SPIRENT TESTCENTER

HYPERMETRICS DX 32-PORT 10G ETHERNET TEST MODULE

The Multiuser Spirent TestCenter 32-port 10G Ethernet HyperMetrics dX test module offers high density and flexibility for testing next-generation multi-terabit fabrics. With support for Ethernet, VLAN, FCoE, IPv4, IPv6, Multi-cast traffic generation and full mesh RFC 2544 latency analysis on thousands of ports, the HyperMetrics dX module is the industry's first space-efficient, power-efficient, and cost-effective solution for testing multi-terabit fabrics to full capacity.

SOLUTION OVERVIEW

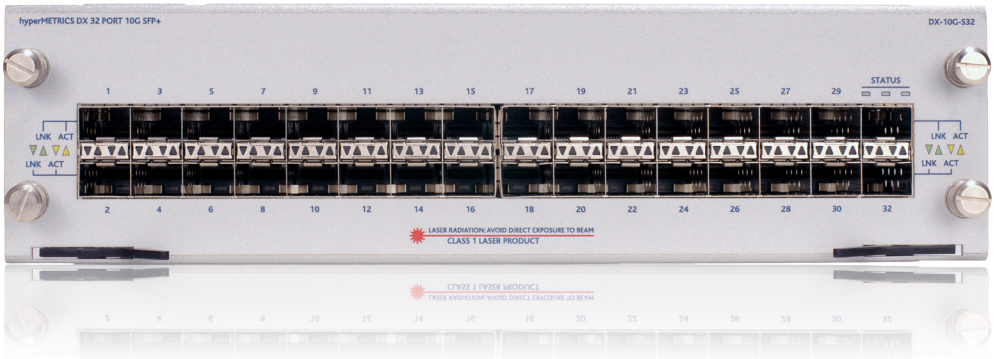
The HyperMetrics dX 32-port 10G Ethernet test module offers the most cost-effective solution for testing ultra high-scale switch and router fabrics. Modern switch and router fabrics span multiple chassis and can be expanded to build systems supporting hundreds or thousands of ports.

Spirent TestCenter™, with the HyperMetrics™ dX module, is capable of fully loading those systems to maximum bandwidth capacity. Using HyperMetrics hardware with Spirent TestCenter CloudCore™ architecture, the Spirent TestCenter platform with HyperMetrics dX test modules can scale traffic to almost 10 terabits in a single rack. This level of traffic can fully load modern multi-terabit backplanes and fabrics to assess system performance and verify reliability when deployed in large mission-critical environments supporting millions of user application flows.

The HyperMetrics dX module is fully compatible with the industry-leading Layer 2-7 traffic generation and deep analysis capabilities of the HyperMetrics CV, CM and mX modules. A solution combining the HyperMetrics dX module with other Spirent TestCenter modules delivers unparalleled possibilities in designing the industry's highest density, capacity and performance test beds at the most cost-effective price point.

APPLICATIONS

- **Data Center Fabrics**: Validate forwarding performance, latency and functional capabilities of ultra high-scale, next-generation SPB and TRILL enabled multi-terabit cloud data center fabrics
- **Terabit Routers**: Emulate ISIS, OSPF and BGP, validate IP throughput and Multicast performance, emulating hundreds of thousands of clients, to understand the architecture efficiency, performance, and reliability
- **Subscriber Access Gateways**: Emulate millions of access subscribers using different services over many ports under normal or full load traffic conditions
- **Device Benchmarking**: Test using IETF RFC 2544, RFC 2889 and RFC 3918 methodologies with easy test setup using dynamically bound traffic and automated wizards
- **Power Efficiency**: Evaluate real power usage and efficiency of router and switch blades and fabrics at low and full capacity load



SPIRENT TESTCENTER

HYPERMETRICS DX 32-PORT 10 GIGABIT ETHERNET TEST MODULE

FEATURES & BENEFITS

When scaling to tests with hundreds or thousands of test ports, several challenges arise. Configuring those ports and analyzing the data produced can be a formidable task. Spirent has been the industry leader in large scale testing for the last decade and the Spirent TestCenter architecture is built to scale.

- Automated Energy Efficiency with near-zero power usage of idle cores while running no/low scale tests and automated low-power states meeting requirement of any running test
- Supports 1G mode operation adding flexibility and cost savings for users needing both 10G and 1G high density test solutions
- Supports the advanced Spirent test signature for full compatibility with the complete line of Spirent TestCenter test modules. This provides a solution enabling full backplane traffic loading with many HyperMetrics dX modules transmitting traffic to be analyzed with the advanced deep analysis capabilities of the HyperMetrics CV,CM and mX modules.
- Full compatibility with Spirent TestCenter Virtual—enabling high-density testing throughout the physical and virtual data center infrastructure
- Available test packages and integrated configuration wizards simplify and accelerate configuration of multi-terabit traffic patterns across hundreds or thousands of ports

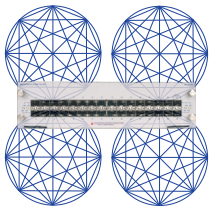
Productivity

- Intelligent Results™
  - Test beds at the scale Spirent TestCenter with HyperMetrics dX can achieve produce an overwhelming amount of data. An advanced and highly efficient distributed database processes billions of real-time results to validate tests and identify problems, giving engineers the immediate feedback they need to debug problems and accelerate development.
  - Spirent TestCenter delivers more results with tight correlation, and more information to find those obscure bugs. With more coverage and more information, answer questions faster, using a single test run where multiple runs are necessary with other test tools
  - Interesting Streams uses real-time results data mining to dynamically filter through mountains of data and display the results that matter.
- NoCode™ Automation with Command Sequencer and GUI to Script

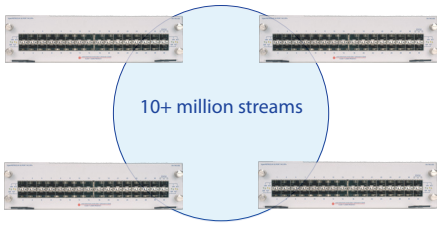
Visual programming empowers the test operator to:

- Construct sophisticated, stressful, automated test cases without programming experience
- Combine numerous individual test cases into a single run to save regression test time
- Develop a catalog of broad automated test cases in a fraction of the time
- Export automated test cases to run from a command line for headless test execution that can be integrated with any automated regression system

High density testing with HyperMetrics dX
Full mesh RFC 2544 throughput and latency



8 USERS PER MODULE



ONE USER WITH THOUSANDS OF PORTS IN FULL MESH TESTS

REQUIREMENTS

- SPT-11U Spirent 11U Chassis and Controller
- SPT-3U Spirent 3U Chassis and Controller
- SPT-2000A-HS Spirent 2U Chassis and Controller or SPT- 9000A Spirent 9U Chassis and Controller.
- Windows-based workstation with 10/100/1000 Mbps Ethernet NIC; mouse and color monitor required for GUI operation.
- Linux or Windows-based workstation for Tcl automation.
- For complete GUI requirements, please refer to Spirent TestCenter Packet Generator and Analyzer Base Package A data sheet (P/N 79-000028).
- For complete test automation system requirements, refer to the Spirent TestCenter Extreme Automation Package data sheet.
- Requires BPK-1001A for packet generation and analysis.

SPIRENT

TECHNICAL SPECIFICATIONS	
Spirent TestCenter HyperMetrics neXt 10 Gigabit Ethernet Test Modules	
Ports per module	32 10GbE ports per module. 192 ports per 9U or 11U chassis. 32 ports per 2U or 3U chassis. In 1GbE mode 32 1GbE ports per module. 192 ports per 9U or 11U chassis. 32 ports per 2U or 3U chassis
Optical transceiver	• SSFP+, 10GBase-SR/SW or 10Base-LR/LW, SFP+ Direct Attach Copper • SFP, 1000Base-SX, 1000Base-LX • SFP+, Dual rate 10G-1G transceivers
802.3ae Operational modes	LAN/WAN, with DIC support
Timing	Common Tx clock synchronized to chassis-based source, adjustable by ±100 ppm; optionally synchronized to GPS or CDMA timing source for inter-chassis synchronization Highly accurate module timestamp for clock synchronized to chassis; inter-chassis timestamp clock synchronized via direct cable, or GPS or CDMA timing source
Port CPU	Stackable multi-core CPU
User reservation	Per 4-port group
User Interface	Windows-based GUI and Tcl API
Layer 2/3 Generator and Analyzer	
Number of streams	4095 transmit and 4095 trackable receive streams; stream fields can be varied to create billions of flows
Frame transmit modes	Port based (rate per port), stream based (rate per stream), burst, timed
Min/max frame size (w/CRC)	60 to 16,004
Min/max Tx rates	1 packet per 3.43 seconds to 101% of line rate
Real-time Tx stream adjustments	Change rate and frame length settings without stopping the generator or analyzer for truly interactive, cause and effect analysis
Per-stream statistics analyzed in real time	• Out of sequence • Tx and Rx frame counts and rates • Tx and Rx L1 byte counts and rates • FCS errors • Min, Max and Average Latency
Transmit timestamp resolution	10 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization
Supported encapsulations	• Layer 2: Ethernet II, 802.1Q, 802.1ad, FCoE • Layer 3/4: IPv4, TDP, UDP
Supported Tx Signature Capability	Advanced sequencing (in-order, lost, re-ordered, late and duplicate), Latency

HYPERMETRICS DX 32-PORT 10 GIGABIT ETHERNET TEST MODULE

ORDERING INFORMATION	
Description	**Part Number**
Spirent TestCenter HyperMetrics DX 10GBE SFP+ 32-Ports	DX-10G-S32
Spirent TestCenter Chassis	**Part Number**
Spirent TestCenter 3U Chassis and Controller—Includes a CHS-3U chassis, CTL-3U-2 controller and the Spirent TestCenter system software (licenses sold separately) and documentation	SPT-3U
Spirent TestCenter 11U Chassis and Controller – Includes a CHS-11U chassis, CTL-11U-2 controller and the Spirent TestCenter system software (licenses sold separately) and documentation	SPT-11U
Spirent TestCenter 9U Chassis and Controller – Includes a CHS-9000A chassis, CTL-9002A controller and the Spirent TestCenter system software (licenses sold separately) and documentation	SPT-9000A
Accessories	**Part Number**
Optical Transceiver, SFP+ MSA, 10GbE, 10GBase-SR, 850nm, MMF	ACC-6050A
Optical Transceiver, SFP+ MSA, 10GbE, 10GBase-LR, 1310nm, SMF	ACC-6051A
SFP+ Passive Copper Cable Assembly, 1-Meter	ACC-6060A
SFP+ Passive Copper Cable Assembly, 3-Meter	ACC-6061A
1000Base-SX GigE SFP Transceiver, MM 850nm, LC Connector	ACC-6025A
1000Base-LX GigE SFP Transceiver, SM 1310nm, LC Connector	ACC-6026A
Optical Transceiver SFP+ Dual Rate 10G-1G 850NM MMF	ACC-6081A
Optical Transceiver SFP+ Dual Rate 10G-1G 1310NM SMF	ACC-6082A

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.

AMERICAS 1-800-SPIRENT • +1-818-676-2683 • sales@spirent.com

EUROPE AND THE MIDDLE EAST +44 (0) 1293 767979 • emeainfo@spirent.com

ASIA AND THE PACIFIC +86-10-8518-2539 • salesasia@spirent.com

TESTED WITH SPIRENT