SPIRENT TESTCENTER

POS AND ATM WAN TEST MODULES

Convergence is creating a new generation of integrated network devices and services that are much more complex than ever before. The resulting increased complexity, scarcity of testing skills and architectural shortcomings in current test systems are hurting the ability of manufacturers to ship products on time at escalating quality levels and slowing service providers' ability to deploy networks that get Quality of Experience (QoE) right the first time.

INCREASE PRODUCTIVITY: GET THERE FASTER WITH SPIRENT TESTCENTER

- Test from POS OC-3 to OC-192 and 10GbE all with one module
- Highest port density UniPHY/OC-192 and OC-48 test solution on the market
- 32k transmit and 64k receive test streams per port
- Analyzer HyperFilters™ allow you to separate and view in real time packet header fields such as MAC DA/SA, IP SA/DA, MPLS labels, VLAN tags, TOS/DSCP, TCP/UDP ports, ATM VPI/VCI or other custom values
- Sophisticated and realistic traffic generation with variable header fields, packet contents, packet lengths and stream rates for quick setup and traffic generation of billions of flows
- Measure and report in real time for thousands of streams: packet loss, re-sequencing, Metro Ethernet Forum-specified jitter, bit errors and latency
- Bi-directional control protocol decoding*
- High-performance per-port CPU for testing IPv4 and IPv6 routing and MPLS protocols

* Requires BPK-1029A Capture and Decode Base Package

Spirent can help you address this challenge with Spirent TestCenter™ with its innovative Inspire Architecture™. Now you can create and execute more complex test cases in less time with the same resources—and scale tests higher while debugging problems faster. The results: lower CAPEX and OPEX, faster time to market, greater market share and higher profitability.

The Spirent TestCenter UniPHY/OC-192, OC-48/12/3 POS and OC-12/3 ATM WAN test modules have the capability to test the industry's highest-performing and most service-rich core and edge routers.

Today's core and edge routers provide the backbone for bandwidth hungry and service-rich networks. These networks must deliver services like voice and live video that are very sensitive to end-to-end latency and jitter. Spirent TestCenter and Series 2000 UniPHY/OC-192, OC-48/12/3 WAN and OC-12/3 ATM modules are the perfect solution for verifying the QoS performance and functionality of next-generation core and edge routers to meet the demands of these services.

Services such as Layer 2 and Layer 3 VPNs, PPPoX and multicast routing put high demands on route processors. Spirent TestCenter's WAN cards feature high performance per-port onboard CPUs and sophisticated control plane/data plane integration to thoroughly test router service capacity in conjunction with traffic.

WAN-2002A
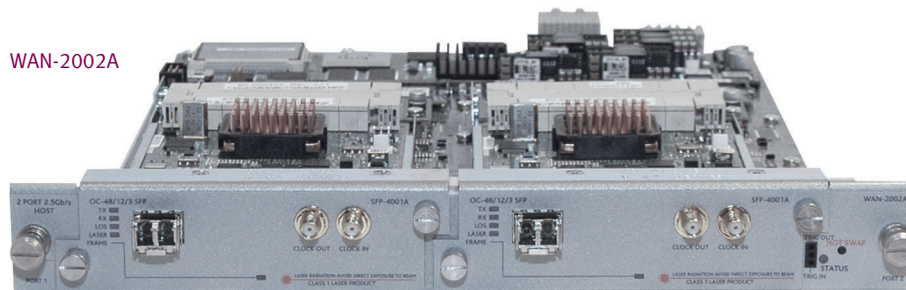
POS AND ATM WAN TEST MODULES
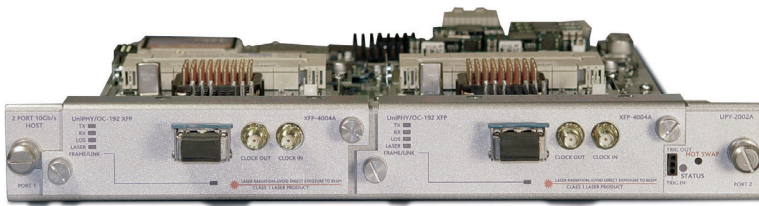
UPY-2002A

Spirent builds test modules for the opera-tional needs of today's labs. As routers become increasingly sophisticated with higher density line cards, lab managers are challenged to do more with less staff and smaller budgets. The Spirent TestCenter platform provides more value through:

- High density, feature-rich modules that require less rack space
- High numbers of virtual interfaces and routing sessions per port requiring fewer interfaces for capacity testing, and thereby fewer chassis to manage
- "White box" test capability allows simple yet powerful test system integration with DUTs to get the right information the first time for post-test analysis

APPLICATIONS

- Test core router capacity with the industry's highest density OC-192 and OC-48 solution
- Characterize line rate forwarding behavior of devices up to 10Gbps
- Test Layer 2 and Layer 3 VPN, multicast, Internet routing and access aggregation service capacity of core, edge and access routers
- Inject routing protocol messages to emulate complex IPv4 and IPv6 networks with thousands of routers
- Characterize DUT forwarding capability by measuring packet rates, loss, re-sequence, latency and latency jitter on thousands of traffic streams
- Test 10GbE LAN, WAN, OC-192, OC-48, OC-12 and OC-3 router interfaces with a single tester module

BENEFITS

- Smaller lab footprint: Save operational costs with the highest density and most flexible solution for testing 10GbE/OC-192, OC-48/12/3 POS and OC-12/3 ATM
- Flexible design protects your investment: The pluggable Personality Board and transceiver design lowers your cost when new interfaces are needed
- Leverages Spirent TestCenter with Inspire Architecture time-to-test advantage: Use the industry's most thoroughly designed platform to save time and money during testing

TECHNICAL SPECIFICATIONS

Line Interface

- XFP-4004A Personality Board
  - Supports pluggable XFP transceiver with 850nm, 1310nm or 1550nm wavelength laser
  - OC-192c or STM-64c, 10GbE LAN and WAN software switchable Layer 1 modes

- SFP-4001A Personality Board
  - Supports pluggable SFP transceiver with 1310nm or 1550nm wavelength laser
  - OC-48c/12c/3c or STM-16c/4c/1c software switchable Layer 1 modes

- SFP-4002A ATM Personality Module
  - Supports pluggable SFP transceiver with 1310nm single-mode or multi-mode
  - OC-12c/3c or STM-4c/1c software switchable Layer 1 modes

- Transmit timing
  - Internal oscillator (20ppm)
  - External input from front panel connector (19.44 MHz SMA)**
  - BITS from chassis controller**
  - Loop from receive signal**

**Available in SONET/SDH modes only

- Interface control
  - Normal: generator transmits to, and analyzer receives from, line interface
  - Diagnostic loopback: analyzer receives from module generator
  - Line monitor: analyzer receives from line interface and passes traffic to transmit interface

SONET/SDH Control

- Monitor receive alarms and errors
  - Section LOS, OOF, LOF, B1, J0 Unstable; Line AIS, RDI, REI, B2, K1/K2 Unstable, K1/K2 Change; Path AIS, LOP, RDI, unequipped, B3, REI, PLM, J1 Unstable, TIM

- Transmit alarms and errors
  - Continuous alarm generation: Section LOS, LOF, B1; Line AIS, RDI, REI, B2; Path AIS, LOP, RDI, B3, unequipped

- Additional status and controls
  - S1 byte transmit, expected and received
  - C2 byte transmit, expected and received
  - APS transmit control and receive information
  - J0 Section Trace control and receive information
  - J1 Section Trace control and receive information

- Automatic alarm response for Line RDI, REI and Path RDI, REI
- Laser output enable/disable
- FCS-16 or FCS-32 control
- HDLC Scrambling enable/disable
- HDLC Keepalive enable disable

10GbE LAN/WAN Control

- MTU size
- Flow Control enable/disable
- Deficit Idle Count enable/disable
- Link Fault Signaling transmit
- MDIO register control

CPU

- Broadcom 800MHz CPU per port
- 1GB DDR RAM

Generator

- 32k transmit test streams, billions of flows
- User defined frame headers, frame contents and custom frames
- Six 32-bit VFDs per stream
- Packet transmit profiles: continuous, burst for specified time, burst for specified number of frames
- Frame sizes: fixed, stepped, or random with minimum and maximum
- Generator port counters
  - Counts and rates: Frames, bytes, signature frames, undersize frames, oversize frames and jumbo frames
  - Error counts and rates: FCS errors, checksum errors, and PRBS bit errors
  - Protocol frames and rates: VLAN frames, MPLS frames, IPv4 frames, IPv6 frames

Analyzer

- 64k receive streams with up to 18 measurements for each stream tracked in real time
- Four 16-bit and one 32-bit HyperFilter for segregating traffic and viewing header or payload values in real time
- Analyzer port counters
  - Counts and rates: Frames, bytes, signature frames, undersize frames, oversize frames and jumbo frames
  - Error counts and rates: FCS errors, checksum errors, and PRBS bit errors
  - Protocol frames and rates: VLAN frames, MPLS frames, IPv4 frames, IPv6 frames, TCP frames, UDP frames, ICMP frames
- Analyzer stream counters (for up to 64k received streams per port)
  - Frames, frame rate, bytes and byte rate
  - Error counts and rates: check sum errors, FCS errors, PRBS bit errors

- Sequence event frames and rates: In sequence frames, out of sequence frames, lost frames, reordered frames, duplicate frames, late frames
- Avg/min/max: packet delay, inter-arrival time, jitter
- Min and max frame length
- 16-bin histogram for delay, inter-arrival time, jitter, frame length, or sequence

ATM Control

- Monitor and receive alarms and errors
  - ATM Alarms: Out of Cell Delineation
- Port Level Settings
  - Enable HEC Coset
  - Enable HEC RX Correction
  - Pass Bad RX HEC
- Host Level Settings
  - VPI/VCI start, stop, step and repeat mode (no repeat, across ports, across VPI)
- Adaptation Layer
  - AAL0 as Unassigned or Idle Cells
  - AAL5
- Encapsulations
  - VC Mux
  - LLC/SNAP
  - Bridged Ethernet with or without FCS via VC Mux (Including VLANs)
  - Bridged 802.3/LLC/SNAP with or without FCS via VC Mux (Including VLANs)
  - Bridged Ethernet with or without FCS via LLC (Including VLANs)
  - Bridged 802.3/LLC/SNAP with or without FCS via LLC (including VLANs)

Analyzer Capture

- 32 bytes of pattern matching for filtering, starting or stopping capture
  - Logical AND, OR and NOT can be applied to pattern matching fields to create an expression
  - Fields easily selected from protocol templates
- 17 separate events to filter, start or stop capture
  - Checksum, FCS, PRBS, Layer 1 or sequence errors
  - Undersize, oversize, jumbo and user-defined frame length
  - IP packet type
- "Slice" mode for capturing first 16 bytes or more of frame data
- 16MB of capture RAM

SPIRENT®

SYSTEM REQUIREMENTS

Minimum PC, UNIX or Linux Requirements by System Size

- For Small Port System (2-25 ports)
  - Minimum Requirement—2.4 GHz Intel Pentium 4 processor (or equivalent), 512 MB RAM and 10 GB of free disk space
  - Recommended System—Intel Core™ 2 Duo E6300 processor (or equivalent), 2 GB of free RAM, 10 GB of free disk space

- For Medium Port System (26-75 ports)
  - Minimum Requirement—3 GHz Intel Pentium 4 processor (or equivalent), 2 GB of free RAM, 15 GB of free disk space
  - Recommended System—Intel Core 2 Duo E6400 processor (or equivalent), 4 GB free RAM, 100 GB of free disk space

- For Large System (76 ports and above)
  - Minimum Requirement—Intel Core 2 Duo E6400 processor (or equivalent), 3 GB free RAM, 100 GB free space on hard drive
  - Recommended System—Intel Core 2 Duo E6600 processor (or equivalent), 4 GB of RAM, 100 GB of free disk space

Spirent TestCenter Hardware Requirements

- Pentium® or greater PC running Windows® XP Professional SP2 with mouse/color monitor required for GUI operation (See Minimum PC Requirements section)
- One Ethernet cable and one 10/100/1000Mbps Ethernet card installed in the PC
- A SPT-2000A-HS Spirent 2U Chassis and Controller or SPT-9000A Spirent 9U Chassis and Controller
- Operating system languages supported: English, French, German, Italian, Japanese, Korean and Chinese (traditional and simplified)
- Operating systems supported: Windows XP SP2, Windows 2003 Server (32 bit), RedHat EL3 and EL5, Solaris 8.0 and 10.0

ORDERING INFORMATION

Packet Generator and Analyzer Base Package (BPK-1001A)

Routing, multicast and other base packages are optional but required for routing, MPLS, multicast and other protocol emulation.

SPIRENT GLOBAL SERVICES

Spirent Global Services optimizes your productivity with Spirent TestCenter over a broad range of technologies:

ORDERING INFORMATION	
Description	Part Number
2-Port 10G Host Module	UPY-2002A
1-Port 10G Host Module	UPY-2001A
2-Port 2.5G Host Module	WAN-2002A
2-Port 622 mb/s Host Module	WAN-2003A
At least one Personality Board required per Host Module:	
XFP 10GbE/OC-192 Personality Board	XFP-4004A
SFP OC-48/12/3 Personality Board	SFP-4001A
ATM SFP OC-12/3 Personality Board	SFP-4002A
Choose one transceiver per Personality Board:	
Optical transceiver, XFP 10GbE/OC-192, 1550nm	ACC-6034A
Optical transceiver, SFP OC-48/12/3, 1310nm single-mode	ACC-6035A
Optical transceiver, SFP OC-48/12/3, 1550nm	ACC-6036A
Optical transceiver, XFP 10GbE/OC-192, 1310nm	ACC-6037A
Optical transceiver, SFP OC-12/3, 1310NM, multi-mode	ACC-6038A

Professional Services

- Test lab optimization: Test automation engineering services
- Service deployment and service-level optimization: Vendor acceptance testing, SLA benchmarking, infrastructure and security validation
- Device scalability optimization: POC high-scalability validation testing

Education Services

- Web-based training: 24 x 7 hardware and software training
- Instructor-led training: Hands-on methodology and product training
- Certifications: SCPA and SCPE certifications

Implementation Services

- Optimized new customer productivity with up to three days of on-site assistance

Visit www.spirent.com/gs or contact your Spirent sales representative.

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