

Ether.Giga next-generation test

the Path to Excellence

ALBEDO Ether.Giga is an Ethernet & IP tester equipped with all the features of normal testers, plus the new ones like Y.1564, Y.1731, and FCS error insertion in pass mode therefore it is capable to verify the QoS and SLA of new Multiplay services offering field technicians tools to quickly and easily validate and troubleshoot Ethernet services.

Ethernet offers opportunities to the industry as it is technology suitable for a massive deployment triggered by network convergence and growth in multiplay applications such as VoIP, IPTV, VoD, high-performance Computing, Virtualization Services, Data Centers and Storage that require significant levels of bandwidth.

New test standards

The deployment of circuits across access and metro networks requires testers that adapt mobility and the most advanced technology to measure the performance and quality metrics of these services.

The Qos + SLA evolution

Ether.Giga is prepared to capture, analyze, and simulate networks. It includes not only RFC 2544 but also the new suite Y.1564 for installation, maintenance and commissioning Carrier Ethernet services, that includes validation of critical parame-

ters such as such as Frame Delay, Jitter, Loss, Error and other QoS parameters. This hand-set can also simulate those services that run on the network and qualify the key SLA parameters for each application.

“Includes ALL the features you may imagine to validate Ethernet & IP Services”

Moreover, it validates the mechanisms provisioned in the network to manage each service type, resulting in better troubleshooting, more accurate validation and much faster deployment.

Access & Demarcation points

If you need to verify Gigabit Ethernet access services at the first mile between the central office and the customer premises we have the best possible solution because it has been deployed with all new features required to satisfy engineers commissioning or maintaining networks.



GbE Field Tester

ALBEDO Ether.Giga is test solution that seamless adapts operating needs without sacrificing portability, speed or cost. After 30 years manufacturing test instruments, we are proud to present our last design, a quite unique tester that concentrates a large number of remarkable features and facilities.



Analysis and Generation

Users of Ether.Giga can rely on the instantaneous traffic generation set up and modify parameters such as headers, bandwidth and frame size directly, without navigating away to a different page, giving experts reaction capacity depending to the on the scopes of the test. While analysis brings in a very well structured way, plenty of graphical measurements and results, ensuring that engineers can quickly and easily interpret the test conclusions.

Pass Through / End Point Modes

Through mode used to pass traffic through the two SFP ports or the two RJ45 ports for full-duplex monitoring of live traffic without the need of splitters. While Terminal mode permit several configurations using the Tx and 2-Rx simultaneously

FCS Error insertion in Pass Mode

This unique feature permits the insertion of errors in live traffic to verify switches and routers procedures when high rate of FCS errors occur.

IP Services test

Often it is required to test IP features to verify end-to-end connectivity by means of Ping and Trace Route with ICMP echo request and analysis fully supported.

Q-in-Q

Ether.Giga has the ability to check QoS by means of the VLAN CoS bits which are used for VLAN stacking by Carrier Ethernet carriers and operators.

Multistream tester

Ether.Giga permits up to 8 traffic streams that are configured with proper CoS and QoS prioritization. The flows facilitate the simulation of realistic traffic conditions such as Internet, VoIP, IPTV to test end-to-end performance.

m-Layer Loopback

This feature assists with four loopback modes from L1 to L4. Whether you need to pinpoint loopback wire traffic, or requires to select specific a UDP or TCP ports, or maybe you need just to swap the MAC or the IP addresses, then Giga.Ether always

has the right configuration set up for each type of test.

m-Layer BERT

Layer 1, 2, and 3 BER testing is supported which can be configured to use either regular PRBS test patterns, stress patterns specifically for Gigabit Ethernet, or user defined test patterns to simulate several traffic conditions. All patterns are encapsulated into an Ethernet frame to verify accurately performance of an Ethernet circuit.

Automatic SLA & QoS Test

Traffic Scan and Discovering

Ether.Giga can quickly scan the network traffic to select those flows to be tested and choose whether you want to monitor or execute any test. Consequently not anymore slow set up, or deep expertise.

Improved RFC 2544

Perform the RFC 2544 test option, testing throughput, frame loss, latency, jitter and burst is straightforward. Ether.Giga can execute it both in symmetric and asymmetric way and with the far-end device in loopback mode or peer-to-peer mode. In any case objectives can be configured and get PASS/FAIL results.

ITU-T Y.1564 e-SAM test

This new methodology for Ethernet executes multiple traffic streams completing the test in two phases:

- *Service Configuration*, confirms the end-to-end set-up while quickly checking the Information Rate (IR), Frame Delay Variation (FDV), Frame Loss Ratio (FLR), Frame Loss Ratio at the Service Acceptance Criteria (FLRSAC).
- *Service Performance*, transmits all configured traffic streams at the CIR confirming all traffic is able to transverse the network under full load while checking IR, FDV, FLR and availability.

The Power of the Innovation

Real Dual Port [2xSFP + 2xRJ45]

Ether.Giga has two ports and they can be used simultaneously to simplify daily work while saves time and costs by conducting bench testing with only one instrument.

PASS / FAIL results

Engineers often have to repeat the same test several times, for them Ether.Giga provides the facilities to execute automatic tests that can be distributed by email, while the results are saved on disks.

Long Battery Life

Since AC power is not always available where you need it, ALBEDO Ether.Giga tester provides up to 5 hours of testing on a single charge, depending on configuration and setup. This coupled with an optional car cigarette lighter cord guarantees the instrument is ready when you are.

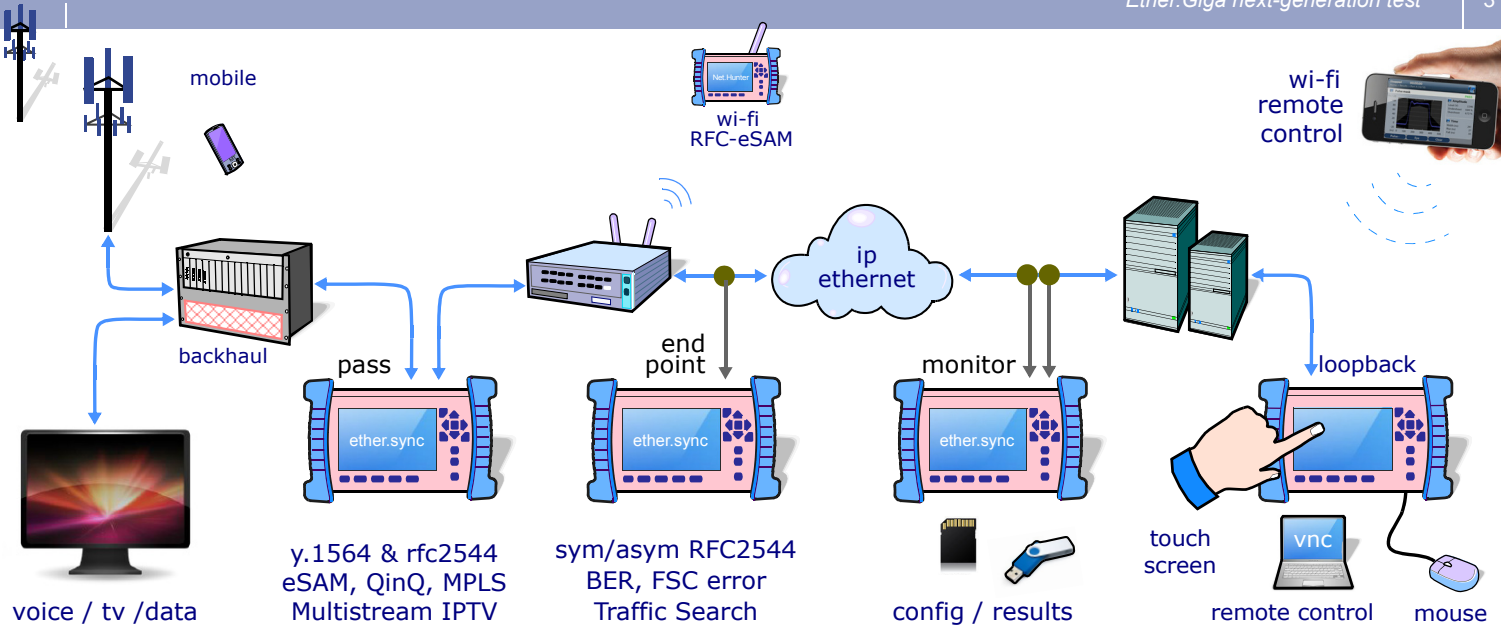
Remote GUI: Wi-Fi and VNC

The Remote Control by means of VNC standards is a very special feature of all ALBEDO instruments to grant full, but password controlled access, to configure, execute, and get results directly using an ad-hoc wi-fi or a LAN and using a public/private IP address. Therefore you will be able to control the unit from a remote PC, or a local iPhone or iPad.

The screenshot displays the Ether.Giga software interface with four panels showing test results and configurations:

- Stopped 00:00:05**: Home (5/5). Test, Setup, Results, File, System.
- Stopped 01:00:40**: Home > System > Network configuration > Ethernet info. Summary table with 8 columns (1-8) and Filter. RX frames: 70,092,968; RX bytes: 4,486E+09. IP, VLAN, MAC, PHY fields.
- Stopped 00:00:11**: Home > Results > Port A (4/16). Traceroute results table (12/30):

Node	Pkts	Min.(ms)	Max.(ms)	Avg.(ms)
1 172.26.0.103	5	0.290	10.040	2.261
2 80.58.67.118	5	1.802	8.933	5.312
3 80.58.88.93	5	2.699	12.481	8.768
4 80.58.75.249	5	6.141	12.487	9.132
5 94.142.103.201	5	2.084	27.686	10.115
6 94.142.120.158	5	37.542	43.702	41.482
7 213.248.75.117	5	35.584	43.896	39.790
8 80.91.247.93	5	34.830	41.120	37.808
- Stopped 01:20:39**: Home > Results > Port B > SFP information (1/7). SFP present: Yes. Transceiver: 100BASE-FX. Vendor: OEM. Model: GPH-1302-02CD. TX optical power: -17.50 dBm. RX optical power: -99.99 dBm. Wavelength: 1310 nm.



BENEFITS

- Touchscreen & mouse
- QoS and SLA certification
- Automatic RFC2544, Y1464
- pdf & csv reports on SD/USB
- IPTV, VoIP, Data assurance
- VNC, LAN or wi-fi control
- Spot sources of degradation
- s-LEDs all events at a glance
- Best price - Top featured

KEY FEATURES

- Y.1564 (e-SAM) FTD, 2-way FDV, FDV, 2-way FTD, FLR SES, PEU and PEA
- Y.1731 QoS statistics
- 2xSFP + 2xRJ45 ports
- Symmetrical & Asymmetrical RFC2544 test
- FCS error insertion in pass-thought mode
- PoE detection / transparency
- Multistreams for IPTV, VoIP, and Critical Data verification
- Q-in-Q for demarcation tests
- Full MPLS support
- Scan MAC/IP/VLAN/QinQ
- Advanced Counts: Up to 8 filters at MAC, IP, TCP/UDP, Arbitrary [mask + offset]

Smart Operation

ALBEDO Ether.Giga is a field tool designed with rugged case and hardware that makes it a secure in harsh environments. It is controlled by a GUI very easy to navigate and learn. We have made a serious effort to make it suitable for any technical skill, and optimised for clarity.

Network Activation

This hand-held unit is ideal for installation and commissioning because it supports all new generation capabilities, and traffic analysis under various conditions. The instrument also provides facilities for BER testing of the lines, performance statistics and QoS statistics

Ethernet/IP maintenance

Carrier-Ethernet providers have to face the maintenance of unhappy customers that often do not differentiate between their internal issues and service provider problems. Now thanks to Ether.Giga is possible to measure at customer demarcation points that separate LAN/WAN, that is customers and operator networks. Test can be executed addressing both

capacity and quality parameters simultaneously to prove where the issue is.

Field engineers can save setups and results for a given application and then, via a USB port or VNC, distribute or download files to other instruments.

Performance Test

Commissioning Ethernet bandwidth is required before delivering the service to the customer that want to see how their SLA is satisfied.

Triple Play verification

Using ALBEDO test suite -built on Ether.Giga- operators of then IPTV and VoIP bundle will be able to:

- Minimize Churn while gaining customer loyalty by quality service.
- Reduce Costs, as faulty networks require experts visiting customers.
- Increase Profits, offering innovative applications to raise the ARPU
- Grow the brand name, cultivating the perception of the company capable to deliver any type of m-play application.

In other words you will improve Service provision using advanced management solutions for quick and easy provisioning and maintenance.



USERS

- Installers and Operators
- Triple Play service providers
- R&D, Universities, Labs
- Commission / Maintenance

Ethernet Testing	
Interfaces	<ul style="list-style-type: none"> Dual RJ-45 port for electrical connection 10/100/1000BASE-T; PoE detection and PoE transparency 2 x SFPs ports: 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX and 1000BASE-BX Autonegotiation: Bit rate at 10, 100, and 1000 Mbit/s, Disable autonegotiation and direct set up EtherType II (DIX v.2), IEEE 802.3, IEEE 802.1Q, and IEEE 802.1ad IEEE 802.2-LLC1 and IEEE 802.3-SNAP IPv4 (RFC791), IPv6 (RFC2460)
Generation	<ul style="list-style-type: none"> Single or multistream traffic generation (up to 8 independent streams) MAC address: Source / Destination, Default / User defined, Single / Range VLAN: Single VLAN support, Q-in-Q stacking, VID, DEI, S-VLAN, C-VLAN, and Priority codepoint Type / Length: Generation/Analysis, Jumbo frames with MTU up to 10 kB Bandwidth Profile: Constant, in bit/s and frames/s, Periodic Burst, in high/low traffic, Ramp, in high/low traffic, Poisson
Loopback	<ul style="list-style-type: none"> L1 (wire loopback) at the far end Rx is forwarded to Tx L2 (frame), MAC addresses are swapped; L3 (packet) IP addresses are swapped; L4 (application) ports are swapped Loop controls for broadcast and ICMP frames
Test Suite	<p>Code Errors Insertion</p> <ul style="list-style-type: none"> Single, burst, rate, random, FCS error insertion in pass-through mode <p>Test Patterns: Insertion modes: single and random</p> <ul style="list-style-type: none"> Unframed Layer I (IEEE 802.3-2008 Annex 36A): High, Low, Mixed Frequency Test Pattern, Long and Short continuous random Unframed Layer I (NCITS TR-25-1999): RPAT, JTPAT, SPAT Framed Layer I-4 BERT; PRB: 211-1, 215-1, 220-1, 223-1, 231-1 and inverted, All 1, all 0, and user-defined (32 bits) <p>SLA Measurement Payload: QoS statistics according to Y.1731</p>
RFC 2544	<ul style="list-style-type: none"> RFC 2544: Throughput, Latency, Frame Loss, Back-to-back, Recovery Symmetric and Asymmetric RFC 2544
Y.1564 (eSAM)	<ul style="list-style-type: none"> Testing of up to eight services (non-color aware mode) or up to four services (color aware mode) Configuration of the CIR, and EIR and maximum throughput for each service Configuration tests (CIR, EIR and policing) with FTD, FDV, FLR and availability results for each service Performance test with FTD, FDV, FLR and availability results for all services
Results	<ul style="list-style-type: none"> SFP: Presence current interface, Vendor, Part number Optical power (over compatible SFP) PoE (IEEE 802.3af), PoE+ (IEEE 802.3at), none; PoE voltage between pairs in endpoint; Voltage and current in through mode Twisted Cable: MDI/MDI-X status, Open (fault distance), Cable Length Test, Short (distance), Polarities, Pair Skew, Crosstalk Autonegotiation: Current bit rate, Duplex mode Frame Delay (FTD) Y.1563: Min/Max/Med/Mean Frame Delay Variation (FDV) RFC1889: Peak; Jitter Curr/Max/Min/Mean Frame Loss (FLR) Y.1563, Duplicated: Out-of-Order packets (RFC 5236) Availability: SES and Y.1563 PEU BER: Count, seconds with errors, Pattern losses, pattern loss second
Filters	<ul style="list-style-type: none"> Up to 8 filters for Counts and Statistics at MAC, IP, TCP/UDP, Arbitrary [mask + offset] Ethernet Selection: MAC address, Type/Length, C-VID, S-VID, CoS and Priority with selection mask IPv4 and IPv6 Selection: address, protocol, DSCP, Flow (v6): single value or range TCP/UDP Selection: port: single value or range
Statistics	<ul style="list-style-type: none"> Separate reports per Port A & B, Tx/Rx (transmit & receive), Active filter, Automatic filtering blocks for top talkers Top 16 talkers: Sour/Dest MAC / IPv4 / IPv6 addresses, VID (VLAN), C-VID (Q_in_Q), S-VID (MPLS) Ethernet Frame Counts (RFC 2819): VLAN, Q-in-Q, Priority, Control, Pause, BPDUs Tx/Rx Uni-Multi-Broadcast, Errors, Undersized, Oversized, Fragments, Jabbers, Runts, (Late) Collisions, Sizes, MPLS stack length Bandwidth Statistics: (in bit/s, frame/s, %) Rate, Max, Min, Aver, Occupancy, Unicast, Multicast, Broadcast IPv4 & IPv6 counts: (in bit/s, frame/s, %) Unicast, Multicast, Broadcast, Errors, TCP, UDP, ICMP
ICMP	<ul style="list-style-type: none"> RFC 792: IP ping / Traceroute feature Generation of ICMP echo request: Destination IP address, Packet length, Generation interval Analysis of ICMP echo reply: Round trip time, Lost packets, Time-To-Live Exceeded, Port unreachable

Operation and Management	
Performance	<ul style="list-style-type: none"> Full Duplex operation at 1 Gbit/s or 1,5 Mframes/s, Accuracy better than 10⁻⁶ secs. at 1 Gbit/s Performance and accuracy 100% independent of the line bit rate

Platform	
Hand-held Instrument	<ul style="list-style-type: none"> Touchscreen 480 x 272 TFT, Mouse, USB & Ethernet ports; 1.0 kg, 223 x 144 x 65mm; IP-54 Soft LEDs All events at a glance Rechargeable Batteries continuous working up to 12 hours continuous operation. Fast recharging time AC Power Adapter Input: 100 ~ 240 V AC, 50/60 Hz, Operating Temperature 0°C ~ 50° C Storage Temperature -20°C ~ 70°C Humidity 5% ~ 95%; IP rating 54 SNMP, MIB and VNC remote control

