

Spirent Attero-100 G

High Speed Ethernet Impairment Testing

Key highlights

- Prove 100 GbE and 40 GbE device performance with full line-rate network simulation
- Full line-rate delay of up to 80ms at 100 G and 200 ms at 40 G
- Boost full line-rate delay to 256ms at 100 G and 640ms at 40 G (optional)
- Introduce lost, mis-ordered, errored and repeated packets
- Auto-detect flows and filter setup using Flow Wizard
- Extensive and powerful set of filters to configure and inject impairments
- Web-based GUI with built-in controller
- FPGA architecture protects your investment
- Integrated Tshark and Wireshark support

Test with real-world network conditions in your lab

Latency in networks really is a big deal. It dramatically reduces throughput and when it affects high speed links carrying applications such as real-time gaming and streaming video, consumers can get pretty disgruntled. Even the financial industry now demands ultra-low latency as algorithmic trading becomes more widespread. So when you are developing high precision network products, it's critical that you validate their performance with real-world network conditions. And that means latency.

It's impractical and almost impossible to use large, unwieldy and expensive drums of fiber to test your design margins and tolerance to the effects of latency—a 200 km drum of fiber only provides 1 ms of delay, is not controllable and needs amplification due to signal loss. Not much help when you need to emulate a long-haul network. Alternatively, you could use the Spirent Attero-100 G. This high speed Ethernet impairment tester can be used to emulate propagation, routing, switching and buffering delays by up to 256 ms at 100 Gb/s and 640 ms at 40 Gb/s. That's the equivalent of over 50,000 km of fiber at 100 Gb/s. Plus, the Attero-100 G offers precise adjustment of the network delay so that you can easily and conveniently model different fiber lengths to emulate:

- Global, continental and transoceanic networks
- Delay sensitive video traffic
- Delay critical data transmission for financial services applications

What's more, you can assess the impact of network congestion, queuing issues or multi-path fading on your device's performance. Attero-100 G lets you introduce lost, mis-ordered, errored and repeated packets with nanosecond accuracy to help you define the performance limits of your device, tune performance, or to detect and eliminate problems before deployment. In other words, you don't need to build inflexible, unrealistic and costly networks to validate your device's performance. Simply use the Attero-100 G to simulate real-world network conditions for maximum stress-testing.



Synchronize frequency to a common reference. Clock Reference Inputs (balanced and unbalanced) enable both test and network equipment to be synchronized..

High speed interface ports for both 100GbE and 40 GbE are supported: Two CFP2 ports for 100 GbE LR4/SR4 testing; two CXP ports for 100 GbE SR10; and two QSFP+ ports for 40 GbE.

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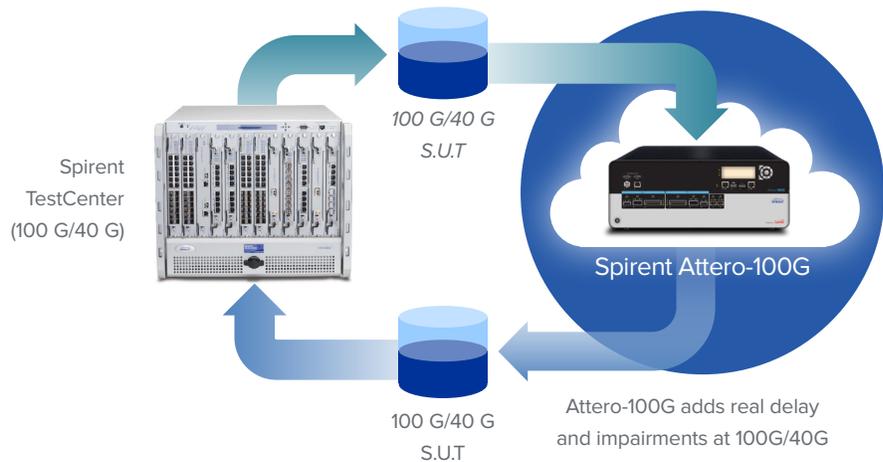
Use the Spirent Attero-100 G for testing:

- IPTV, VoIP
- Cloud Computing
- CoS/QoS Levels
- Server Actualization/Consolidation
- WAN Acceleration
- Telecom/Federal Applications
- ADSL, FTTH
- LAN/WAN Emulation
- Customer Proof of Concept
- SLA Verification
- ITU-T Y.1731
- IEEE 802.1 ag
- Storage Networks.

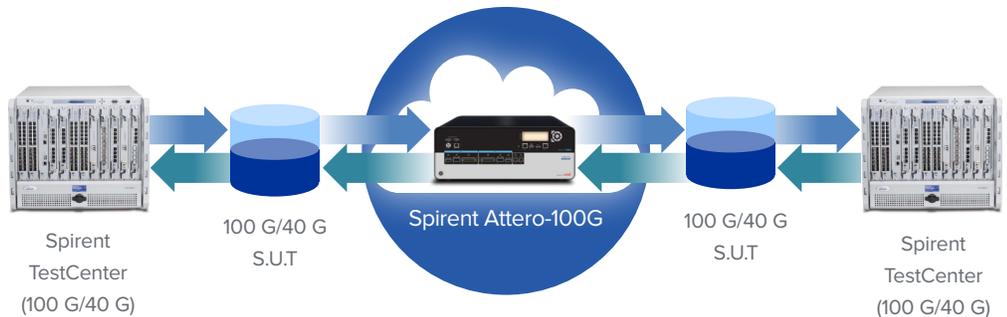
Applications

Use the Spirent TestCenter to emulate user and network traffic and test switches, routers, applications, even new routing protocols under realistic network conditions:

- Introduce different impairments for different CoS levels
- Add delays that are accurate to nanoseconds
- Test behavior as input to, or output from, shaper/policer



Combine with Spirent TestCenter for E2E protocol and scale testing



Use stand-alone for inline 100 G/40 G emulation



Web-based User Interface

Control the Attero-100 G from any web-enabled device, including your tablet



Avoid the 'wait-and-see' approach

Validate the performance of your applications, services, protocols or devices against a wide range of delay, bandwidth and impairment conditions found in real-world networks. The Attero-100 G lets you prove 100 GbE and 40 GbE network and device performance with full line rate network simulation, allowing you to:

- Evaluate performance and characterize end user experience
- Perform negative or conformance type testing (corruption, modification, etc.)
- Discover and fix network related issues early

Powered by Calnex

The Attero-100 G is powered by technology from Calnex Solutions, proven leaders in precision test equipment with best-in-class accuracy and performance.

For more information on the Spirent Attero-100 G, call your Spirent sales representative or visit us on the Web at www.spirent.com



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Spirent services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirent.com or contact your Spirent sales representative.

Technical specifications

Optical Interfaces	Ethernet (optical CXP, CFP2 and QSFP+ modules not supplied). <ul style="list-style-type: none">100 GbE: CXP (SR10)—2 slots (optional)100 GbE: CFP2 (LR4/SR4)—2 slots (optional)40 GbE: QSFP+ (LR4/SR4)—2 slots (optional) Order the 100 GbE option and/or the 40 GbE option. At least one must be ordered
Internal reference clock	Frequency Stability over Temp: $\pm 1.5 \times 10^{-7}$
Network Emulation	
Packet analysis	Integrated Tshark and Wireshark support
Line rate delay	Full line-rate delay of 80 ms at 100 Gb/s and 200 ms at 40 Gb/s
Full line-rate delay boost	Full line-rate delay of 256 ms at 100 Gb/s and 640 ms at 40 Gb/s
Selection of flow from multi-flow environment (Free update*/future release)	<ul style="list-style-type: none">Automatic detection of flows and filter setup using Flow Wizard multi-flow environmentUser settable filters (e.g. IP Address etc.)
Packet Corruption (Free update*/future release)	<ul style="list-style-type: none">Errored packets, lost packets, repeated packets, mis-ordered packetsCorruption modes: single, burst, rate (%), ratio (xE-y), constant
Timing accuracy	5 ns
General	
Web browser UI	<ul style="list-style-type: none">Web-based user interface with built-in controller enables operation from a PC, Android or Tablet (browser screen resolution of 1024 x 768 pixels is required)RJ 45 LAN connection to instrument
Management port	User settable IP address
Remote control	<ul style="list-style-type: none">Scripting via TCL, Perl and PythonAutomatic Script Recorder for TCL, Perl and Python
Indicator/LEDs	<ul style="list-style-type: none">Power On40 GbE QSFP+ (if option fitted), 100GbE CXP, 100 GbE CFP2—Integral LEDs
Rackmount	Rackmount kit included
Maintenance	First Year SW and HW Maintenance is included. Extensions available for purchase

(*) Free Update will be made available as soon as possible after the initial release.

Related products

Spirent TestCenter™ is an end-to-end testing solution for next generation networks—providing traditional performance testing to the rigorous analysis of Virtualization, Cloud Computing, Mobile Backhaul, and High Speed Ethernet.

Spirent TestCenter™ Virtual is the industry-leading solution that optimizes the performance of new cloud-enabled network services and innovations like SDN and NFV. TestCenter Virtual creates testing topologies to run on both control plane and data plane to stress simulated, virtualized network functions.

The **Attero-X**, **Attero-Lite** and **Attero-Virtual** family of Ethernet Network Emulators use dedicated impairment engines to provide nanosecond accuracy and full line rate traffic throughput from 100 Mb/s to 10 Gb/s. Apply delay, jitter and packet corruptions to selected traffic or capture 'real network' jitter profiles and replay these in the test lab.

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