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Find the *Fluke MetroScope and LinkRunner Duo* at our website: ***Click HERE***

FLUKE networks

NETWORKSUPERVISION



MetroScope™ Service Provider Assistant

Complete SLA testing and IP visibility for installing and troubleshooting Ethernet services.



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As more customers turn to Ethernet, providers are faced with new opportunities and threats. Ethernet service is becoming a commodity. As more services providers offer the same service, prices continue to decline. But, there are opportunities, as well. By offering differentiated services, providers can extract additional revenues. And, keeping customers is much easier if you provide excellent service when things go wrong.

The new MetroScope Service Provider Assistant test set from Fluke Networks can help you in this evolving landscape, with advanced features to help you offer differentiated services and increase customer satisfaction, all while reducing both Capex and Opex costs.



The vision you need to deploy and troubleshoot

Offer differentiated services

Ethernet provides the flexibility to offer packaged services and maximize revenues. With the MetroScope test set, you can define custom tests to match your service offerings. High-accuracy jitter measurements let you offer SLAs for VoIP and IPTV. If you are moving into advanced services such as DNS or email, the MetroScope test set can provide tests to demonstrate SLA compliance for response time for these applications and many more. It can even generate custom reports with your logo as proof of your services to your customer.

Increase customer satisfaction

Taking too long to resolve customer issues not only wastes time and money, it can result in the loss of clients and future revenues. The new MetroScope test set takes advantage of more than a decade of Fluke Networks IP expertise to put unmatched troubleshooting power behind a deceptively simple user interface. Advanced capabilities such as VLAN discovery and monitoring can be accessed with just a screen touch. Use SNMP to query switches and routers, find overloaded ports and pinpoint offending devices. The full VGA color display shows you details which most handheld test sets cannot.

Key features

- **Complete SLA testing at a break-through price**: Gigabit LinkReflector remote tester lets you test links without a second MetroScope test unit. Test as many as seven links for the cost of one alternative test solution.
- **Full VGA color display**: Shows more information so problems get solved faster.
- **Jitter and server response time measurements**: Supports deployment of advanced services including VoIP, IPTV, DNS, and email.
- **Powerful customized scripting for RFC 2544 tests**: Design tests for specialized services, custom pass/fail limits, or fast test times, while ensuring consistent methods and procedures.
- **In-depth traffic monitoring**: Find problems in IP networks fast, whether on the customer or the network side.
- **Active discovery and analysis of networks**: Investigate network and customer devices in-depth, without breaking the network link.

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advanced Ethernet services

Keep costs down

Fluke Networks MetroScope test set's advanced design helps you save money when you buy it and when you use it. A unique, low cost, gigabit LinkReflector remote tester included with the MetroScope Service Provider Assistant Kit lets you perform complete SLA testing without purchasing a second unit. Test as many as seven links for the cost of testing one using alternative solutions. The MetroScope test set is designed for web-based remote control. A technician at a customer site can consult with remote experts within your organization to resolve complex problems. Not only does that save time and money, it means the technician learns more, and, most importantly, the customer's problem is solved that much faster.

- **Remote operation via web browser**: Technicians can get support from expert engineers, without the need for an on-site consultation.
- **Built-in tools for managing network devices**: Leave the laptop at home. The MetroScope test set includes telnet, terminal emulation, FTP, and a web browser.



MetroScope Service Provider Kit

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Flexible testing supports advanced services

Testing the performance of the Ethernet link is critical for verifying service level agreements (SLAs) and as a baseline if troubleshooting is required. The MetroScope Service Provider Assistant provides the essential RFC 2544 testing plus advanced tests such as jitter and server response time. Performance test scripting allows the methods and procedures engineer the flexibility to design tests for specialized services, custom pass/fail limits, or fast test times.

Setup/customized tests

Easy-to-configure performance test scripting allows control of what is tested and how long it takes. Test to a single or numerous endpoints for testing multipoint services. Configurable pass/fail thresholds mean repeatable results with less training. Specify a bandwidth or hunt for lossless throughput rates using the fastest convergence algorithms in the industry.

The MetroScope test set offers the flexibility to set test duration, accuracy, starting bandwidth, specific frame sizes or sweep, and number of endpoints. This allows the method and procedures engineer the freedom in trading off test coverage versus test time. Setting of user-defined bandwidth to an exact expected value allows a single test to confirm an SLA commitment. Test scripts can be saved under a descriptive task name on the built-in CompactFlash® card.

RFC 2544 testing

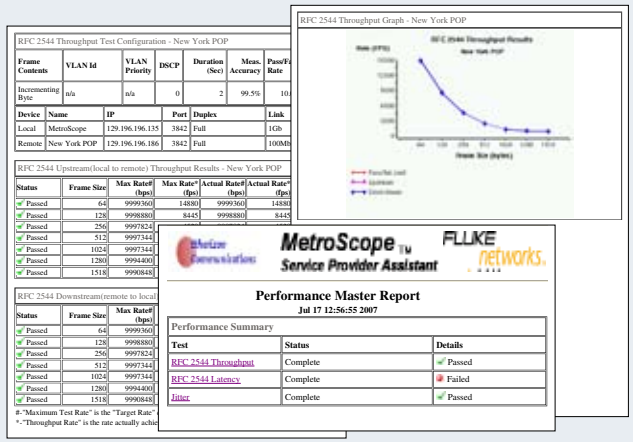
MetroScope Service Provider Assistant performs the RFC 2544 automated test suite at full line rate with recommended frame sizes. Complete support is included for throughput, latency, loss, and back-to-back modes. The test suite can be performed using a variety of peer, reflector, and loop back schemes. All performance tests may be run with RFC sizes or user-selected sizes including jumbo frames and with complete control of VLAN ID and Class of Service.

Jitter testing

Delay-sensitive applications such as VoIP and IPTV require low packet jitter for acceptable operation. While RFC 2544 testing does not include jitter, with Fluke Networks MetroScope Service Provider Assistant, you can test jitter with accuracy in the microseconds.



Customized performance test scripting



XML report provides a thorough record of the test environment and results

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Customized reports

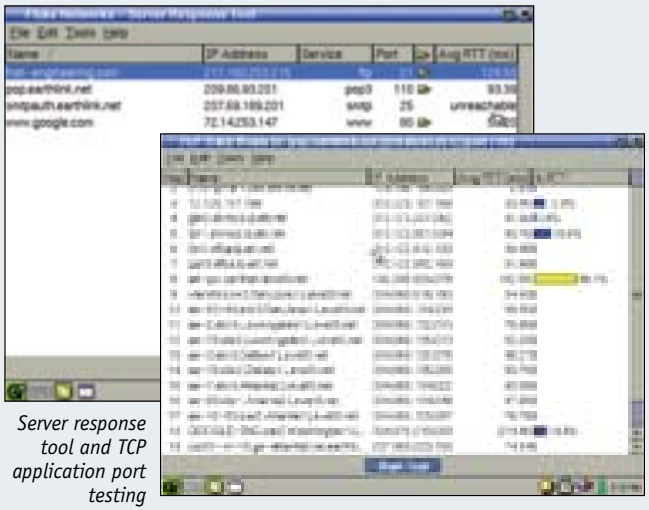
Once the test is completed, a thorough report is created including a record of the test environment. The performance of the link – including throughput, latency, loss, back to back, and jitter – is displayed in both a tabular format for precision and a graphical format for quick interpretation. Flexible XML reports can be saved and viewed locally or remotely via a built-in web server. Saved reports can include your logo and technician job comments. Reports can be transferred to a host system where reporting tools or Microsoft® Excel® can be used to create customer reports.

Server response time

The server response tool tests the TCP application port response of advanced or managed services such as email, DNS, FTP and web. TCP application port testing operates just like a client, removing many of the PING obstacles such as firewalling and low priority ICMP provisioning. The application port responsiveness can be dissected using TCP trace route, which identifies the exact point of performance loss along the route.

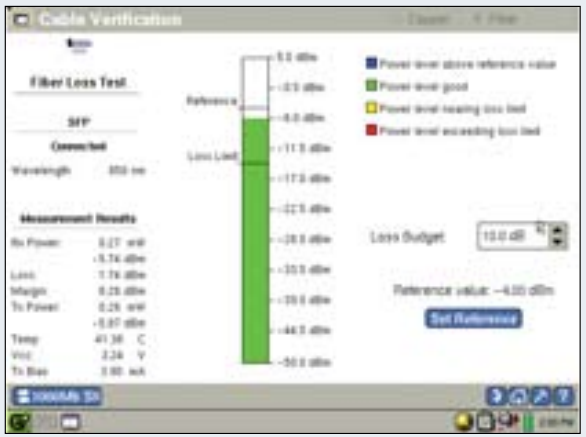
Physical layer and BERT testing

Complete physical layer testing is provided for both copper and fiber. Optical measurements allow monitoring of optical output power, optical input power, as well as temperature, laser bias current, and transceiver supply voltage. UTP Cable Diagnostics include built-in TDR fault location, wire mapping and digital or analog toning. Dark fiber may be qualified for deployment using the built-in FrameBERT™ feature to assure an error-free physical layer.



Server response tool and TCP application port testing

Server Response Tool



Ensure optical power limits are within specification

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Solve customer problems faster

Turning up and certifying services is only half the job. When disputes over services arise, a MetroScope test set can help you isolate them quickly. Fluke Networks MetroScope Service Provider Assistant cuts troubleshooting time by offering a wide range of tests, and by running multiple tests at the same time. If it is a network problem, you can pinpoint it and solve it quickly. If it is a customer problem, you will find it faster, saving time and money, and maybe even shortening your customer's troubleshooting process. Either way, the customer benefits from better service.

VLAN monitoring

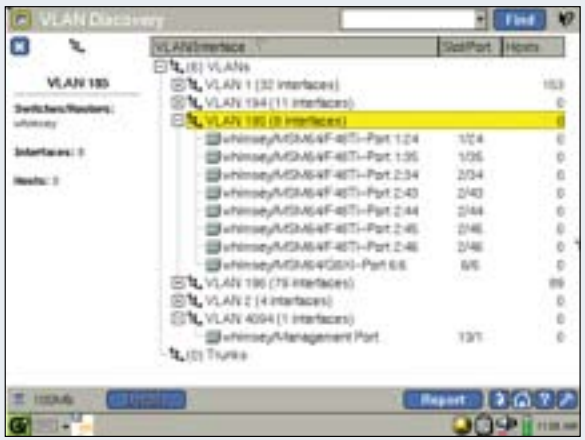
Active and passive VLAN features allow discovery, monitoring and troubleshooting of this critical service delivery mechanism. MetroScope shows VLAN utilization and frame counts to understand the VLAN traffic. Quickly find errors in VLAN configuration of switches or devices in the network. Filter on a VLAN to identify suspicious traffic. See VLAN participants, detect QinQ, and investigate top talkers, protocols, and network health. Trending can be used to understand the traffic type on the VLAN over minutes, or hours, broken down by Unicast, Multicast, Broadcasts and Errors to catch sporadic misuse such as a broadcast storm.

Active troubleshooting

The MetroScope test set provides extensive active analysis that shows what is happening at both ends of the network and in between – without breaking the link. SNMP is used to query switches, routers and other elements, gathering information about what is connected, ongoing traffic levels, instances of errors and discards. Switch Scan allows active monitoring of two switches allowing direct comparison of the border router port and demarcation port, or near and far end equipment. Network discovery organizes devices by IP subnet and domain. Enterprise bottlenecks, congestion points and connections are uncovered using TraceSwitch Route to any element. Any device identified exhibiting unexpected behavior can be viewed in detail, including MAC and IP address, domain, and advertised services, as well as located logically using active troubleshooting tools such as the TraceSwitch Route.



TraceSwitch Route™ shows how devices are interconnected in a switched network.



Active and passive discovery, monitoring and troubleshooting using VLAN discovery

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Monitoring

Utilization history provides trending and statistics to show steady and bursty traffic broken down by traffic or error type, on a single or multiple VLANs. Protocol Statistics hierarchically displays the presence and percentage of traffic by protocol type. Drill in as needed, for example, by expanding TCP, then selecting HTTP, a list of all devices using HTTP on the VLAN is displayed. Top talkers and broadcasters, overall, or by protocol, show who and what is using the bandwidth.



Utilization history provides trending and statistics

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Flexible, cost effective end-to-end testing

MetroScope can be teamed with LinkRunner™ Pro Reflector to offer a low-cost solution for end-to-end testing. A Reflector is an IP loopback solution supporting gigabit speeds based on Fluke Networks' LinkRunner Pro Network Multimeter. This unique device can be placed anywhere – on the customer's network, at a point of presecnce (POP), or at a data center. At a fraction of the cost of a complete test set, the Reflector offers new approaches to troubleshooting.

For testing a single link, just place the LinkReflector at the destination site, and use the MetroScope test set at the local site to control the tests. For testing a distributed network, place Reflectors at multiple sites and test the connection to each from one MetroScope unit.

For extended testing, just leave Reflectors connected at customer sites. And for the most cost-effective solution, place the MetroScope at the Central Office and dispatch technicians with Reflectors. Tests can then be run from the MetroScope. The cost and simplicity of the Reflector allows you to outfit seven field techs at a price comparable to that of a single competing solution. Now, every technician can support Ethernet services, and that means more responsive customer service.

In addition to providing the end-to-end testing capability, LinkRunner Pro is a powerful troubleshooting tool on its own, with the ability to ping key devices, verify link status, provide basic monitoring, and test copper cabling.





Test from one location with MetroScope to a second location with MetroScope



Test from MetroScope in one location to LinkReflector in the field



Test from one location with the MetroScope to multiple LinkReflectors in the field

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Remote operation

Even the smartest technician with the best tool needs help sometimes. MetroScope's secure web remote operation lets them get it instantly from your own experts. Your expert can take control of the MetroScope remotely, view all the results and identify the problem without an expensive truck roll. It is on-the-job-training for the technician, who can follow the whole process on the MetroScope display. Best of all, the customer does not have to wait any longer to get their problem solved.

One tool does it all

Fluke Networks' new MetroScope Service Provider Assistant test set offers additional capabilities you won't find in other handhelds – capabilities that can eliminate the need to bring a laptop along. Use the built-in web browser, terminal emulator or telnet to configure devices or access shared documents. Download files using the built-in FTP capability. Control all these capabilities through a touch-sensitive keyboard on the display or an optional USB keyboard. Embedded Linux® shell programming allows the automation of standard work, data collection, reporting, and support of OAM&P.

Future-ready

MetroScope Service Provider Assistant 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, the MetroScope test set grows with you. Your investment will serve you for years to come.



Consult an expert remotely for advanced troubleshooting



Built-in web browser, terminal emulator and telnet to configure devices.

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General specifications

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)
Carrying case	Rugged carrying case with two removable pockets, camcorder strap and adjustable strand hook

Power

Battery	Lithium Ion 7.2V DC (nominal), 4.2Ah, removable/rechargeable
Battery life	4 hour typical, 10 hour 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)
Auto charger	12V "cigarette lighter" charger with (1.8 m) 6 foot fully extended coiled cord and LED power indication

Ports

Communication and accessory ports	1 USB, 1 PCMCIA/Cardbus (PC Card type II), 1 SFP cage, 1 CompactFlash (Card Type I/II), 1 DB-9 serial, headphone jack, microphone jack, Kensington lock receptacle
RJ-45/Copper port	RJ-45 10/100/1000BASE-T Ethernet
Fiber port	Small Form-factor Pluggable (SFP) in accordance with MSA
Supported SFP modules	1000BASE- LX, SX, ZX, BX, 100BASEFX
SFP connector	Duplex LC

Environmental and safety

Operating temperature	0° to +50°C (32° to 122°F) with up to 95% relative humidity
Battery charging temperature	10° to +40°C (50° to 104°F) with up to 95% relative 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

Fiber optic power measurements

Receive input power Transmit output power Temperature Voltage TX bias current	Real-time access to digital diagnostic monitoring of SFP operating parameters in accordance with the SFP Multi Source Agreement (MSA) and SFF-8472

Copper media

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	± [5% of reading + 1 m (3 ft)], with open, shorted, with wire map adapter, or terminated with reflection ≥ 20%
Receive level	100 to 5000 mVp-p
Datalink signal	500 to 4000 mVp-p
Measuring terminated cables	The Cable Verification feature tests the individual twisted-pairs of a cable that are terminated into most equipment vendor's Ethernet ports such as on a hub, switch or NIC. All cable tests other than WireView wire map and office locator ID are operational in the presence of datalink signal
Wiremapper/office locator compatibility	Detects combinations of shorts, opens, and connector miswires. Compatible with Fluke Networks WireView wire map adapter/office locator
Fault tolerance	The RJ-45 Ethernet connection on the analyzer is designed to withstand a maximum of 100 volts

Performance tests

Compatible remote devices	MetroScope, LinkReflector, EtherScope
RFC-2544 compliant tests	Throughput, latency, frame loss, back-to-back
Additional performance tests	Jitter, FrameBERT
Frame content	All 0s, all 1s, alternating 1s and 0s, Pseudo Random Bit Sequence (PRBS), Incrementing Byte
Frame size	64, 128, 256, 512, 1024, 1280, 1518, RFC-2544 sweep, Jumbo sweep, or user-defined including baby jumbo sizes up to 2048
Application port	User defined
Rate (bps)	Up to 1000 M
802.1Q settings	VLAN Id, priority
IP TOS settings	IP Precedence/TOS parameter, DiffServe Code Point
Throughput settings	Duration, maximum rate, measurement accuracy, pass/fail limits
Latency settings	Duration, rate, iterations, pass/fail limits
Frame loss settings	Duration, rate, step size, pass/fail limits
Back to back settings	Min and Max duration, rate, iterations, pass/fail
Jitter settings	Duration, rate, pass/fail limits
FrameBERT settings	Duration, rate, pass/fail limits

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Server response tool	
TCP port response	DNS name, IP address, port name, port number, port response time
TCP trace route	Hop count, router name, IP address, average RTT and percentage of total RTT

Internetwork throughput option	
Compatible remote device	MetroScope, LinkReflector, OptiView v3 Integrated Network Analyzer, EtherScope, OneTouch Series II
Frame content	All 0s, all 1s, alternating 1s and 0s, Pseudo Random Bit Sequence (PRBS)
Frame size	64, 128, 256, 512, 1024, 1280, 1518, sweep of all sizes
Rate (bps)	12336 to 1000 M
Duration(s)	1 to 64,800 (18 hr)
Results	Frames sent, received, rate and percent loss for both upstream and downstream directions
Results format	Tabular, graphical, xml-based report

Traffic generator	
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

LinkReflector specifications	
Weight	10 oz (311 grams) with batteries installed
Dimensions	5.3" h x 3.1" w x 1.3" d (13.46 cm x 7.87 cm x 3.30 cm)
Operating temperature	10° to +40°C (50° to 104°F) with up to 95% relative humidity
Media access	10BASE-T, 100BASE-TX, 1000BASE-T (IEEE 802.3), and PoE (IEEE 802.3af)
Operating modes	Reflect All, Reflect Targeted MAC, Reflect Targeted IP, Reflect Fluke Networks Test Traffic, Reflect Non-Broadcast, Non-Reflecting (Troubleshooting Mode)
Address setting	Manual or DHCP

LinkReflector troubleshooting mode	
Cable tests	Pair lengths, opens, shorts, splits, crossed, straight through, and cable ID
Tone generator	IntelliTone digital tone: [500 kHz]; analog tones: [400Hz, 1kHz]
Ping	Automatically pings default router and DNS server; can be configured to ping up to 10 additional devices
802.1x	Discovers and gains authentication to 802.1x networks
PoE Detection	Detects and identifies PoE type
Port Verification	Displays make, model, address, slot, and port of the nearest LLDP device
User Interface (UI)	Display: black and white, 2 x 1 in display, link LED; control: five push-buttons for selection of icons and navigation of menus; power: on/off button
Ports	Test ports: RJ45 ports (2): network test port, loop-back wire map port; Application port: mini-USB, Kensington lock receptacle
Power Source	4 AA batteries or optional Li-ion Battery Pack with AC Charger



MetroScope Service Provider Assistant Kit

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Ordering information

Model	Contents
MTSCOPE-KIT	**MetroScope Service Provider Assistant Kit** MetroScope mainframe including 10/100/1000BASE-T and 1000BASE-X SFP Port, rechargeable Lithium-ion battery pack, AC adapter/battery charger, auto lighter charger, remote wiremap adapter, 128 MB CompactFlash® card, documentation CD, carrying case and LinkReflector including 10/100/1000BASE-T port and Lithium-Ion battery pack
MTSCOPE	**MetroScope mainframe** including 10/100/1000BASE-T and 1000BASE-X SFP Port, rechargeable Lithium-ion battery pack, AC adapter/battery charger, remote wiremap adapter, 128MB CompactFlash® card, documentation CD, carrying case
LRPRO-REFLCT	**LinkRunner Pro Reflector** including 10/100/1000BASE-T port WireView Cable ID #1, LinkReflector Connect software CD, USB cable, Getting Started Guide, four (4) AA alkaline batteries
LRPRO-REFLCT-OPT	Reflector option for LinkRunner Pro
LRPRO-LION	Lithium-ion battery pack for LinkRunner Pro
MS-100FX	MS-100FX,Optical Transceiver Module, SFP, DDM, 100BASE-FX,1310
MS-SX	MS-SX,Optical Transceiver Module, SFP, DDM, GIGE, 850
MS-LX	MS-LX, Optical Transceiver Module, SFP, DDM, GIGE, 1310
ES2-SX	1000BASE-SX Gig Fiber SFP Transceiver (850 nm VCSEL)
ES2-ZX	1000BASE-ZX Gig Fiber SFP Transceiver (1550 nm DFP laser)
ES2-LX	1000BASE-LX Gig Fiber SFP Transceiver (1310 nm FP laser)
ES-BATTERY	Replacement battery
ES-BATT-CHG	External battery charger
MS-AUTO-CHG	Auto lighter charger
OPVS-KB	Mini USB keyboard
944806	Null modem cable (DB9)
DTX-ACUN	AC charger, universal

Support

Model number/name	Description
GLD-MS	Covers any MetroScope mainframe, 1 year
GLD-MS-REN	Covers the renewal of any MetroScope mainframe, 1 year

Fluke Networks offers a wide range of integrated systems and solutions for service providers including:

- **Network and Application Performance Monitoring:** Fluke Networks solutions help carriers provide managed services to thousands of customers worldwide.
- **Taps:** A wide variety of tap solutions let you connect where and how you need.
- **Operational Support Systems:** Products and services that help wire line service providers manage existing networks more efficiently and transition to next generation networks.
- **Service Assurance Solutions:** Supporting customer uptime, rapid trouble resolution and the ability to effectively monitor network performance for world-class network operations.
- **Outside Plant Conditioning and Management Solutions:** Qualify your existing copper infrastructure and verify your plant records for ADSL2/2+ and VDSL services.
- **Access Network Test Equipment and Tools:** Award-winning field test products from Fluke Networks that have earned their acclaim where it matters most: on the job.

For more information about our Network SuperVision Solutions, call **800-283-5853** (US/Canada) or **425-446-4519** (Other locations) or email **info@flukenetworks.com** and visit **www.flukenetworks.com/metroscope**

Network SuperVision Gold Support

Sign up for our Network SuperVision Gold Support plan and you will enjoy privileges to protect and add value to your equipment. Privileges 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** for details.

NETWORKSUPERVISION

Fluke Networks
P.O. Box 777, Everett, WA USA 98206-0777

Fluke Networks operates in more than 50 countries worldwide. To find your local office contact details, go to **www.flukenetworks.com/contact**.

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