance and an exchange unit at no cost in the event something happens to your unit. Support also includes web based training, unlimited access to the knowledgebase, product discounts and "members only" promotions.

See www.flukenetworks.com/goldsupport for details.





EtherScope Series II Network Assistant Specifications

General specification	ns						
Weight, with battery	0.86 kg (1.9 lb)						
Dimensions	19.1 x 15.2 x 4.4 cm (7.5 x 6.0 x 1.75 in)						
Display	LCD touch screen, 640 x 480 pixels, TFT (active) color panel, touch pad						
LED indicators	6 (including power LED)						
Power							
Battery	Lithium Ion 7.2V DC (nominal), 4.2Ah, removable/rechargeable						
Battery life	4 hr typical, 10 hr in standby mode						
External AC adapter/ battery charger	AC input: 90 to 264 V ac, 48 to 62 Hz; 1.5 A DC output: 15 V dc, 1.2 A (isolated output)						
Ports							
Communication and accessory ports	1 USB, 1 PCMCIA/Cardbus (PC Card type II), 1 SFP cage, 1 Compact Flash (Card Type I/II), 1 DB-9 serial, headphone jack, microphone jack, Kensington lock receptacle						
Network analysis port	RJ-45 10/100/1000 BASE-T Ethernet (must be enabled)						
Environmental and sa	fety						
Operating temperature	0° to +40°C (32° to 104°F) with up to 95% rela- tive humidity						
Storage temperature	-20° to +60°C (-4° to 140°F)						
Shock and vibration	Meets requirements of MIL-PRF-28800F for Class 3 equipment						
Safety	CSA Canada and United States, CE, FCC Part 15 Class A, C-TICK N10140; UL and CSA approvals for universal AC adapter.						
EMC	Complies with EN61326, Class A, Criteria C						
Copper media (LAN/F	ro models)						
Cable types	Unshielded twisted pair LAN cables (100 and 120 Ohm UTP), Foil-screened twisted pair LAN cables (100 and 120 Ohm ScTP)						
Cable length	1 to 305 m (3 to 1000 ft), accuracy dependent upon the cable type selected						
Length resolution	\pm [5% of reading + 1 m (3 ft)], with open, shorted, with wire map adapter, or terminated with reflection \geq 20%						
Receive level	100 to 5000 mVp-p						
Datalink signal	500 to 4000 mVp-p						
Power over Ethernet (PoE)	Solicit for IEEE 802.3af PoE, measure DC voltage (mV) on each pin, remove solicitation						
Measuring terminated							
that are terminated in on a hub, switch or NI	feature tests the individual twisted-pairs of a cable to most equipment vendor's Ethernet ports such as IC. All cable tests other than WireView wire map and perational in the presence of datalink signal.						
Wiremapper/office loca	ator compatibility						
	of shorts, opens, and connector miswires. Compatible 'ireView wire map adapter/office locator.						
Fault tolerance							
a maximum of 100 vol	nnection on the analyzer is designed to withstand ts. The RJ-45 connection is not for connection of ms and should only be connected to the public phone						

network through regulatory agency-compliant modem devices.

Fiber optic power meter (LAN/Pro models)								
The analyzer supports the Fluke Networks DSP-FOM optical power meter. Connection to the DSP-FOM is through the RF-45 Ethernet connection.								
Internetwork Throughput	Option (option for LAN/Pro models)							
Compatible remote device	OptiView v4 Integrated Network Analyzer, EtherScope, EtherScope Series II, OneTouch Series II							
Frame content	All Os, all 1s, alternation 1s and Os, Pseudo Random Bit Sequence (PRBS)							
Frame size	64, 128, 256, 512, 1024, 1280, 1518, sweep of all sizes							
Rate (bps)	672 to 1000 M (max. rate using two EtherScopes)							
Duration (s)	1 to 64,800 (18hr)							
Results	Frames sent, received, rate and percent loss for both upstream and downstream directions							
Results format	Tabular, graphical, xml-based report							
Traffic generator (include	d with Internetwork Throughput Option)							
Traffic type	Broadcast, multicast or unicast							
Frame type	Benign Ethernet, Benign LLC, NetBEUI, Benign IP, IP/ICMP Echo, IP/UDP Echo, IP/UDP Discard, IP/UDP Chargen, IP/UDP NFS, IP/UDP NetBIOS							
Frame size	64, 128, 256, 512, 1024, 1280, 1518							
Rate	Utilization (%): >0 - 100 Frames/second: 1 - 1488095							
Duration	Seconds: 1 – continuous Frames: 1 – continuous							
Wireless LAN Adapter Car	d (Wireless/Pro models)							
Specification compliance	IEEE 802.11a, 11b, 11g							
Certifications	FCC part 15, Telec, CTICK, ETSI, EN301893, EN60950							
Interoperability	WECA compliant							
Interface	32-bit Cardbus							
Outdoor operating range	Up to 515 m (1690 ft)							
Indoor operating range	Up to 85 m (279 ft)							
Data rate	802.11a: up to 54 Mbps 802.11b: up to 11 Mbps 802.11g: up to 54 Mbps							
Output power	18 dBm peak power							
Infrastructure mode	BSS							
Fiber Optic Transceiver (o	ption for LAN/Pro models)							
Ethernet rate	1000Mbps							
Туре	Small Form-factor Pluggable (SFP)							
Connector	Duplex LC							
Security								
Authentication types	LAN: 802.1X, WLAN: 802.1X, 802.11i, WEP, WPA, WPA2							
EAP types	TLS, GTC, MD5, MS-CHAP-V2, LEAP, PEAP-GTC, PEAP-MD5, PEAP-MS-CHAP-V2, PEAP-TLS, TTLS- PAP, TTLS-CHAP, TTLS-MS-CHAP, TTLS-MS-CHAP- V2, TTLSEAP-MD5, TTLS-EAP-GTC, TTLS-EAP-MS- CHAP-V2, TTLSEAP-TLS							



Ordering Information

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Model	10/100/1000 twisted pair	1000 Mbps fiber optic	802.11a/b/g wireless	ITO	PE	0VC—500	InterpretAir	Contents
ES2-LAN	•							LAN analyzer Mainframe, rechargeable Li-Ion battery pack (installed), protective holster, carrying strap, AC adapter/battery charger, remote wire map (WireView #1), 64MB CompactFlash® card, patch cable, RJ-45 coupler, CD containing user manuals and other useful files, carrying case
ES2-LAN-SX	•	•						LAN analyzer, SX Fiber ES2-LAN plus SX Fiber Option
ES2-LAN-SX-I	•	•		•				LAN analyzer, SX Fiber, ITO ES2-LAN plus SX Fiber Option and Internetwork Throughput Option (ITO)
ES2-WLAN			•					Wireless LAN analyzer ES2-LAN plus Cardbus WLAN adapter (note: only wireless analysis enabled)
ES2-PRO	•		•					LAN and Wireless LAN analyzer ES2-LAN plus Cardbus WLAN adapter
ES2-PRO-I	•		•	•				LAN and Wireless LAN analyzer, ITO ES2-PRO plus Internetwork Throughput Option
ES2-PRO-SXLX-I/S	•	•	•	•				LAN and Wireless LAN analyzer, SX and LX Fiber, ITO, accessories kit ES2-PRO plus SX Fiber Option, LX Fiber SFP, Internetwork Throughput Option (ITO), replacement battery, external battery charger, USB mini keyboard, WireView outlet IDs #2 - #6 and large carrying case.
ES2-PRO-PE	•		•		•			Pro LAN Vision Suite/PE ES2-PRO plus Protocol Expert software package
ES2-PRO-OVC	•		•			•		Pro LAN Vision Suite/OVC ES2-PRO plus OptiView Console 500 node software package
ES2-PRO-OVC/PE	•		•		•	•		Pro LAN Vision Suite EtherScope Pro LAN Vision Suite, includes ES2- PRO, Protocol Expert and OptiView Console 500 node software packages
ES2-PRO-INTAIR	•		•				•	LAN and Wireless LAN analyzer and InterpretAir WLAN Survey Software suite ES2-PRO plus InterpretAir WLAN Survey Software
ES2-PRO-IA-AA	•		•				•	LAN and Wireless LAN analyzer, InterpretAir WLAN Survey and AnalyzeAir Wi-Fi Spectrum Analyzer software suite
ES2-LAN-CIQ100	•							LAN analyzer and CableIQ 100 kit ES2-LAN plus CableIQ Qualification Tester



Side Interfaces – RS-232C serial port, USB port, microphone and headphone jacks, Kensington lock (opposite side).



Top Interfaces – 10/100/Gigabit twisted pair copper port, Gigabit Fiber SFP transceiver, CompactFlash® memory card and 802.11a/b/g WLAN adapter.

Options & Accessories

Model	Option
ES-WLAN-OPT	802.11a/b/g wireless upgrade option for all LAN-only models
ES-LAN-OPT	10/100/1000 LAN upgrade option for all Wireless LAN- only models
ES2-SX-OPT	SX Gigabit Fiber Option for all LAN-enabled models
ES-ITO-OPT	Internetwork Throughput Option for all LAN- enabled models
Model	Accessory
ES2-SX	SX Gig Fiber SFP Transceiver (850nm VCSEL, replacement item)
ES2-LX	LX Gig Fiber SFP Transceiver (1310nm FP laser, SX Fiber Option required)
ES2-ZX	ZX Gig Fiber SFP Transceiver (1550nm DFB laser, SX Fiber Option required)
ES-ACCY-KIT	Kit containing an EtherScope battery, external battery char- ger, AC charger and line cord, USB mini keyboard, WireView identifiers #2 - #6, and a larger carrying case
DSP-FTK	Fiber optic test kit, 850nm and 1300nm LED source and 850/1300/1550 nm meter
ES-BATTERY	Replacement battery
ES-BATT-CHG	External battery charger
WIREVIEW 2-6	Remote identifiers 2 – 6
OPVS2-KB	Mini USB keyboard
ES-WCARD	Replacement WLAN card (hard- ware only)
DTX-ACUN	AC charger, universal
OPV-POE	Power Over Ethernet adapter
MT-8200-63A	IntelliTone 200 Probe
MT-8200-53A	IntelliTone 100 Probe
944806	Null modem cable (DB9)

N E T W O R K S U P E R V I S I O N

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