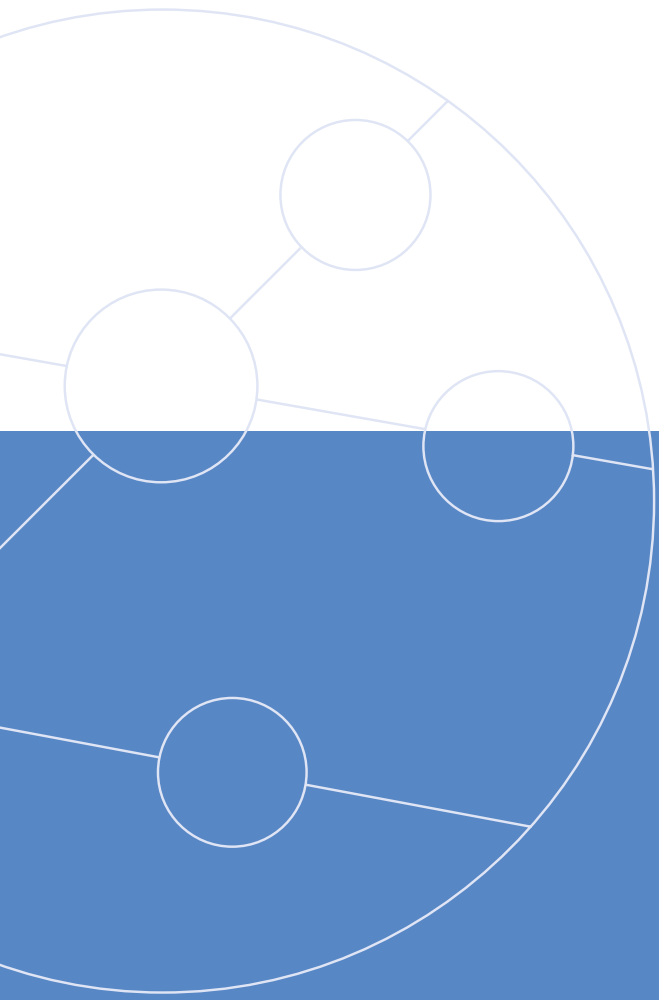


AuroraTango



Quick Service Qualification



Multitechnology

Gigabit Ethernet, ADSL, SHDSL, ISDN, E1



TrendCommunications

Modularity

a concept taken to the edge

The modular design of Aurora Tango covers both today's and tomorrow's testing requirements. Technologies may change, but keeping your Aurora Tango up to date is easy, and it does not require large investments.

PDA User Interface

By using a PDA, your test set has the most advanced user interface, and you can also integrate test processes with company applications and carry your testing schedule with you.



Modular architecture keeps you abreast of state-of-the-art testing

Aurora Tango's test modules are really easy to change; just snap'n'go!



Test Modules

The growth of access technologies calls for different test applications and equipment, and keeping your test equipment up to date may not always be easy.

With Aurora Tango, this is no longer a problem. Aurora Tango's test modules can be swapped, which guarantees full flexibility and makes Aurora Tango a genuine multi-service test tool.

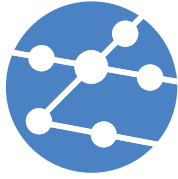
Thanks to its modular architecture, Aurora Tango is completely future proof, and you can secure your investment any time by simply upgrading the tester with a module that best suits your needs.

Universal Test Engine

The UNiversal Test Engine (UNITE) is the heart of Aurora Tango.

The UNITE enables you to carry out one-button tests and print test reports. The test reports together with the status LEDs and the Pass/Fail indication provide enough information to produce detailed report.

- Modularity is the guarantee for your investment
- The PDA provides an advanced touch-screen interface
- The UNITE can be used for one-button operation
- Test modules keep abreast of the latest in test technology



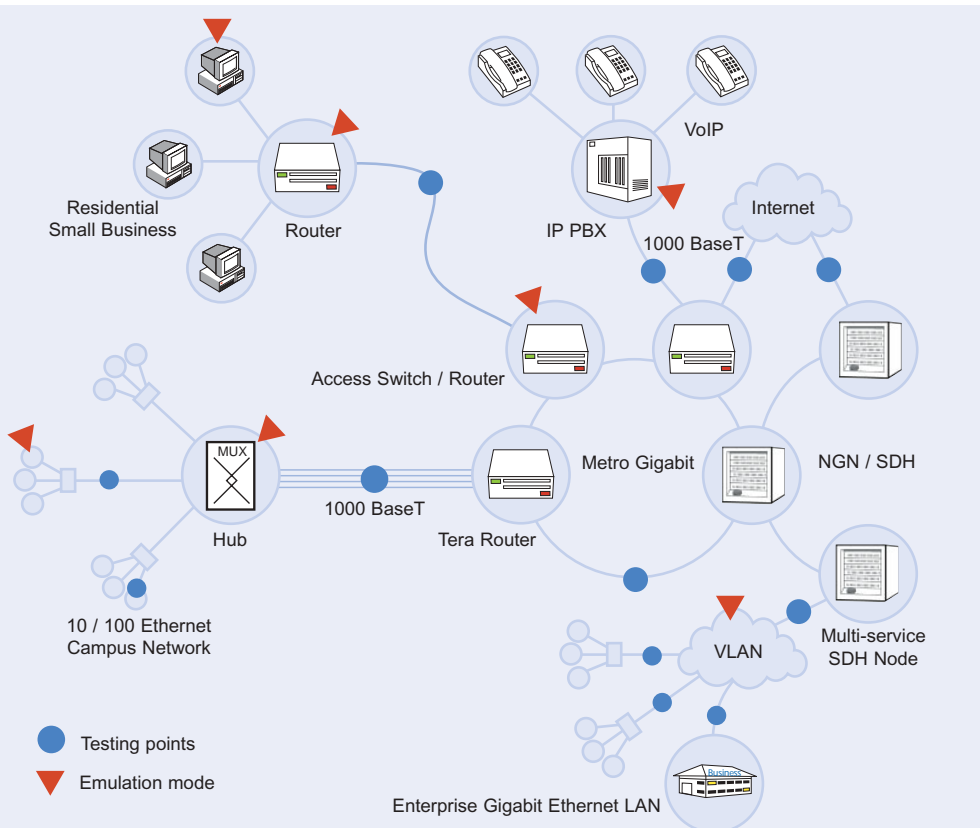
Aurora Tango Gigabit Ethernet



The convergence of Core, Metro and Access networks is driving the migration from packet and circuit networks to Ethernet.

Aurora Tango Gigabit Ethernet has a comprehensive set of functions to verify that Ethernet installations can provide a level of Quality of Service similar to technologies such as Frame Relay, ATM or E1/T1.

Installing and maintaining links and end-to-end services based on Gigabit Ethernet is now easy with Aurora Tango which combines high performance and the most advanced design, in a light and user-friendly test set.



- RFC 2544 conformance
- Full 10, 100, 1000 Mbit/s support
- Comprehensive traffic generator
- Terminate, Through and Monitoring operation modes
- PDA as user interface
- Gigabit Ethernet commissioning
- Service Level Agreement (SLA) verification
- Class of Service (CoS) setup
- Modules for ADSL, SHDSL and ISDN
- One button PASS/FAIL test
- Physical, MAC, IP, verification
- Access and Metropolitan use

Service Deployment

and SLA Verification

The Ethernet Challenge

The emergence of Ethernet in Metropolitan Networks (MAN) is leading the migration from circuit-oriented to packet oriented data networks. During this process Ethernet will have to face new types of physical layers, new multiservice nodes, and carry data over longer distances.

Furthermore, soon Ethernet will be required to support MPLS, RPR, and time-dependent applications such as VoIP and multimedia. This is a big challenge for Ethernet which was designed as a best effort technology - what this means is that there is no commitment in terms of bandwidth, latency or performance. From the customers' position, in order for Ethernet to provide telecom-like quality, it is necessary to have an SLA to guarantee the service.



Aurora Tango modularity

- Quick and efficient tests
- SLA set up and verification
- Link-to-link and end-to-end analysis
- Auto-tests
- PDA provides an advanced, user-friendly touchscreen interface

Installation and Commissioning

Aurora Tango Gigabit Ethernet ensures a quick setup and debug process for Ethernet installation up to 1 Gigabit/s. It has the prime objective of:

1. Assisting and debugging physical layer installation (copper or fibre), using the optical power meter (fibre only), through continuity test, traffic generation and receive statistics data.
2. Verifying the Ethernet and IP layers using RFC 2544, IP Ping and trace route and VLAN verification
3. SLA certification, including traffic load, bandwidth, service integrity (so that no traffic is lost during normal service conditions) and latency.

Maintenance

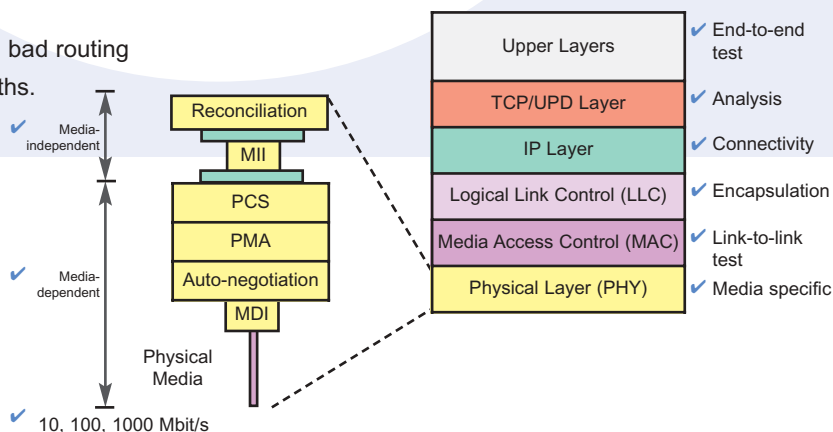
Once the Gigabit Ethernet network is deployed, and poor performance issues are raised, the senior engineer will be requested to maintain the service.

To find the causes of low performance the following tests can be used: throughput, link utilization and MAC errored frames to produce accurate statistics.

If the cause is not in the data link layer the engineer can also test the IP and upper layers by means of packet analysis such as UDP, TCP, ICMP.

Filtering the traffic to a protocol analysis application such as Trend Observer, may help to isolate the problem.

If there is no traffic at all, the IP ping can be used to find bad routing configurations and the Trace Route to trace network paths.

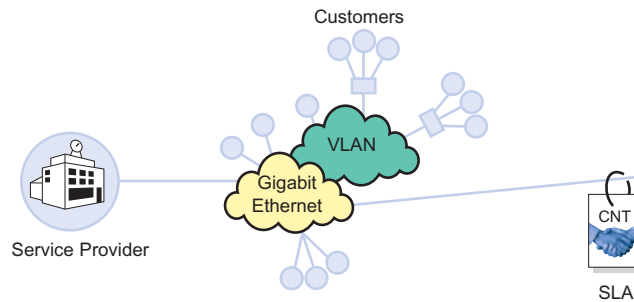


All the Test Applications

for Installation and SLA Maintenance

Copper/Fibre Installation

Aurora Tango provides field support for cable or fibre installations. If the physical layer is a cable, it can measure the cable length, check pair or polarity swap and perform a BERT as well. If the physical layer is fibre, Aurora Tango can execute a continuity check, BERT and measure optical power to verify the connection to the laser source.



SLA setup and certification

- Simultaneous traffic generation and analysis
- Programmable filters for frame and packet capture
- Physical, MAC, IP and upper layer analysis
- Cable and fibre testing
- Capture filter and packet export testing
- RFC 2544 and 2819 compliant
- Traffic trace

Capture and Decoding

Aurora Tango provides up to two bidirectional ports for viewing complete protocol activity; Ethernet layer performance statistics, for example packet count by size and packet errors.

Traffic filtering by address enables problems to be isolated and also saves time and resources.

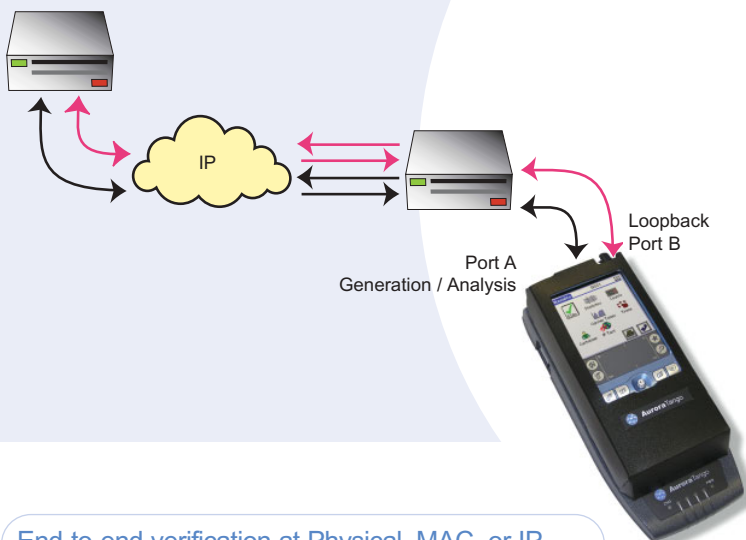
DNS/DHCP for correct login to server
IP Ping / Trace Route to confirm router/destination connection.

Traffic Generation

Aurora Tango is able to generate wire-speed traffic to emulate traffic conditions in order to stress network links and nodes.

The traffic parameters can be programmed including patterns, address, formats at MAC and IP layers. Bit Error Rate Testing at line rate can be analysed at Physical or IP layers.

Errors and alarms can be inserted to verify that the far-end point is responding correctly and the layer is properly managed.



End-to-end verification at Physical, MAC, or IP layer using two ports and loopback terminate mode

AuroraTango Gigabit Ethernet

Ethernet Interfaces	1000BaseSX, SFP GBIC, LC optic connectors 1000BaseLX, SFP GBIC, LC optic connectors 10/100BaseT, RJ45
Relevant Standards	IEEE 802.3 compliant RFC 1242, 2544 compliant
Functions	BERT (Phy, MAC, IP) Data loop at Physical, MAC and IP layers Filters for frame analysis Frame drop for external analysis Top Ten most popular MAC, VLAN and IP address
Traffic generation	Data rate, frame size and test duration setup Continuous, Burst and Ramp patterns
RFC 2544	Throughput, Latency, Back-to-Back Frames, System Overload Recovery
Operation modes	Terminate, Monitor and Through modes
Cable test	Pair length, Pair swap, Polarity swap, Pair skew, Cable SC/OC, Impedance mismatch
Physical Layer tests	Link status Synchronization Auto-negotiation parameters Optical power measure
MAC Layer tests	Valid, Errored, Loss, Undersize, Oversize, Uni/multicast, Pause frames, Runts, Jabbers and Fragments Frame count per frame size FCS error insertion Packet Export through external port for protocol analysis
IP layer test (ideal)	DCHP client DNS support IP ping IP trace route
Encapsulations	EtherType II (DIX v.2), IEEE 802.3 - SNAP
Safety and Environmental	Storage ETS 300 019-1-1, Transportation: ETS 300 019-2-2, Operating ETS 300 019-1-7 EMC: Radiated and Conducted Emission EN55022 , EMC Immunity: EN55024 Electrical Safety: EN60950 EN609550:192/A11:1997 CSA C22.2 No. 950 UL 1950 IEC 950:1991/A4:1996 Operating temperature: 0°C to +40°C Storage temperature: -20°C to +60°C
User Interfaces	Pocket PC or PC application
Ergonomy	Size: 210 x 90 x 90 mm Weight: 1.1 kg (Test module and UNITE) Battery or 12V DC from mains conversion Touch screen: 240 x 320 colour 6 LEDs: Power, Charging, Port A Tx/Rx, Port B Tx/Rx, Progress/Pass/Fail test, On/off test For additional modules for ISDN, ADSL, and SHDSL, see the Aurora Tango family brochure



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Distributor

To arrange a demonstration or to obtain the latest information on the Trend **AuroraTango** or any of Trend's other test equipment, contact your nearest Trend Distributor.

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