When it Comes to Carrier Network Testing, Spirent Delivers

Whether it’s testing service provider core networks, mobile backhaul or associated network technologies like Carrier Ethernet, MPLS routing, timing and synchronization, Spirent meets the challenges of testing the new multi-protocol carrier network.

By combining Carrier Ethernet, MPLS routing, core networks and mobile backhaul test packages, Spirent TestCenter™ provides the industry’s most complete solution for testing metro ethernet and converged mobile backhaul networks and devices. Get it done faster!

- Easy test setup
- Quickly access functionality
- Build real world test scenarios

**Carrier Ethernet**

Carrier Ethernet is comprised of several technologies and Spirent understands that testing needs differ. Spirent TestCenter™ offers two levels of emulation for the best value and best fit for specific test needs. For functional testing in a development test environment, Package A supports up to 10 nodes per port. For demanding system testing or proof of concept testing, Package B allows full-scale testing using thousands of nodes and MAs per port.

- Comprehensive, real time EOAM protocol counters for interactive testing and troubleshooting
- Generate and analyze EOAM messages for thousands of emulated MEPs
- Topology preview for visualizing emulated nodes and their connectivity to other nodes
- Summarized counters and information with drill-down statistics for problem identification and analysis address
- Operates in IEEE or ITU-T mode

**Mobile Backhaul**

The TDM backhaul is no longer a cost-effective solution. Recent improvements in Carrier Ethernet and router capabilities make the Ethernet backhaul capable of handling the bandwidth and reliability required. Spirent TestCenter™ provides support for the Precision Timing Protocol (PTP). The Spirent TestCenter™ ports act as master or slave clocks, run the best master clock algorithm or negotiated unicast procedures, and exchange PTP messages with attached devices. This enables functional, performance and accuracy testing of boundary, transparent, master and slave DUT clocks.

- Enables scaled testing of boundary and transparent clocks
- Supports scale testing of Telecom Profile Master and Slave clocks
- Optional support for external BITS and GPS time sources
- Combine with Calnex Paragon-X for comprehensive mobile backhaul testing

**Routing/MPLS**

Spirent TestCenter™ enables Network Equipment Manufacturers, Service Providers and large Enterprises to quickly evaluate and troubleshoot MPLS and VPLS functionality. This includes performance and scalability of any MPLS-enabled LSR device or network with traffic engineering or VPN technologies.

- Emulate any imaginable topology using Spirent TestCenter’s unique Topology Emulation—quickly build MPLS topologies running broadband access protocols, Carrier Ethernet protocols, or stateful application-layer protocols from a single application interface
- Use Command Sequencer Conditional test logic to automate complex test cases without writing any TCL code
- Create large scale tests generating thousands of LSPs, VPNs, pseudowires or tunnels
- Test data-plane outer convergence and network high availability features like BFD and Graceful Restart and monitor the affects of router configurations on traffic and QoS classes in real time

When it Comes to Carrier Network Testing, Spirent Delivers
Trusted Performance

Spirent TestCenter™ has won numerous awards and been selected as the test solution for countless public tests. Whether testing the new breed of carrier networks and their technologies for scale, performance, QoS, QoE, or putting the network’s security to the test, Spirent TestCenter™ is the smarter way to test.

Spirent TestCenter™ was awarded Test & Measurement World magazine’s 2012 Test of Time Award for demonstrated excellence in testing. Spirent TestCenter™ is the leading choice for network equipment manufacturers, service providers and enterprises employing the L2-7 IP and Ethernet technologies required to deliver any application over any network and on any device.

Spirent Communications is the leader in the global Ethernet testing market with a share of 30.9 percent. Frost & Sullivan recognized Spirent as the market leader in each segment (1GbE, 10GbE and 40/100GbE) that it tracks with shares of 27.9 percent, 32.9 percent and 34.1 percent respectively.

Spirent TestCenter™ Virtual and Spirent Avalanche Virtual received TMC’s 2011 Cloud Computing Excellence Award for exemplifying innovation and excellence in the market by leveraging the latest technology trends. This award recognizes companies that most effectively leveraged cloud computing in efforts to bring new, differentiated offerings to market.
Successful Carrier Network Testing Demands Unparalleled Flexibility and Converged Innovation

Spirent is a flexible, unified hardware and software platform, perfect for multi-protocol network scalability, security, availability and performance testing.

Carrier networks require several significant infrastructure enhancements. Improvements to the mobile backhaul, evolved packet core, transport core and data center must be made. Spirent TestCenter™ provides a fast path forward by enabling equipment manufacturers and carriers to validate all-IP next generation network infrastructure and performance, network QoS and subscriber QoE in the lab, and across live networks.

The Spirent TestCenter N11U chassis is the next generation in chassis architecture, designed to handle complex multiprotocol scale and cloud virtualization testing needs.

The Spirent TestCenter N4U chassis is the next-generation mobile chassis for the newest high-speed Ethernet dX2, fX2 and mX test modules.

- Designed for today's secure app-aware mobile, enterprise and carrier networks
- Supports a full range of test cases
- Supports Spirent Avalanche and Spirent Landslide applications

The Spirent TestCenter GUI emphasizes ease of use while offering very powerful capabilities and a high degree of flexibility.

- Its object-oriented interface simplifies the creation of multi-protocol topologies
- It introduces the emulated device concept and automatically propagates the device’s configured addresses to all protocols that it is required to emulate
- Built-in wizards and configuration accelerators reduce the time-to-test
- Cause-effect testing is simplified because both results and test configuration can be seen in a single view
Multi 10 Gbps security, attack and performance testing for network infrastructures, Web application infrastructures, virtual/cloud infrastructures and Triple Play services.

- 40Gbps line rate support for Spirent TestCenter mX 40G modules
- Provides support for virtual environments, including VMware, KVM, QEMU, Zen and Hyper-V
- Provides multi-protocol support
- Extensive, flexible reporting

The C100 Landslide platform is a comprehensive end-to-end platform. It provides the highest scale and most realistic mobile application traffic emulation test scenarios available. Landslide now tests very high user-plane or application performance testing over the top of the control and data plane testing.

- Emulates all key wireless core packet data network elements
- Combines control-plane and data-plane simulation
- New dual-port 10G interface significantly reduces the amount of equipment, power and connections required to test a high-performance mobile network

Ideal for network element engineering development, design and test groups requiring physical access to a test port on the workbench
Ideal for network equipment manufacturers doing burn-in and production line tests requiring low port count and compactness
Ideal for technical and field marketing groups that need to mirror actual network scenarios and traffic patterns so networks, services and individual network elements can be quickly validated

Validates virtualized network performance, scalability and security
Ensures seamless transitions when migrating to a virtualized data center or cloud environment
Reduces TCO by testing virtualized infrastructure prior to hardware or end-to-end testing with a single integrated system in a hybrid environment
Next Generation Carrier Network Testing with Spirent Optimized Infrastructure

"Spirent remains a trusted partner in public testing events and Spirent’s solutions in the interoperability events were important to help showcase the advances in the implementation and features of Carrier Ethernet."

- CARSTEN ROSSEHÖVEL, MANAGING DIRECTOR, EANTC AG

Spirent fX2
HIGH PERFORMANCE COMPUTING
fX2 module delivers the highest density and lowest total cost of ownership in its class and is ideal for testing next-gen multi-terabit service provider and cloud infrastructure
- 5-port 40G/20-port 10G
- 1X 2-port 100G CFP-2
- High Scale Terabit Routers—Test 40G and 100G Ethernet core routers with multi-protocol topologies and line rate traffic

Spirent dX2
FABRIC PORT DENSITY
Highest density 100G/40G/10G tri-speed CFP2/CFP4 and 40/10G dual speed QSFP+ modules for verifying next generation router and switch architectures
- 4-port 100G/8 port 40G / 40 port 10G CFP2/CFP4 module
- 400 Gbps per module
- 4.8 Tbps per chassis
- 8-port 40G/32 port 10G QSFP+ module
- 320 Gbps per module
- 3.84 Tbps per chassis
- Load DUT to terabit fabric and backplane capacity
- Designed to test Industry’s data center Ethernet Fabrics

HyperMetrics neXt mX
MOBILE MULTIPLAY EXPERIENCE
Highest performance 10G Ethernet multiple performance test modules
- 2, 4, or 8 10Gbe SFP+ port module options
- Line rate Layer 2-3 stateful protocols at mobile subscriber data scale
- 80 Gbps per module
- 960 Gbps per chassis
- Test access, routing, mobile backhaul, mobility, cloud infrastructure and application performance with a single module
- Copper version available

Spirent mX 100G CFP-2
Spirent mX 100G is the industry’s highest density 100G module with support for CFP-2
- High Scale Terabit Routers: Test 100G Ethernet core routers with high scale, multi-protocol topologies
- High Capacity Multiservice Routers: Validate IP throughput and Any G mobility with millions of subscribers and per-port line-rate data with minimum-sized packets and detailed per-mobile statistics
- Data Center Fabrics: Validate the forwarding performance and functional capabilities of ultra-high scale, next-generation multi-terabit cloud data center fabric
Achieve Accurate, Intelligent, Dynamic Results

The industry’s most accurate and comprehensive set of real-time results gives you the insight to eliminate customer-found defects. Intelligent Results provides data correlation with hierarchical results – bringing important information to the user’s attention and making drill-down analysis simple for transmit and receive statistics.

Experience Increased Testing Efficiency

Spirent TestCenter™ built-in automation tools make it easy to maintain a test program that’s efficient and increases product or service speed to market – which is critical in today’s competitive world.

- **Spirent Test Expert** software wizards show you how to test.
- **Spirent TestCenter API** is a powerful API that enables the test case author to replicate practically any GUI functionality in a user script. Spirent TestCenter provides native programmatic interfaces in Tcl, Perl, C, Java and Ruby, allowing you to work in the language of your choice.
- **Spirent TestCenter Command Sequencer** is a powerful API that enables the test case author to replicate practically any GUI functionality in a user script. Spirent TestCenter provides native programmatic interfaces in Tcl, Perl, C, Java and Ruby, allowing you to work in the language of your choice.
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Spirent iTest

iTest is a software solution for test productivity that integrates with Spirent test equipment. iTest allows developers and testers to rapidly develop new test cases without specialized programming expertise. iTest uses unique and differentiated technologies to capture subscriber actions, orchestrate network testing, and easily parse and analyze unstructured device responses. In addition, iTest automatically documents all subscriber actions and system device responses saving significant time. The result is portable and maintainable test cases that can be used for “lights out” regression testing.

- iTest provides comprehensive support for end-to-end network testing incorporating automated control and reporting
- Orchestrate system testing with network devices and traffic generators to create an automated system test solution
- Sessions supported include CLI, Test Equipment, SNMP, Web, Java Swing, Flash (Flex), web services, VNC, serial port, Tcl, and VMware vSphere
- Easily parse and analyze device responses with iTest Response Mapping and then utilize advanced analysis and conditional logic for pass/fail criteria and branching
- Automatically generate comprehensive and customizable documentation for every run, including proof of testing and concise information for bug reports and issue resolution
- Store test cases and test results in customer’s choice of source control management and database systems, including SVN, SQL, HP ALM, and IBM Rational
- Create graphical topologies that provide a single-click connection to any test-bed device for setup, teardown, or diagnostic procedures
- iTest topologies can be reserved for specific test case execution and used to remotely change network topologies using Layer 1 and Layer 2 switches

Spirent OnDEMAND Test Services

Spirent OnDEMAND is a suite of packaged test services designed to detect and mitigate problems before you launch new network upgrades or infrastructure, services or applications. Through the use of proven, advanced techniques, a structured testing approach, and full benefit of Spirent’s award-winning Spirent TestCenter, Avalanche, Studio, or Landslide test solutions, risks of poor performance are eliminated.

Spirent OnDEMAND leverages the expertise of the Spirent Professional Services team to provide hands-on assistance to meet all major testing needs. Our test methodology and automation experts are IETF and RFC authors who have developed industry benchmarks and best practices. They assist in defining standards and performance tests for standards bodies and industry forums. Spirent OnDEMAND ensures the promise of successful converged carrier networks and associated services. Converged carrier network testing should address:

- Session scalability and Quality of Experience (QoE)—for sensitive applications such as voice and video
- Performance—of thousands of MPLS tunnels while handling low-priority traffic
- SLA performance—across thousands of business customers
- MPLS-tunnels—service traffic failover verification
- Conformance—to make-before-break standards
- Peer, route, adjacency and AS capacity
- Establish network/device performance under load, allowing issues to be resolved prior to the subscriber experience
- Verify network equipment manufacturer product claims with consistent, comparable statistics to provide objective comparison of each tested vendor
- Ensure customer satisfaction by delivering the highest service quality possible
- Realize budget savings with successful first time seamless system integration

Spirent iTest orchestrates sophisticated system and scenario testing, configuring and managing hundreds of devices simultaneously while providing interactive testing with DUTs.