DATASHEET

Spirent Attero and Attero-X

Ethernet Network Emulators

Emulate 'the Cloud' with the industry-standard Spirent Attero and Attero-X Network Emulation test solutions.

The Attero and Attero-X allow you to emulate a network or a network element in an accurate and repeatable way to fully stress-test the transport of real-time services like video and VoIP over Next-Gen IP platforms and networks. Set filters to test the effect of impairments to particular packets or particular types of traffic.

Capture real-world network profiles and replay them in the lab for absolute proof of performance. Emulating the cloud under real-world conditions is just like testing your Ethernet devices or topology in an actual network. Except it's in a box.

Applications

Spirent Attero-X is a total solution to the problem of real-world Ethernet testing. It combines comprehensive and highly-accurate network emulation to enable you to test:

- Video/voice applications (IPTV, VoIP, etc)
- Mobile subscriber network (VoLTE, eMBMS, etc)
- Content delivery networks
- Cloud computing/migration
- CoS/QoS levels
- WAN acceleration/network optimization
- LAN/WAN enterprise networks
- ADSL/FTTH
- SLA verification
- ITU-T Y.1731/IEEE 802.1ag operations & maintenance
- Satellite link testing
- Storage networks
- Telecom/Federal network applications
- Carrier WiFi
- Cable/boadband networks

Don't emulate just any network, re-create your actual network

Real Capture + Replay—You're not limited to capturing pings or restricted with capacity. Now you can capture IPG and PDV traffic from REAL networks for long periods of time and replay these back in the lab

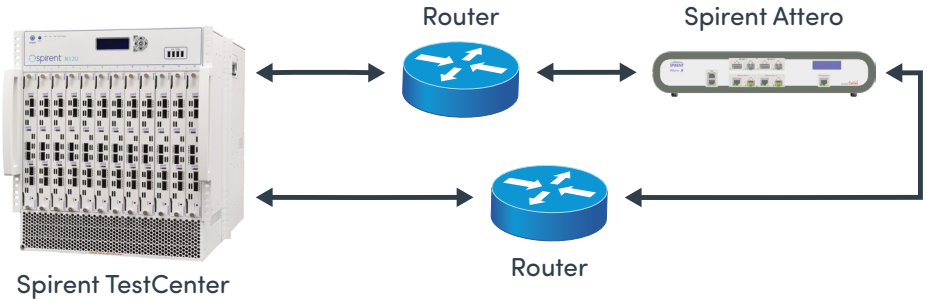
Impair eight CoS levels up to 10 GbE

Class of Service (CoS)/Quality of Service (QoS) levels have to be independently impaired during testing. Spirent Attero-X allows eight CoS levels to be uniquely impaired at the same time, even at 10 GbE

Key Highlights

Eliminate Errors From Test Equipment

- **Ultra High Precision Emulation—** Nanosecond accuracy and repeatability means you emulate precisely what you think you're emulating
- **True Transparency—**Attero and Attero-X do not impose MAC and IP termination, so they do not add potential sources of error to the test bed
- **SyncE Support—**Allows Network Emulation between SyncE devices and maintains clocking link



Technical Specificaions		
Attero and Attero-X		
Physical interfaces	Attero • 100 M electrical (RJ45) • 100 M optical (SGMII) • 1 G electrical (RJ45) • 1 G optical (SFP)	Attero-X • 100 M electrical (RJ45) • 100 M optical (SGMII) • 1 G electrical (RJ45) • 1 G optical (SFP) • 10 G optical (SFP+, XFP)
Reference clock input	• **Internal**—Stratum-3, +4.6 ppm • **External**—10 MHz; 2.048 MHz; T1 BITS clock; E1 MTS, 1 pps; 64 kbps	
PC control interface	Windows GUI. RJ45 (10/100/1000) direct LAN connection to instrument. For WAN connection, local controller option can be recommended	
Automation/ remote control	Available via TCL, PERL or PYTHON API. Integrated Script Recorder	
Selection of flow from multi-flow environment	• Automatic detection of flows and filter setup using Flow Wizard • User settable filters (eg IP address, etc) with powerful ranges and wildcards • Integrated Wireshark decode	
Impairment profiles	Select at time of purchase—4, 8, or 16 profiles • 4 profiles allows all impairments to be configured individually for 4 Flows (2 in each direction) • 8 profiles allows all impairments to be configured individually for 8 flows (4 in each direction) • 16 profiles allows all impairments to be configured individually for 16 flows (8 in each direction)	
Packet corruption	• Errored, lost, repeated and misordered packets (depth 1–32) • **Distribution**—Single, burst (1 to 10,000), rate (%), ratio (xE-y), constant • **Periodicity**—Constant or timed on/off • **Byte overwrite**—Any or all bytes within the first 128 bytes of frame—invert/overwrite value • ITU-T G.1050 impairments	

Key Features

- Add latency and jitter to nanoseconds accuracy and repeatability
- Introduce lost, mis-ordered, errored and repeated packets
- Capture then replay real-world network profiles based on actual traffic, and create precisely-defined network profiles
- Realistic and accurate regression, validation, poof of concept and customer demos
- Field-programmable architecture protects your investment
- Real-network problem replication for troubleshooting
- Full line-rate delay of 800ms at 10 G and 8s at 1 G
- Extensive and powerful set of filters to configure and inject impairments and delays to target:
  - Class of Service (CoS) identifiers/levels—VLAN (P), MPLS (EXP) and IP (DSCP)
  - Ethernet (Layer 2) and/ or IP (Layer 3) parameters
  - VLAN ID, IP/MAC addresses, MPLS labels, TCP/UDP port, etc.
  - Other Layer 2 to Layer 7 protocols
  - Proprietary traffic and protocols
- Mobile GTPv2 control messages, ceate session request, modify bearer request etc
- Automatic traffic flow detection and integrated Wireshark decode

Technical Specifications (Cont'd)		
Attero and Attero-X		
Latency/delay and PDV/jitter	• Gaussian, gamma (internet), uniform or step distribution of delay • Apply independent delay/jitter to each profile simultaneously	
Max delay	8 seconds at 1 GbE. 800ms at 10 GbE full line rate delay. Extend Delay further for sub line rate traffic (e.g. 2s delay at 4 Gbps or 16s delay at 500 Mbps)	
Library of profiles	• Real-world network profiles, saved profiles • MEF-18, ITU-T G.8261 (optional)	
Network capture+replay	(Optional)	
Timing accuracy	5nsec	
Bandwidth control	• Control bandwidth throttle and buffer depth per profile • Preset bandwidths and user-defined bandwidths • Basic mode and advanced policing and shaping mode	
Graph delay variation	Plot: • Received Inter-packet arrival time versus time or packet number • Generated impairment profile of PDV (delta delay versus packet or probability density function) • Save/Export captured PDV and mark packets to be dropped • Import file for replay—emulate the real network	
Combined capture & replay	• 100 M: 95nsec, 1 G: 15nsec, 10 G: 5nsec	
Rackmount	Rackmount kit available (optional)	
Maintenance	First year SW and HW maintenance is included. Extensions available for purchase.	
Power supply	110 V/220 V–12 V DC power adaptor provided.	
Power consumption & weight (incl. power suppy & cord)	Typical power draw 65 W • **Attero**—3.9 kg	Typical power draw 80 W • **Attero-X**—4.2 kg
Dimensions (w x d x h)	• **Attero**—45 x 24 x 9 cm	• **Attero-X**—45 x 24 x 9 cm

Ordering Information		
Platform	**Spirent Attero**	**Spirent Attero-X**
Impairment profiles (must order one)	-4 profiles, -8 profiles & -16 profiles	-4 profiles, -8 profiles & -16 profiles
Optical modules	SFP	SFP, SFP+, XFP
Other options	• Capture+replay 1 G • MEF-18, G.8261 profiles (1 G) • Rackmount kit • Transport case	• Capture+replay 1 G+10 G • MEF-18, G.8261 profiles (1 G+10 G) • Rackmount kit • Transport case

GREENTEST® TECHNOLOGIES

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