

# EtherScope™ Series II

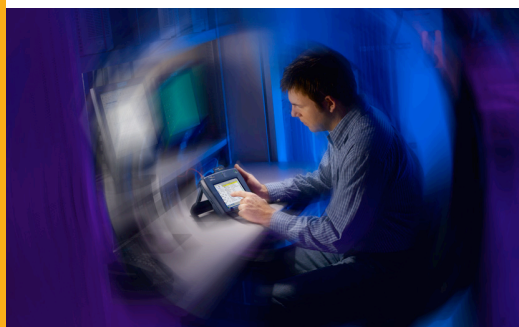
## Network Assistant

### 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 ITO/RFC 2544 Option 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.

## 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.

## Validate signaling and connectivity

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.

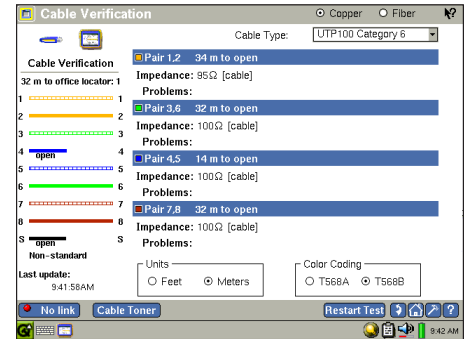
Emulate a powered device (PD) to troubleshoot problems with 802.3af Power over Ethernet (PoE) systems. Solicit and measure DC voltage on each pin.

### Infrastructure cabling

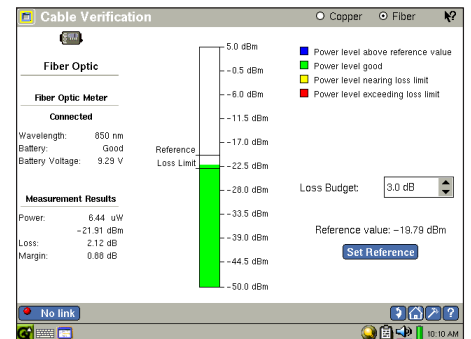
- UTP/STP wiremap
- Fault location
- Toning
- Jack identification
- Fiber optic power/loss

### Connectivity and configuration

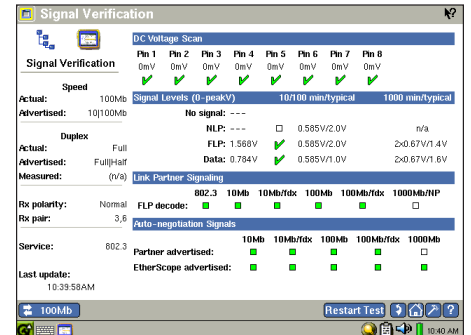
- Signaling
- PoE troubleshooting



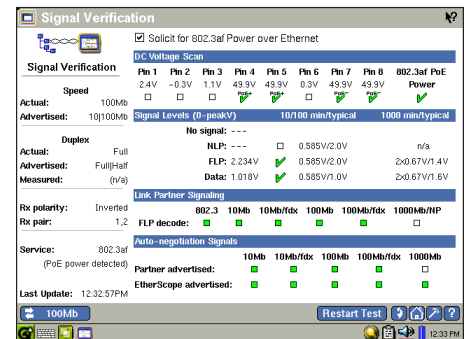
Cable verification



Fiber optic power measurement



Signaling



Power over Ethernet (PoE)

## Observe association and authentication

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.

## 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.

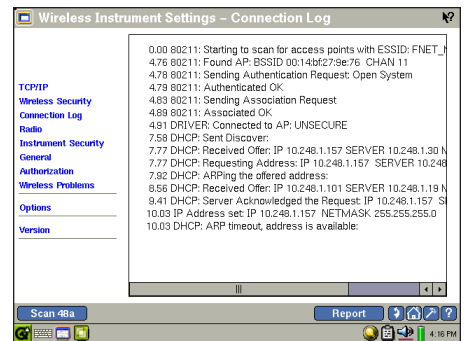
Managing VLANs has never been easier. See the switch interfaces that comprise each VLAN. In addition, “nearest switch discovery” speeds troubleshooting by identifying the slot and port to which you are connected while “network discovery” organizes devices by IP subnet and domain.

### Association and authentication

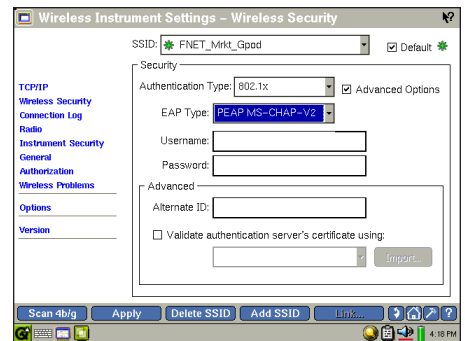
- WLAN association
- Security authentication
- DHCP addressing

### Discovery

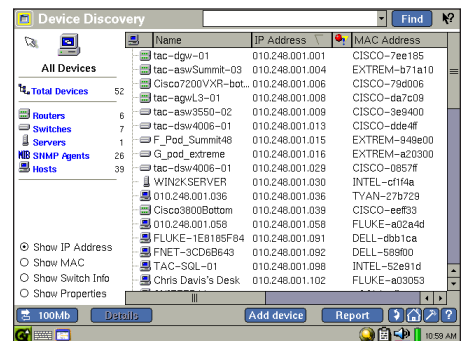
- Devices and details
- Networks
- VLANs
- Switch interfaces and port stats
- Switch trace route



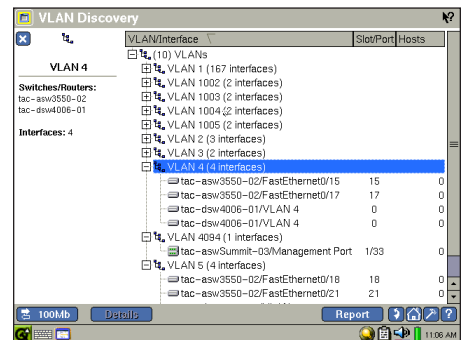
Wireless association



802.1X authentication



Device discovery



VLAN discovery

## 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. "

## RFC 2544 performance testing at Gigabit rates

Network managers are adopting elements of the IETF RFC 2544 to provide a standard methodology for characterizing LAN and WAN link performance. EtherScope features both RFC 2544 tests and ITO tests for characterization and verification of link performance at up to Gigabit speeds in both upstream and downstream directions. Advantages of EtherScope's implementation of RFC 2544 include control over test configurations and automation for testing efficiency.

Select between three RFC 2544 tests: throughput, latency and frame loss. Run only the test(s) of interest to you. For each test, use the default configuration or customize the test parameters to observe how traffic differences affect link performance. User-definable parameters common to all tests include frame content, frame size, layer 2 802.1p class of service priority, layer 3 IP type of service (TOS), test duration and test rate. In addition, test-specific parameters include measurement accuracy for throughput testing, iterations for latency testing and step size and failure threshold for loss testing. By adjusting these parameters,

## Health

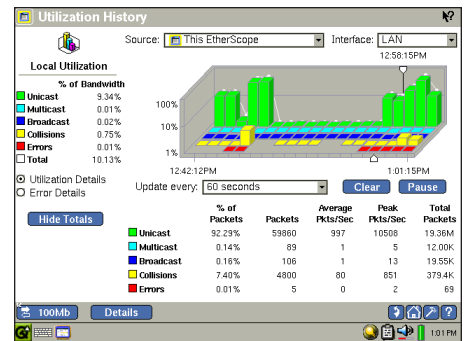
- Switch port scanning
- Utilization history
- Protocol statistics
- Top talkers
- Key devices
- Problem log

## Performance

- Internetwork throughput
- Traffic generation
- RFC 2544 testing

you can also control the time required for a test to complete. For example, very small changes in accuracy can dramatically cut test times, by more than one hour, to reduce testing expenses and make RFC 2544 testing more predictable.

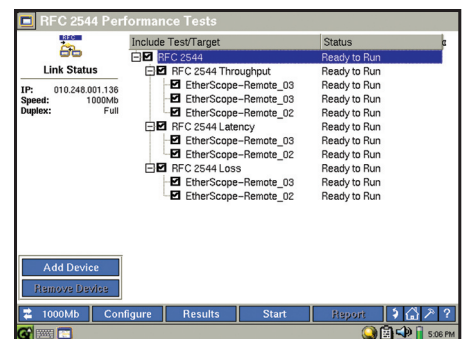
Construct a test suite consisting of one or more RFC 2544 tests. For each RFC 2544 test, specify the LAN or WAN link(s) to test by defining the target EtherScope device(s). Test the same link multiple times with varying configurations to observe performance differences. Test multiple links from a single destination using multiple EtherScope remotes. Click the Start button once to run all the tests in a single, automated operation. View and save tabular and graphical results to document link performance.



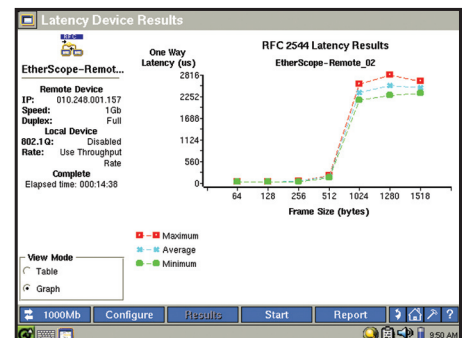
Utilization history



Top talkers



RFC 2544 test suite



RFC 2544 results



# 802.11 a/b/g wireless analysis

## Troubleshoot RF coverage and performance issues

### RF measurements

Is co-channel interference causing a problem? Is signal strength too low to support all users? EtherScope continuously scans 2.4GHz and 5GHz frequencies, providing visibility into wireless LAN coverage and performance. Choose the measurement you wish to view using drop down menus that include signal strength, signal to noise ratio, utilization, and several other useful measurements. Quickly determine if your access points are configured for the appropriate channels and that the RF transmit power is appropriate for your environment.

### Network Discovery

Who is using the network, and where are they? Are wireless clients congregating in one area of the building, dragging down wireless network performance? Wireless EtherScope quickly identifies all wireless network access points and discovers all associated clients. Visibility into wireless network utilization helps you make better decisions about access point placement and expansion to support actual usage patterns.

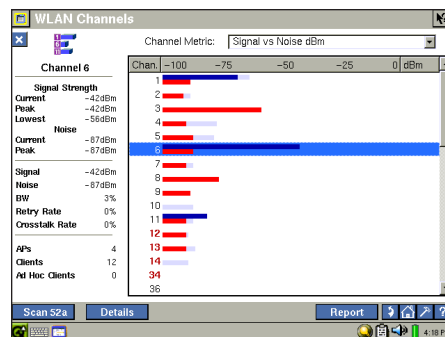
### Identify top talkers

See who the top bandwidth users are at a glance. Use Wireless EtherScope to identify the busiest access points and the most demanding wireless clients.

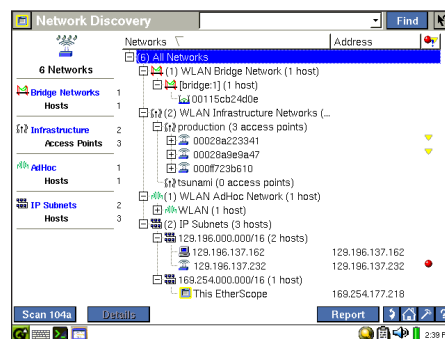
Drill-in to view wireless LAN metrics such as FCS errors, crosstalk, and retries. Identify suspicious activity, then identify the source and solve the problem.

### Wireless 802.11 a/b/g

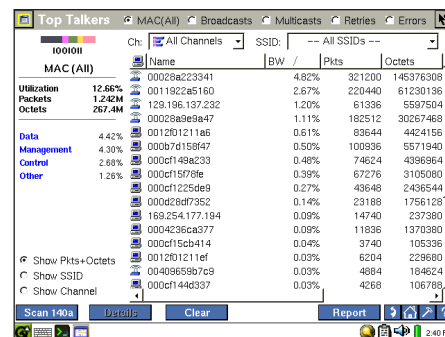
- Channel analysis
- Device discovery
- Network discovery
- Site survey
- Security scan
- Key devices



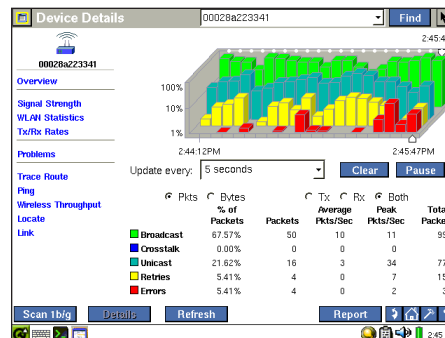
Channel scan



Network discovery



Top talkers



Device details

## Wireless security and policy enforcement

### Discover unauthorized devices

Wireless security is a top concern, and wireless security policies are difficult to enforce. Use Wireless EtherScope to perform periodic audits of the wireless environment. Wireless EtherScope automatically discovers rogue access points, unauthorized wireless bridges, mobile clients and ad-hoc networks, enabling quick response and resolution.

### Locate rogue devices

Wireless EtherScope features Security Scan and Locate to identify rogue devices and hunt them down. Unauthorized devices are automatically discovered and identified on the EtherScope home page under Security Scan. Select a device from the list then use the Locate feature to track down its physical location. An external, directional antenna speeds location by 75%.

### Verify authentication and encryption

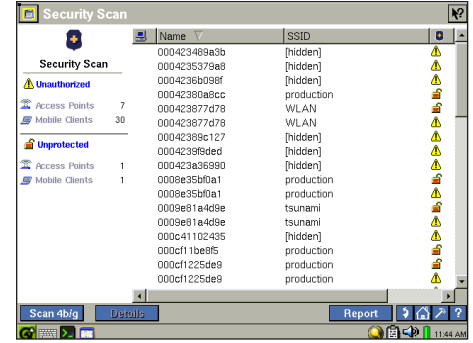
Wireless EtherScope discovers whether infrastructure and client devices are employing the appropriate authentication mechanism. EAP (Extensible Authentication Protocol) authentication is tested and monitored using EtherScope's login test tool. Using EtherScope, force a wireless client to disassociate from an access point, and monitor the client and access point EAP exchange as the client re-authenticates on the network. Discover if, where, and when the EAP authentication process breaks down.

## Planning wireless network expansion

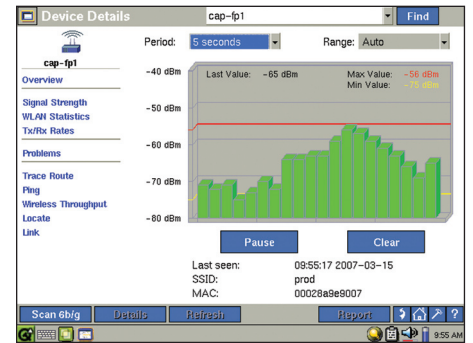
### Site survey

Has the RF environment changed since the access points were installed? Is wireless network coverage sufficient to support all users? Does the wireless network provide ubiquitous coverage sufficient to support seamless roaming?

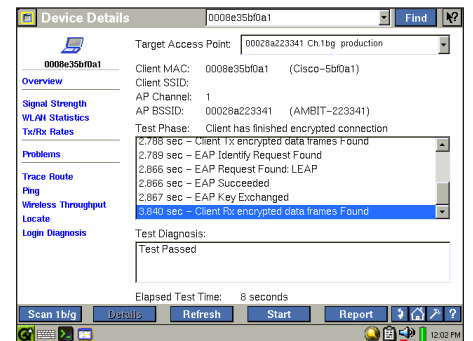
Use Wireless EtherScope to capture baseline RF coverage data immediately after the wireless infrastructure is installed, then compare historical data to periodic survey data over time. Use this information to make minor adjustments to wireless access point transmit power, relocate access points, or add new access points before RF environmental changes impact your user community.



Discover unauthorized devices



Locate rogue devices



Verify authentication and encryption

Site Survey	SSID	BSSID	Ch	Signal
Current Survey	[bridge-1]	00115cb24d0e	11	-74dBm
Location	[hidden]	000f723b610	1	-80dBm
Surveys	production	0011922a5160	6	-63dBm
Total APs	production	00028a9e9e47	6	-36dBm
New APs	production	00028a223341	1	-68dBm
Missing APs	tsunami	0009e81a4d9e	6	-20dBm

Site survey

### 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.

## 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 unlimited access to the knowledgebase, product discounts and "members only" promotions. See [www.flukenetworks.com/goldsupport](http://www.flukenetworks.com/goldsupport) for details.

Name	MAC Address	IP Address	Properties	Switch	Slot/Port	VLAN
010.000.004.001	FD867Y-06c588	010.000.004.001	---	---	---	---
hacvism2	LITEON-1c7b1a	010.248.001.110	---	Catalyst 2800	9	---
010.248.001.233	Lmkxy-580c95	010.248.001.233	---	TAC_C-pod	2	100
WINZSERVER	INTEL-cf184a	010.248.001.030	DHCP.DNS	TAC_C-pod	2	100
010.248.001.116	INTEL-cf17e1	010.248.001.116	---	Cisco1900_FT	1	---
TESTNET	INTEL-cf1344	010.248.001.106	---	TAC_C-pod	2	100
WIN-3000-FPO	INTEL-8cc7a4	010.248.001.103	---	TAC_C-pod	2	100
CONCORD	INTEL-960ce	010.248.001.134	---	---	---	---
TAC-QE330DGE2	INTEL-751e5a	010.248.001.111	---	Catalyst 2800	10	---
SIMULATION_SERV	INTEL-7505ab	010.248.001.089	MB	TAC_C-pod	9	100
WZKSERVER	INTEL-52e914	010.248.001.098	---	TAC_C-pod	2	100
NFPC63722	HP-e63722	010.248.001.099	---	TAC_C-pod	2	100
Catalyst 2800	Grdum-e82c53	010.248.001.195	---	TAC_C-pod	9	100
010.248.001.100	FLUKE-e00074	010.248.001.100	---	---	---	---

Network reports

## EtherScope™ Series II Suites

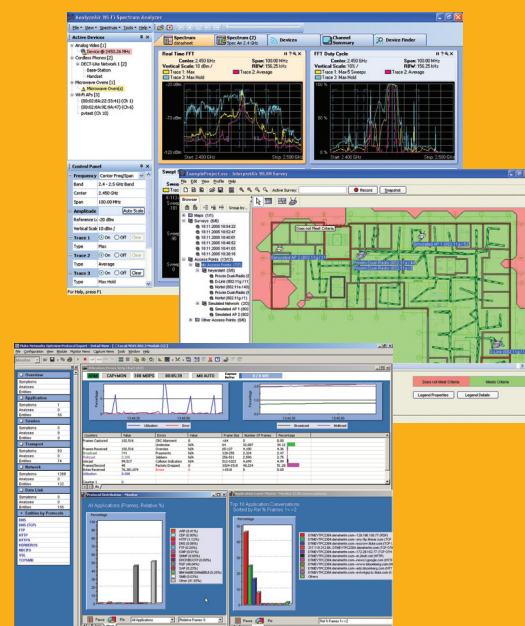
EtherScope is available bundled with complementary tools to expand your network troubleshooting capabilities. These tools run on Windows-based tablet and notebook PCs.

Use InterpretAir WLAN Survey Software to plan, simulate and verify 802.11 wireless LANs. InterpretAir is a wireless site survey tool and much more; it provides visualization of RF health metrics, greatly simplifying WLAN environment analysis and enabling performance tuning.

AnalyzeAir Wi-Fi Spectrum Analyzer detects, identifies and locates RF

interference in 802.11 wireless LANs. AnalyzeAir provides IT professionals with the vision they need into the hidden world of RF, providing them the ability to see the spectrum in a visible and intelligible format.

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.



## Ordering Information

Model	10/100/1000 twisted pair	1000 Mbps Fiber optic	802.11a/b/g wireless	IT0/RFC 2544	Protocol Expert	InterpretAir	AnalyzeAir	Contents
ES2-LAN-SX/I	•	•		•				<b>LAN analyzer, SX Fiber, IT0/RFC 2544</b> Mainframe, rechargeable Li-Ion battery pack (installed), protective boot, 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 plus SX Fiber Option and Internetwork Throughput Option (IT0)
ES2-PRO-SX/I	•	•	•	•				<b>LAN and Wireless LAN analyzer, SX Fiber, IT0/RFC 2544</b> ES2-LAN-SX/I plus 802.11a/b/g Cardbus adapter and external directional antenna.
ES2-PRO-SXLX-I/S	•	•	•	•				<b>LAN and Wireless LAN analyzer, SX and LX Fiber, IT0/RFC 2544, accessories kit</b> ES2-PRO-SX/I plus, LX Fiber SFP, replacement battery, external battery charger, USB mini keyboard, WireView outlet IDs #2 - #6 and large carrying case.
ES2-PRO-SX/I-PE	•	•	•	•	•			<b>Protocol Expert Suite</b> ES2-PRO-SX/I plus Protocol Expert software package for laptop/tablet PC
ES2-PRO-SX/I-IA	•	•	•	•		•		<b>InterpretAir WLAN Survey Software Suite</b> ES2-PRO-SX/I plus InterpretAir WLAN Survey Software for laptop/tablet PC
ES2-PRO-SX/I-AA	•	•	•	•			•	<b>AnalyzeAir Wi-Fi Spectrum Analyzer Suite</b> ES2-PRO-SX/I plus AnalyzeAir Wi-Fi Spectrum Analyzer for laptop/tablet PC
ES2-PRO-SX/I-IA-AA	•	•	•	•		•	•	<b>InterpretAir and AnalyzeAir Suite</b> ES2-PRO-SX/I plus InterpretAir and AnalyzeAir solutions



**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.

### NETWORK SUPERVISION

Fluke Corporation  
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Fluke Networks operates in more than 50 countries worldwide. To find your local office contact details, go to [www.flukenetworks.com/contact](http://www.flukenetworks.com/contact).

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## Options & Accessories

Model	Option
ES-WLAN-OPT	802.11a/b/g wireless upgrade option for all LAN-only models, enables WLAN Option and includes FNET-EXTANT and FNET-WCARD.
ES-LAN-OPT	10/100/1000 LAN upgrade option for all Wireless LAN-only models, enables LAN Option.
ES2-SX-OPT	SX Gigabit Fiber Option for all LAN-enabled models, enables Fiber Option and includes ES2-SX.
ES-ITO-OPT	Internetwork Throughput Option for all LAN-enabled models, enables ITO Throughput Test, Traffic Generator and RFC 2544 tests.
Model	Accessory
ES2-SX	SX Gig Fiber SFP Transceiver (850nm VCSEL, replacement item, SX Fiber Option required)
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 charger, 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
DTX-ACUN	AC charger, universal
OPV-POE	Power Over Ethernet adapter
MT-8200-63A	IntelliTone 200 Probe
944806	Null modem cable (DB9)
FNET-EXTANT-KIT	Kit including 802.11a/b/g radio card with antenna jack and external uni-directional antenna. For EtherScope WLAN or Pro models with the WLAN option enabled.
FNET-EXTANT	External uni-directional antenna. Replacement item.
FNET-WCARD	802.11a/b/g radio card with antenna jack. Replacement item.
ES-SWUGD-V3	EtherScope software upgrade to version 3.0