

# Layer 4-7 Network Test Products

CATALOG



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# Unleash Your Network's Full Potential

## Testing tomorrow's technologies today!

Your high-performance networks, devices, and services give you a competitive edge. Whether you manufacture network equipment or silicon chips and must identify issues before shipping to prevent costly product recalls and warranty claims, are a service provider who must validate performance under high traffic to meet service level agreements (SLAs), or an enterprise relying on these devices and applications—the network is your lifeline.

With today's ever-evolving new technologies and network architectures like edge computing, zero trust network access (ZTNA), secure access service edge (SASE), and AI workloads, testing is critical to verify compatibility, optimize performance and strengthen your overall security posture.

By testing the performance of your network applications and services, you can quickly identify potential bottlenecks and other issues, ensuring smooth roll-out and reliable quality of experience (QoE).

Layer 4-7 validation is vital for network security, helping you to pinpoint vulnerabilities, meet compliance requirements, and improve incident response times. As cyber threats increase and become more sophisticated, it's crucial to implement proactive security measures to safeguard your organization's sensitive data and mitigate potential risks.

As networks become more hybrid and distributed, it's also important to validate performance and scalability. Testing determines exactly how well your network can handle growing traffic loads and adapt to changing user demands, enabling you to prevent performance degradation and maintain high availability.

Keysight offers the industry's highest-performance solutions with the most realistic workload emulation, traffic mixes, dynamic payloads, and threat simulation and evasions. Our layer 4-7 test solutions replicate your network in action and support a wide range of protocols and applications, with realistic scenarios.

Explore our solutions and stay ahead of the game!



# Pick Your Solution

## L4-7 test software and cloud solutions

### BreakingPoint

All-in-one application & security testing

### Threat Simulator

Breach & Attack Simulation (BAS)

### IxLoad

Multi-play performance testing

### IoT Security Assessment

Automated L2-7 security testing for IoT devices

### CyPerf

Cloud-native application & security testing

### SBOM Manager

Transform binaries into SBOMs

### Cyber Range Solution

Hands-on cybersecurity training in a secure environment

## L4-7 test hardware solutions

### APS-100 / 400GE Family

Application delivery & network security testing

### CloudStorm 100GE multi-rate

Application delivery & security testing

### PerfectStorm 40GE / 10GE

multi-rate Application delivery & security testing

### Novus-NP 10GE multi-rate

High density application performance testing

### XGS Chassis

Network infrastructure & application

## Click here for L1-3 product catalog

L1-3 test software  
L1-3 test hardware  
Cloud network testing

# Layer 4-7 Network Test Software

Comprehensive network,  
application and security  
coverage with intuitive UI  
and full test automation

Our broad selection of software solutions  
delivers trusted, comprehensive validation  
of application delivery performance and  
the efficacy of network security against  
cyber threats.



# Layer 4-7 Network Application and Security Testing Software

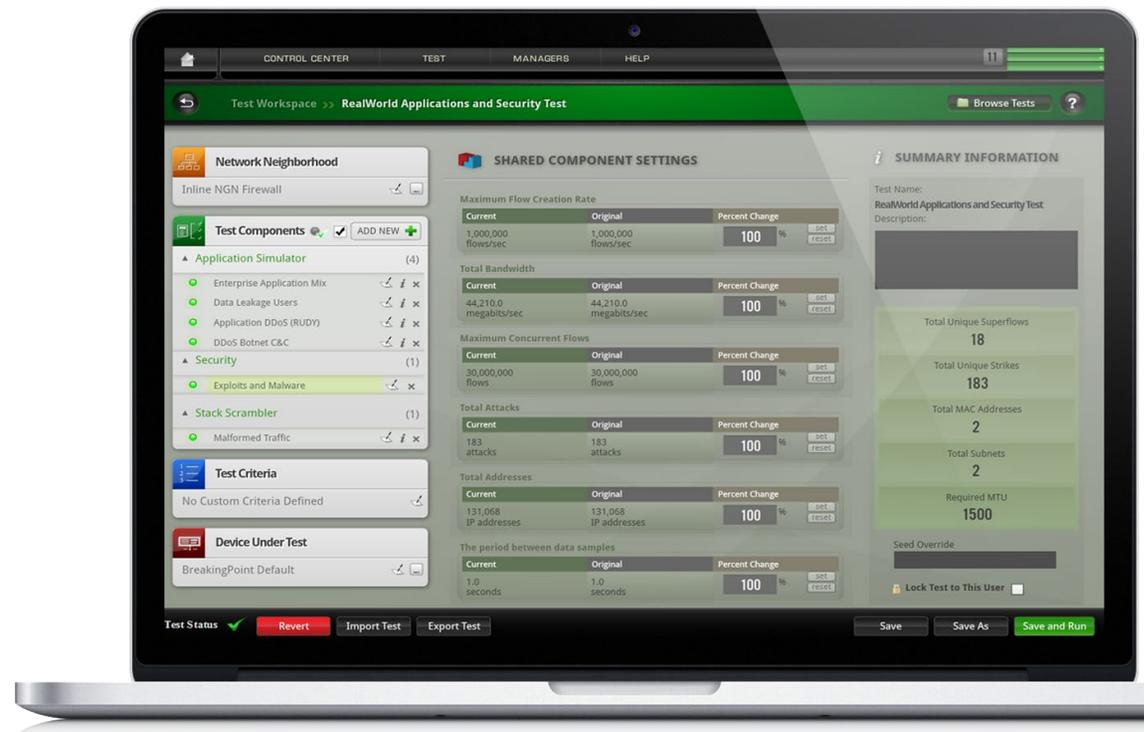
Keysight's application and security testing solutions, powered by our Application and Threat Intelligence (ATI) security research center, provide a comprehensive database of over 850 network applications and more than 150,000 security attacks for validating converged multi-play services, application delivery, and network security controls, for both wired and wireless networks. Our L4-7 solutions deliver the insights you need to balance the cybersecurity and application performance demands of today's distributed and hybrid environments.

Software / application	OSI layer(s) support	Appliance / chassis	Software / application	Get a quote
BreakingPoint	L2-7	APS 100 / 400GE family, CloudStorm family, PerfectStorm family	BreakingPoint VE	<a href="#">Get Quote &gt;</a>
IxLoad	L4-7	APS 100 / 400GE family, CloudStorm family, PerfectStorm family, Novus family	IxLoad VE	<a href="#">Get Quote &gt;</a>
CyPerf	L4-7	Software only. Portable, lightweight, distributed test agents.	Cloud-native CyPerf controller and agent	<a href="#">Get Quote &gt;</a>
IoT Security Assessment	L2-7	Hardware appliance		<a href="#">Get Quote &gt;</a>

# BreakingPoint

## All-in-one application and network security testing

- Delivers all real-world traffic simultaneously from a single port, including legitimate traffic, exploits, malware and even DDoS.
- Simulates 856+ real-world application protocols and more than 150,000 security attacks from enterprise to cloud-scale, with customization for true realism, including bringing production network dynamics into the lab via TrafficREWIND.
- Ensures users stay current with daily malware updates, new applications and threats via bi- weekly Application and Threat Intelligence (ATI) subscription updates.
- Delivers unparalleled performance, from PerfectStorm, to CloudStorm, and the APS-M8400 appliance, the industry's first 400GE application and security testing system.
- It's capable of generating 3.2 Tbps L4-7 throughput, over 5.1 billion concurrent connections, and 56 million connections per second to emulate real- world traffic network at hyperscale.
- Extends the power of BreakingPoint to virtualized systems and networks with BreakingPoint VE. Running on a variety of commercially available compute environments, including private and public clouds, it validates virtual network functions (VNF) and physical network functions (PNF) with functional testing and performance benchmarking.



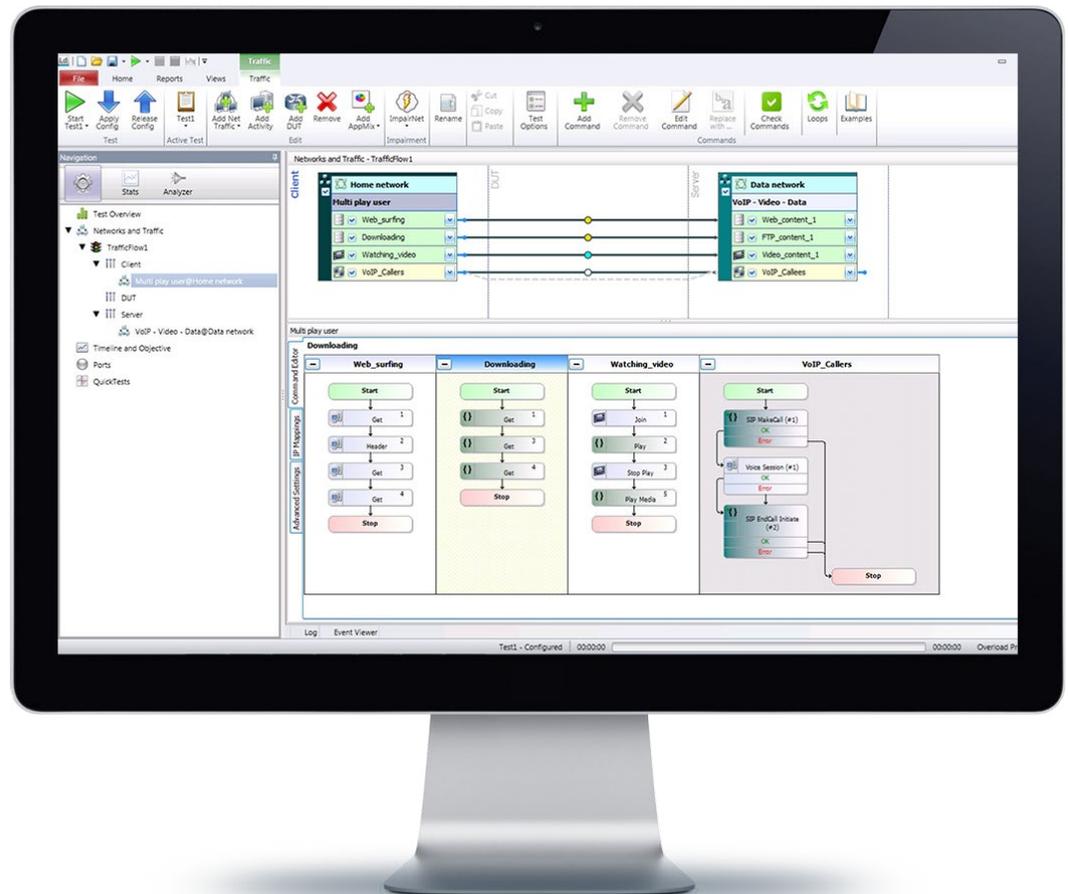
## BreakingPoint comparison chart

License name	Description	Subscription / perpetual	Floating / node-lock	Variants		
				Performance tier	Throughput	Part number
BreakingPoint Application and Threat Intelligence (ATI)	<b>All-inclusive</b> ATI program covering major / minor BPSOS release upgrades and bi-weekly strike packs for continuous application and security updates	Annual subscription	Node-lock for APS / CloudStorm / PerfectStorm HW and BreakingPoint VE perpetual license(s)	N/A	Up to 12 Tbps Depends on HW or VE Tier	909-0856
BreakingPoint Virtual Edition (VE) annual subscription	BreakingPoint VE annual subscription including ATI	Annual subscription	Floating	100GE	100 Gbps	939-9640
				10GE	10 Gbps	939-9610
				1GE	1 Gbps	939-9600
BreakingPoint VE perpetual	BreakingPoint VE perpetual license that requires annual ATI subscription in year 2	Perpetual	Floating	100GE	100 Gbps	939-9649
				10GE	10 Gbps	939-9619
				1GE	1 Gbps	939-9609

# IxLoad

## L4-7 performance testing for multi-play services and application delivery platforms

- Offers the industry's highest HTTP, TLS, and IPsec performance and scale.
- Delivers end-to-end testing of converged wireless and wired application delivery infrastructure and services.
- Provides high performance voice and video emulation with real-time insight into quality of experience (QoE).
- Emulates fully integrated broadband network infrastructures with application traffic testing including modeling the dynamic nature of user behavior.
- Works smoothly in virtualized network environments and runs from a large number or commercially available compute environments including both private and public clouds to validate VNF/PNF with functional testing and performance benchmarking.
- Meets industry standards for network service testing (IPsec, TLS, multi-play with VoIP/video/data) featuring extensive per-flow, per-subscriber analysis.



## IxLoad comparison chart

License name	Description	Subscription / perpetual	Floating / node-lock	Variants		
				Performance tier	Throughput	Part number
IxLoad Multi-play	Data / video / voice / storage / network-access package	Perpetual	Node-lock for XGS-2 / XGS-12 chassis	N/A	Depends on HW	925-3379
			Node-lock for PerfectStorm ONE / Novus ONE appliance	N/A	Depends on HW	925-6321
IxLoad Data	Software bundle, layer 4-7 performance test application. Advanced data package	Perpetual	Node-lock for XGS-2 / XGS-12 chassis	N/A	Depends on HW	925-3367
			Node-lock for PerfectStorm ONE / Novus ONE appliance	N/A	Depends on HW	925-6121
IxLoad AppLibrary slot bundle	Software bundle, layer 4-7 performance test application; enables support for AppLibrary on a single load module or appliance.  Includes AppLibrary slot feature (925-3462) and slot subscription service (925- 3460) with one year access to new application flows.	Subscription	Node-lock for CloudStorm / PerfectStorm / Novus load module or PerfectStorm ONE / Novus ONE appliance	N/A	Depends on HW	925-3461

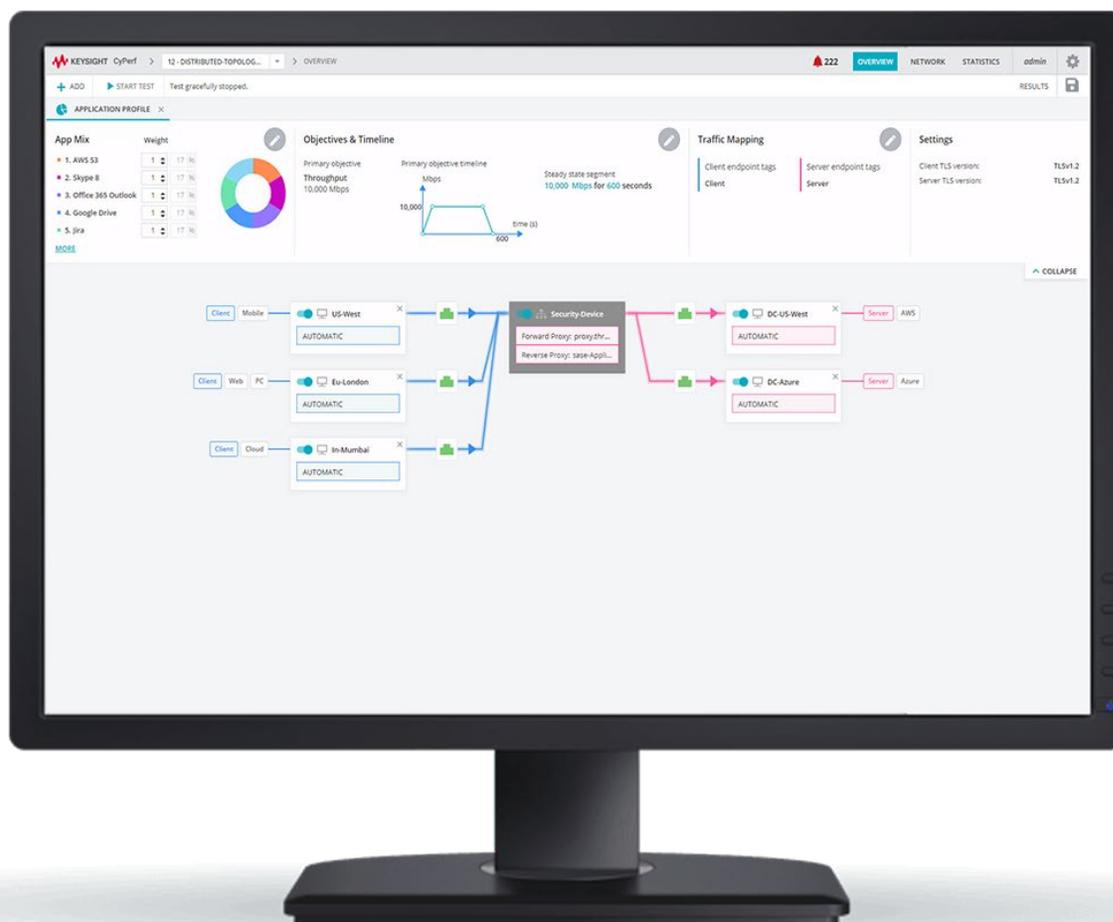
## IxLoad Virtual Edition (VE) comparison chart

				Variants		
License name	Description	Subscription / perpetual	Floating / node-lock	Performance tier	Throughput	Part number
IxLoad VE annual subscription	IxLoad VE tiered floating annual subscription license	Annual subscription	Floating	Tier-1	100 Gbps	939-9631
					10 Gbps	939-9531
					1 Gbps	939-9511
				Tier-2	100 Gbps	939-9632
					10 Gbps	939-9532
					1 Gbps	939-9512
				Tier-3	100 Gbps	939-9633
					10 Gbps	939-9533
					1 Gbps	939-9513
IxLoad VE perpetual	IxLoad VE tiered floating perpetual license	Perpetual	Floating	Tier-1	100 Gbps	939-9637
					10 Gbps	939-9537
					1 Gbps	939-9517
				Tier-2	100 Gbps	939-9638
					10 Gbps	939-9538
					1 Gbps	939-9518
				Tier-3	100 Gbps	939-9639
					10 Gbps	939-9539
					1Gbps	939-9519

# CyPerf

## Industry's first cloud native elastic application and security test solution for zero trust in distributed cloud

- Creates digital twin of users, applications, and attacks to validate network performance, security efficacy and quantify user QoE in real-world distributed and hybrid networks.
- Tests the functionality and performance of zero trust policies with authenticated and unauthenticated application traffic and security attacks.
- Validates the control plane performance and scalability of SSL VPN or IPsec Gateways, and the application performance and security efficacy of VPN enabled network security solutions.
- Deploys lightweight traffic agents as containerized pods (on-prem or managed Kubernetes), VMs, COTS, and private or public cloud (AWS, GCP, Azure).
- Tests network application performance and security efficacy in both pre-deployment lab settings and safely in live production networks.
- Delivers fully automated orchestration and test execution for today's continuous integration, deployment, testing (CI/CD/CT) environments.
- Solves real-world test challenges for cloud migration, SD-WAN optimization,



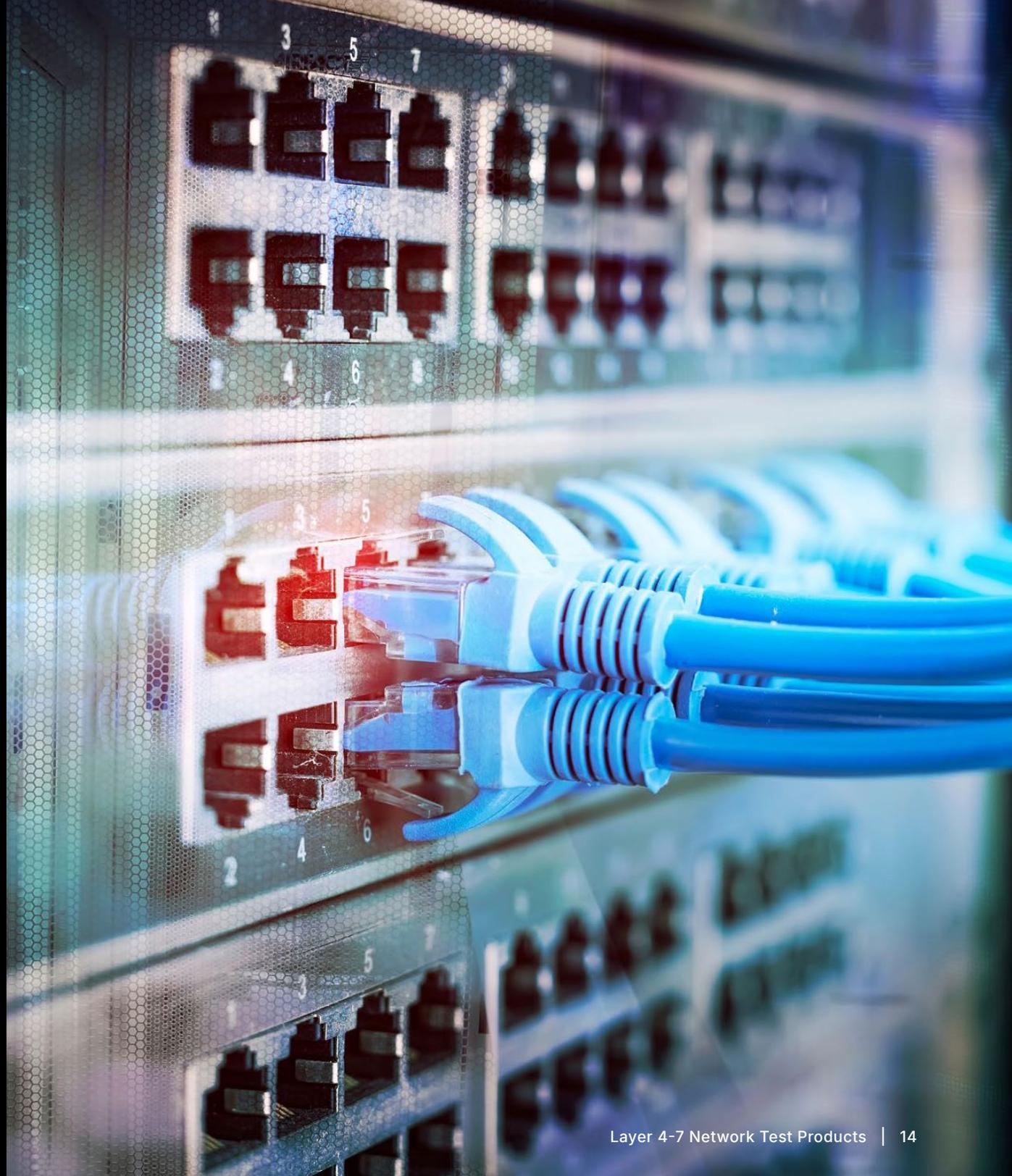
## CyPerf comparison chart

License name	Description	Subscription / perpetual	Floating / node-lock	Variants		
				Performance tier	Throughput	Part number
CyPerf starter bundles	Bundle with annual subscription; includes ATI	Annual subscription	Floating	10 agents and 10GE	10 Gbps	938-1010
				4 agents and 1GE	1 Gbps	938-1008
				2 agents and 10GE	10 Gbps	938-1009
	Bundle with perpetual license	Perpetual		10 agents and 10GE	10 Gbps	938-1022
CyPerf single agent (add-on license)	CyPerf single agent floating license (requires previous purchase of corresponding CyPerf bundle)	Subscription	Floating	Annual	-	938-1001
		Perpetual		Perpetual	-	938-1005
CyPerf 10GE Performance Bundle	CyPerf 10GE Bundle 1 license x 10 Gbps & 10 Agents	Subscription	Floating	Annual	10 Gbps	938-1040
		Perpetual		Perpetual	10 Gbps	938-1041
CyPerf 100GE Performance Bundle	CyPerf 100GE Bundle 1 license x 100 Gbps & 10 Agents	Subscription	Floating	Annual	100 Gbps	938-1050
		Perpetual		Perpetual	100 Gbps	938-1051
CyPerf 400GE Performance License	CyPerf 400GE Bundle 1 license x 400 Gbps & 40 Agents	Subscription	Floating	Annual	400 Gbps	938-1060
		Perpetual		Perpetual	400 Gbps	938-1061

# Layer 4-7 Network Test Hardware

**Purpose built high  
performance turnkey  
solutions**

Our L4-7 application-focused family of load modules and standalone appliances offer the industry's most scalable test solutions.



# Layer 4-7 Network Test Hardware

Keysight's L4-7 application-focused family of load modules and standalone appliances includes APS, CloudStorm, PerfectStorm and Novus-NP, that collectively offer the industry's most scalable solution set for testing converged multi-play services, application delivery, and network security platforms.

These solutions deliver the insights you need to balance cybersecurity with application and encryption test performance, enabling you to effectively identify security gaps, performance bottlenecks, and interoperability issues.

Category	Product / product family	Appliance / chassis	Software / application	Get a quote
400GE / 100GE	APS-M8400 with APS-ONE-100	Stacked system	BreakingPoint	<a href="#">Get Quote &gt;</a>
	APS-M1010 with APS-ONE-100	Stacked system	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
	APS-ONE-100	Appliance	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
100 / 50 / 40 / 25 / 10GE Multi-rate	CloudStorm / CloudStorm XP	XGS2 / XGS12	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
40GE / 10GE	PerfectStorm 40 / 10GE	XGS2 / XGS12	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
	PerfectStorm ONE 40 / 10GE	Appliance	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
10GE Multi-rate	PerfectStorm 10 / 1GE	XGS2 / XGS12	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
	PerfectStorm ONE 10 / 1GE	Appliance	BreakingPoint / IxLoad	<a href="#">Get Quote &gt;</a>
	Novus-NP 10GE	XGS2 / XGS12	IxNetwork / IxLoad	<a href="#">Get Quote &gt;</a>

# APS-100 / 400GE Family

## Industry's most powerful application and cybersecurity test platform

- Delivers the industry's first native 400GE application and security testing platform.
- Employs a modular approach allowing users to stack APS-ONE-100 appliances to scale up to 16 compute nodes all managed by a single APS-M8400 appliance.
- Creates a hyperscale system capable of driving
- 5.1 billion concurrent TCP connections and generating 3.2 Tbps of L47 traffic through BreakingPoint.
- Meets data center and service provider demands (i.e., mobile 5G) to balance security and performance to effectively test hyperscale network infrastructure consisting of NextGen firewalls (NGFW) and application delivery controllers (ADC).
- Delivers unparalleled TLS performance to significantly improve the transmission of realistic application mixes over TLS connections. (see chart for details).
- Supports a flexible 'pay-as-you-go' model, enabling you to build a test system supporting 200 Gbps today and scaling up to support 3.2 Tbps as your needs grow.



## APS-100 / 400GE Family comparison chart

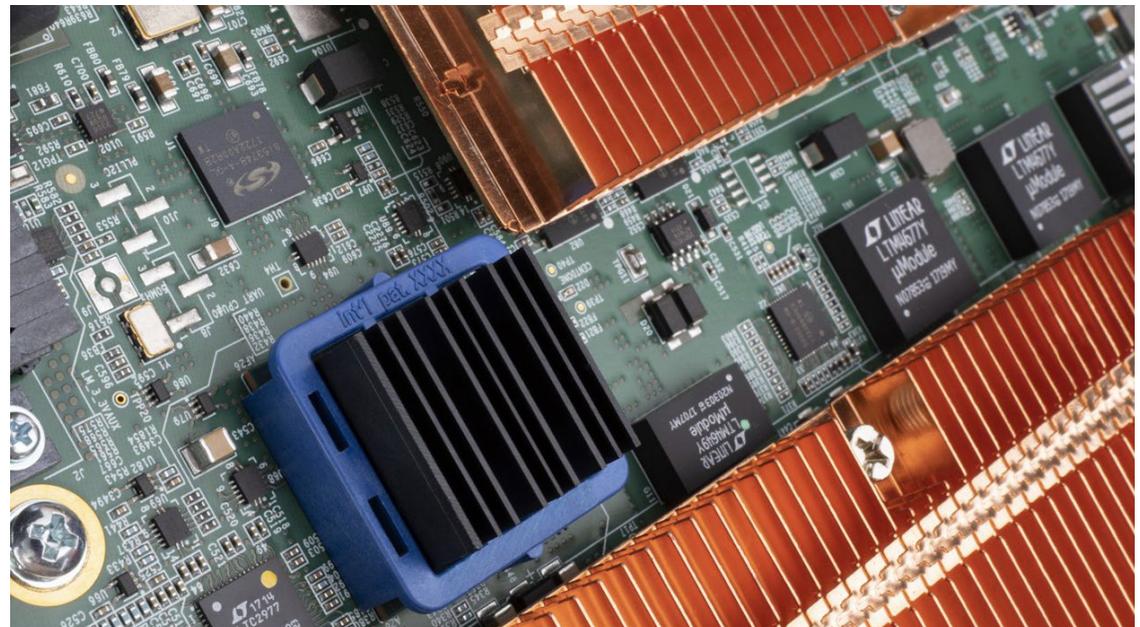
						Variants	
Product name	Number of ports	Stream / application support	Performance	Physical interfaces	Speed	Model number	
APS-ONE-100	4 x 100GE physical ports can fan-out to: <ul style="list-style-type: none"> <li>• 8 x 25GE</li> <li>• 8 x 10GE</li> </ul>	BreakingPoint	Application throughput: 190 Gbps TLS throughput: 150 Gbps HTTP CPS: 3.5 M TLS CPS: 100 K Elephant flow: 65 Gbps @ 9200 B	QSFP28	100GE 25GE 10GE	APS-ONE-100	
APS-M1010 with APS-ONE-100	Up to 10 APS-ONE-100 nodes with: <ul style="list-style-type: none"> <li>• 40 x 100GE</li> <li>• 80 x 25GE</li> <li>• 80 x 10GE</li> </ul>	BreakingPoint	Application throughput: 1.9 Tbps TLS throughput: 1.5 Tbps HTTP CPS: 35 M TLS CPS: 1 M	QSFP28	100GE 25GE 10GE	APS-M1010 + up to 10 x APS-ONE-100	
APS-M8400 with APS-ONE-100	8 x 400GE physical ports can fan-out to: <ul style="list-style-type: none"> <li>• 16 x 200GE</li> <li>• 32 x 100GE</li> <li>• 64 x 50GE</li> <li>• 16 x 40GE</li> <li>• 64 x 25GE</li> <li>• 64 x 10GE</li> </ul>	BreakingPoint	Application throughput: 3.2 Tbps TLS throughput: 2.4 Tbps HTTP CPS: 56 M TLS CPS: 1.6 M Elephant flow: 65 Gbps @ 9200 B	QSFP-DD400	400GE 200GE 100GE 50GE 40G 25GE 10GE	APS-M8400 + up to 16 x APS-ONE-100	

# CloudStorm 100GE Multi-rate



## Cloud-scale application delivery and network security test platform

- Offers the industry's first multi-terabit solution for application performance to support real-world traffic at massive scale.
- Provides hardware-based SSL acceleration to deliver up to 100GE encryption performance per module.
- Emulates multi-terabit DDoS and botnet attacks to future-proof security solutions.
- Delivers a unified application and security test platform, with Layer 2–7 capabilities with support for BreakingPoint and IxLoad applications.
- Supports 100/50/40/25/10GE speeds to preserve existing test infrastructure and is multi-rate ready to future proof your investment.
- Leverages the per-port ownership model for all ports on the test modules installed into the chassis in a multi-user environment.



# CloudStorm 100G Multi-rate comparison chart

Product name	Number of ports	Software / application support	Performance	Physical interfaces	Variants	
					Speed	Model number
CloudStorm Fusion	2 x 100GE physical ports can fan-out to:	BreakingPoint  IxLoad	Application mix: 200 Gbps HTTP connection rate: 3.5M TLS throughput: 100 Gbps HTTP bidirectional throughput: 200 Gbps (IxLoad) HTTP connection rate: 4.5M (IxLoad) TLS throughput: 92 Gbps (IxLoad)	QSFP28	<ul style="list-style-type: none"> <li>• 100GE</li> <li>• 50GE</li> <li>• 40GE</li> <li>• 25GE</li> <li>• 10GE</li> </ul>	CS100GE2Q28NG
CloudStorm	<ul style="list-style-type: none"> <li>• 4 x 50GE</li> <li>• 2 x 40GE</li> <li>• 8 x 25GE</li> <li>• 8 x 10GE</li> </ul>	IxLoad	HTTP bidirectional throughput: 200 Gbps HTTP connection rate: 4.5M TLS throughput: 92 Gbps		<ul style="list-style-type: none"> <li>• 100GE</li> <li>• 50GE</li> <li>• 40GE</li> <li>• 25GE</li> <li>• 10GE</li> </ul>	CS100GE2Q28
CloudStorm-XP Fusion	2 x 100GE physical ports can fan-out to:	BreakingPoint IxLoad	Application mix: 100 Gbps HTTP connection rate: 1.5M TLS throughput: 50 Gbps HTTP bidirectional throughput: 95 Gbps (IxLoad) HTTP connection rate: 2.5M (IxLoad) TLS throughput: 38 Gbps (IxLoad)	QSFP28	<ul style="list-style-type: none"> <li>• 100GE</li> <li>• 50GE</li> <li>• 40GE</li> <li>• 25GE</li> <li>• 10GE</li> </ul>	CSXP100GE2Q28NG
CloudStorm-XP	<ul style="list-style-type: none"> <li>• 4 x 50GE</li> <li>• 2 x 40GE</li> <li>• 8 x 25GE</li> <li>• 8 x 10GE</li> </ul>	IxLoad	HTTP bidirectional throughput: 95 Gbps HTTP connection rate: 2.5M TLS throughput: 38 Gbps		<ul style="list-style-type: none"> <li>• 100GE</li> <li>• 50GE</li> <li>• 40GE</li> <li>• 25GE</li> <li>• 10GE</li> </ul>	CSXP100GE2Q28

# PerfectStorm 40GE / 10GE Multi-rate

## Enterprise-scale application delivery and network security test platform

- Offers real-world traffic at enterprise-scale, including hardware-based acceleration for SSL and IPSec.
- Provides a unified application and security test platform, with layers 2–7 capabilities and support for BreakingPoint and IxLoad applications.
- Offers multi-rate support from 40GE QSFP+ with fan-out option to 10 / 1GE SFP+.
- Leverages the per-port user ownership model for all ports on the test modules installed into the chassis in a multi-user environment.
- Delivers a portable appliance for a “Security Test Lab in a Box” solution with PerfectStorm ONE.



# PerfectStorm Dual-Speed comparison chart

Product name	Number of ports	Software / application support	Performance	Physical interfaces	Variants			
					Physical ports	Speeds	Model number	
PerfectStorm* 40 / 10GE Fusion	2 x 40GE physical ports can fan-out to: 8 x 10GE	BreakingPoint IxLoad	Application mix: 80 Gbps; TCP connection rate: 2M CPS TLS throughput: 20 Gbps HTTP bidirectional throughput: 76 Gbps (IxLoad) HTTP connection rate: 1.5M CPS (IxLoad) TLS throughput: 20 Gbps (IxLoad)	QSFP+	2	40GE / 10GE	PS40GE2NG	
PerfectStorm* 40/10GE		IxLoad	HTTP bidirectional throughput: 76 Gbps HTTP connection rate: 1.5M CPS TLS throughput: 20 Gbps			40GE / 10GE	PS40GE2	
PerfectStorm ONE 40 / 10GE Fusion	2 x 40GE physical ports can fan-out to: 8 x 10GE	BreakingPoint IxLoad	Application mix: 80 Gbps; TCP connection rate: 2M CPS TLS throughput: 20 Gbps HTTP bidirectional throughput: 76 Gbps (IxLoad) HTTP connection rate: 1.5M CPS (IxLoad) TLS throughput: 20 Gbps (IxLoad)	QSFP+	3	40GE / 10GE	PS40GE2NG Appliance	
PerfectStorm ONE 40 / 10G		IxLoad	HTTP bidirectional throughput: 76 Gbps HTTP connection rate: 1.5 M CPS TLS throughput: 20 Gbps			40GE / 10GE	PS40GE2 Appliance	
PerfectStorm 10 / 1GE Fusion	8 x 10GE 8 x 1GE	BreakingPoint IxLoad	Application mix: 80 Gbps; TCP connection rate: 2M CPS TLS throughput: 20 Gbps HTTP bidirectional throughput: 72 Gbps (IxLoad) HTTP connection rate: 1.5 M CPS (IxLoad) TLS throughput: 20 Gbps (IxLoad)	SFP+	8	10GE / 1GE	PS10GE8NG	
					4	10GE / 1GE	PS10GE4NG	
2					10GE / 1GE	PS10GE2NG		
PerfectStorm 10 / 1G		IxLoad			HTTP bidirectional throughput: 72 Gbps TCP connection rate: 2M CPS TLS throughput: 20 Gbps	8	10GE / 1GE	PS10GE8
						4	10GE / 1GE	PS10GE4
						2	10GE / 1GE	PS10GE2
PerfectStorm ONE 10 / 1GE Fusion	8 x 10GE 8 x 1GE	BreakingPoint IxLoad	Application mix: 80 Gbps; TCP connection rate: 2M CPS TLS throughput: 20 Gbps HTTP bidirectional throughput: 76 Gbps (IxLoad) HTTP connection rate: 1.5 M CPS (IxLoad) TLS throughput: 20 Gbps (IxLoad)	SFP+	8	10GE / 1GE	PS10GE8NG Appliance	
					4	10GE / 1GE	PS10GE4NG Appliance	
2					10GE / 1GE	PS10GE2NG Appliance		
PerfectStorm ONE 10 / 1GE		IxLoad			HTTP bidirectional throughput: 76 Gbps HTTP connection rate: 1.5 M CPS TLS throughput: 20 Gbps	8	10GE / 1GE	PS10GE8 Appliance
						4	10GE / 1GE	PS10GE4 Appliance
						2	10GE / 1GE	PS10GE2 Appliance

# Novus-NP 10GE Multi-rate

## High-density Dual-PHY tri-speed for enterprise-scale application performance testing

- Offers high-performance layer 4–7 testing using Keysight's IxLoad application — up to 40G bidirectional application throughput per load module
- Provides high scale and performance for emulating L2-3 protocols to validate performance and scalability of L2-3 routing/switching and data center test cases using IxNetwork application.
- Generates full line-rate traffic to evaluate ASIC designs, FPGAs, and hardware switch fabrics.
- Supports testing SFP+ and 10GBase-T RJ-45 copper ports at different speeds simultaneously on the same load module.
- Delivers industry-standard RFC tests and protocol emulation in large test bed with hundreds of 10GE, 1GE, and/or 100M ports in a single test—to benchmark data plane and performance and scale of ultra-high-density network equipment.
- Detects and debugs data transmission errors with 10GE, 1GE, and 100M line-rate hardware packet capture.
- Offers flexible 4:1 CPU and memory aggregation, for high-scale protocol emulation and performance.
- Provides real-time latency with latency resolution of up to 2.5ns.
- Delivers extensive port and traffic flow statistics.



**Please refer to Novus 10GE product family table for details**

# Novus 10GE comparison chart

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

# XGS Chassis

## Flexible and scalable modular test systems

Keysight's chassis family makes our modular test systems possible, providing the power and performance necessary for portable to massive-scale testing of L2-7.

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 for broad range of speeds.
- Offers ultra-high performance chassis assembly with innovative high-speed backplane that supports resource aggregation and meets high-bandwidth requirement.
- Has front-to-back airflow system to ensure that 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 Modules.
- Supports remote chassis management via browser.
- Offers 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

# Cloud Test Solutions

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



# Cloud Test Solutions

## Complete end-to-end solution for testing cloud infrastructure, applications, and security

Keysight's cloud test solution suite offers complete test coverage from cloud infrastructure (compute/storage/network), and various types of virtual network functions (VNFs) to end-to-end network application, and security. Common VNFs include vRouter, vADC, vNGFW, WAF, SWG, DDoS mitigation, ALB, etc.

Our cloud test solutions fit in all major types of virtualized environments from virtual machines on private clouds to containers on public clouds. It helps in 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.

Below is a snapshot of Keysight's cloud test solutions for Layers 1-7. This catalog focuses only our L4-7 products. You can find more details on the L1-3 solutions listed below in our [Layer 1-3 Network Test product catalog](#).

Software / application	SUT / DUT	Applicable to production network	Get Quote
CyPerf	Distributed and hybrid network, SD-WAN, SASE, WAF, vNGFW, CDN	Yes	<a href="#">Get Quote &gt;</a> <a href="#">Or see page 12 for more details</a>
BreakingPoint VE	Application and security VNF / PNF	No	<a href="#">Get Quote &gt;</a> <a href="#">Or see page 7 for more details</a>
IxLoad VE	Multi-play application delivery VNF / PNF	No	<a href="#">Get Quote &gt;</a> <a href="#">Or see page 9 for more details</a>
IxNetwork VE	Network VNF / PNF	No	See layer 1-3 product catalog
Keysight Elastic Network Generator	Network VNF / PNF	No	
IxChariot	End-to-end network	Yes	<a href="#">Get Quote &gt;</a>
Threat Simulator	Network, Endpoint, Email and Cloud security testing	Yes	

# Security Operations

- Measure, optimize, and monitor network security continuously
- Prepare for and stay ahead of security vulnerabilities and attacks



# Threat Simulator

## Hack yourself before others do with safe breach and attack simulation (BAS)

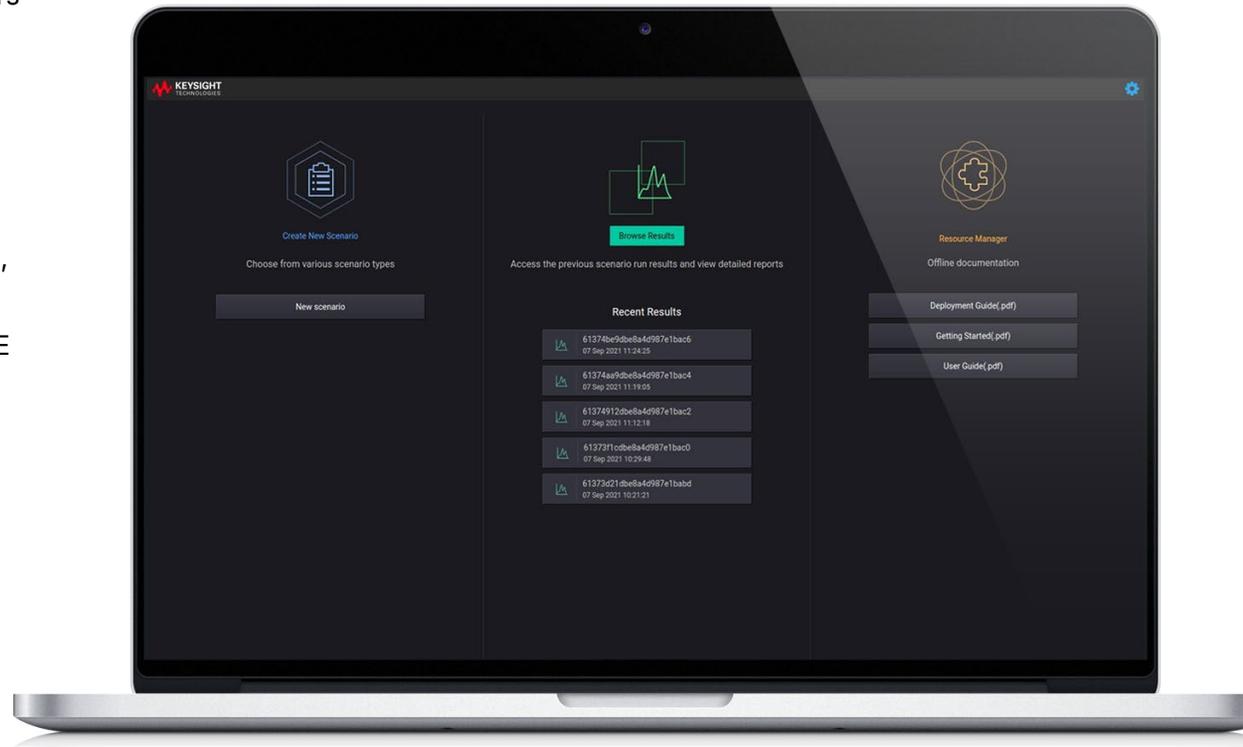
- Simulates attacks safely on your live network, measure and optimize SecOps spend, while continuously monitoring your security posture.
- Supports Software-as-a-Service (SaaS) and on-premise deployment options.
- Utilizes over two decades of network security testing expertise, supported by the Keysight Application and Threat Intelligence (ATI) research center.
- Validates security controls against a library of 50,000+ tactics, techniques, and procedures (TTPs) with direct mapping to MITRE ATT&CK.
- Identifies and rectifies misconfigurations and gaps through real-time SIEM correlations and vendor-specific recommendations.
- Measures network, email, and endpoint security posture.
- Detects and remediates environmental and configuration drift.
- Saves money by maximizing existing security controls and processes before purchasing new tools.
- Also available through managed security service providers (MSSPs).



# IoT Security Assessment

## Comprehensive, automated security testing for XIoT devices

- Finds security flaws in connected devices quickly with an intuitive UI.
- Integrates security testing into CI/CD pipeline with complete REST API management.
- Generates SBOMs automatically
- Identifies CVEs in third-party components and monitors them daily for new vulnerabilities
- Discovers unknown network stack and chipset weaknesses with protocol fuzzing.
- Hardens security with comprehensive vulnerability assessment.
- Broadens scope with testing for consumer, healthcare, automotive, and other connected devices.
- Validates Wi-Fi, Ethernet, CAN bus, Bluetooth, and BLE connected devices.
- Supports link-layer, application-layer, and firmware security analysis.

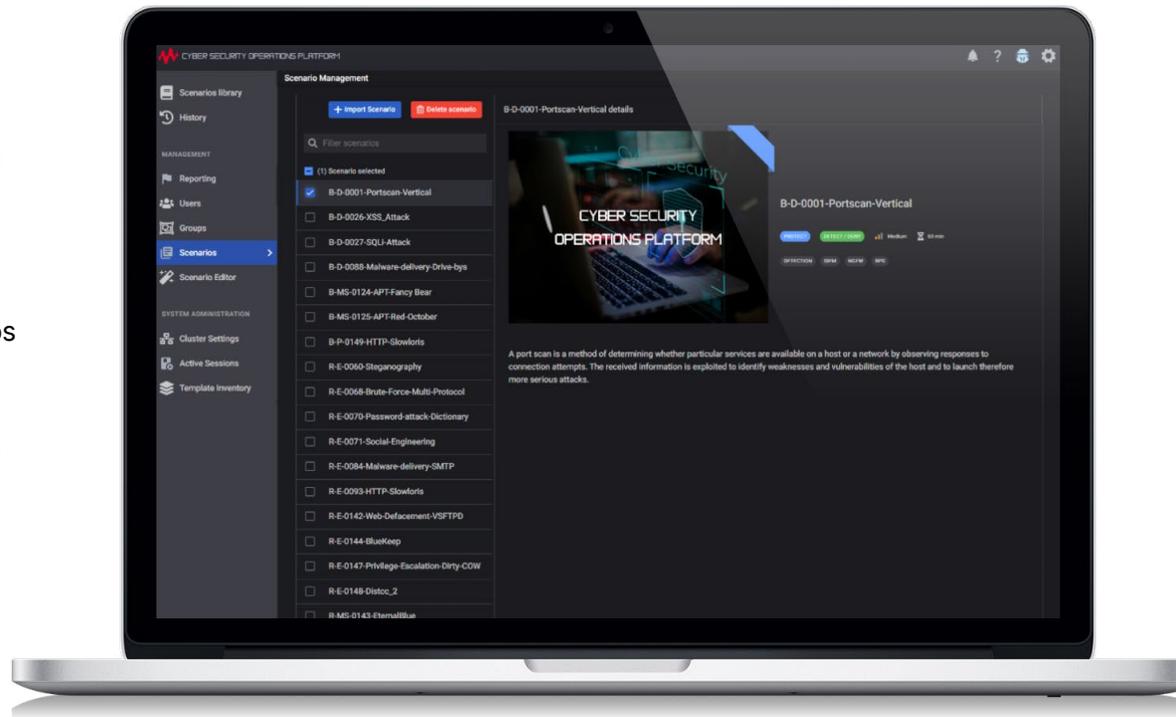




# Cyber Range Solution

## Gain hands-on cyber skills and test your organization's security posture in a controlled environment

- Prepares security teams for cyber-attacks with dynamic, hands-on practice in a safe and controlled cyber range environment.
- Customizes the scalable Cyber Security Operations platform to suit different architectures and organizational requirements on a realistic cyber range platform.
- Integrates security tools from your preferred vendors into the cyber range in a vendor-agnostic manner.
- Allows users to train on multiple technologies simultaneously through a multitenant architecture, reducing the overhead of costly classroom training.
- Provides Capture the Flag (CTF) exercises to sharpen your team's cybersecurity skills in a competitive space.
- Offers a comprehensive library of threat and event scenarios covering a wide range of predefined cybersecurity topics and techniques.
- Enables you to build your own customized scenarios on the cyber range platform. Keysight can also help you create complex scenarios to meet your unique requirements.





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](http://www.keysight.com).

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