Vision X (Model: Vision X) Network Packet Broker

Scalable visibility for data centers today and tomorrow



Product Description

Keysight's Vision X is the next-generation network visibility solution. It delivers expandability and flexibility that meets the ever-evolving needs of the data center.

Vision X is a high-density, modular chassis comprised of customizable front modules and multi-speed port choices. It also supports a rear, advanced packet processing module, extending the total packet processing capacity of the chassis.

With a small data center footprint, Vision X conserves both power and rack space. Its footprint, along with its upgradable chassis, will improve your overall ROI now and in the future.



Key Features

- Automated filter compiler that simplifies configuration using either the powerful GUI or REST API
- **Zero-loss, advanced packet processing** improves tool efficiency through deduplication, packet trimming, and header stripping without dropping packets.
- Space efficient 3RU design saves rack space in your data center and provides modularity.
- **5G visibility** provides unparalleled more core visibility and insight for service providers and operators, enabling optimization of network performance through correlation, sampling, and network slice awareness.
- **Inline Decryption** provides the ability to decrypt and re-encrypt traffic as a transparent proxy for both inline and out-of-band tool deployments. Offloads the decryption burden from tools to improve ROI and security performance.

Use Cases

- In a typical spine-and-leaf visibility architecture, Vision X takes aggregated traffic from Vision Edge NPBs, and provides the centralized traffic processing before sending the processed traffic to security tools.
- With dedicated encryption/decryption hardware, Vision X provides inline man-in-the-middle decryption/encryption for either inline or out-of-band security tools.
- For application DPI, Vision X provides application identification, app filtering and forwarding, rich meta data generation including proprietary IxFlow generation to security tools.
- Inline HA offers the best in the industry, and most resilient visibility architecture to protect against all kinds of failures (tools, cables, transceiver, loss of power, hardware replacement, software upgrade etc.)

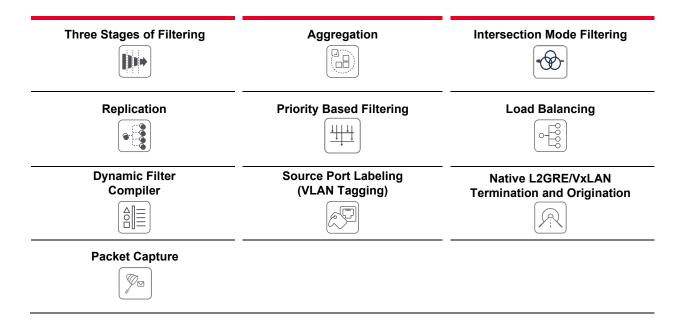


Product Capabilities

NetStack

Robust filtering, aggregation, replication and more – the gold standard for network traffic visibility.

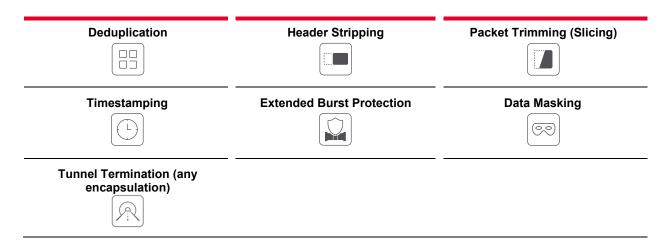
The following traffic visibility capabilities combined as NetStack are the foundational set available as standard features for Keysight's industry-leading network packet brokers.



Learn more about NetStack features

PacketStack

Line-rate (up to 2 Tbps), intelligent packet processing. Modify every packet at line-rate using any combination of Keysight's FPGA based PacketStack (AFM) capabilities. Flexibly assign advanced packet processing to any port or dynamic filter in 100 Gbps increments.



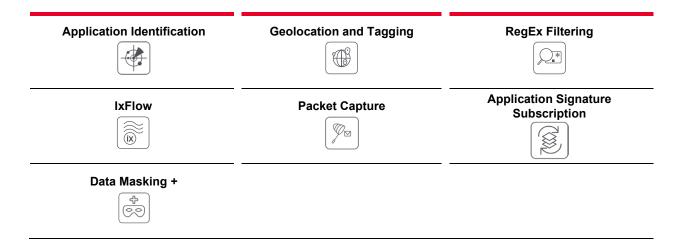
Learn more about PacketStack features

AppStack

Context aware, signature-based application layer filtering. Relying on both static traffic pattern identification and dynamic application discovery, AppStack provides a comprehensive view of which applications are running within your network, what bandwidth they consume, and where these applications are running geographically.

Pinpoint sensitive information anywhere in the data, using advanced RegEx, with pre-defined detection for e-mail addresses, social security numbers and credit card numbers.

IxFlow empowers Big Data, observability, security and performance monitoring tools by generating enriched metadata with support for NetFlow, IPFIX, JSON, Kafka and Pulsar.



Learn more about AppStack features

FlowStack

Custom acceleration engines on PacketStack modules implement the FlowStack algorithm which increases the performance of metadata extraction and generation by up to 5X compared to CPU based approaches. FlowStack extracts information from the initial packets in a flow, measures the state of the flow in subsequent packets and determines when and why the flow ends, generating metadata records at each step.

AppStack software running on application modules combines the FlowStack output into IxFlow or sends records to an enterprise messaging bus.



SecureStack

Optimized handling for secure traffic. SecureStack allows organizations to inspect encrypted data and enable tools to detect threats and malware hiding in encrypted traffic.



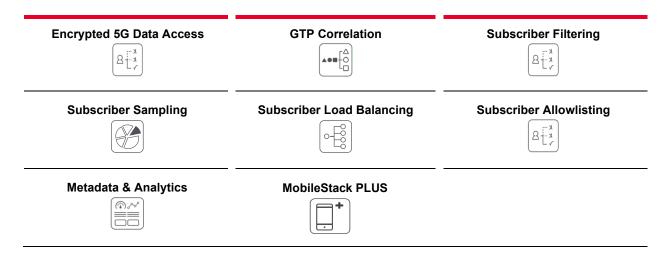
Learn more about SecureStack features



MobileStack

Network visibility for mobile operators: High Performance optimized for cost savings.

MobileStack significantly reduces probe traffic, focusing on crucial data to monitor subscriber quality of experience, essential in managing the transition to 5G with efficiency. This ensures optimal use of monitoring infrastructure, leading to considerable cost reductions. As 5G traffic increases, the integration of MobileStack with AppStack amplifies Al/ML analytics capabilities, providing deep insights into network operations and enhancing subscriber quality of experience (QoE).



Learn more about MobileStack features

Vision X features

i eature
Native L2GRE/VxLAN origination and termination, including conditional header stripping
Filtering on IP4/IPv6 fragments
Full-duplex, non-blocking, and line rate L2 forwarding of 12.8 Tbps
Supports individual configuration of 10G, 25G, 40G, 50G or 100G speeds
Superior architecture enables maximum use of filter memory for each installed module
Packet Capture on all ports. Up to 1000 packets per capture. Up to 50MB for storage
IFC cluster supports any-to-any topology with tools either a single hop or multiple hops away
IFC cluster and Inline HA are the most resilient architecture for OOB monitoring and Inline tool deployment respectively
IFC clustering with other Vision platforms to offer a single pane of glass management
Application intelligence with hundreds of pre-loaded signatures for app detection and reporting, app filtering and metadata generation
High-performance module for application detection, metadata generation, and Inline/OOB decryption
Comprehensive wizards make inline tool deployment extremely easy for complex use cases that require tool sharing or VLAN translation
Inline HA offers the most resilient architecture for Inline tool deployment
Up to 2 Tbps of advanced packet processing (dedup, header stripping, timestamping, etc.)
Standard header stripping that includes VLAN, FabricPath, ETag, VNTag, GTP, MPLS, VxLAN, L2GRE, ERSPAN. Supports cascaded header stripping
Generic Header Stripping can be used to strip proprietary or other protocols headers not in above list. Examples are: L3GRE, GENEVE, JMirror, PBB-TE, LISP, VSL, OTV, PPPoE
PTP 1588 Time Stamping
High performance 5G visibility
With MobileStack PLUS provides correlation, sampling and allowlisting of GTP traffic along with deduplication, trimming, and timestamping without loopbacks



Inline capabilities

Requirement	Inline Capability	
Inline Basics	Supports failsafe serial service chaining, parallel load balancing with spares, or combined topologies.	
	Customizable heartbeat (HB) support to detect and automatically recover from monitoring and security tool failures.	
	Multiple HB templates enable each tool to have its own unique HB.	
Inline Advanced	Link Force Down (LFD) and its triggered response provide coordinated link status change in either standalone or High Availability (HA) mode.	
	Bypass switches and Keysight Vision X can have different HB, making a multi-tier design possible, to increase overall resilience for High Availability (HA).	
	Active-Active Inline HA solution is the gold standard in the industry and offers the most resilient architecture to protect against all kinds of failures.	
	Tool Sharing (TS) enables sharing of the same set of inline tools among multiple network segments without crosstalk.	
	VLAN translation enables inline tools that don't support QinQ to enjoy Tools Sharing.	
	Asymmetric hashing supports common use cases for lawful interception	
Inline Decryption	Delivered through an Application Module with a dedicated cryptographic processor	
Capabilities	Transparently intercepts and decrypts TLS traffic, enables inspection by tools, then re-encrypts the traffic, and transmits it forward	
	Supports all modern TLS encryption schemes	
	Support for both forward proxy and reverse proxy in the same instance	
	Supports Host Categorization Service for decryption bypass of site types such as Financial and Health	
	Offload the decryption from a service chain of multiple security tools	
	Does not impact the ability to use any other feature of the Vision X	



Network Packet Broker Management

IFC (Ixia Fabric Controller) clustering

Ixia Fabric Controller (IFC) clustering offers a single pane of glass management for a cluster of network packet brokers. Manage and configure NPBs in a distributed environment using a single user interface as if one centralized visibility and security fabric.

	Capability
Platforms	IFC clustering supports any combination of Vision Edge 40/100/10S/7816, Vision ONE/X platforms
Topologies	Typical topologies supported include hub-and-spoke, spine-and-leaf, tree, ring, full mesh, partial mesh, or any combination of above
	Supports direct connection for interconnects, or GRE encapsulated interconnects (limited to Vision ONE and 7300 only) when going thru DWDM or WAN devices
	Supports both single hop and multi hop cluster topology
Algorithms	Best routes are calculated based on least hop-count using Shortest Path First (SPF) algorithm
	Intelligent load balance among Equal Cost Multiple Paths (ECMP) to guarantee session integrity and avoid packet reordering
Scalability and	User configurable number of Controller Node vs. Fabric Node to maximize resiliency
Resiliency	A single IFC cluster can scale to more than 50 nodes
	Total flexibility in the number of controller nodes vs. the number of fabric nodes. Full redundancy among controller nodes
	LLDP auto discovery of interconnect links makes cluster configuration easy and error proof
	Automatic or user triggered path re-optimization to avoid failed links or nodes
	IFC cluster offers industry best resilient architecture for OOB monitoring

Learn more about IFC Clustering features



Keysight Vision Orchestrator

Keysight Vision Orchestrator (KVO) offers intent-based visibility for its users and its main goal is to provide a single pane of glass for Keysight visibility solutions, covering both physical and virtual world. KVO has two key components, element management and data path management. Key functional blocks of each component are listed below:

Element Management

- KVO User management Single Sign On
- Granular Role and Resource Based Access Control
- · Custom Dashboards and Reporting
- Event Management
- Software Upgrade Automation
- Centralized License Management

Data Path Management

- Cluster Management
- Intent-based Network Policies
- Policy Scheduler
- Self-healing Visibility Fabric
- Global Change Management
- Audit Trail of Changes
- Open API for fabric management

Keysight KVO



Keysight Vision Orchestrator can manage hundreds of visibility nodes in the Cloud, Data Center, or Edge. This enables organization to scale and operate their visibility solutions across their entire environment with the ease of intent-based policies.

Learn more about Keysight's KVO



Port Configuration

Speed	Main Switch +4 x NetStack Modules # of Ports	Main switch +4 x PacketStack Modules # of Ports	Main switch +4 x Application Modules # of Ports
100 GbE	Up to 60	Up to 44	Up to 28
50 GbE	Up to 108	Up to 88	Up to 56
40 GbE	Up to 76	Up to 76	Up to 40
10/25 GbE	Up to 108	Up to 108	Up to 96

Product Specifications

General specifications

Airflow direction	Front to Rear		
MTBF	AC Base Chassis	115,167 h	
(at 25 °C)	AC chassis + rear PS module	95,102 h	
	AC chassis + 4x front PS modules	54,297 h	
	AC chassis + 4x NS module	88, 855 h	
	DC base chassis	104,653 h	
	DC chassis + rear PS module	87,924 h	
	DC chassis + 4x front PS + rear PS module	47,719 h	
	DC chassis + 4x NS module	80,789	
Management	 Intuitive Web GUI, TLS 1.2 SNMP v1, v2, v3 Requests, Inform Requests and Traps support Supports IEEE 1588 / Precision Time Protocol (PTP) time synchronization. Local, RADIUS, TACACS+ and LDAP support (users and groups) IP allowlist 	 Granular access control features Event monitoring and logging Syslog (cleartext or encrypted) IT Automation control with RESTful API IPv4, IPv6, static or DHCP Secure serial console port with authentication 	
Performance	 Fully non-blocking 6.4Tb one-way or 12.8Tb full-duplex switch capacity, line rate across all ports with filtering enabled. Up to 2Tbps Advanced Packet Processing 10GbE/25GbE/40GbE/50GbE/100GbE support 		



Physical specifications

Physical size (W x D x H)	44.5 x 78.7 x 13.3 cm 17.5 x 31.0 x 5.25 inches		
Weight	Chassis	57.0 kg or 125.0 lb	S
	Modules	Weight	Size (WxDxH)
	MVX-PS8PC PacketStack	21.7 kg (48 lbs)	10 x 38 x 28 inches
	MVX-AM4PC AppStack	6.8 kg (15 lbs)	25x25x5 inches
	MVX-NS12PC NetStack	20.4 kg (45 lbs)	10x38x28 inches
	MVX-PS-R PacketStack Rear	21.7 kg (48 lbs)	10x38x28 inches
	MVX-SWCH Switch Card	7.9 kg (17.64 lbs)	20.08x25.59x8.27 inches
Rack mountable	3 RU for 19" rack-mountable chassis		

Electrical specifications

Power AC	Quad hot-swappable AC power supplies	
Input voltage	100-240 VAC, 50-60 Hz	
Power Consumption	Low line [100 VAC] max 1260W	
(per power supply)	Normal line [110 -120 VAC] max 1400W	
	High line [200 – 240 VAC] max 1500W	
Input current	15 A @ 100 VAC, 10 A @ 240 VAC	
Power DC	Quad hot swappable DC power supplies	
Input voltage	48-60 VDC	
Input current	Max. 25 A	
Power Consumption	1500W	
(per power supply)		
Heat / Power dissipation	Max. 3000w / 11,942 BTU/hr	
Operational scenarios		
Normal Operation	Four (4) power supplies deployed, with 600W per power supply as the typical max load.	
Deployment example	Power feed A connection is to the left two (2) chassis power supplies	
	 Power feed B connection is to the right two (2) chassis power supplies 	
Fail scenarios	If power feed A or B fails, either side can support the full power load of 2400W or 1200W load per power supply.	
	 If one power supply fails, that results in an 800W load per power supply. 	
	 If two power supplies fail, that results in a 1200W load per power supply. 	
	 In any fail case, there is a 1200W maximum load for each power supply, with the normal max operation of only 600W, pre-power supply. 	



Environmental specifications

Operating temperature	5 °C to 40 °C	Short term ¹ : -5 °C to 55 °C Short-term ¹ with fan failure: -5 °C to 40 °C
Operating humidity	5% to 85% RH (non-condensing)	Short term ¹ : 5% to 90% RH (non-condensing
Storage temperature	-40° to 70°C	
Storage humidity	5 to 95%	
Operating altitude	Up to 2000 m	
RoHS	RoHS Directive 2011/65/EU; Annex II, Directive (EU)2015/863 China RoHS	
WEEE	WEEE Directive 2012/19/EU	

¹ (not to exceed 96 consecutive hrs)



Compliance

Regulatory type	Standard
Safety	EN IEC 62368-1
Guicty	UL 62368-1/CSA C22.2 No. 62368-1
	CISPR 32, Class A,
	IEC 61000-3-2,
	IEC 61000-3-3
	EN 55032, Class A,
	EN 61000-3-2,
FMO amilaniana	EN 61000-3-3
EMC emissions	FCC Part 15B, Class A
	CAN ICES-003(A)/NMB-003(A)
	AS/NZS CISPR 32, Class A
	KS C 9832, Class A,
	KS C 9610-3-2,
	KS C 9610-3-3
	CISPR 35
EMC immunity	EN 55035
-	KS C 9835

Country / Region certifications	USA Canada EU UK
	Australia
	South Korea
Country of origin	USA, Malaysia



Order Information

Base Unit Vision X

Part number	Description
SYSVX-BASE-AC	Keysight Vision X Base system, AC, includes chassis, 12-port 100G Switch card, 4 AC power supplies, 5 fans and 4+1 smart blanks
SYSVX-BASE-DC	Keysight Vision X Base system, DC, includes chassis, 12-port 100G Switch card, 4 DC power supplies, 5 fans and 4+1 smart blanks
SYSVX-CHASE-AC	Keysight Vision X Base system, includes chassis, 4 AC power supplies, 5 fans, and 4+1 smart blanks, main switch card not included
SYSVX-CHASE-DC	Keysight Vision X Base system, includes chassis, 4 DC power supplies, 5 fans, and 4+1 smart blanks, main switch card not included
TAA compliant versions	
SYSVX-BASE-AC-T	Keysight TAA Compliant Vision X, Base AC system, includes Chassis, (12) port 100G Switch card, 4 power supplies, 5 fans, front/rear blanks as needed (991-2047)
SYSVX-BASE-DC-T	Keysight TAA Compliant Vision X, Base DC system, includes Chassis, (12) port 100G Switch card, 4 power supplies, 5 fans, front/rear blanks as needed (991-2048)
SYSVX-CHASE-AC-T	Keysight TAA Compliant Vision X, Chassis Only AC system, includes chassis, 4 power supplies, 5 fans. Must order blanks separately. Switch card not included (9912049)
SYSVX-CHASE-DC-T	Keysight TAA Compliant Vision X, Chassis Only DC system, includes chassis, 4 power supplies, 5 fans. Must order blanks separately. Switch card not included (9912050)

Switch and Interface Modules Vision X

Part number	Description
MVX-SWCH	Keysight Vision X Switch Card with (12) 100G ports
MVX-NS12PC	Keysight Vision X, NetStack 12-port 100G module
MVX-PS8PC	Keysight Vision X, PacketStack 8-port 100G module (Front)
MVX-PS-R	Keysight Vision X, Rear PacketStack module
MVX-AM4PC	Keysight Vision X, App Module (4) port 100G module; Port and feature licenses sold separately
TAA compliant versions	
MVX-AM4PC-T	Keysight TAA Compliant Vision X, App Module (4) port 100G module; Port and feature licenses sold separately (991-8103)
MVX-NS12PC-T	Keysight TAA Compliant Vision X, NetStack (12) port 100G module; Port license sold separately (991-2043)
MVX-PS-R-T	Keysight TAA Compliant Vision X, Rear PacketStack card; No ports; Performance/feature license sold separately; (991-2044)
MVX-PS8PC-T	Keysight TAA Compliant Vision X, PacketStack (8) port 100G module (Front); Performance/feature and port license sold separately (991-2045)
MVX-SWCH-T	Keysight TAA Compliant Vision X, Switch Card with (12) 100G ports; Port license sold separately (991-2046)



Port Licenses Vision X

Part number	Description
LIC-VX-1PC	Keysight Vision X Port License for(1) 100G multispeed port
LIC-VX-SPR	Keysight Vision X, (1) Cold spare system license

Feature Licenses Vision X

Part number	Description
NetStack capability	
LIC-VX-NS-TUNL	Keysight Vision X, (1) Enables Netstack tunneling feature, one per system (993-0229)
LIC-VX-IFC	Keysight Vision X, (1) Fabric connectivity Feature license
LIC-VX-INLN	Keysight Vision X, (1) Inline feature; Licensed per system (993-0138)
LIC-VX-NS-CAPT	Keysight Vision X, perpetual license, enable packet capture on all ports
PacketStack capability	
LIC-VX-PS2C	Keysight Vision X, 200Gbps, PacketStack feature license. Includes Data Masking, Packet Trimming, Packet Time stamping, Add trailer with original packet length, Trailer Stripping
LIC-VX-DDUP	Keysight Vision X, (1)Packet deduplication feature license
LIC-VX-STRP	Keysight Vision X, (1) Header stripping feature license
LIC-VX-TUNL	Keysight Vision X, (1) Header stripping feature license
FlowStack capability	
LIC-VX-FS-SHNT	Keysight FlowStack flow shunting perpetual feature. Support for up to 400G on MVX-PS-R or MVX-PS8PC module. Max (1) per module
LIC-VX-FS-NTFL	Keysight FlowStack NetFlow meta data generation perpetual license. Allows export of up to 400G of data ingestion. Support on MVX-PS-R and MVX-PS8PC modules. Max (1) per module
AppStack capability	
LIC-VX-SSAS	Keysight Vision X, AppStack perpetual feature; Licensed for one (1) CPU on MVXAM4PC module; Max (2) per module
SUB-VX-SSAS	Keysight Vision X, one (1) year AppStack feature subscription; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module
LIC-VX-SSAS-APFL	Keysight Vision X AppStack perpetual license. Includes App Filtering, Masking and Regex. One (1) CPU instance
LIC-VX-SSAS-NTFL	Keysight Vision X AppStack perpetual license for MetaData generation. One (1) CPU instance
SUB-VX-APTL	Keysight Vision X, one (1) year subscription; Includes AppStack signature updates, QTY (1) per system
SUB-VX-SSAS-APFL	Keysight Vision X AppStack one year subscription license. Includes App Filtering, Masking and Regex. One (1) CPU instance (993-0336)
SUB-VX-SSAS-NTFL	Keysight Vision X AppStack one year subscription license for MetaData generation. One (1) CPU instance (993-0337)
SecureStack - Inline dec	cryption
LIC-VX-ASSL	Keysight Vision X, Inline Decryption perpetual feature; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module (993-0147)
SUB-VX-ASSL-HCS	Keysight Vision X, Host Categorization Service subscription; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module (993-0148)



SecureStack - Out-of-band decryption

LIC-VX-PSSL	Keysight Vision X Decryption Out-of-Band perpetual feature; license for one (1) CPU on MVX-AM4PC module; Max (2) per module (993-0192)
SUB-VX-PSSL	Keysight Vision X, One (1) year Decryption Out-of-Band subscription; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module (993-0179)
MobileStack	
LIC-VX-MS2C	Keysight Vision X, MobileStack perpetual feature; GTP Correlation, GTP-U for up to 200G on MVX-PS-R or MVX-PS8PC Module; Max (2) per module
LIC-VX-GTP	Keysight Vision X, MobileStack perpetual feature; GTP Correlation, GTP-C for up to 64M subscriber sessions per CPU on MVX- AM4PC module; Max (2) per module
LIC-VX-GTPFD2C	Keysight Vision X, 200G MobileStack GTP Flow Distribution (ELB) for up to 200G on MVX-PS-R or MVX-PS8PC Module; Max (2) per module
LIC-VX-GTP5GC	Keysight Vision X, MobileStack perpetual feature; GTP Correlation, 5G correlation, load balancing, and CUPS support on MVX- AM4PC module. Requires one LIC-VX-GTP license; Max (2) per module
LIC-VX-5GT	Keysight Vision X, MobileStack third-party virtual tap termination perpetual feature; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module
LIC-VX-PS-MS-DDUP	Keysight Vision X deduplication feature perpetual license. MUST run in conjunction with MobileStack GTP correlation, requires LIC- VX-MS2C. Max (1) per chassis
LIC-VX-PS-MS-TRIM	Keysight Vision X packet trimming feature perpetual license. MUST run in conjunction with MobileStack GTP correlation, requires LIC-VX-MS2C. Max (1) per chassis
LIC-VX-PS-MS-TMSP	Keysight Vision X timestamping feature perpetual license. MUST run in conjunction with MobileStack GTP correlation, requires LIC- VX-MS2C. Max (1) per chassis
LIC-VX-PS-MS-TRAL	Keysight Vision X add trailer with original packet length feature perpetual license. MUST run in conjunction with MobileStack GTP correlation, requires LIC-VX-MS2C. Max (1) per chassis

Acessories Vision X

Part number Description

MVX-DCPS	Keysight Vision X, (1) DC power supply
MVX-ACPS	Keysight Vision X, (1) AC power supply
MVX-FAN	Keysight Vision X, (1) FAN module
MVX-CBLM	Keysight Vision X, (1) cable management
MVX-SBF	Keysight Vision X, (1) Smart Blank (Front)
MVX-SBR	Keysight Vision X, (1) Smart Blank (Rear)



Support

Keysight's Visibility industry-best products are backed by our industry-leading expertise. Our comprehensive product support does more than ensure uptime – it ensures a competitive edge. The Ixia support team partners with customers to:

- Avoid downtime and keep schedules on track
- · Implement according to industry specifications
- Develop best practices to meet individual needs and objectives
- Maximize efficiency and reduce operating expenses
- Protect and maximize investments in test and visibility

In addition to above, Keysight customers registering for the secure area and access to the Support Site will also be able to view and download our product Security Advisories.

Access Keysight Visibility Support

About Keysight Visibility

Connect and Secure the World with Dynamic Network Intelligence

The need for always-on networks is pervasive, and expectations are high when it comes to keeping them connected and secure. As technologies advance, edge computing, cloud environments, sophisticated security threats, increasing bandwidth requirements, and demanding compliance regulations make it challenging to extract actionable insight from your network.

Keysight can help. Customers rely on our solutions to deliver rich data about network traffic, applications, and users across any networking environment. This deep insight is what we call dynamic network intelligence. It helps you continuously innovate, meet aggressive service level agreements, and keep applications running smoothly and securely.

Learn more about Keysight Visibility Solutions



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.