



TrendMultipro GbE

The Leading Next Generation Network Tester

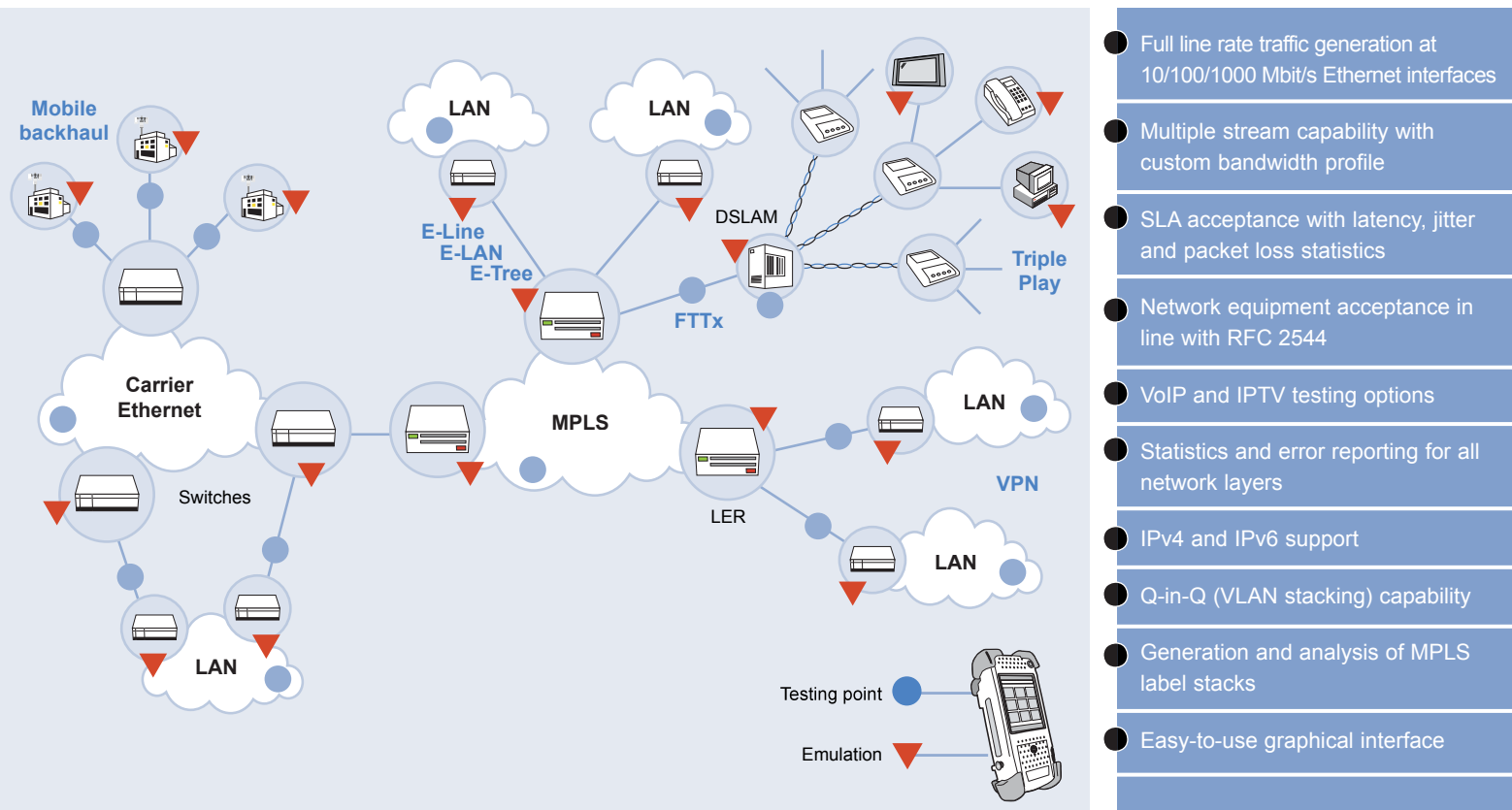


Ethernet is found almost everywhere, in the vast majority of workstations, servers and local area networks, improving the flexibility and granularity of telecom services. Because Ethernet is more efficient and scalable than legacy technologies, many operators now base their services on Ethernet.

Trend Multipro GbE is a modular, hand-held tester for bringing Ethernet-based next-generation networks into service. The main applications of this powerful tester are Service Level Agreement (SLA) verification, IPTV/VoIP troubleshooting and network equipment acceptance.

Trend Multipro is a truly versatile test set. With the tester's Pluggable Interface Module (PIM) for Gigabit Ethernet you can perform measurements at several testing points from the user premises to the core of the network.

Thanks to its modularity and versatility, Trend Multipro is one of the most cost-effective testers on the market. The tester's portability, rugged design and extended autonomy make it a very efficient field tool. Arm your field technicians with Trend Multipro GbE, and you will soon see that the efficiency of your test workflow has greatly improved.



Multiservice Ethernet

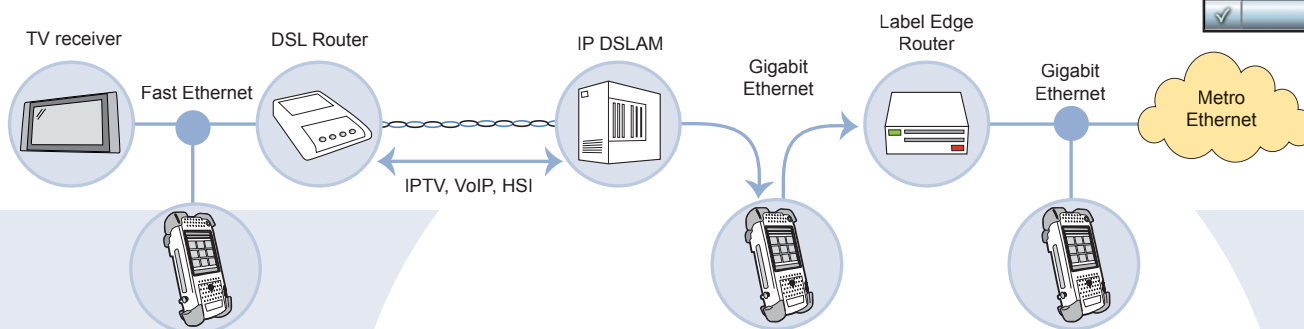
and next-generation networks

Triple Play Testing

Trend Multipro GbE supports IP television, telephony and data service testing over optical and electrical Ethernet and Gigabit Ethernet interfaces.

The Triple Play testing features of Trend Multipro enable you to check the SIP signalling of a VoIP call, measure the connection speed when accessing a remote HTTP server, or preview MPEG-encoded video signals.

These measurements can be performed directly from the customer premises, or from the DSLAM or IP/MPLS core. You can even make measurements on the local loop, thanks to the PIMs specialised in testing the access network.



Trend Multipro is the ideal tool for the installation and maintenance of IP-centric converged networks and applications

VLAN and Q-in-Q

Trend Multipro supports all the popular extensions to the basic Ethernet frame, such as the IEEE 802.1Q (VLAN). This enables you to define and analyse custom streams with configurable VLAN tags and user priority.

You can also measure Q-in-Q frames in line with IEEE 802.1ad. This frame format is used to isolate the subscriber and service provider networks in carrier-class implementations.

Thanks to the VLAN and Q-in-Q frame support, you can connect the tester to virtually any point in your Ethernet network.

MPLS

Multiprotocol Label Switching (MPLS) is one of the key technologies for metro and core multiservice networks.

Trend Multipro GbE uses the RFC 3032 label format, which means that you can connect your tester to any standard MPLS network.

The tester supports double-labelled frames, which means that it is compatible with pseudowires and can analyse applications based on VPLS.

- Field-replaceable SFP interfaces
- Bidirectional monitoring by means of dual optical/electrical ports
- Power over Ethernet (PoE) detection
- Ping and trace route to test end-to-end connectivity
- FTP and HTTP tests for the application layer
- Video stream preview and QoS monitoring



Carrier-Grade Ethernet

installation and troubleshooting

Installation and Bringing-into-Service

Trend Multipro is a powerful tool for the installation and bringing-into-service of Ethernet network equipment and optical or electrical links.

Copper length, impedance, wire connection faults, or optical power and continuity – these are just some of the parameters that you can measure with Trend Multipro. You can also perform BER tests on both optical and electrical interfaces.

Trend Multipro includes RFC 2544 measurements for the benchmarking and commissioning of network equipment. The tester uses combined throughput, latency and frame loss measurements to make sure that the network runs smoothly.



- Diagnostics for UTP copper and optical fibre
- Programmable filters for traffic analysis
- BER tests over Ethernet
- L2 and L3 remote loopback
- VLAN priority bits as per 802.1p

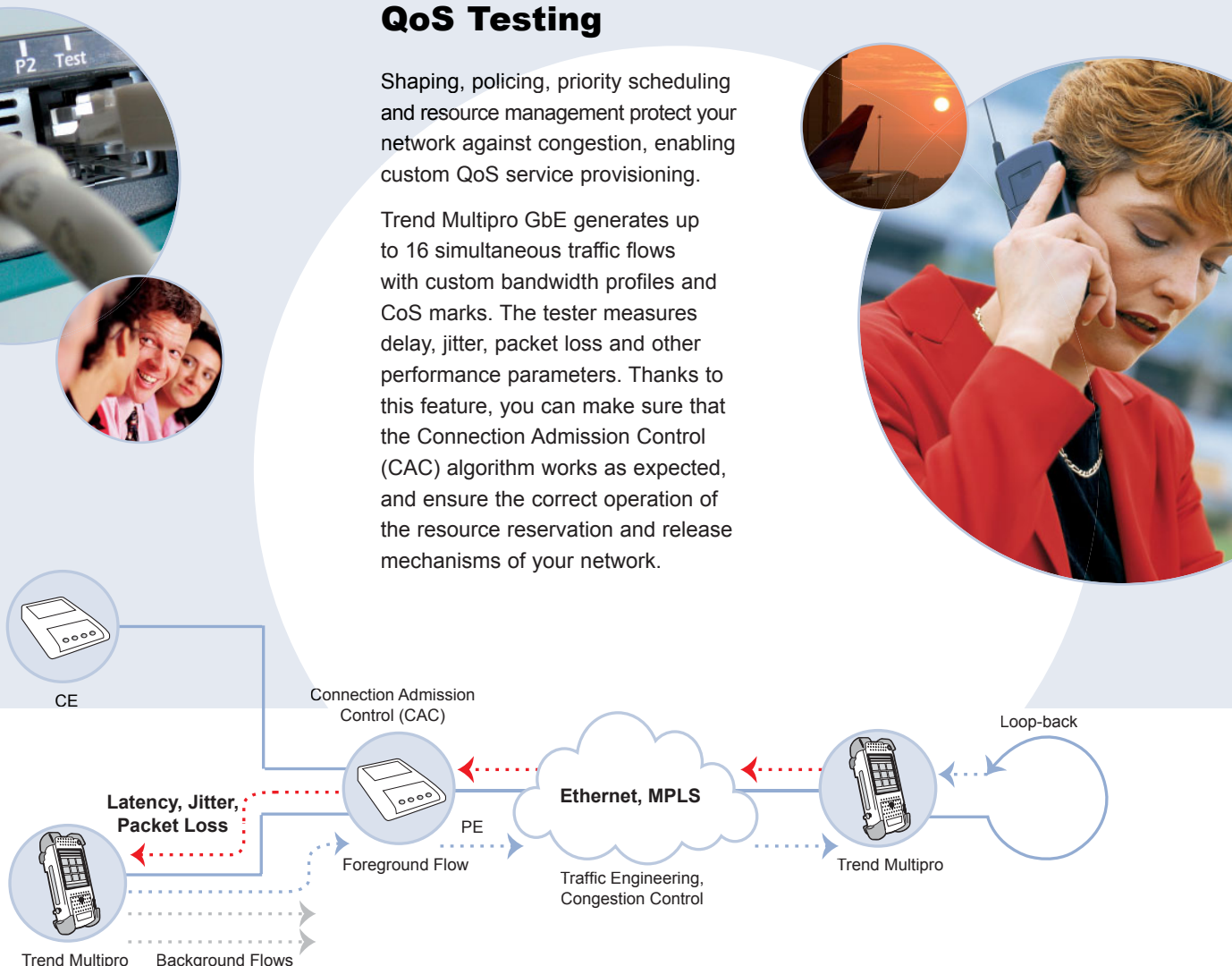
E-Line, E-LAN, E-Tree

MEF Service Qualification

QoS Testing

Shaping, policing, priority scheduling and resource management protect your network against congestion, enabling custom QoS service provisioning.

Trend Multipro GbE generates up to 16 simultaneous traffic flows with custom bandwidth profiles and CoS marks. The tester measures delay, jitter, packet loss and other performance parameters. Thanks to this feature, you can make sure that the Connection Admission Control (CAC) algorithm works as expected, and ensure the correct operation of the resource reservation and release mechanisms of your network.



TrendMultipro GbE

Ethernet Interfaces	100/1000 Dual SFP ports (optical) 10/100/1000 Dual RJ-45 ports (electrical)
Frame Formats	MAC frame, VLAN frame, Q-in-Q frame, IP frame Jumbo frames MPLS label stack over Ethernet IPv4 and IPv6 support
Operation Modes	Terminal, Monitor, Pass-through, Loop-back reflector
Physical Layer Tests	Pair Length, Polarity, Swap and Skew Short/open circuit and impedance mismatch detection PoE detection Optical power measurement Auto-negotiation analysis
MAC Layer Tests	Frame size, bandwidth statistics Unicast, multicast and broadcast frame counts VLAN-tagged frame counts Pause frame counts Undersized, Oversized, Fragment and Jabber frame counts Lost and misordered frame counts
IP Layer Tests	IP ToS/DSCP datagram generation and analysis DHCP client DNS support ARP protocol support IP ping and trace route
Traffic Generation	Configuration of: <ul style="list-style-type: none"> - Source and destination MAC addresses, frame length and payload - VLAN IDs and user priorities with stacking (Q-in-Q) capabilities - MPLS label, EXP and TTL - IP datagram fields (IPv4 and IPv6) Realistic multiple-stream traffic generation Constant, bursty and ramp traffic profiles
Functions	Automatic RFC 2544 testing BERT (Physical, MAC and IP layers) with error insertion Comprehensive VoIP, IPTV and High-Speed Internet (HSI) testing* Lists of the most popular source and destination MAC, VLAN and IP addresses Loop-back (Physical, MAC and IP layers) Filters for frame analysis Graphical representation of results
Ergonomics	Modular structure, PIMs for ADSL2+, VDSL and Gigabit Ethernet Excellent connectivity: 3 x USB, RS-232, 10/100BASE-T via RJ-45, POTS via RJ-11 Integrated microphone and speaker, and external microphone/headphone connectors TFT true colour touchscreen display with ¼ VGA resolution Remote control software identical to the GUI of the tester Mainframe: 132 x 302 x 60 mm, 1.80 kg Battery: 7.4 V, 8.8 Ah Li-Ion pack, up to 6 hours of operation
Safety	EMC Emission: EN55022, EN61000-3-2 and EN61000-3-3 Immunity: EN55024
Relevant Standards	IEEE 802.3, 802.1Q and 802.1ad RFC 1242, 2544, 3031 and 3032

* See the Trend Multipro VoIP (Ref. 405503) and Video (Ref. 405502) brochures for more information on VoIP, IPTV and HSI testing. See the Trend Multipro mainframe brochure (Ref. 405500) for more information on the Trend Multipro platform.