

This Former Spirent Business is Now Part of VIAVI

Contact Us +1 844 GO VIAVI | (+1 844 468 4284)

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M1 Multi-speed Appliances

Compact Layer 2-3 Test Platform

100/50/40/25/10/5/2.5/1G and 10/100/1000M

Solution Overview

Spirent M1 Appliance is the industry's highest density, compact appliance that offers a comprehensive portfolio of products that will help generate, analyze, capture, and filter network packets. M1 Appliance combines Spirent's industry-leading Layer 2-3 traffic generation and analysis with powerful network emulation and application layer protocols for emulating a wide range of device types, users, and protocols.

The M1 also delivers the highest performance with the most competitive total cost of ownership (TCO) in a compact 2U appliance form factor. The M1 can be used in a benchtop lab environment where excessive equipment noise can be an issue for operators or in a traditional test lab environment. The M1's flexibility makes it perfect throughout the test lifecycle for functional, performance, and benchmark testing of data center and service provider network infrastructure and evolving SDN and NFV technologies.

Applications

SDN and data center —Validate forwarding performance and functional capabilities of Software-Defined Networks (SDN) with ultra-low latency and flexible port density. Supports key technologies like VXLAN, OpenFlow, PCE, Segment Routing and BGP-LS

Device benchmarking —Test using IETF RFC 2544, RFC 2889, & RFC 3918 methodologies with easy test setup using dynamically bound traffic and automated wizards

Core and edge routers & switches —Verify scale, reliability, and performance of Layer 2 & 3 services, including data, multicast, and video delivered via unicast routing, multicast routing, switching, and MPLS VPN technologies

Carrier Ethernet —Verify scale, reliability, and performance of Ethernet services delivered via Ethernet OAM, MPLS-TP, VPLS, PWE3 Pseudowire, bridged Ethernet, packet transport protocols, or combinations of these technologies

Subscriber emulation —Verify setup & teardown of thousands of access subscribers using different services over various tunneling technologies (VLAN, L2GRE, MPLS, VPNs, VPLS, etc...) under normal or exceptional traffic conditions

Features & Benefits

- Multi-speed
100/50/40/25/10/5G/2.5G/1G, and 10/100M/1000M Ethernet for flexible interconnect with various options, including Long Reach optical transceiver, Short Reach optical transceiver, Direct Attached Copper Cable (DAC), and 1GBASE-T
- Low noise for benchtop operation in proximity to users
- Traffic and protocol performance identical to fX2 mainframe test modules and fully interoperable with all Spirent TestCenter hardware
- Full chassis chaining and external timing synch available via direct connect, NTP, PTP, GPS, and CDMA
- Full suite of Spirent TestCenter protocols and test packages are available



Technical Specifications

Spirent M1 Appliance

Inter-NIC and inter-system time synchronization	Stratum-3 rated oscillator is the default time source. Transmit line clock is at the precise nominal Ethernet rate $\pm < 1$ PPM on initial shipment. Accurate to ± 4.6 PPM 15 years of operation • Frame time-stamp resolution of 2.5ns • GPS and CDMA-based external time sources are supported • IEEE 1588v2 and NTP packet-based external time sources are supported • TIA/EIA-95B-based external time sources are supported
Histograms	Port-level histograms
Operating Condition	Supported for 41° to 86° F (5° to 30° C) ambient temperature. 20% to 80% relative humidity
AC Input Range	100-240VAC (Autosensing)
Max Power Draw	Maximum of 2000W
Product Weight	Unit installed weight: 32 lb. (14.5 kg) Shipping weight: 42 lb. (19 kg)
Product Dimensions	2U rackmount height 20" (D) x 17.5" (W) x 3.5" (H) or 50.80cm x 44.45cm x 8.89cm

M1-KIT-04-START

M1 4-PORT 10G/1G SFP+ AND LAYER 2-3 SW KIT

User Reservation	Per-port reservation available
Number of Ports	4 SFP+ ports
Port Speed	10/1G
Media Support	10G Direct Attach Copper Cable, 10GBASE-SR, 10GBASE-LR, 1000BASE-SX, 1000BASE-LX, 1000BASE-T
Transmit/Receive Streams per Port	64k/128k
Stream Block Definitions per Port	512, each capable of generating multiple streams
Capture Buffer Size	256 MB
VFDs	6
Min/max Frame Size (w/CRC)	100% line rate for frames of 58-16383 bytes /Sub-line rate for frames from 33-57 bytes
Latency Measurement Resolution	2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization

M1-KIT-06-START

M1 8-PORT 10G/1G SFP+ AND LAYER 2-3 SW KIT

User Reservation	Per-port reservation available
Number of Ports	8 SFP+ ports
Port Speed	10/1G
Media Support	10G Direct Attach Copper Cable, 10GBASE-SR, 10GBASE-LR, 1000BASE-SX, 1000BASE-LX, 1000BASE-T
Transmit/Receive Streams per Port	64k/128k
Stream Block Definitions per Port	512, each capable of generating multiple streams
Capture Buffer Size	256 MB
VFDs	6
Min/max Frame Size (w/CRC)	• 100% line rate for frames of 58-16383 bytes • Sub-line rate for frames from 33-57 bytes
Latency Measurement Resolution	2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization

M1-KIT-15-START		M1 16-PORT FX2 10/100/1000 ETHERNET SFP NIC AND HW TIMING KIT	
User Reservation		Per-port reservation available	
Number of Ports		16 SFP ports	
Port Speed		1000M/100M/10M	
Media Support		1000MBASE-SX, 1000MBASE-LX, 10/100/1000MBASE-T* (full-duplex only) *Spirent accessory Part Number (ACC-6092A) is needed to support BAST-T (RJ-45)	
Transmit/Receive Streams per Port		32k/64k	
Stream Block Definitions per Port		512, each capable of generating multiple streams	
Capture Buffer Size		8 MB	
VFDs		6, available for each of 1024 stream templates	
Min/max Frame Size (w/CRC)		100% line rate for 1G frames of 58-16383 bytes controlled by fixed, increment, decrement, random and IMIX modes 10/100 max frame length of 16350 when not using PPM adjust 10BASE-T max frame length of 13000 when using PPM adjust	
Latency Measurement Resolution		2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization	
M1-KIT-18-START		M1 8-PORT FX2 10/100/1000 SFP, 4-PORT 10/1G SFP+ TIMING KIT	
User Reservation		Per-port reservation available	
Number of Ports		8 SFP ports, 4 SFP+ ports	
Port Speed		1000M/100M/10M ; 10G/1G	
Media Support		1000MBASE-SX, 1000MBASE-LX, 10/100/1000MBASE-T* (full-duplex only) 10G Direct Attach Copper Cable, 10GBASE-SR	
Transmit/Receive Streams per Port		- FX2 10/100/1000 SFP card: 32k/64k - FX2 10/1G SFP+ card: 64k/128k	
Stream Block Definitions per Port		512	
Capture Buffer Size		- FX2 10/100/1000 SFP card: 256 MB - FX2 10/1G SFP+ card: 8 MB	
VFDs		6	
Min/max Frame Size (w/CRC)		- FX2 10/100/1000 SFP card 100% line rate for 1G frames of 58-16383 bytes controlled by fixed, increment, decrement, random and IMIX modes 10/100 max frame length of 16350 when not using PPM adjust 10BASE-T max frame length of 13000 when using PPM adjust - FX2 10/1G SFP+ card 100% line rate for frames of 58-16383 bytes - Sub-line rate for frames from 33-57 bytes	
Latency Measurement Resolution		2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization	
M1-KIT-21-START		M1 4-PORT DX3 100/50/40/25/10G QSFP28, L2-3 & 2544 STARTER KIT	
User Reservation		Test port speed groups per card	
Number of Ports		4 QSFP28 ports	
Port Speed		100G/50G/40G/25G/10G Ethernet	
Media Support		CR, SR, LR, CWDM, CLR, PSM, at multi-rate (100/50/40/25/10G)	
Transmit/Receive Streams per Port		- Stats/Streams @100G; Tx=8K Rx=16K/4K (Basic Stats/ Latency stats) - Stats/Streams @50/40G; Tx=8K Rx=8K/2K (Basic Stats/ Latency stats) - Stats/Streams @25/10G; Tx=4K Rx=4K/1K (Basic Stats/ Latency stats) - Stream fields can be varied to create billions of flows	
Capture Buffer Size		8 MB per port	
VFDs		4	
Min/max Frame Size (w/CRC)		60 to 16,004	
Latency Measurement Resolution		2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization	

M1-KIT-23-START		M1 2-PORT DX3 100/50/40/25/10 QSFP28, 4-PORT FX2 10/1G SFP+ KIT	
User Reservation		Test port speed groups per card	
Number of Ports		2 QSFP28 ports and 4 SFP+ ports	
Port Speed		100G/50G/40G/25G/10G Ethernet	
Media Support		- DX3 100/50/40/25/10 QSFP28 card: CR, SR, LR, CWDM, CLR, PSM, at multi-rate (100/50/40/25/10G) - FX2 10/1G SFP+ card: 10G Direct Attach Copper Cable, 10GBASE-SR, 10GBASE-LR, 1000BASE-SX, 1000BASE-LX, 1000BASE-T	
Transmit/Receive Streams per Port		- DX3 100/50/40/25/10 QSFP28 card - Stats/Streams @100G; Tx=8K Rx=16K/4K (Basic Stats/ Latency stats) - Stats/Streams @50/40G; Tx=8K Rx=8K/2K (Basic Stats/ Latency stats) - Stats/Streams @25/10G; Tx=4K Rx=4K/1K (Basic Stats/ Latency stats) - Stream fields can be varied to create billions of flows - FX2 10/1G SFP+ card: 64k/128k	
Capture Buffer Size		8 MB per port	
VFDs		4	
Min/max Frame Size (w/CRC)		60 to 16,004	
Latency Measurement Resolution		2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization	
M1-KIT-25-START		M1 4-PORT 1G SFP NIC, 8-PORT 10G/5G/2.5G/1G/100M COPPER KIT	
User Reservation		Per-port reservation available	
Number of Ports		8 10G BASE-T ports, 4 SFP ports	
Port Speed		1G SFP NIC card: 1000M/100M/10M Ethernet 10G/5G/2.5G/1G/100M COPPER card: 10G/5G/2.5G/1G/100M Ethernet	
Media Support		10GBASE-T, 1000MBASE-SX, 1000MBASE-LX, 10/100/1000MBASE-T* (full-duplex only) *Spirent accessory Part Number (ACC-6092A) is needed to support BAST-T (RJ-45)	
Transmit/Receive Streams per Port		1G SFP NIC card: Tx=32k; Rx=64k 10G/5G/2.5G/1G/100M COPPER card: Tx=8K; Rx=8K	
Capture Buffer Size		8 MB per port	
VFDs		4 per stream	
Min/max Frame Size (w/CRC)		60 to 16,004	
Latency Measurement Resolution		2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization	

Requirements

- Windows-based workstation with 10/100/1000 Mbps Ethernet NIC; mouse and color monitor required for GUI operation
- Linux- or Windows-based workstation for scripting
- Mac-, Linux-, or Windows-based workstation for Rest API support

Ordering Information

Part Number	Description
M1-KIT-04-START	M1 4-PORT 10G/1G SFP+ AND LAYER 2-3 SW KIT
M1-KIT-06-START	M1 8-PORT 10G/1G SFP+ AND LAYER 2-3 SW KIT
M1-KIT-15-START	M1 16-PORT FX2 10/100/1000 ETHERNET SFP NIC AND HW TIMING KIT
M1-KIT-18-START	M1 8-PORT FX2 10/100/1000 SFP, 4-PORT 10/1G SFP+ TIMING KIT
M1-KIT-21-START	M1 4-PORT DX3 100/50/40/25/10G QSFP28, L2-3 & 2544 STARTER KIT
M1-KIT-23-START	M1 2-PORT DX3 100/50/40/25/10 QSFP28, 4-PORT FX2 10/1G SFP+ KIT
M1-KIT-25-START	M1 4-PORT 1G SFP NIC, 8-PORT 10G/5G/2.5G/1G/100M COPPER KIT