

# Layer 4-7 Network Test Products

## CATALOG



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## INTRODUCTION

# 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're a network equipment manufacturer (NEM) who must identify issues before shipping to prevent costly product recalls and warranty claims, a service provider validating performance under high traffic to meet service level agreements (SLAs), or an enterprise using the devices and applications, the network is your lifeline.

With today's everchanging new technologies and network architectures like edge computing, zero trust network access (ZTNA) and secure access service edge (SASE), 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 network issues, ensuring smooth roll-out and reliable quality of experience (QoE).

Layer 4-7 testing 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, scalability and robustness. 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 application workloads, 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 testing scenarios.

Explore our solutions and stay a step 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

### BreakingPoint Cloud

SecOps and DDoS cloud/SaaS Testing

### CyPerf

Cloud-native application  
& security testing

### IoT Security Assessment

Automated L2-7 security testing for  
IoT devices

### Cyber Range

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

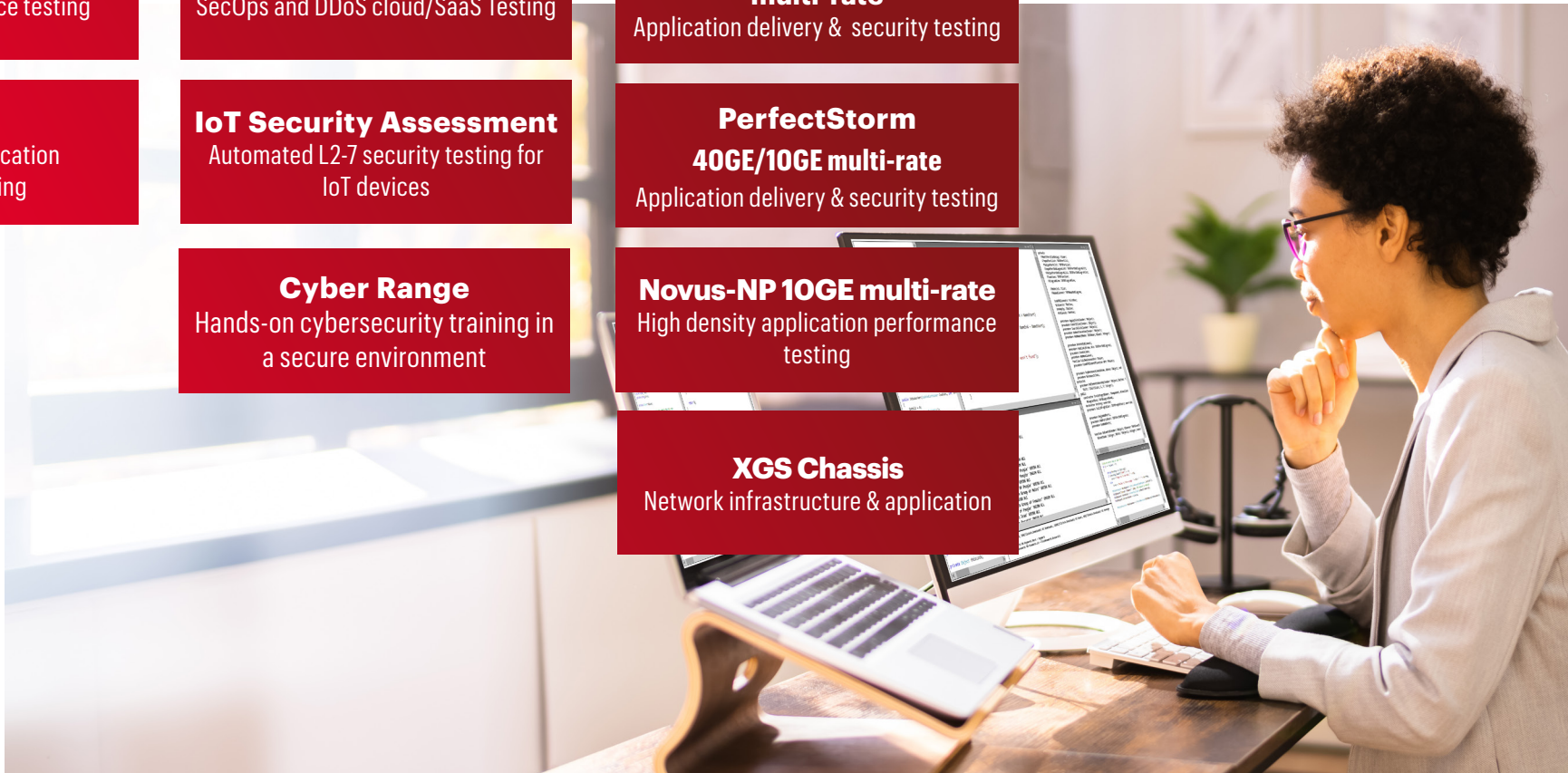
High density application performance  
testing

### XGS Chassis

Network infrastructure & application

[Click here for L2-3  
product catalog](#)

[L2-3 test software  
L2-3 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 application  
and security test software delivers  
comprehensive LA-7 testing  
methodologies.



# Layer 4-7 Network Application and Security Testing Software

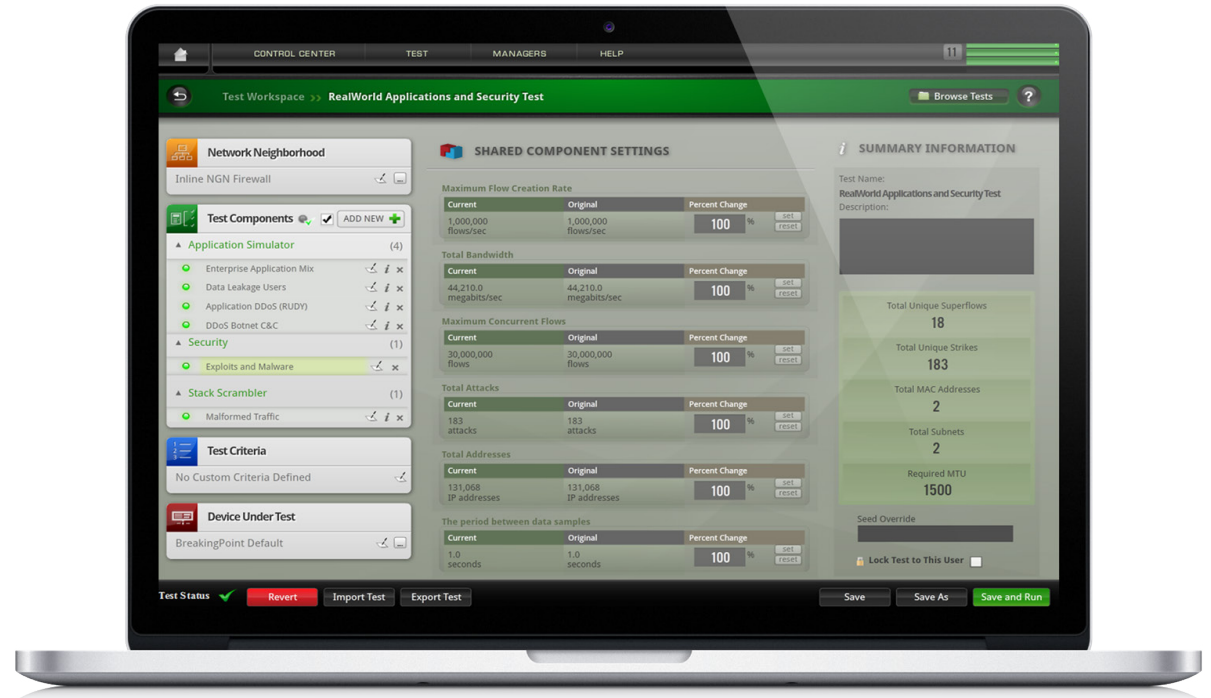
Keysight's application and security testing solutions, powered by our Application and Threat Intelligence (ATI) security research center, provide a comprehensive database of network applications (600+) and security attacks (100K+) for testing converged multi-play services, application delivery, and network 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	Applicable to test hardware	Virtual edition	
<b>BreakingPoint</b>	L2-7	APS 100/400GE family, CloudStorm family, PerfectStorm family	BreakingPoint VE	<a href="#">Get a Quote &gt;</a>
<b>IxLoad</b>	L4-7	APS 100/400GE family, CloudStorm family, PerfectStorm family, Novus family	IxLoad VE	<a href="#">Get a Quote &gt;</a>
<b>CyPerf</b>	L4-7	Software only. Portable, lightweight, distributed test agents.	Cloud-native CyPerf controller and agent	<a href="#">Get a Quote &gt;</a>
<b>IoT Security Assessment</b>	L2-7	Software only. Binary software or full OVA distribution	Installable in a VM	<a href="#">Get a Quote &gt;</a>

# BreakingPoint

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

- Delivers all real-world traffic simultaneously from a single port, including legitimate traffic, exploits, malware and even DDoS.
- Simulates 700+ 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, a 400GE application and security testing system, 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.
- BreakingPoint VE extends the power of BreakingPoint to virtualized systems and networks, running on a variety of commercially available compute environments, including private and public clouds, to validate virtual network functions (VNF) and physical network functions (PNF) with functional testing and performance benchmarking.



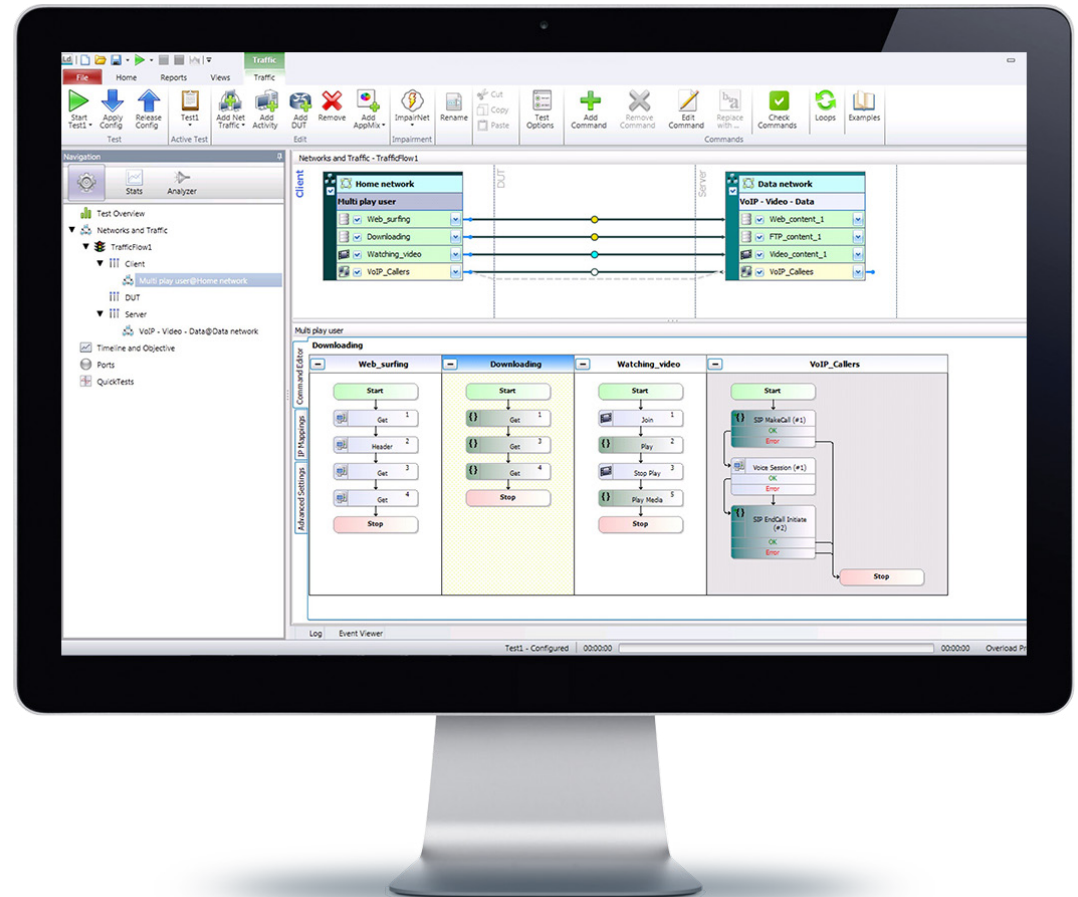
# BreakingPoint comparison chart

License name	Description	Subscription / perpetual	Floating / node-lock	Variants		
				Performance tier	Throughput	Part number
<b>BreakingPoint Application and Threat Intelligence (ATI)</b>	<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	Depends on HW or VE Tier	909-0856
<b>BreakingPoint Virtual Edition (VE) annual subscription</b>	BreakingPoint VE annual subscription including ATI	Annual subscription	Floating	100GE	100 Gbps	939-9640
				10GE	10 Gbps	939-9610
				1GE	1 Gbps	939-9600
<b>BreakingPoint VE perpetual</b>	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.
- Industry standard for network service testing (IPsec, TLS, multi-play with VoIP/video/data) featuring extensive per-flow, per-subscriber analysis.



## IxLoad comparison chart

				Variants		
License name	Description	Subscription / perpetual	Floating / node-lock	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

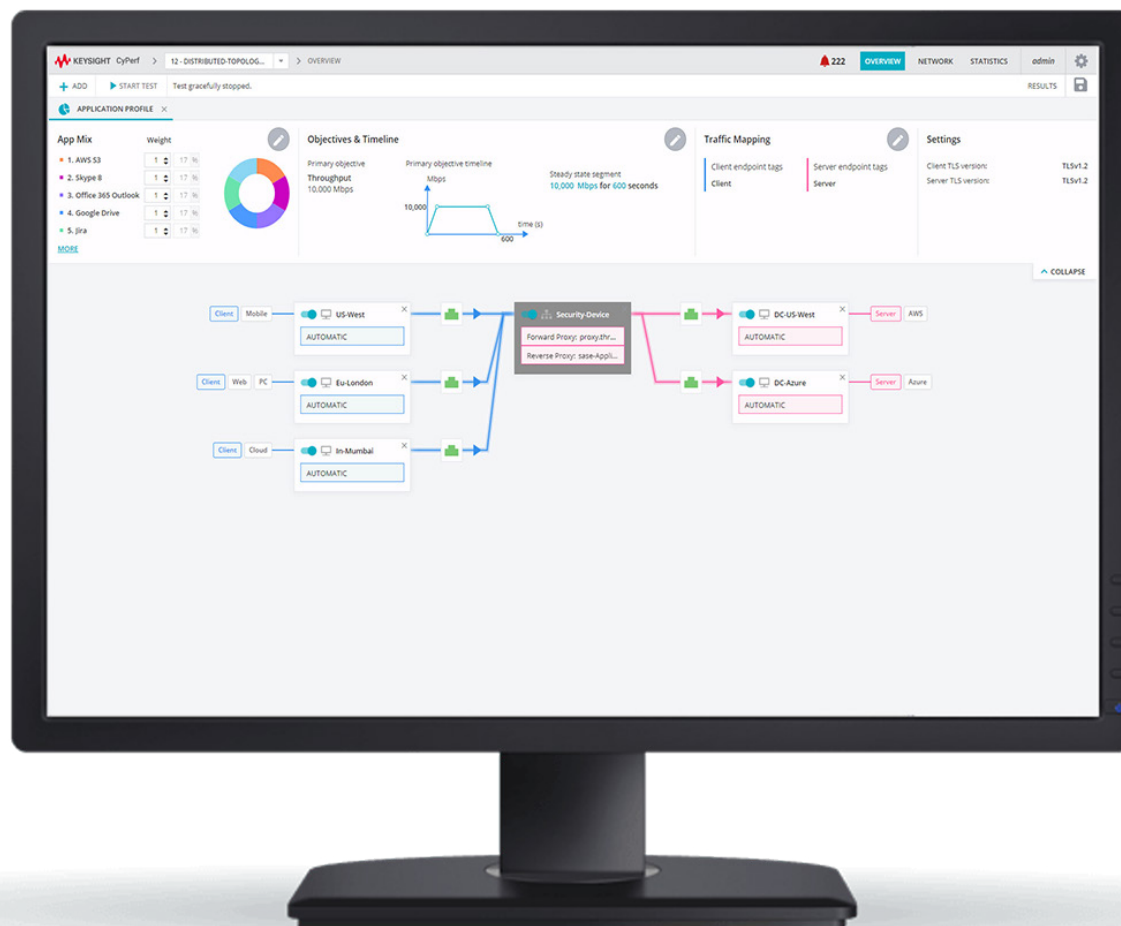
# IxLoad Virtual Edition (VE) comparison chart

License name	Description	Subscription / perpetual	Floating / node-lock	Variants		
				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

## A cloud native elastic application and security test solution for zero trust in distributed cloud

- Create digital twin of users, applications, and attacks to validate network performance, security efficacy and quantify user QoE in real-world distributed and hybrid networks.
- Test the functionality and performance of zero trust policies with authenticated and unauthenticated application traffic and security attacks.
- Validate 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.
- Deploy lightweight traffic agents as containerized pods (on-prem or managed Kubernetes), VMs, COTS, and private or public cloud (AWS, GCP, Azure).
- Test network application performance and security efficacy in both pre-deployment lab settings and safely in live production networks.
- Deliver fully automated orchestration and test execution for today's continuous integration, deployment, testing (CI/CD/CT) environments.
- Solve real-world test challenges for cloud migration, SD-WAN optimization, SASE validation, CDN delivery, and zero trust network access (ZTNA).



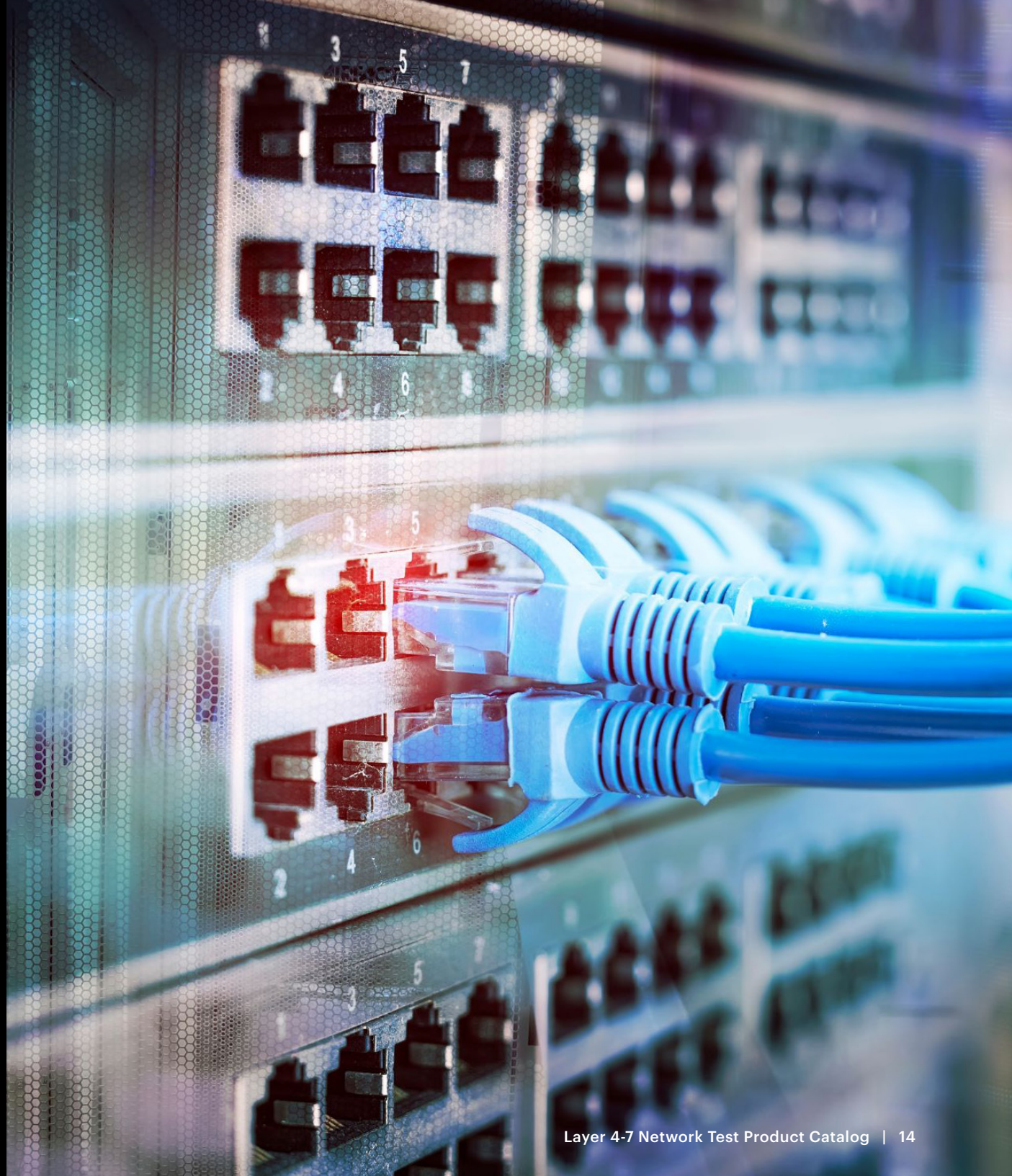
## CyPerf comparison chart

License name	Description	Subscription/ perpetual	Floating/ node-lock	Variants		
				Performance tier	Throughput	Part number
<b>CyPerf bundle annual subscription</b>	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
<b>CyPerf bundle perpetual</b>	Bundle with perpetual license	Perpetual	Floating	10 agents and 10GE	10 Gbps	938-1022
<b>CyPerf single agent floating license</b>	CyPerf single agent floating license  (requires previous purchase of corresponding CyPerf bundle)	Subscription	Floating	Annual	10 Gbps	938-1001
		Perpetual		Perpetual	10 Gbps	938-1005
<b>CyPerf 10G performance floating license</b>	CyPerf 10G performance floating license  (requires previous purchase of corresponding CyPerf bundle)	Subscription	Floating	Annual	10 Gbps	938-1002
		Perpetual		Perpetual	10 Gbps	938-1006

# 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>
100GE 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

## Powerful application and cybersecurity test platform

- Delivers a 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 200Gbps today and scaling up to support 3.2 Tbps as your needs grow.



## APS-100/400GE Family comparison chart

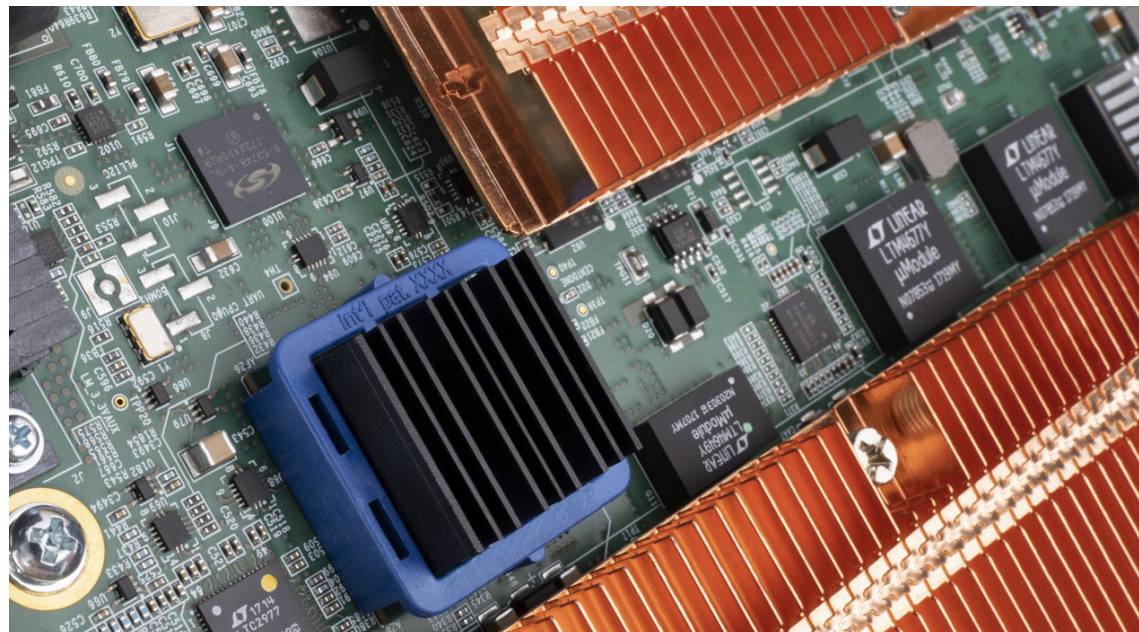
Product name	Number of ports	Stream/application support	Performance	Physical interfaces	Variants	
					Speed	Model number
<b>APS-ONE-100</b>	4 x 100GE physical ports can fan-out to: <ul style="list-style-type: none"> <li>8 x 25GE</li> <li>8 x 10GE</li> </ul>	BreakingPoint	Application throughput: 190Gbps TLS throughput: 150Gbps HTTP CPS: 3.5M TLS CPS: 100K Elephant flow: 65Gbps @ 9200B	QSFP28	100GE 25GE 10GE	APS-ONE-100
<b>APS-M1010 w/ APS-ONE-100</b>	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: 1.9Tbps TLS throughput: 1.5Tbps HTTP CPS: 35M TLS CPS: 1M	QSFP28	100GE 25GE 10GE	APS-M1010 + up to 10 x APS-ONE-100
<b>APS-M8400 w/ APS-ONE-100</b>	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: 3.2Tbps TLS throughput: 2.4Tbps HTTP CPS: 56M TLS CPS: 1.6M Elephant flow: 65 Gbps @ 9200B	QSFP-DD400	400GE 200GE 100GE 50GE 40GE 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 a 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: <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>	BreakingPoint	Application mix: 200 Gbps HTTP connection rate: 3.5M TLS throughput: 100 Gbps	QSFP28	100GE	CS100GE2Q28NG
		IxLoad	HTTP bidirectional throughput: 200 Gbps (IxLoad) HTTP connection rate: 4.5M (IxLoad) TLS throughput: 92 Gbps (IxLoad)		40GE 25GE 10GE	
CloudStorm		IxLoad	HTTP bidirectional throughput: 200 Gbps HTTP connection rate: 4.5M TLS throughput: 92 Gbps		100GE 50GE 40GE 25GE 10GE	CS100GE2Q28
CloudStorm-XP Fusion	2 x 100GE physical ports can fan-out to: <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>	BreakingPoint	Application mix: 100 Gbps HTTP connection rate: 1.5M TLS throughput: 50 Gbps	QSFP28	100GE	CSXP100GE2Q28NG
		IxLoad	HTTP bidirectional throughput: 95 Gbps (IxLoad) HTTP connection rate: 2.5M (IxLoad) TLS throughput: 38 Gbps (IxLoad)		50GE 40GE 25GE 10GE	
CloudStorm-XP		IxLoad	HTTP bidirectional throughput: 95 Gbps HTTP connection rate: 2.5M TLS throughput: 38 Gbps		100GE 50GE 40GE 25GE 10GE	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.



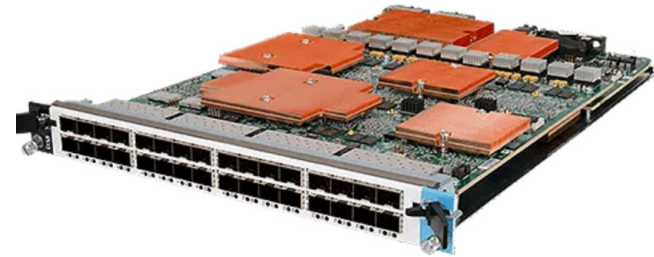
# PerfectStorm 40GE/10G Multi-rate comparison chart

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

## Variants

Product name	Number of ports	Form factor	Application support	Physical interfaces	Physical ports	Performance	Model number
<b>Novus 32-port 10GE/1GE/100M SFP+</b>	<ul style="list-style-type: none"> <li>• 32 x 10GE</li> <li>• 32 x 1GE</li> <li>• 32 x 100M</li> </ul>	Load module	IxNetwork (L2-3)	SFP+	32	N/A	NOVUS10/1GE32S
<b>Novus 5-speed 10GE/5GE/2.5GE/1GE/100M</b>	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
<b>Novus 3-speed 10GE/1GE/100M</b>	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
<b>Novus-NP 10GE/1GE/100M</b>	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
<b>Novus ONE PLUS 3-speed 10GE/1GE/100M</b>	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
<b>Novus ONE PLUS 5-speed 10GE/5GE/2.5GE/1GE/100M</b>	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

# 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
<b>Compact (2-slot, 3RU)</b>	XGS2-SD, XGS2-SDL and XGS2-HSL	Benchtop (rackmount optional)	IxOS
<b>Full (12-slot, 11RU)</b>	XGS12-SD, XGS12-SDL and XGS12-HSL	Rackmount	IxOS

# Network Testing in the Cloud

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



# Cloud Test

## 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 2-7. This catalog focuses only our L4-7 products. You can find more details on the L2-3 solutions listed below in our [Layer 2-3 Application and Security 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 2-3 product catalog
Cloud Peak	NFVi	No	See layer 2-3 product catalog
IxChariot	End-to-end network	Yes	See layer 2-3 product catalog

# Security Operations

- Continuously measure, optimize, and monitor network security
- Prepare for and stay ahead of security vulnerabilities and attack



# Threat Simulator

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

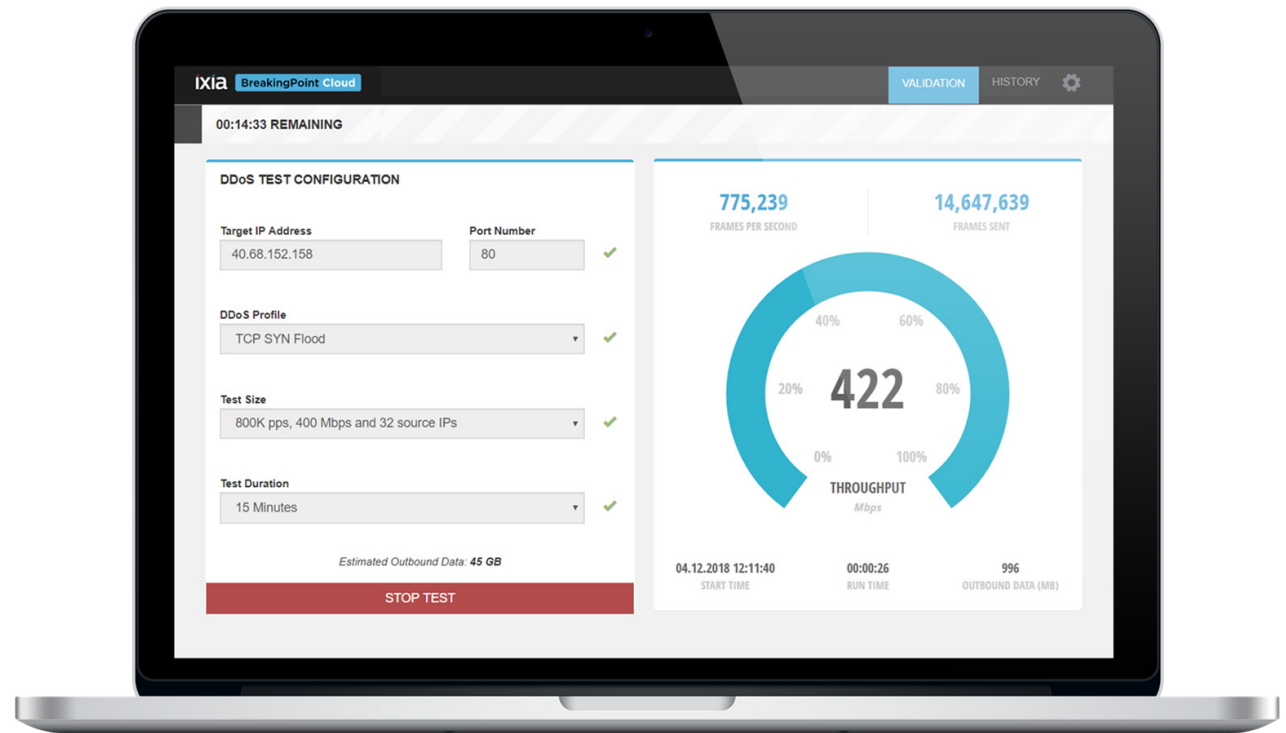
- Simulate attacks safely on your live network, measure and optimize SecOps spend, while continuously monitoring your security posture.
- Support Software-as-a-Service (SaaS) and on-premise deployment options.
- Utilize over two decades of network security testing expertise, supported by the Keysight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



# BreakingPoint Cloud

## Microsoft Azure DDoS protection validation

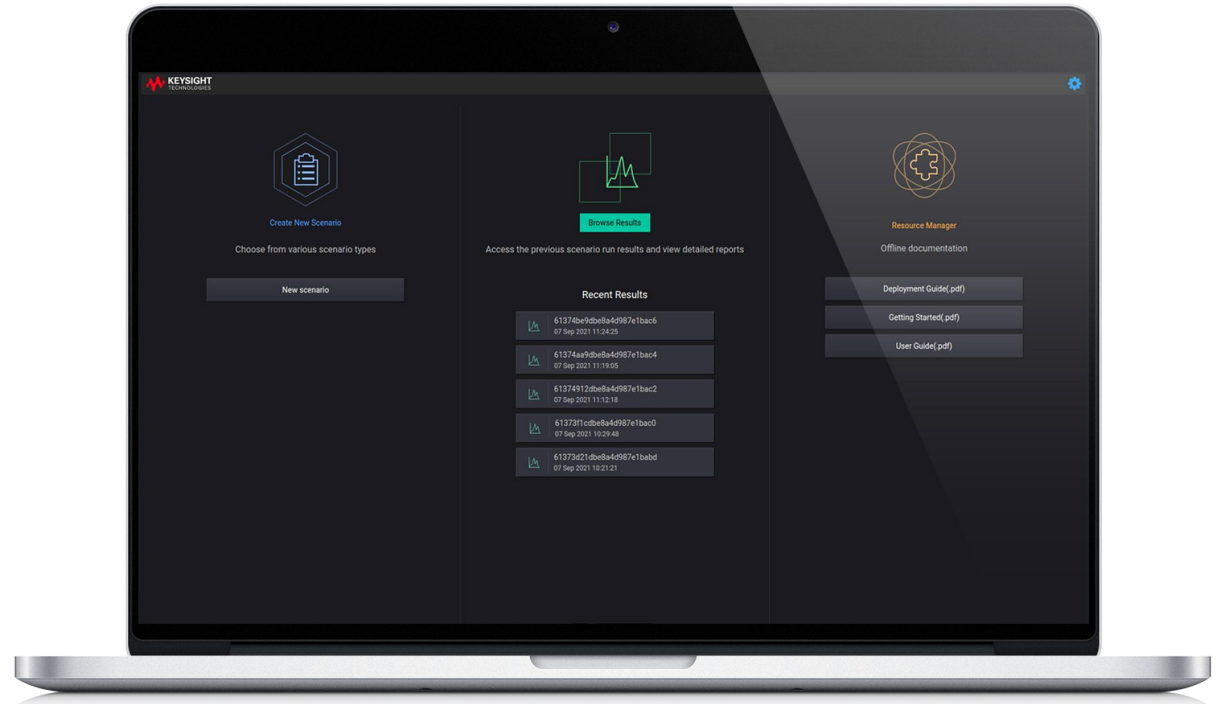
- Provides validation-as-a-service through a software-as-a-service (SaaS), allowing you to consume it via a simplified, browser-based user interface, which means there's no software to install and it is always up to date.
- Offers built-in safety features to validate that the Azure account owns the target IP address executing the DDoS validation. Pre-defined DDoS test sizing and test duration profiles eliminate the potential of configuration errors.
- Elastically scales DDoS simulation agent.
- Offers a flexible pay-per-use model to grow validations as your business and network expand.
- Delivers the resources and expertise to provide large-scale DDoS validation available with assistance from Microsoft Azure and Keysight.



# IoT Security Assessment

## Comprehensive, automated security testing for IoT devices

- Finds security flaws in connected devices quickly with an intuitive UI.
- Integrates security testing into CI/CD pipeline with complete REST API management.
- Discovers unknown network stack and chipset weaknesses with protocol fuzzing.
- Hardens security with comprehensive vulnerability assessment and OWASP IoT Top 10 coverage.
- Broadens scope with testing for consumer, healthcare, automotive, and other connected devices.
- Validates Wi-Fi, cellular, Ethernet, CAN bus, Bluetooth, and BLE connected devices.
- Supports link-layer, application-layer, and firmware security analysis.

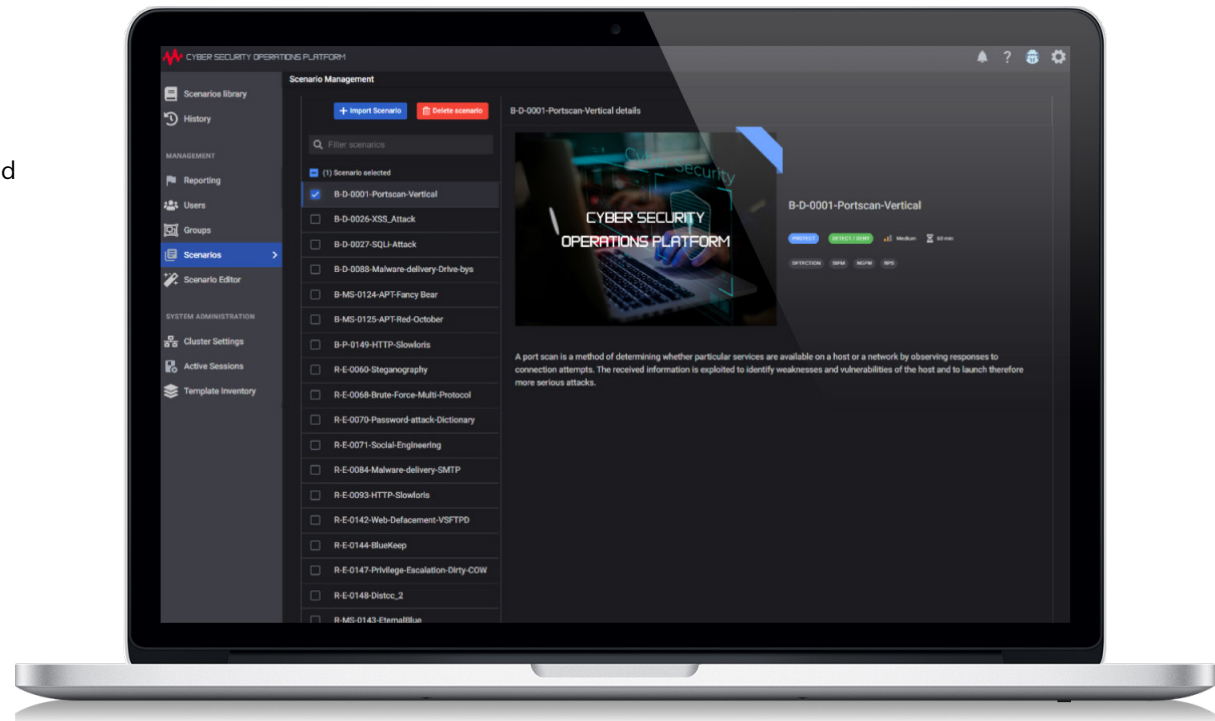


Part of **Keysight KORA O-RAN**  
Security Test Suite

# Cyber Range Solution

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

- Controlled cyber range environment: Prepare security teams for cyber-attacks with dynamic, hands-on practice in a safe environment.
- Realistic cyber range platform: Customize the scalable Cyber Security Operations platform to suit different architectures and organizational requirements.
- Security-tool agnostic: Integrate tools from your preferred vendors into the cyber range
- Multitenant architecture: Allows users to train on multiple technologies simultaneously, reducing the overhead of costly classroom training.
- Capture the Flag (CTF) exercises: Sharpen your team's cybersecurity skills in a competitive space.
- Library of threat and event scenarios: Cover several predefined scenarios with a wide range of cyber security topics and techniques.
- Customizable scenarios: Build your own custom scenarios on the cyber range platform, or Keysight can 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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