Layer 1-3 Network Test Products

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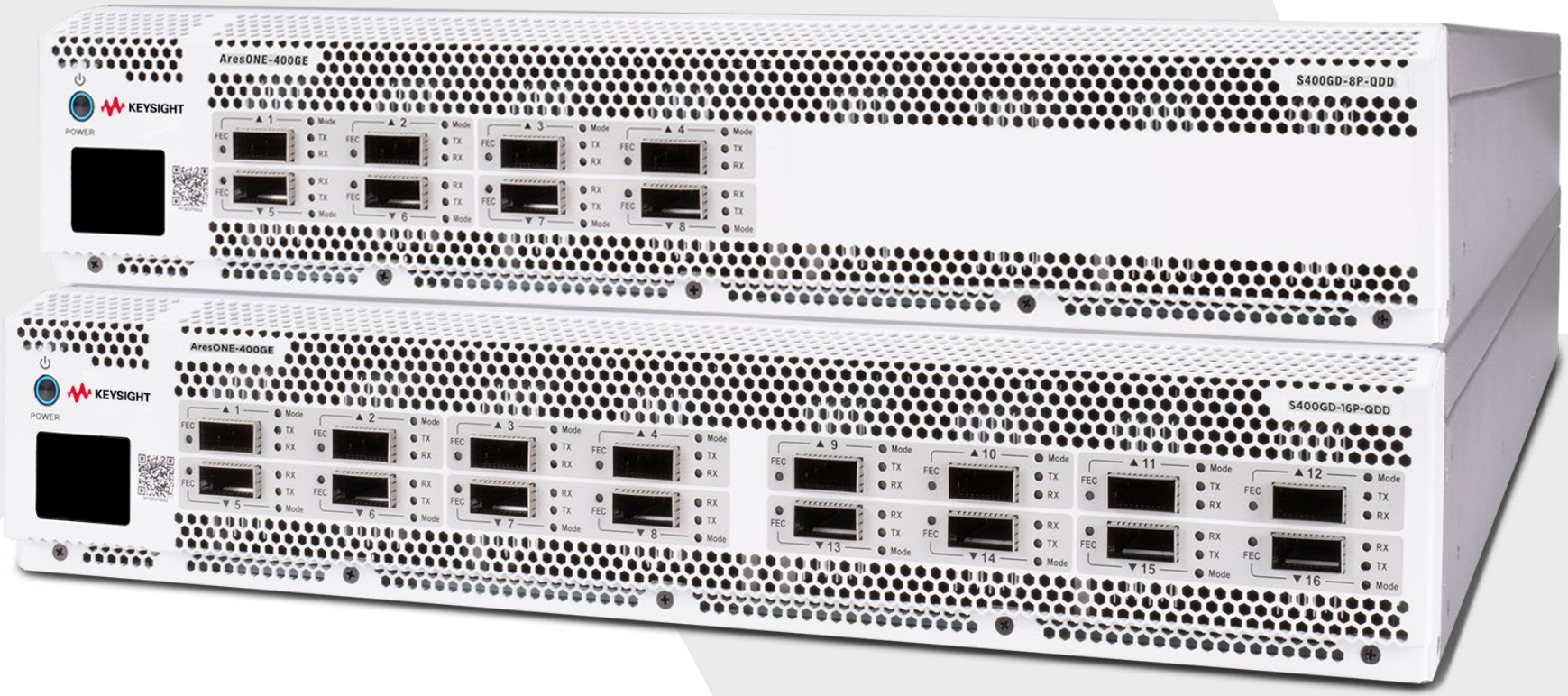

KEYSIGHT

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INTRODUCTION

A New Era of Network Testing

As data centers, network infrastructures and devices evolve, your strategies must keep up!

Building and maintaining a reliable, secure network or data center is a high-stakes game. For silicon chip or network equipment manufacturers (NEMs), identifying and resolving issues before shipping products is essential to avoid costly recalls and warranty claims. AI data center operators and service providers must ensure performance under high traffic to accelerate technology adoption with confidence. No matter your role, the network remains the lifeline of your business.

Unplanned downtime isn't just about lost revenue—it disrupts productivity, drives up recovery costs, damages customer satisfaction, and can seriously impact reputation. Depending on the severity, recovery can take weeks, months, or even years.

From NEMs and hyperscalers, to AI operators, cloud providers, and enterprises, a robust network is the foundation of success. Yet, organizations often invest heavily in validating expensive business and security applications while overlooking critical network infrastructure testing.

Keysight's end-to-end network and security test portfolio ensures reliability across all seven OSI layers, offering robust software applications, high-density load modules, platforms that validate interconnects up to 1.6T Ethernet, network emulators that replicate real-world impairments, and flexible chassis platforms. With comprehensive performance, conformance, and security testing solutions, we help you build confidence in every connection—so your network operates at peak performance, without surprises.

Peek inside – we think you'll like what you see!

Pick Your Solution...

L1-3 test software & cloud solutions

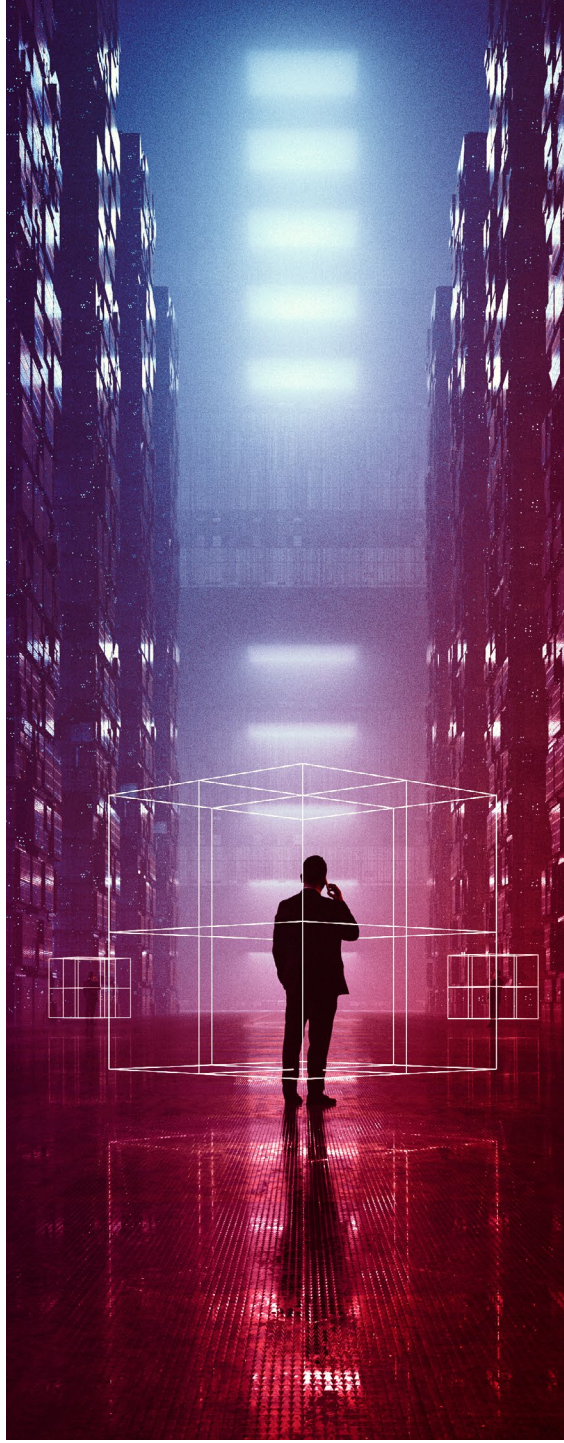
- IXNETWORK
- IXCHARIOT
- IXANVL
- KEYSIGHT ELASTIC NETWORK GENERATOR
- IXVERIFY
- INTERCONNECT TEST SYSTEM SOFTWARE
- KEYSIGHT AI DATA CENTER BUILDER
- KEYSIGHT NETWORK CONFORMANCE (KNC)

L1-3 test hardware solutions

- INTERCONNECT AND NETWORK PERFORMANCE TESTER 1600GE (INPT-1600GE)
- INTERCONNECT AND NETWORK PERFORMANCE TESTER 800GE (INPT-800GE)
- ARESONE-M 800GE
- G800GE-02
- ARESONE 400GE
- NOVUS QSFP28 / SFP28
- SWITCH AND EDGE ROUTER TESTER 100GE
- NOVUS 10GE AND NOVUS ONE PLUS
- NOVUS MINI
- NETWORK IMPAIRMENT EMULATORS
- NETWORK EMULATOR 3
- TIME SYNC ANALYZER
- XGS CHASSIS

Click here for L4-7 product catalog

- L4-7 TEST SOFTWARE
- L4-7 TEST HARDWARE



Layer 1-3 Network Test Software

Intuitive UI and full test automation using trusted industry methodologies

Our broad selection of network and AI infrastructure validation software delivers the industry's most comprehensive Layer 1-3 test applications.

Learn more

Layer 1-3 Network Infrastructure Testing

Software Test Solution Portfolio

Keysight's network test software applications provide comprehensive validation of network access, switching, routing, SDN protocols, RoCEv2 AI Fabric, and large-scale data center deployments.

They also deliver industry standard conformance, compliance and support of benchmark test suites. Our layer 1-3 test portfolio will help you build a differentiated, cost-effective network infrastructure to meet exponential growth in data center traffic across networks.

Our network validation software can:

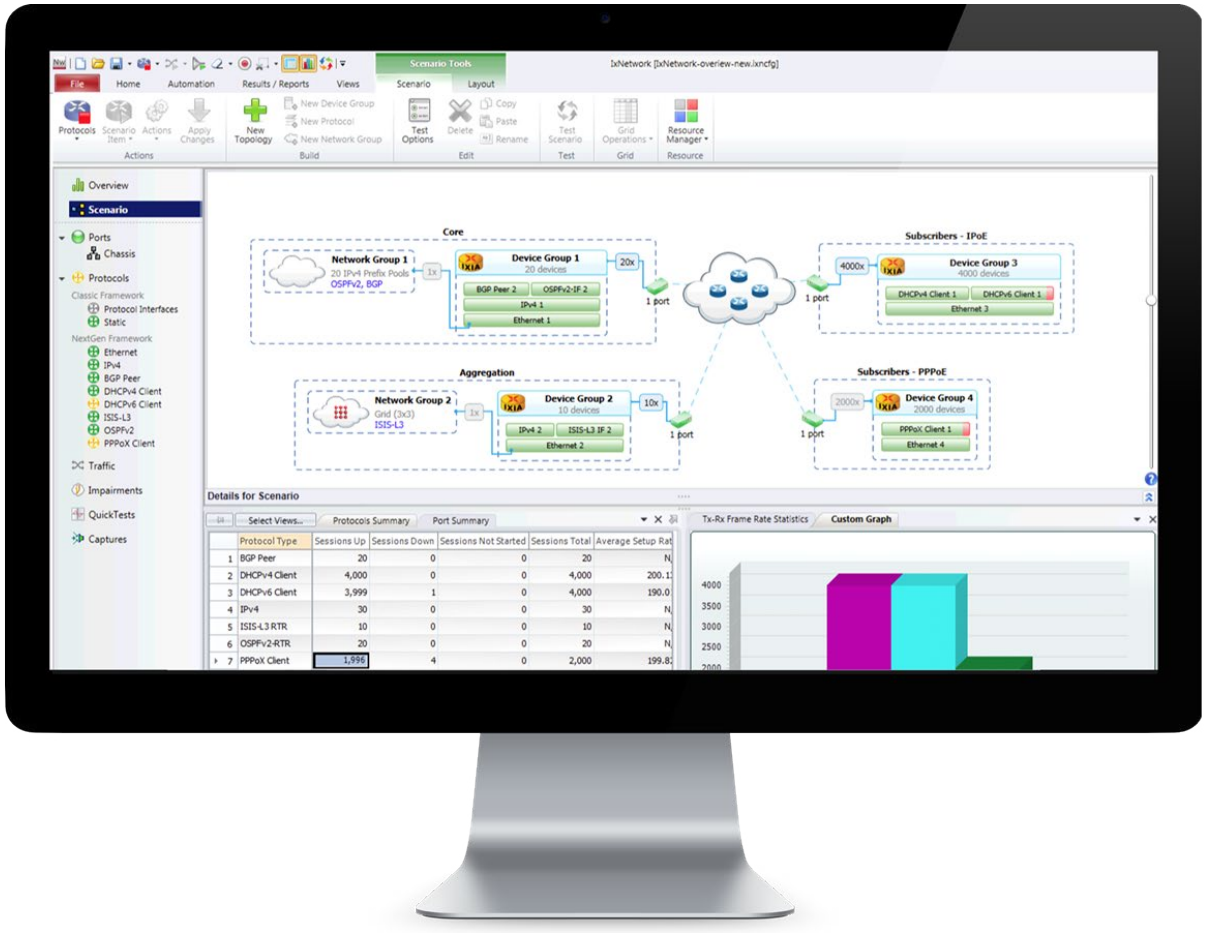
- Reduce capital expenditures by emulating and testing an exceptionally large scale of hosts/ switches/routers without using real devices.
- Shorten test time with easy-to-use visual topology- based protocol configuration, comprehensive analytics with drill-down, learned information, and test automation support.
- Lower network operating costs and identify problems in the lab before deployment with realistic emulation of real-world conditions, granular traffic generators, and stateful AppLibrary.
- Help you understand performance and scaling bottlenecks with unparalleled density, scale, and performance stress testing to take down the most powerful network device(s).

Software / application	OSI layer(s) support	Applicable to test hardware	Virtual edition	
IxNetwork	L1-3	AresONE family, Novus family	IxNetwork VE	Get a Quote >
IxChariot	L2-7	XRPi, Vision Edge 1S (E1S)	IxChariot console and performance endpoints	Get a Quote >
IxANVL	L2-4	Windows / Linux host	N/A	Get a Quote >
Keysight Elastic Network Generator (KENG)	L1-3	AresONE family, Novus family	Ixia-c (Container based)	Get a Quote >
IxVerify	L1-3	N/A	KVM environment	Get a Quote >
Interconnect Test System (ITS)	L1-2	INPT-1600GE, INPT-800GE	N/A	Get a Quote >
Keysight AI Data Center Builder (KAI DC Builder)	RoCEv2 L2-7	AresONE-M 800GE, AresONE-S 400GE	N/A	Get a Quote >
Keysight Network Conformance (KNC)	L1-3	Novus and Novus mini	N/A	Get a Quote >

IxNetwork

L1-3 network infrastructure performance testing that scales to your business needs

- Supports test coverage from 1GE to 800GE
- Comprehensive protocol test coverage for routing/switching, multiprotocol label switching (MPLS), software-defined networking (SDN), data center networking, broadband access, carrier Ethernet, automotive & industrial Ethernet, 5G transport, L2 security (MACSec).
- RoCEv2 lossless Ethernet validation for AI Fabric
- Emulates realistic network topology from access, and data center, to core network testing.
- Generates traffic flows that mimic realistic network traffic, and user applications.
- Provides powerful ingress/egress tracking and drill-down traffic flow analysis for rapid isolation of service violations.
- Emulates real-world application traffic mix over L23 infrastructure.
- Delivers end-to-end test system automation and performance benchmarking.
- IxNetwork VE runs in virtualized networks from any commercially available compute environment including private and public clouds.



Read the IxNetwork Data Sheet

Read the IxNetwork VE Data Sheet

IxNetwork comparison chart

			Variants			
License name	**Subscription / perpetual**	**Floating / node-lock**	**Subscription tier**	**Throughput**	**Common applications**	**Part number**
IxNetwork software bundle	Perpetual	Node-lock for XGS-2/XGS-12 chassis and fixed chassis/ appliance	SW package Tier 0 (Chassis)	Depends on HW	Routing, Basic MPLS and Multicast	928-0020
			SW package Tier 1 (Chassis)	Depends on HW	Routing/Switching, MPLS/VPN, Multicast	930-3500
			SW package Tier 2 (Chassis)	Depends on HW	Routing/Switching, MPLS/VPN, Multicast, Carrier Ethernet	930-3501
			SW package Tier 3 (Chassis)	Depends on HW	Routing/Switching, MPLS/VPN, Multicast, Carrier Ethernet, Data Center Ethernet, Broadband	930-3500
			All-inclusive	Depends on HW	All Inclusive package excludes: AppLibrary Slot Bundle, MACSec and/or Encryption test package	930-2210 (Chassis) 930-2200 (AresONE) 930-2220 (Novus ONE Plus) NTXNM1100A (Novus mini Pro)
	Annual Subscription	Floating	Subscription Tier 1	Depends on HW	Routing/Switching, MPLS/VPN, Multicast	930-9521
			Subscription Tier 2	Depends on HW	Routing/Switching, MPLS/VPN, Multicast, Carrier Ethernet, data Center Ethernet, Broadband	930-9522
			Subscription Tier 3	Depends on HW	All Inclusive package excludes: AppLibrary Slot Bundle, MACSec and/or Encryption test package	930-9523
IxNetwork AppLibrary slot bundle	Annual Subscription	Node-lock	Slot bundle	Depends on HW	IxNetwork Subscription AppLibrary Slot Bundle	930-3461
		Node-lock	Chassis bundle	Depends on HW	IxNetwork Subscription AppLibrary Slot Bundle	930-3463

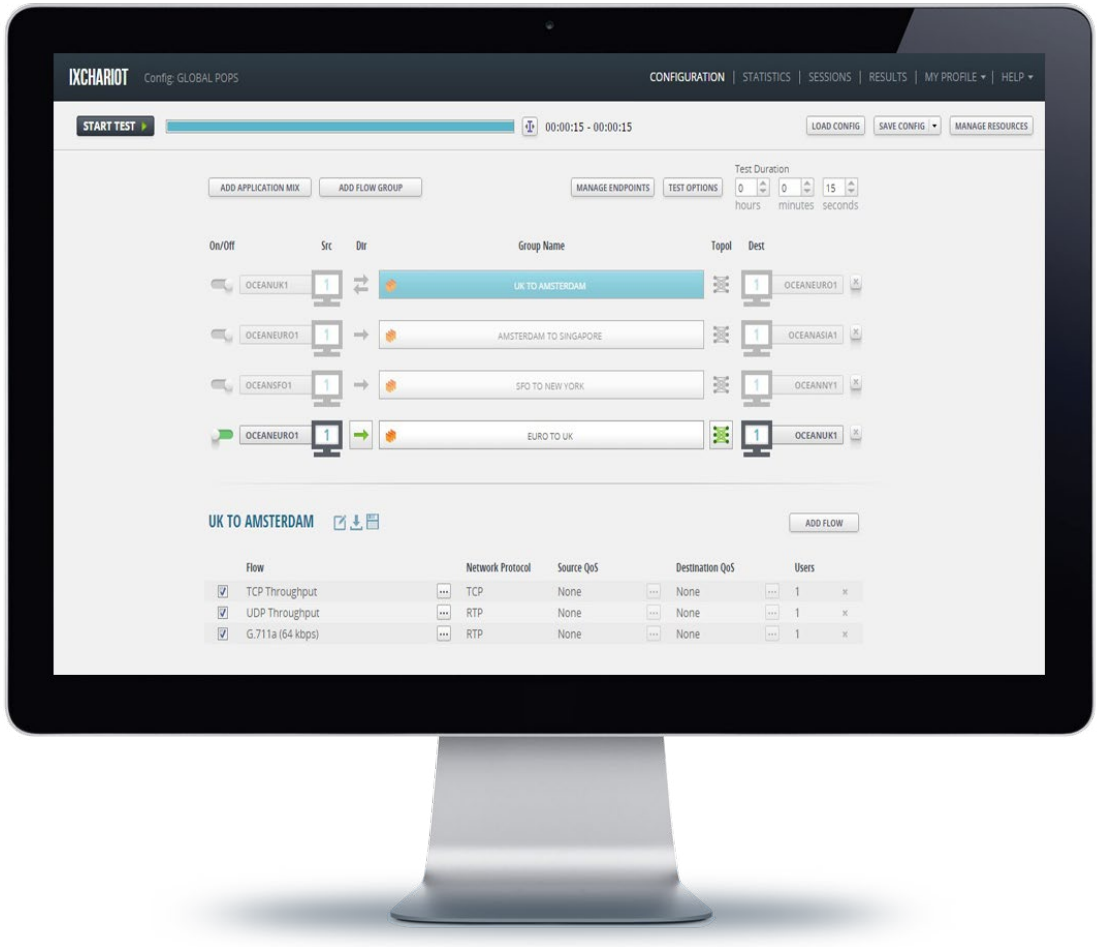
IxNetwork Virtual Edition (VE) comparison chart

				Variants		
License name	**Description**	**Subscription / perpetual**	**Floating / node-lock**	**Performance tier**	**Throughput**	**Part number**
IxNetwork VE annual subscription	IxNetwork VE tiered floating annual subscription license	Annual subscription	Floating	Tier 0	1 Gbps	939-9510
					100 Gbps	939-9620
				Tier 1	1 Gbps	939-9501
					100 Gbps	939-9621
				Tier 2	1 Gbps	939-9502
					100 Gbps	939-9622
				Tier 3	1 Gbps	939-9503
					10 Gbps	939-9523
					100 Gbps	939-9623
IxNetwork VE perpetual	IxNetwork VE tiered floating perpetual license	Perpetual	Floating	Tier 0	100 Gbps	939-9626
				Tier 1	100 Gbps	939-9627
				Tier 2	100 Gbps	939-9628
				Tier 3	1 Gbps	939-9509
					10 Gbps	939-9529
					100 Gbps	939-9629

IxChariot

Instant performance assessment for complex networks from pre- to post-deployment

- Provides a software-based network assessment and diagnostics tool.
- Offers a centralized console, with an intuitive web-based user interface, manages test endpoints, test runs, test reports.
- Simulates applications to measure key performance metrics such as throughput, latency, loss, jitter, MOS.
- Tests conformance for IPv4/IPv6, routing/MPLS/VPN, segment routing, automotive Ethernet, and more.
- Validates Wi-Fi clients and access points (APs) based on Wi-Fi Alliance certification tool.
- Assesses network performance instantly, including wireless performance and geo-location.
- Supports distributed and portable performance endpoints deployed on mobile, PC, Mac or in any hypervisor or cloud provider.
- Automates tests using Python APIs.
- Emulates and reports KPIs from complex application flows, voice and video services like Netflix and YouTube to understand your network's ability to deliver quality user experience.
- Emulates a blend of real-world application traffic used on today's networks. See AppLibrary.

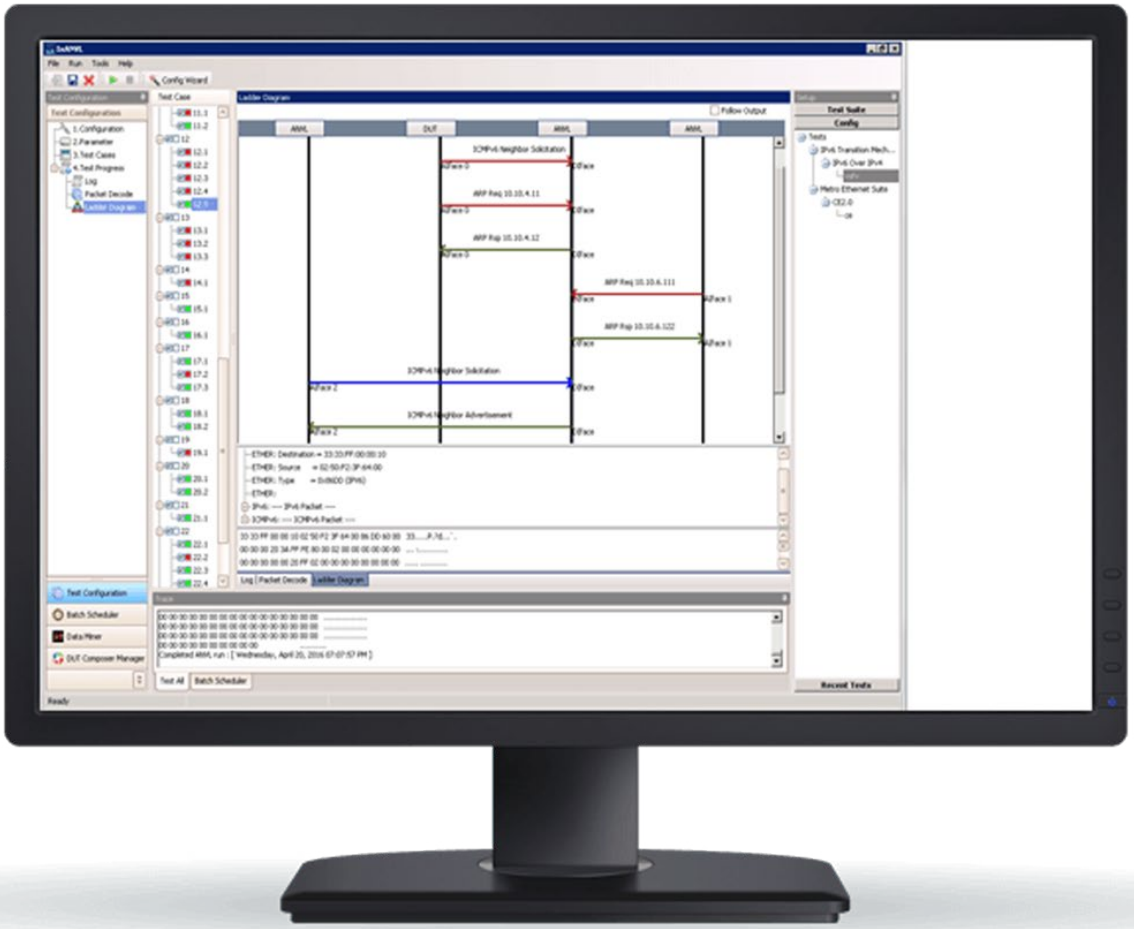


Read the IxChariot Data Sheet

IxANVL

Industry standard for automated network protocol validation

- Provides conformance test cases for a wide variety of protocols.
- Emulates large, multi-node networks which reduces costs and leads to more efficient testing and faster product-release times.
- Enables verification of the protocol stack, whether it is RFC/Standard compliant or not.
- Runs on minimal hardware, like a PC with a Linux or Windows operating system and only an Ethernet card.
- Functions with Keysight's powerful test and analysis platform through a Virtual Network Interface Card (VNIC) driver.
- Supports flexible industry standard test interfaces, including 100 Mbps / 1G / 10G / 100G / 400G Ethernet.



Learn more about IxANVL

Keysight Elastic Network Generator

Containerized network infrastructure testing based on Open Traffic Generator API

Software solution. Validate modern data center networks in a software world.

Automated testing. Execute automated test scripts for repeatable validation.

Open interfaces. Create scripts based on open-source OTG API data model.

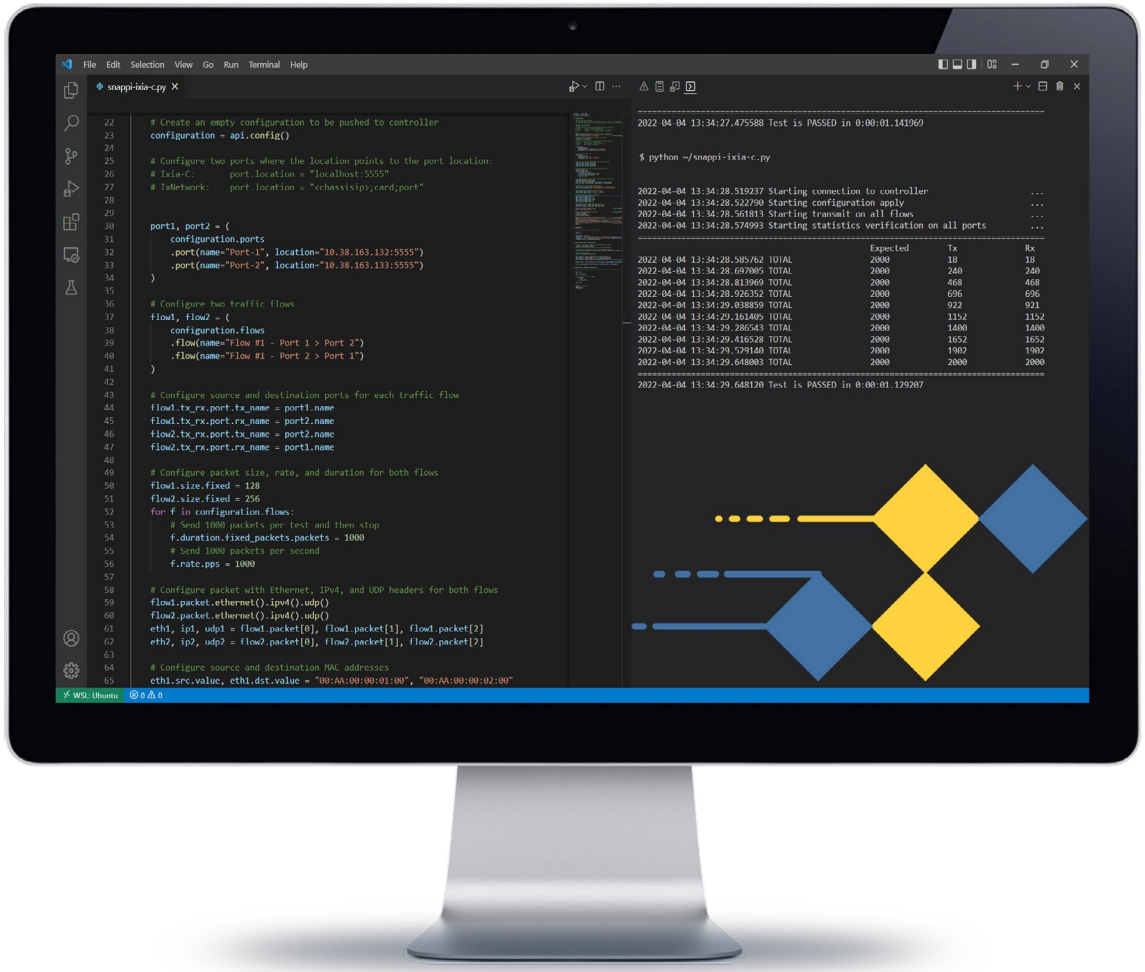
Language choice. Use preferred scripting language with snappi or gosnappi.

Modern architecture. Deploy a modular tool based on containers / microservices.

Fast. Very fast. Accelerate execution with fast API response time. Did we say fast?

Select protocols. Emulate key data center Layer 1-3 control plane protocols.

Traffic performance. Send Layer 1-3 data plane traffic with DPDK acceleration.



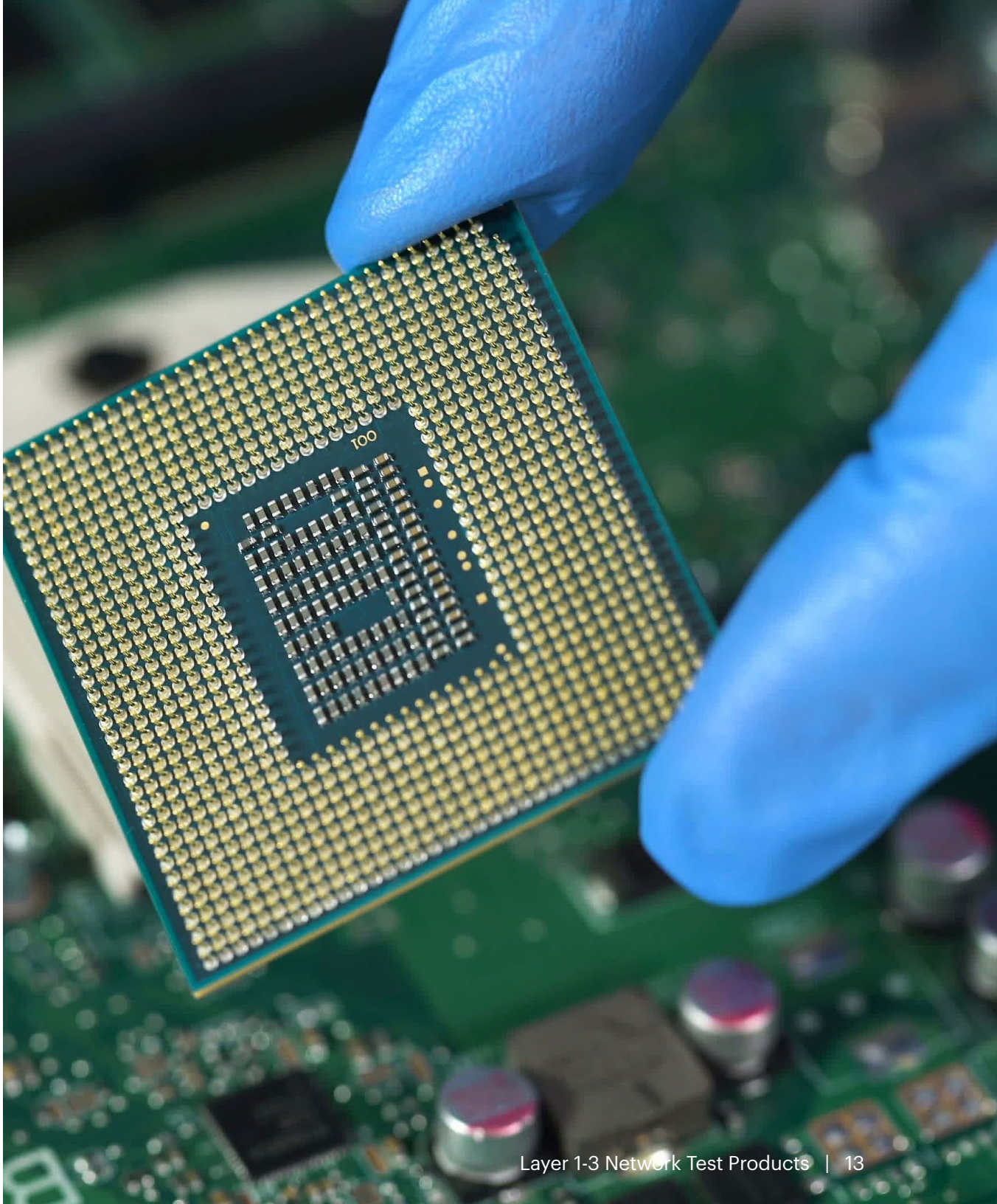
- Explore Our FREE Ixia-c Community Edition Version
- Read Keysight Elastic Network Generator Data Sheet
- Get hands on Lab for FREE

IxVerify

Industry's first solution purpose-built for pre-silicon testing in emulation

- Test routers, switches, automotive, SmartNIC or 5G radio unit chip design in emulation.
- Use elastic fully virtual test solution to support globally distributed users.
- Access packet and signal rate measurements and statistics.
- Support automation with REST, Python, TCL, Perl, and Ruby.
- Integrate with a variety of emulators, adding necessary stimuli to validate protocols and measure performance during the chip verification cycle.
- Ensure zero packet loss between virtual IxVerify environment and the emulation system.
- Share test configurations and scripts across pre-silicon and post-silicon test environments.

Read IxVerify Data Sheet



Interconnect Test System Software

Redefine interconnect data storage and organization and simplify high-speed interconnect validation

The Interconnect Test System (ITS) is a browser-based software application that runs on Keysight's Interconnect and Network Performance Tester (INPT) 1600GE and INPT-800GE hardware platforms, enabling you to reduce the time needed to create, qualify and automate interconnect test suites.

- Validates the functionality and performance of high speed optical and copper network equipment and interconnect media that use PAM4 signaling and Forward Error Correction (FEC).
- Provides a robust, fast graphical user interface (GUI) that runs directly on the INPT-800GE and INPT-1600GE platforms, or on a client network.
- Supports 100GE to 1600GE PAM4 Ethernet speeds when combined with the INPT hardware platform, so you can test all multiple speed Ethernet configurations found on most interconnects.
- Offers a first-of-its-kind, US patent pending Interconnect Library (IL) that introduces a new way to organize, retrieve, and use interconnect data.
- Includes Common Management Interface Specification (CMIS) data that standardizes how users program and manage high-speed interconnects.
- Utilizes the IL to organize all data associated with the interconnect, including measurements.
- Creates a complete record used to create and execute new tests. The record is automatically added to the IL self-serve database, allowing users to easily retrieve, reuse, edit, and update records.
- Increases productivity and accelerates the creation of automated test suites without requiring any advanced programming.

Read the ITS software flyer

Keysight AI Data Center Builder

Transform AI Infrastructure Benchmarking

The Keysight AI (KAI) Data Center Builder is a robust evaluation and benchmarking solution that optimizes AI / ML system design. Designed for fast deployment and streamlined operations, it provides deep insights into performance characteristics of RDMA backend networks that help identify bottlenecks and optimize the overall efficiency of your AI systems.

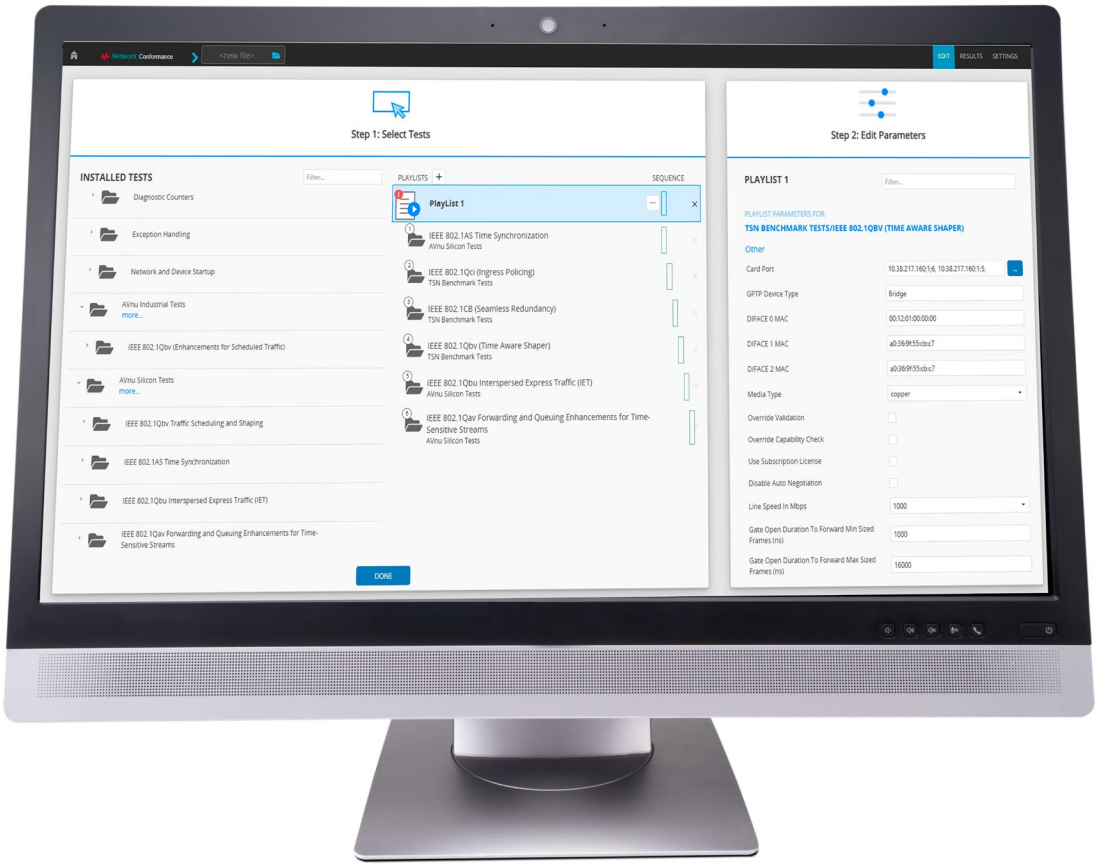
- Emulate realistic high-scale AI workloads without large GPU clusters, reducing test and validation costs by leveraging high-density traffic load appliances or software endpoints.
- Access the KAI Workload Library, a comprehensive set of AI workload execution traces built through partnerships with leading AI operators and academia.
- Leverage high-density AI host emulation, supporting 800GE / 400GE to accurately mirror AI cluster behavior.
- Streamline benchmarking and deliver insights into collective communications performance with the KAI Collective Benchmarks app, which enables you to validate AI network fabric performance and improve usage.
- Automate AI fabric testing to assess network impact on job completion time, performance isolation, load balancing, and congestion control, optimizing AI training performance.
- Simplify benchmarking and validation with pre-packaged methodologies delivered as applications.
- Emulate Remote Direct Memory Access (RDMA) over Converged Ethernet v2 (RoCEv2) endpoints by using high-density AresONE traffic load appliances with hundreds of 400GE or 800GE ports.
- Execute a trial run using one of the KAI test engines including Keysight's AresONE hardware or Keysight endpoint software, operating on general-purpose servers equipped with RDMA NICs.

Read KAI Data Center Builder Solution Brief

Keysight Network Conformance (KNC)

End-to-end conformance test platform

- Provides a web based tool powered by IxNetwork and IxAnvl engine that offers a common platform for all conformance test solutions.
- Enables quick and easy viewing, configuration, and execution of tests using play lists.
- Offers simple and easy to use UI, with live logs, consolidated reports and run history.
- Delivers conformance validation for:
  - Avnu Component Certification Conformance Tests.
  - Avnu Automotive Conformance Tests.
  - Avnu Switch Certification Tests.
  - Keysight defined TSN Conformance Tests.
  - Open Alliance TC8 & TC11 Conformance Tests (Coming Soon).
  - Autosar IPv4 and IPv6 Conformance Tests (Coming Soon).
  - MACsec Conformance Tests (Coming Soon).
  - IEEE 802.1DP Conformance Tests for Aerospace Profile for TSN. (Coming Soon).



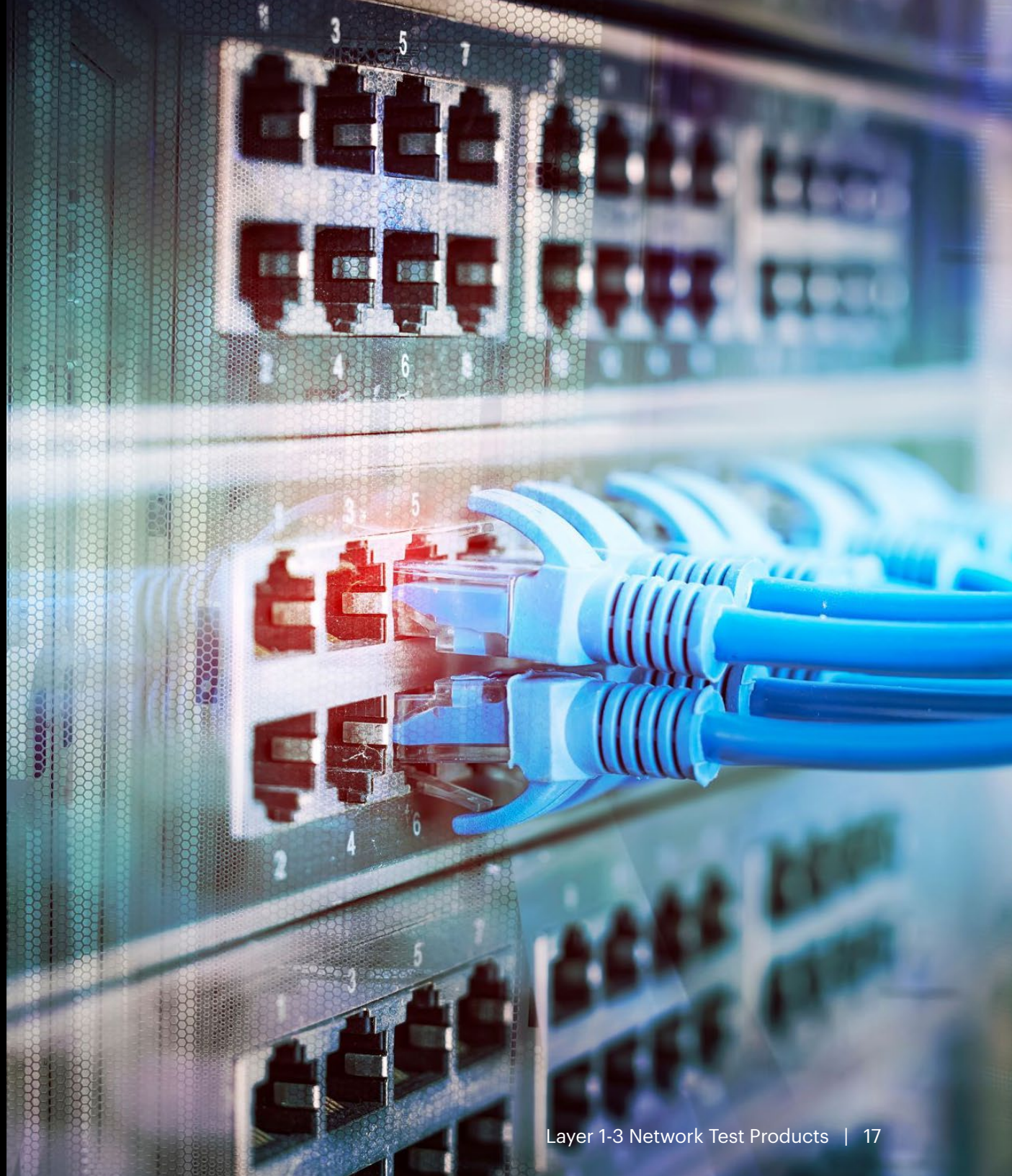
Read Keysight Network Conformance Data Sheet

Layer 1-3 Network Test Hardware

Purpose built high performance turnkey solutions

Our fixed-chassis, appliances, and load modules offer the industry's highest-density and highest-performance Ethernet Internet Protocol (IP) test solutions.

Learn about Keysight's Network Test Hardware



Layer 1-3 Network Infrastructure Testing

Hardware Test Solutions

Keysight's hardware-based family of traffic generators, network impairment generators, modular chassis, and acclaimed IxNetwork, IxExplorer, and KAI Data Center Builder applications help you build a differentiated, cost-effective network infrastructure to meet exponential data center traffic growth across your networks.

Our network infrastructure test portfolio offers the industry's first high-volume traffic generators—first to market in 1GE, 10GE, 25GE, 40GE, 50GE, 100GE, 400GE, 800GE, and 1600GE. Earning industry honors for its innovation, the INPT-1600GE platform delivers advanced performance validation for high-speed Ethernet interconnects, supporting next-generation networking at scale.

Category		Product / product family	Appliance / chassis	Software / application	Get a quote
1600GE multi-rate		Interconnect and Network Performance Tester 1600GE (INPT-1600GE)	Benchtop / rackmount	Interconnect Test System (ITS), IxNetwork, IxExplorer [1]	Get Quote >
800GE multi-rate		Interconnect and Network Performance Tester 800GE (INPT-800GE)	Benchtop	ITS, IxNetwork, IxExplorer	Get Quote >
		AresONE 800GE	Fixed chassis	IxNetwork / IxExplorer [1]	Get Quote >
		G800GE-02 (layer 1-2)	Fixed chassis	KiOS	Get Quote >
400GE multi-rate		AresONE 400GE	Fixed chassis	IxNetwork / IxExplorer [1]	Get Quote >
100GE multi-rate		UHD100T32	Appliance	UHD Web Application & Quick Test	Get Quote >
		Novus QSFP28 / SFP28	XGS2 / XGS12 (modular chassis)	IxNetwork / IxExplorer [1]	Get Quote >
		Switch and Edge Router Tester 100GE (SERT100GE)	Appliance	IxNetwork	Get Quote >
		Network Emulator 3	Fixed chassis	Network impairment software	Get Quote >
10GE multi-rate		Novus 3 or 5-speed 10GE	XGS2 / XGS12	IxNetwork / IxExplorer [1] / IxLoad	Get Quote >
		Novus ONE PLUS	Appliance	IxNetwork / IxExplorer [1] / IxLoad	Get Quote >
		Network Emulator II	Fixed chassis	Network impairment software	Get Quote >
2.5GE multi-rate		Novus mini	Appliance	IxNetwork Web / Keysight Network Conformance (KNC) [2]	Get Quote >
XGS Chassis	Compact (2-slot, 3RU)	XGS2-SD, XGS2-SDL and XGS2-HSL	Benchtop (Rack mount optional)	IxOS	Get Quote >
	Full (12-slot, 11RU)	XGS12-SD, XGS12-SDL and XGS12-HSL	Rackmount	IxOS	Get Quote >

1. IxExplorer software provides complete configuration, control, and monitoring of Keysight resources in the test network.
2. Keysight Network Conformance (KNC) is an automated graphical web-based network protocol and performance conformance tool with flexible scheduling, reporting and REST API. It also runs on the Novus ONE Plus and some Novus line cards.

Interconnect and Network Performance Tester 1600GE (INPT-1600GE)

Validate AI infrastructure, network components, and data center interconnects from 100GE to 1600GE

- Delivers flexible deployment options as a portable benchtop unit or rackmount chassis. Both models support 1x1600GE, 2x800GE, 4x400GE, and 8x200GE to validate a range of Ethernet devices and interconnects that use 212Gb/s electrical lane interfaces.
- Assesses reliability, stability, and interoperability of silicon chips, optical transceivers, active cables, and networking equipment at speeds from 100GE to 1600GE PAM4 for Layers 1 through 3 on any port.
- Uses a single power cord, supporting 100-240 VAC, 10-4.5A, 50-60 Hz single-phase supply.
- Offers a lightweight solution with the 22 pound (10 kilogram) benchtop unit and 25 pound (11.3 kilograms) rackmount chassis.
- Increases test case throughput and optimizes efficiency of interconnect validation via the browser based Interconnect Test System (ITS) software and fast, robust GUI.
- Supports multiple users, allowing them to simultaneously run or schedule tests with the advanced multi-user test scheduler, maximizing unattended test execution.
- Facilitates high power consumption optical transceivers by delivering up to 40 watts of power per cooling port.

Read INPT-1600GE Solution Brief

Interconnect and Network Performance Tester 800GE (INPT-800GE)

Portable, quiet, and energy efficient 50GE to 800GE PAM4 Ethernet benchtop test system

- Provides Layer 1 BERT to Layer 3 IP validation from 50GE to 800GE PAM4 with 106.25 Gb/s and 53Gb/s host electrical lane signaling in a single test platform.
- Increases test coverage with support for up to 4-users on a 4-port chassis, and 2-users on a 2-port chassis, allowing you to run more tests simultaneously.
- Features an intuitive, easy-to-use graphical user interface (GUI) to manage the hardware platform. The GUI runs on the benchtop by connecting a monitor, keyboard, and mouse or by connecting a computer for remote management by multiple users.
- Operates at an audio level classified as office quiet, less than 60 dBA.
- Minimizes power consumption, reducing the lab's carbon footprint, operating at a maximum of 15 amperes on 100-127 VAC, 50 / 60 Hz, requiring only a single 15 or 20 ampere power source.
- Offers a portable, light weight (22 pounds / 10 kilograms) unit with a built-in handle, making it easy to move around within the lab or to transport outside of the lab. Use in a horizontal or vertical orientation to maximize lab bench space.
- Supports 30 watts per port for high power consumption coherent optical transceivers.

Read INPT-800GE Data Sheet

Interconnect and Network Performance Tester (INPT)

1600GE and 800GE comparison chart

Product Name	Port Speed	Stream count	Form factor	Port count	Chassis	Model name
INPT-1600GE	1 x 1600GE 2 x 800GE 4 x 400GE 8 x 200GE	1 x 1600GE: 64 (per FPP) 2 x 800GE: 64 (per fan-out) 4 x 400GE: 64 (per fan-out) 8 x 200GE: 64 (per fan-out)	OSFP1600	2	Benchtop Half-rackmount	INPT-1600-2P-OSFP-BT INPT-1600-2P-OSFP-RM
	1 x 800GE 2 x 400GE 4 x 200GE 8 x 100GE	1 x 800GE: 64 (per FPP) 2 x 400GE: 64 (per fan-out) 4 x 200GE: 64 (per fan-out) 8 x 100GE: 32 (per fan-out)	OSFP1600	2	Benchtop Half-rackmount	INPT-1600-2P-OSFP-BT INPT-1600-2P-OSFP-RM
INPT-800GE	1 x 800GE 2 x 400GE 4 x 200GE 8 x 100GE	1 x 800GE: 64 (per FPP) 2 x 400GE: 64 (per fan-out) 4 x 200GE: 64 (per fan-out) 8 x 100GE: 64 (per fan-out)	OSFP800	2	Benchtop	INPT-800-2P-OSFP-BT
	1 x 400GE 2 x 200GE 4 x 100GE 8 x 50GE	1 x 400GE: 64 (per FPP) 2 x 200GE: 64 (per fan-out) 4 x 100GE: 64 (per fan-out) 8 x 50GE: 32 (per fan-out)	OSFP800	4	Benchtop	INPT-800-4P-OSFP-BT

Note: For INPT-1600GE and INPT-800GE all port speeds and stream counts are common to each front panel port.

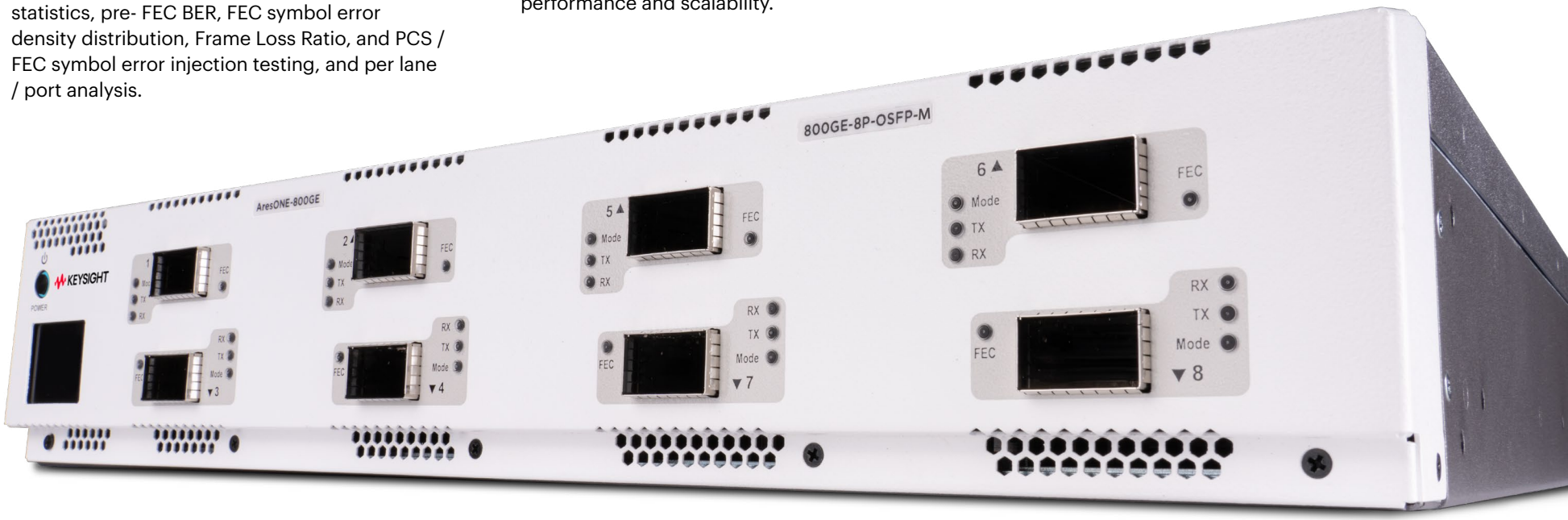
AresONE-M 800GE

All-in-one 800GE multi-rate system level testing solution

- Provides QSFP-DD800, OSFP800, and dual interface chassis with 2-port, 4-port, and 8-port full and reduced performance models.
- Supports multi-rate Ethernet traffic generation, reception, capture, and packet analysis per port (all 400/800GE PAM4-based speeds).
- Offers options for testing NRZ-encoded Ethernet speeds: 1x200GE, 2x100GE, 1x100GE, 4x50GE, 2x50GE, 8x25GE, and 4x25GE.
- Delivers comprehensive L1 BERT pattern generation and BER analysis, RS-544 FEC statistics, pre- FEC BER, FEC symbol error density distribution, Frame Loss Ratio, and PCS / FEC symbol error injection testing, and per lane / port analysis.
- Offers auto-negotiation and link training for passive, and direct attached copper cables (DAC).
- Simplifies interoperability testing by qualifying new silicon devices, optical transceivers, AOCs, copper cables (DACs), ACCs, AECs, and networking equipment to IEEE 802.3ck, IEEE 802.3df, and IEEE802.3bs specifications.
- Provides broad protocol coverage for all Ethernet speeds, validating high scale Layer 1-3 multi-protocol networking devices for performance and scalability.

Read AresONE 800GE QSFP-DD800 Data Sheet

Read AresONE 800GE OSFP800 Data Sheet



AresONE 800GE comparison chart

Product name	Number of ports	Stream count per port	Physical interfaces	Variants		
				Physical ports	Performance	Model number
AresONE 800GE QSFP-DD800-M 8-port	8 x 800GE physical ports can fan-out to: • 16 x 400GE • 32 x 200GE • 64 x 100GE • 4 x 800GE physical ports model fan out to half the port density shown above	Full performance • 800GE: 64 • 400GE: 64 • 200GE: 64 • 100GE: 32 Reduced performance • 800GE: 32 • 400GE: 32 • 200GE: 32 • 100GE: 16	QSFP-DD800	8	Full	800GE-8P-QDD-M
				8	Reduced	800GER-8P-QDD-M
				4	Full	800GE-8PHW-4P-QDD-M
				4	Reduced	800GER-8PHW-4P-QDD-M
AresONE 800GE QSFP-DD800-M 4-port	4 x 800GE physical ports can fan-out to: • 8 x 400GE • 16 x 200GE • 32 x 100GE • 2 x 800GE physical ports model fan out to half the port density shown above	Full performance • 800GE: 64 • 400GE: 64 • 200GE: 64 • 100GE: 32 Reduced performance • 800GE: 32 • 400GE: 32 • 200GE: 32 • 100GE: 16	QSFP-DD800	4	Full	800GE-4P-QDD-M
				4	Reduced	800GER-4P-QDD-M
				2	Full	800GE-2P-QDD-M
				2	Reduced	800GER-2P-QDD-M

AresONE 800GE comparison chart, continued

				Variants		
Product name	**Number of ports**	**Stream count per port**	**Physical interfaces**	**Physical ports**	**Performance**	**Model number**
AresONE 800GE OSFP800-M 8-port	8 x 800GE physical ports can fan-out to: • 16 x 400GE • 32 x 200GE • 64 x 100GE • 4 x 800GE physical ports model fan out to half the port density shown above	Full performance • 800GE: 64 • 400GE: 64 • 200GE: 64 • 100GE: 32 Reduced performance • 800GE: 32 • 400GE: 32 • 200GE: 32 • 100GE: 16	OSFP800	8	Full	800GE-8P-OSFP-M
				8	Reduced	800GER-8P-OSFP-M
				4	Full	800GE-8PHW-4P-OSFP-M
				4	Reduced	800GER-8PHW-4P-OSFP-M
AresONE 800GE OSFP800-M 4-port	4 x 800GE physical ports can fan-out to: • 8 x 400GE • 16 x 200GE • 32 x 100GE • 2 x 800GE physical ports model fan out to half the port density shown above	Full performance • 800GE: 64 • 400GE: 64 • 200GE: 64 • 100GE: 32 Reduced performance • 800GE: 32 • 400GE: 32 • 200GE: 32 • 100GE: 16	OSFP800	4	Full	800GE-4P-OSFP-M
				4	Reduced	800GER-4P-OSFP-M
				2	Full	800GE-2P-OSFP-M
				2	Reduced	800GER-2P-OSFP-M

G800GE-02

800GE layer 1 BERT, KP4 FEC & L2 packet blast multiport testing solution

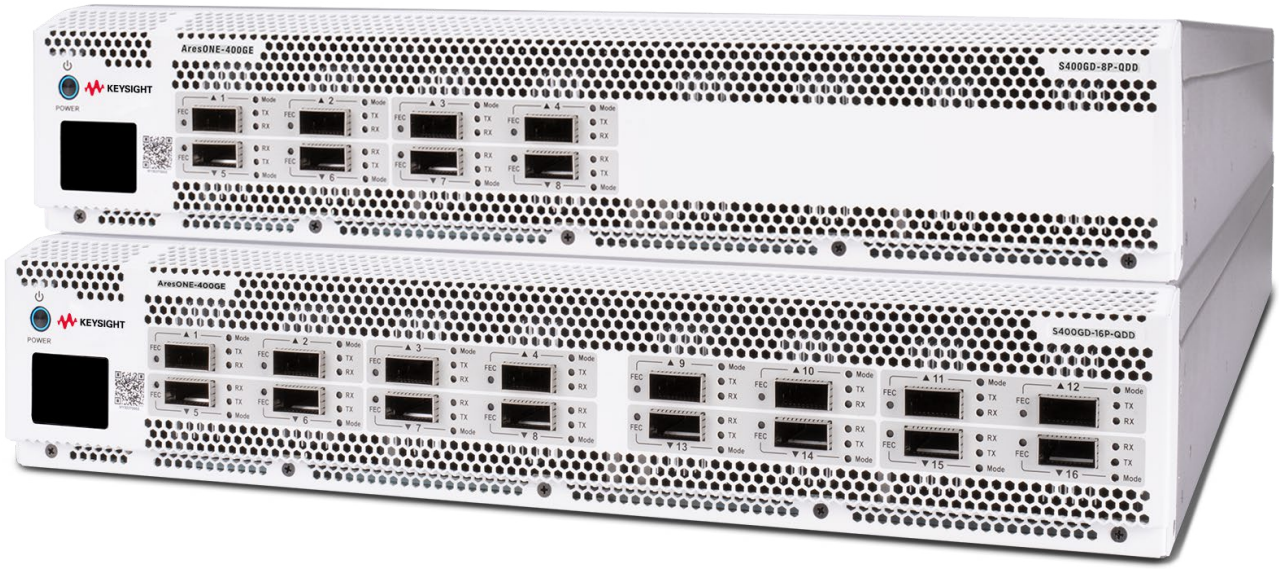
- Validate BER performance of optical transceivers, active and passive copper cables, silicon devices with the 800GE BERT, FEC and packet blast test capabilities and Keysight's KiOS browser application.
- Find problems fast with Keysight iOS browser-based single page application (SPA), system-view of all BERT, FEC, and packet statistics.
- Support all lanes or ports with 1x800GE, 2x400GE, 4x200GE, 8x100GE and 8x100GE.
- Measure full line rate BER, FEC, and L2 packet performance in minutes, not hours—at all Ethernet speeds simultaneously with Keysight's patented Enhanced BERT option.
- Perform long-duration (timed tests) and stress tests using Keysight's KP4 FEC symbol bit error density distribution analysis—excellent for catching bursty errors that occur over time.
- Connect G800GE-02 to Keysight's M8040A high- performance BERT analyzer or Infiniium UXR- Series oscilloscopes for advanced FEC-aware physical layer test and validation.
- Connect a module compliance board or device eval board via the electrical coaxial cable interface.

Read G800GE-02 Data Sheet

AresONE 400GE

All-in-one 400GE system level testing solution

- Grow as you go with 16-port and 8-port models. Offers reduced port options for economical low-port-count testing, plus reduced or high-performance options.
- Optimize power and cooling requirements with a 2RU fixed chassis form factor.
- Future-proof with a single platform for all seven speeds: 400/200/100/50/40/25/10GE with PAM4 and NRZ signaling mode support.
- Scale to 6.4 Tbps of line-rate traffic, with the ability to synchronize up to five chassis in a star topology to test 25.6 Tbps with option for up to six chassis for applications beyond 25.6 Tbps with the Metronome Timing System.
- Validate with complete L2/3 protocol emulation support with IxNetwork software.
- Improve interoperability for optics, cables, and devices using Layer 1 BERT, PCS, and FEC testing for PAM4 and NRZ signaling modes.



AresONE-S 400GE QSFP-DD Data Sheet

AresONE 400GE High-Density Data Sheet

AresONE 400GE High-Performance Data Sheet

AresONE 400GE comparison chart

				Variants		
Product name	**Number of ports**	**Stream count per port**	**Physical interfaces**	**Physical ports**	**Performance**	**Model number**
AresONE-S 400GE 16-port	16 x 400GE physical ports can fan-out to: PAM4 • 32 x 200GE • 64 x 100GE • 128 x 50GE NRZ • 32 x 100GE • 32 x 40GE • 64 x 50GE • 128 x 25GE • 128 x 10GE 8 x 400GE physical ports model fan out to half the port density shown above	Full performance • 400GE: 64 • 200GE: 64 • 100GE: 32 • 50GE: 16 • 40GE: 16 • 25GE: 16 • 10GE: 16 Reduced performance • 400GE: 32 • 200GE: 32 • 100GE: 16 • 50GE: 8 • 40GE: 8 • 25GE: 8 • 10GE: 8	QSFP-DD	16	Full	S400GD-16P-QDD
				16	Reduced	S400GDR-16P-QDD
				8	Full	S400GD-16PHW-8P-QDD
				8	Reduced	S400GDR-16PHW-8P-QDD
AresONE-S 400GE 8-port	8 x 400GE physical ports can fan-out to: PAM4 • 16 x 200GE • 32 x 100GE • 64 x 50GE NRZ • 16 x 100GE • 16 x 40GE • 32 x 50GE • 64 x 25GE • 64 x 10GE 4 x 400GE physical ports model fan out to half the port density shown above	Full performance • 400GE: 64 • 200GE: 64 • 100GE: 32 • 50GE: 16 • 40GE: 16 • 25GE: 16 • 10GE: 16 Reduced performance • 400GE: 32 • 200GE: 32 • 100GE: 16 • 50GE: 8 • 40GE: 8 • 25GE: 8 • 10GE: 8	QSFP-DD	8	Full	S400GD-8PHW-8P-QDD
				8	Reduced	S400GDR-8PHW-8P-QDD
				4	Full	S400GD-8PHW-4P-QDD
				4	Reduced	S400GDR-8PHW-4P-QDD

AresONE 400GE comparison chart, continued

				Variants		
Product name	**Number of ports**	**Stream count per port**	**Physical interfaces**	**Physical ports**	**Performance**	**Model number**
AresONE high-density	8 x 400GE physical ports can fan-out to: • 16 x 200GE • 32 x 100GE • 64 x 50GE 4 x 400GE physical ports model fan out to half the port density shown above	Full performance • 400GE: 128 • 200GE: 128 • 100GE: 32 • 50GE: 16 Reduced performance • 400GE: 32 • 200GE: 32 • 100GE: 16 • 50GE: 8	QSFP-DD	8	Full	T400GD-8P-QDD
				8	Reduced	T400GDR-8P-QDD
				4	Full	T400GD-4P-QDD
				4	Reduced	T400GDR-4P-QDD
AresONE high-performance	4 x 400GE physical ports can fan-out to: • 8 x 200GE • 16 x 100GE • 32 x 50GE	• 400GE: 512 • 200GE: 512 • 100GE: 512 • 50GE: 256	QSFP-DD	4	N/A	T400GP-4P-QDD

UHD100T32

Ultra-high density 100GE QSFP28 test system

- Conduct data center vendor selection tests for disaggregated white-box and network operating system deployments – **SONiCtestbed-in-a-box solution** with IONOS and sonic-mgmt community test capability.
- Speed time to test with easy-to-deploy, out-of-the-box solution.
- Validate high-port-count devices for performance, scalability, and interoperability.
- Pay as you grow with alternative full-solution subscription model.
- Use less rack space and power with compact, data-center-ready footprint.
- Detect and debug data transmission errors for multiple speeds with line-rate 3.2Tbps packet generation and analysis of received traffic.

Read the UHD100T32 Data Sheet

Novus QSFP28 / SFP28

High-density 100GE multi-rate testing

Novus 5-speed QSFP28

- Enable high-density, multi-rate native QSFP28 100/50/40/25/10GE testing.
- Validate 100GE, 50GE, 40GE, 25GE, and 10GE over copper, multimode and single-mode fiber media.
- Provide excellent interoperability in a high-performance platform for the new
- 100GBASE-SR4, 100GBASE-CR4, 50GBASE-CR2, 50GBASE-SR2, 25GBASE-CR, and 25GBASE-SR, with auto-negotiation, FEC, and link training.
- Leverage affordable lower-density 4-port full-feature configuration with field-upgradable option to 8-ports.
- Generate broad range of traffic and analysis with full L2/3 network protocol emulation and coverage.

Novus-S 4-speed SF28/QSFP28

- Validate 5G RAN xHaul transport network infrastructure on SFP28 25GE and 10GE interfaces.
- Emulate frame preemption over 25GE using SFP28 interfaces for 5G fronthaul.
- Validate TSN standards in 10GE, 25GE, 50GE, 100GE.

Read the Novus QSFP28 Data Sheet

Read the Novus SFP28 / QSFP28 Data Sheet

Novus QSFP28 / SFP28 comparison chart

				Variants		
Product name	**Number of ports**	**Stream count per port**	**Physical interfaces**	**Physical ports**	**Performance**	**Model number**
Novus QSFP28 5-speed 100GE/50GE/40GE/ 25GE/10GE	8 x 100GE physical ports can fan-out to: • 16 x 50GE • 8 x 40GE • 32 x 25GE • 32 x 10GE 4 x 100GE physical ports model fan out to half the port density shown above	Full performance • 100GE:128 • 50GE: 64 • 40GE: 128 • 25GE: 64 • 10GE: 64 Reduced performance • 100GE:64 • 50GE: 16 • 40GE: 64 • 25GE: 16 • 10GE: 16	QSFP28	8	Full	NOVUS100GE8Q28+FAN
				8	Midrange	NOVUS-M100GE8Q28+FAN
				8	Reduced	NOVUS-R100GE8Q28+FAN
				4	Full	NOVUS100GE4Q28+FAN
Novus SFP28/QSFP28 4-speed 100GE/50GE/ 25GE/10GE	Load module supports: • 8 x 100GE (QSFP, optional) • 8 x 50GE (QSFP, optional) • 8 x 25GE (SFP28) • 8 x 10GE (SFP28)	• 100GE:64 • 50GE: 64 • 25GE: 64 • 10GE: 64	SFP28	8	N/A	NOVUS-S 10/25GE8SFP28
			SFP28 + QSFP28	8	N/A	Speed upgrade from NOVUS-S 10/25GE8SFP28

Switch and Edge Router Tester 100GE

Scalable, cost-effective Edge device test solution

- Provides 12x100GE port appliance with 50/40/25/10GE fan-out support over native 25G NRZ lines.
- Tests Ethernet edge devices and networks, addressing the need for mid to low-end control plane validation.
- Delivers the right balance of capabilities and performance at lower costs targeted to specific segment test requirements.
- Allows efficient, cost-effective scaling of 100GE testing network with 5-speed ports (100/50/40/25/10GE)
- Offers full end-to-end automation over multiple APIs.
- Runs hundreds of ports in the same time domain.
- Lowers test times, accelerating time to market.

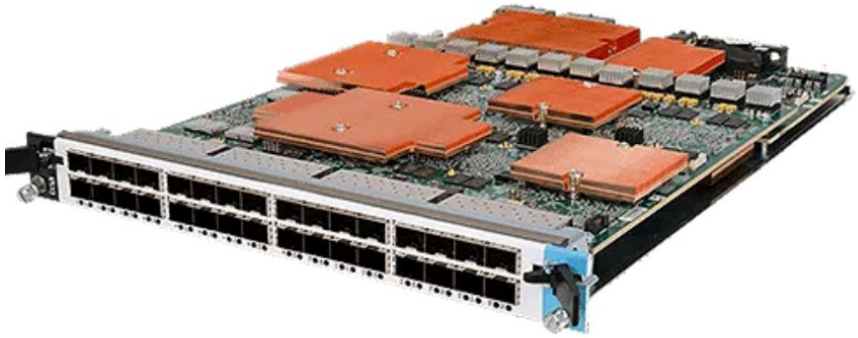
Product name	Number of ports	Stream count per port	Physical interfaces
SERT100GE	12 x 100GE physical ports can fan-out to: • 24 x 50GE • 12 x 40GE • 48x 25GE • 18 x 10GE	Full performance • 100GE: 256 • 50GE: 128 • 40GE: 256 • 25GE: 64 • 10GE: 64	SFP28 + QSFP28 SFP28

Download the SERT 100GE Datasheet

Novus 10GE and Novus ONE PLUS

High density 10GE multi-rate test solutions

- Offer high density 10/1/100M SFP+ and Dual-PHY SFP+/10GBASE-T RJ45 testing with portable appliance support, and extensive port and traffic flow statistics.
- Support 32-port full line-rate traffic generation to evaluate and validate the performance of ultra-high density networking equipment.
- Emulate L1-3 protocols for ultra-high scale performance testing of routing/switching and data center test cases using Keysight IxNetwork.
- Perform industry-standard RFC benchmark tests and protocol emulation in large test bed with hundreds of ports in a single test.
- Cover a broad range of L4-7 protocols including video, voice, storage, and access protocols using Keysight's IxLoad application.
- Support 3-Speed 10GE/1GE/100M or 5-speed 10GE/5GE/2.5GE/ 1GE/100M mode, providing low total cost of ownership and high ROI.
- Enable real-time latency with latency resolution of up to 2.5ns.
- Deliver advanced sequence checking with duplicate packet detection.
- Support for 100/1000Base-T1 interface using automotive SFP transceiver
- Support for 2.5G/5G/10GBase-T1 interface using automotive SFP transceiver.
- Support for 10Base-T1S and 10Base-Tx full and half duplex using SFP copper transceiver.



Get the Novus data sheets

- **Novus 3-Speed 32-Port 10GE/1GE/100M SFP+**
- **Novus 5-Speed 10GE/5GE/2.5GE/1GE/100M**
- **Novus 3-Speed 10GE/1GE/100M**
- **Novus ONE PLUS 3- and 5-Speed L2-7**

Novus 10GE comparison chart

					Variants		
Product name	**Number of ports**	**Form factor**	**Application support**	**Physical interfaces**	**Physical ports**	**Performance**	**Model number**
Novus 32-port 10GE/1GE/100M SFP+	32 x 10GE 32 x 1GE 32 x 100M	Load module	IxNetwork (L1-3)	SFP+	32	N/A	NOVUS10/1GE32S
Novus 5-speed 10GE/5GE/2.5GE/ 1GE/100M	8 or 16	Load module	IxNetwork (L1-3) IxLoad (L4-7)	SFP+ and 10Base-T RJ-45	16	Full	NOVUS10/5/2.5/1/100M16DP
					8	Full	NOVUS10/5/2.5/1/100M8DP
					16	Reduced	NOVUS10/5/2.5/1/100M16DP-R
					8	Reduced	NOVUS10/5/2.5/1/100M8DP-R
Novus 3-speed 10GE/1GE/100M	8 or 16	Load module	IxNetwork (L1-3) IxLoad (L4-7)	SFP+ and 10Base-T RJ-45	16	10G/1G/100M	NOVUS10/1GE16DP
					8	10G/1G/100M	NOVUS10/1GE8DP
					16	1G/100M	NOVUS1GE16DP
Novus-NP 10GE/1GE/100M	8 or 16	Load module	IxNetwork (L2-3) IxLoad (L4-7)	SFP+ and 10Base-T RJ-45	16	N/A	NOVUS-NP10/1GE16DP
					8	N/A	NOVUS-NP10/1GE8DP
					4	N/A	NOVUS ONE PLUS 10/1GE16DP
Novus ONE PLUS 3-speed 10GE/1GE/100M	4,8 or 16	Appliance	IxNetwork (L1-3) IxLoad (L4-7)	SFP+ and 10Base-T RJ-45	16	N/A	NOVUS ONE PLUS 10/1GE8DP
					8	N/A	NOVUS ONE PLUS 10/1GE4DP
					4	N/A	NOVUS ONE PLUS 10/5/2.5/1GE16DP
Novus ONE PLUS 5-speed 10GE/5GE/ 2.5GE/1GE/100M	4,8 or 16	Appliance	IxNetwork (L1-3) IxLoad (L4-7)	SFP+ and 10Base-T RJ-45	16	N/A	NOVUS ONE PLUS 10/5/2.5/1GE8DP
					8	N/A	NOVUS ONE PLUS 10/5/2.5/1GE4DP
					4	N/A	NOVUS ONE PLUS 10/5/2.5/1GE4DP

Novus Mini

Compact network testing

- Offers traffic generation and protocol testing in a single platform.
- Features ultra-quiet, fan-less operation and the smallest footprint in the industry.
- Provides a very affordable solution with outstanding cost per port.
- Comes in 3-port, 4-port and 6-port (Novus mini Pro) variants.
- Validates layers 2-3, covering full performance and conformance testing.
- Features IxNetwork Web, Quick Test and Keysight Network Conformance applications.
- Validates different timing and TSN standards like, 802.1AS 2011/2020, 802.1Qbv, 802.1Qav, 802.1CB, and 802.1Qci.
- Tests routing protocols including SDN.

Read the Novus Mini Data Sheet

Network Impairment Emulators

Emulate precise real-world network impairment conditions

Keysight's family of network emulators precisely emulate real-work network impairment conditions and/or worse case conditions in a controlled lab environment to validate and test the performance of new hardware, protocols, and applications.

The network impairment emulators identify:

- Application performance across distributed data centers and/or long-haul network
- 5G RAN E2E performance across the xHaul transport network
- The effects of delay, jitter, packet loss on application and network timing and performance
- The effects of packet modification over open fronthaul interface on O-RAN security
- The efficacy of data center backup

Network Emulator II

10GE multi-rate real-world network impairment testing

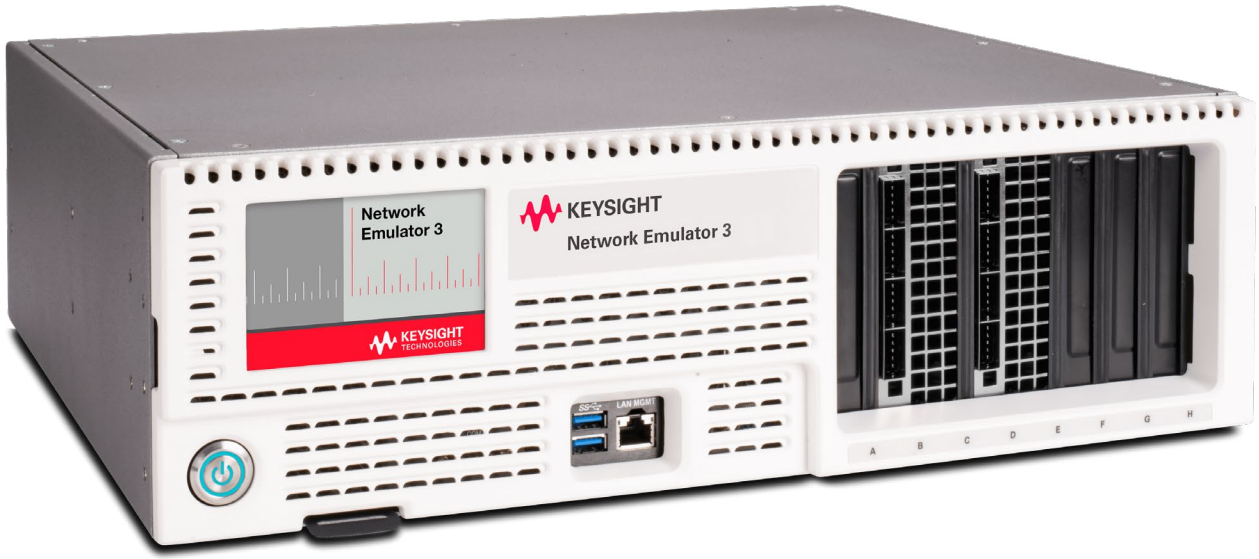
- Provides a single hardware platform for Ethernet 10GE, 1GE, and 100MB speeds.
- Supports 1G and 10G Base-T1 automotive interfaces.
- Integrates with Keysight IxNetwork™, IxLoad™, and BreakingPoint™ test systems for a complete test environment that includes real-world impairments.
- Enables validation, performance, and interoperability testing.
- Features 8 Port FPGA hardware architecture that provides 100% line-rate performance.
- Allows IT to test mixed speeds simultaneously using one device.
- Offers robust profile configuration for line-rate packet capture; produces standard PCAP output format.
- Precisely reproduces and quickly resolves issues occurring in the field.
- Delivers flexible resource management.

Read Network Emulator II Data Sheet

Network Emulator 3

100GE multi-rate real-world network impairment testing

- Provides a single hardware platform for 100GE/50GE/40GE/25GE/10GE speeds.
- Emulates normal and worst-case conditions in the lab that can occur over live production LAN/WAN networks.
- Tests hardware, protocols, and applications to validate performance and interoperability.
- Characterizes end-user experience under real-world conditions.
- Reproduces and quickly resolves issues occurring in the field.
- Tests the effect of delay on the network and application performance.
- Determines how applications will perform when distributed across data centers.
- Causes outage and degrade scenarios to trigger and validate fail-over protection.
- Tests 5G RAN networks and the impact of delay and impairments – ORAN open fronthaul conformance/performance/security testing solution.



Read Network Emulator 3 Data Sheet

Time Sync Analyzer

TimeSync Tester and High - Performance O-RAN DU Emulator

- Integrates with Open RAN Studio to play, capture, and analyze O-RAN traffic
- Future proofs CUSM-Plane fronthaul validation in a single platform.
- Offers expandable fronthaul data rate for massive MIMO beamforming test demand
- Delivers a high-density and high-performance TimeSync tester
- Analyzes PTP, SyncE and digital clocks with built- in impairment for realistic testing.
- Measures clock quality per ITU-T and O-RAN specifications.
- Offers concurrent multi-path measurements across devices and networks
- Provides scalable multi-user architecture for parallel test execution.

Download the Time Sync Analyzer - Time Sync Data Sheet

Download the Time Sync Analyzer - O-RAN Data Sheet

XGS Chassis

Flexible and scalable modular test systems

Keysight's chassis family powers our modular test systems, delivering the performance and scalability needed for validating everything from portable setups to massive- scale L2-7 applications.

Keysight's chassis family:

- Supports hot-swappable Novus, PerfectStorm and CloudStorm load modules, providing seamless integration with existing Keysight test systems.
- Reduces space requirements and simplifies management for high port densities across a range of speeds.
- Offers ultra-high performance chassis assembly with innovative high-speed backplane, supporting resource aggregation and meeting high-bandwidth requirements.
- Provides front-to-back airflow system that ensures load modules operate efficiently.
- Simplifies management and upgrades with integrated IxOS operating system for chassis and load modules.
- Enables simple and quick field service with field-replaceable modular controller, fan, and power supply nodules.
- Supports remote chassis management via browser.
- Offers a multi-user environment that leverages a per-port user ownership model for all test module ports.

Category	Product / product family	Form factor	Software / application
Compact (2-slot, 3RU)	XGS2-SD, XGS2-SDL and XGS2-HSL	Benchtop (rackmount optional)	IxOS
Full (12-slot, 11RU)	XGS12-SD, XGS12-SDL and XGS12-HSL	Rackmount	IxOS

Learn more about the compact XGS2 chassis platform

Learn more about the XGS12 chassis platform

Network Testing in the Cloud

- Agile, elastic, and scalable
- Industry standard for virtual / cloud testing
- Pre- and post-deployment testing

Learn more about Keysight's Cloud Test Solutions

Cloud Test Solutions

Complete end-to-end solutions for testing cloud infrastructure

Keysight's cloud test solutions offer complete test coverage from various types of VNFs (Virtual Network Functions) and CNFs (Cloud-Native Network Functions) such as vRouter, vFirewall, vSLB, to end-to-end networks, applications, and security.

Our cloud test portfolio fits all types of virtualized environments from VM on private clouds to container on the public clouds. We deliver both pre-deployment functional and performance tests, and post-deployment SLA monitoring with complex troubleshooting scenarios.

The floating subscription licensing model of Keysight's cloud test solutions provides a flexible and cost-effective way to address your current and future needs on a "pay as needed" and "pay as you go" basis.

This catalog focuses only on our Layer 1-3 network test products.

Explore our L4-7 Application and Security Test product catalog

Software / application	SUT/DUT	Applicable to production network	Get quote
IxNetwork VE	Network VNF/PNF (Isolated DUT)	No	Get Quote >
Cloud Peak	NF Vi	No	Get Quote >
IxChariot	End-to-end network	Yes	Get Quote >
CyPerf	Distributed and hybrid network, SD-WAN, SASE, WAF, vNGFW, CDN	Yes	See L4-7 Catalog
BreakingPoint VE	Application and security VNF/PNF (Isolated DUT)	No	See L4-7 Catalog
IxLoad VE	Application and security VNF/PNF (Isolated DUT)	No	See L4-7 Catalog

KEYSIGHT

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.