



Spirent CES and ToP Test Solutions

CIRCUIT EMULATION SERVICE AND TIMING OVER PACKET

CES AND TOP TEST APPLICATIONS

Spirent's emulation solutions are ideal for vendors to test a wider range of Circuit Emulation Service and Timing over Packet tests including:

- Verify conformance to ITU-T G.8261, MEF-18 and other emerging standards
- Characterize clock recovery performance across a packet-based network
- Validate TDM services are delivered with the required jitter and wander performance
- Verify packet-loss-concealment algorithms by introducing packet loss and re-order
- Validate the performance of protection fail-over features
- Verify accuracy of performance metrics reporting and status/alarm indicators

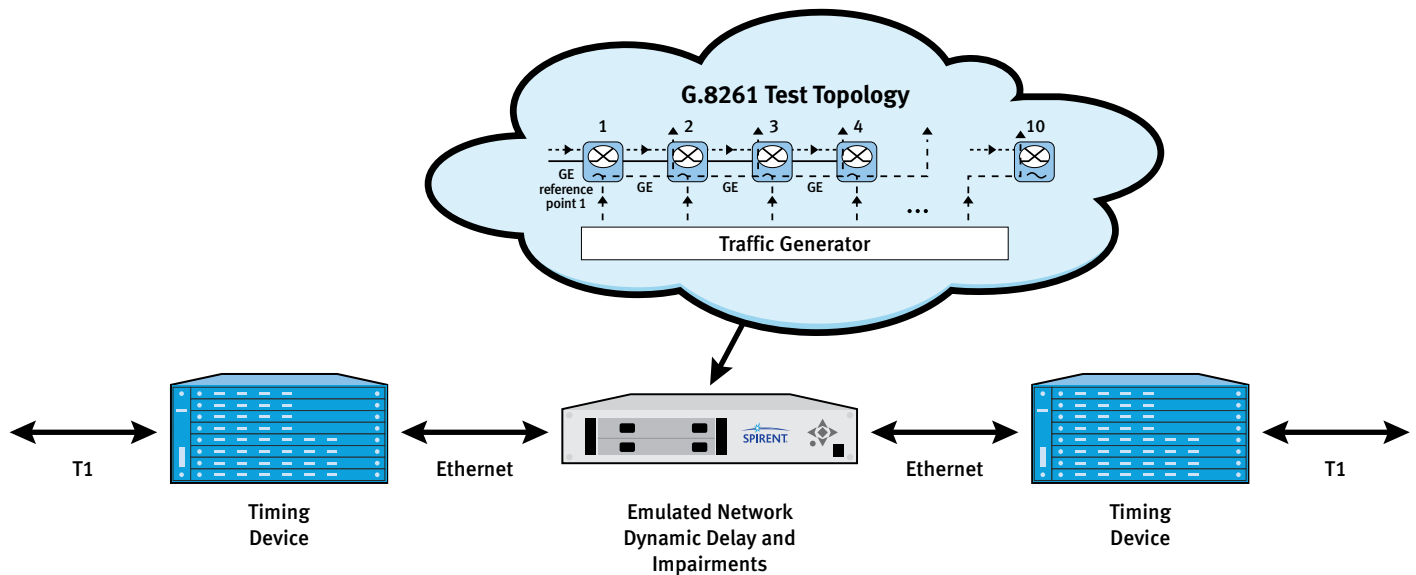
Wireline and wireless operators can use Spirent's CES solutions to easily evaluate competing Circuit Emulation Service and Timing over Packet solutions.

KEY FEATURES

- Test with realistic, repeatable and customizable network conditions in a lab
- Spirent's MEF-18 and ITU-T G.8261 Test Suites allow testing prior to certification submissions
- Save time and money by leveraging emulation with standards-based test suites
- Resides on a hardware-based architecture providing maximum accuracy and repeatability
- 100% line rate (up to 11.3Gbps) capable even with minimum size frames
- Hardware allows users to precisely emulate delays and impairments that occur over Ethernet networks

Live networks and mock-ups have been traditional approaches for testing Circuit Emulation Services (CES) and Timing over Packet (ToP) products, but these methods have significant drawbacks. Using leased lines on a live network is costly, difficult to manage and only represents one customer scenario of the many possible. At the same time, mock-ups are complex to build and maintain, while still only providing limited scenarios. Most importantly, both approaches lack the flexibility and repeatability required to effectively allow a vendor to prepare CES or ToP solutions for real-world deployment.

Spirent's network emulation solution combined with the new MEF-18 Test Suite provides a superior test solution that defines a realistic test network. Vendors and service providers now can significantly reduce the time and cost required to characterize performance and validate the Interworking Functions of their CES (ITU-T Y.1413, IETF CESoPSN or IETF SAToP) and ToP (IEEE 1588 or NTP) solutions.



REALISTIC, REPEATABLE NETWORK CONDITIONS IN THE LAB

Spirent’s unique hardware-based emulator design provides nano-second precision and line-rate performance. Spirent’s Network Playback™ feature provides users the flexibility to control delay and impairments on a per-packet basis. Users can now create virtually any network scenarios required including the following:

- Pathological timing scenarios
- Custom statistical impairment distributions such as long tail
- Extremely high or low (sub-Hertz) frequency delay changes and impairments
- Dynamic delay and impairment conditions (packet-to-packet or time-based control)

Network Playback’s open file format enables configuration input from actual live network measurements or software-

based network models. These network scenarios can be customized with user-defined impairment tables. Extremely large tables are supported for multi-day scenarios for low frequency content (e.g., diurnal variation).

MEF-18 TEST SUITE FOR FAST AND COST EFFECTIVE TESTING

The Metro Ethernet Forum (MEF) has developed a set of test cases based on ITU-T G.8261 for certification of CES products. Spirent now offers the MEF-18 test suite providing customers the ability to test their solution against industry-based test plans prior to certification testing. The MEF-18 test suite is integrated with Spirent’s network emulator product so tests can be set up quickly and easily:

- Repeatable testing against models based on ITU-T G.8261
- Complete set of section six (synchronization) network emulation scenarios



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