DATA SHEET

APS-100/400GE Series

Hyperscale Network Applications and Security Modular Test Platform

Problem: Quantify Unknowns in a Hyperscale World

Today's networks and data centers are moving to a hyperscale paradigm where traffic volumes are increasing more than estimated, encryption is ubiquitous, and new transport technologies are emerging faster than ever before. This digital transformation is impacting organizations of all sizes and comes at a time of increased user experience expectations whether at home or in the office.

To differentiate application delivery and network security offerings in this burgeoning market, network equipment manufacturers (NEMs) must not only support unprecedented traffic volumes and ever-expanding attack surfaces but strike the right balance between security and user experience. These hyperscale network challenges require a hyperscale test solution.

Solution: Modular and Flexible Hyperscale Testing

Keysight's APS Series next-generation application and security test platform, consisting of the APS-M1010 controller and APS-ONE-100 appliance, recreates hyperscale environments in a modular, grow-as-you-need approach. The APS-ONE-100 appliance is used standalone or stacked with multiple appliances to scale to your highest-performance needs. When stacked, the APS-ONE-100 appliances are controlled by the APS-M1010 controller, which supports up to ten appliances in a single system. The APS Series helps NEMs shorten their development cycles and data center operators find the right balance between mitigating security risks and delivering high end-user application performance.

Highlights

- Simplify testing, upgrades, and management with single pane of glass web UI that provides one IP address for the entire system
- Maximize your test budget with a flexible grow-as-you-need model—APS-ONE-100 appliance in standalone mode or in a stacked system and path to 400GE QSFP-DD
- Get unrivaled elephant flow performance of up to 75 Gbps per single TCP connection
- Elevate encrypted traffic performance with an order of magnitude improvement—up to 100K TLS connections per second and 150 Gbps encrypted throughput per appliance
- Test with hyperscale performance under realistic traffic conditions by using Keysight's industry-leading application and security test application
- Future-proof your investment with an upgrade to multi-speed 400/100/50/40/25/10GE modes

APS-ONE-100 appliance

KEYSIGHT TECHNOLOGIES

A single APS-ONE-100 Appliance delivers unparalleled real-world Transport Layer Security (TLS) performance of up to 100K TLS connections per second, 150 Gbps bulk encryption throughput and 3.2M concurrent connections per appliance. The hardware-based TLS acceleration significantly boosts overall encryption performance to double the encryption throughput per rack unit of the nearest competitor, significantly improving the transmission of realistic application mixes over TLS connections. With up to 75 Gbps per single TCP connection, the APS-ONE-100 appliance provides industry's highest Elephant Flow performance.

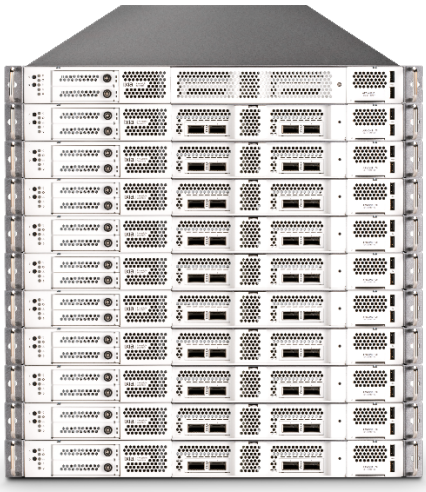
Each APS-ONE-100 Appliance supports two native QSFP28 100GE active interfaces. An innovative architecture allows concurrent emulation of complex applications, unprecedented TLS encrypted applications, and a large volume of distributed denial of service (DDoS) traffic to validate that network infrastructure is high performing and secure.

The APS Series is driven by Keysight's industry-leading test solution for application delivery and security resiliency testing.

Product Capabilities

The APS Series is a hyperscale Layer 4–7 test solution for validating devices and systems under real-world conditions, helping users to easily identify performance and interoperability issues. A modular architecture allows linear performance scaling to multi-terabit levels by stacking up to 10 APS-ONE-100 appliances in a single system controlled by the APS-M1010 controller.

The APS-M1010 controller appliance delivers a centralized management of up to 10 compute node appliances, facilitating centralized software upgrades of each system element. The rear I/O of the APS-M1010 appliance provides fast uplink network connectivity using 10 x 10GE ports to enable direct access to each APS-ONE-100 appliance, reducing the need for intermediary Layer 2 switches and provides a single management IP address for the entire cluster. Equipped with high-reliability data center removable drives—the APS-series provides fast and reliable storage, while allowing retention of the data drives when operating in high confidentiality environments.



Hyperscale testing with 3+ billion concurrent sessions,
35 million CPS, and 1.5 Tbps encrypted TLS throughput

With new paradigms like work from home settling in for the long-term, network infrastructures need to support unprecedented traffic volumes. Also, the proliferation of internet of things (IoT) devices is on-going, posing new security risks and adding additional pressures to support billions of concurrent connections to service these devices. Keysight's APS Series allows future-proof validation of hyperscale data center infrastructures and service provider networks with its capacity to generate up to 3 billion concurrent sessions, 35 million connections per second, and line-rate TLS encrypted traffic from a fully populated system.

Additionally, the system's underlying management operating system has been purpose-built with a cloud-native architecture for improved security, scalability, and resilience.

Hardware

The APS Series architecture employs cutting-edge innovation by combining powerful multi-core, multi-threaded processors, and a cloud-native software implementation to generate realistic, hyperscale-volume traffic.

The APS-ONE-100 appliance features powerful multi-core processors with dedicated memory and crypto accelerators for traffic generation. It can be used in a standalone mode or stacked together with other appliances in a system controlled by a dedicated APS-M1010 system controller. This reduces CAPEX and simplifies the management of the test system while allowing higher density.

The APS-ONE-100 appliance supports 100/50/40/25/10GE on the same port, saving CAPEX by eliminating the need to buy different hardware for each speed and increasing test platform efficiency.

Specifications

Specification	APS-ONE-100 appliance
Applications support	
KCOS	Yes
BreakingPoint	Yes, except Bit Blaster, Routing Robot, and Recreate test components
TCL API	Yes
REST API	Yes
Hardware specifications	
Physical interfaces	Front I/O: 4-port 100GE QSFP28 per appliance for test traffic Rear I/O: (1) Dual 1E management network ports for fast uplink network connectivity and BMC management over NCSI (2) Dual 10GE management network ports for future expandability (3) Dedicated BMC management port
Transceiver support	QSFP28 SR4 and CR4 (pluggable transceivers)

Specification	APS-ONE-100 appliance
Hardware encryption offload	Yes
Traffic Capture	Software-based
Capture memory	Maximum between 2GB or 2 million packets, per interface
IPv4, IPv6, UDP, TCP	Hardware checksum generation
Dimensions	30” (L) x 19” (W) x 1.7” (H) 762 mm (L) x 482 mm (W) x 43.65 (H)
Operating temperature	41 °F to 95 °F (5 °C to 35 °C), ambient air
Weight	35.06 lbs | 15.9 kgs

Specification	APS-M1010 controller
Applications support	
KCOS	Yes
BreakingPoint	Yes, except Bit Blaster, Routing Robot, and Recreate test components
TCL API	Yes
REST API	Yes
Hardware specifications	
Physical interfaces	10-port (active), rear I/O 10GE RJ45 cluster management ports
Transceiver support	N/A
Dimensions	30” (L) x 19” (W) x 1.7” (H) 762 mm (L) x 482 mm (W) x 43.65 (H)
Operating temperature	41 °F to 95 °F (5 °C to 35 °C), ambient air
Weight	32.34 lbs | 14.67 kgs

Specification	APS-M1010 controller
System capacity	
Appliances per system	Up to 10 x APS-ONE-100

Specification	Description
Input voltage	100-127VAC/200-240VAC, 50-60Hz, 15/10A (x2)
Power supply operating mode	(1) Redundant PSU 1,2: 1+1 100-127VAC/200-240VAC (2) Single Supply PSU 1: 1+0 100-127VAC/200-240VAC (3) Single Supply PSU 2: 0+1 100-127VAC/200-240VAC
Power cords	15A, 250V, C13 TO C14, 6 FT (x2)—Included
Max power requirement	941-0110 (APS-ONE-100)—1200W 941-0113 (APS-M1010)—600W

1. Connect supplied power cords into the power cord sockets of the APS System chassis (sockets labeled ‘A’ (amber) in the earlier image).
2. Plug the power cords into appropriate power receptacles.

Note: Keysight recommends connecting both PSU 1 and PSU 2 for APS-ONE-100 nodes.

Performance

Performance numbers are provided in back-to-back scenario by using both APS-ONE-100 appliance ports.

Performance metric	APS-ONE-100 appliance	APS-ONE-100 10-Unit System with controller
Application throughput	190 Gbps	1.90 Tbps
HTTP Connection Rate (CPS)	3.5 million	35 million
HTTP Concurrent Connections (CC)	320 million	3200 million
TLS throughput (TLS1_2_ECDHE_RSA_AES128_GCM_SHA256_2K_key, 256 P 1MB page)	150 Gbps	1.5 Tbps

Performance metric	APS-ONE-100 appliance	APS-ONE-100 10-Unit System with controller
TLS Connection Rate (CPS) **(ECDHE RSA 2k key, 256 P 1B page)**	100 K	1 million
TLS Concurrent Connections (CC)	3.2 million	32 million
Elephant Flow	75Gbps @ 9200B 27Gbps @ 1500B	75Gbps @ 9200B 27Gbps @ 1500B
IPsec Performance	2M concurrent tunnels 80 Gbps 4K tunnels/sec	20M concurrent tunnels 800 Gbps 40K tunnels/sec

Product Ordering Information

Part number	Description
941-0110	Ixia, APS-ONE-100, Compute Node with 4 x 100GE front I/O ports for the APS-M1010 Management Controller (941-0113)
941-0113	Ixia, APS-M1010 Management Controller Node, 1RU. This controller can support up to 10 APS-ONE-100 Compute Nodes (941-0110). Note: APS-ONE-100 Compute Nodes are purchased separately

Part number	Description
947-4057	Ixia, L4-7 Hardware Bundle with 10 x APS-ONE-100 Compute Nodes (941-0110) with 4 x 100GE front I/O ports each and 1 x APS-M1010 Management Controller (941-0113)
909-0856	BreakingPoint Application and Threat Intelligence (ATI) Subscription Program
QSFP28-SR4-XCVR	QSFP28 100GBASE-SR4 100GE pluggable optical transceiver, MMF (multimode), 850 nm, 100 m reach
942-0088	QSFP28 passive, copper, Direct Attach Cable (DAC), 3-meter length

Product Ordering Information for TAA-Compliant Parts

Part number	Description
941-0110-T	Ixia, APS-ONE-100, Compute Node with 4 x 100GE front I/O ports for the APS-M1010 Management Controller (941-0113), (941-0110)
941-0113-T	Ixia TAA Compliant, APS-M1010 Management Controller Node (941-0113)
QSFP28-SR4-XCVR-T	Ixia, TAA compliant, QSFP28 100GBASE-SR4 100GE pluggable optical transceiver, MMF (multimode fiber), 850 nm, 100 m reach (995-8040)

Learn more at: www.keysight.com

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