

Vision X Network Packet Broker

Scalable visibility for data centers today and tomorrow

Introduction

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.



Highlights

- High-density 100GE, 3RU modular chassis
- Full-duplex, non-blocking, and line rate L2 forwarding of 12.8 Tbps
- Supports individual configuration of 10G, 25G, 40G, 50G or 100G speeds
- Hot-swappable fans, power, and 4 front modules, 1 rear module
- Up to 2 Tbps of advanced packet processing (dedup, header stripping, timestamping, etc.)
- PTP 1588 Time Stamping
- High performance 5G visibility
- IFC clustering with other Vision platforms to offer a single pane of glass management
- Superior architecture enables maximum use of filter memory for each installed module
- High-performance module for application detection, metadata generation, and Inline/OOB decryption
- Ease of use, best in the class WebUI

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
- **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
- **Application intelligence** with hundreds of pre-loaded signatures for app detection and reporting, app filtering and metadata generation
- **Comprehensive wizards** make inline tool deployment extremely easy for complex use cases that require tool sharing or VLAN translation
- **Secure serial console port** with authentication
- Support **management port** IP allow-list
- **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
- **Native L2GRE/VxLAN** origination and termination, including conditional header stripping
- **Filtering on IP4/IPv6 fragments**

Vision X Port Flexibility

| Main switch +4 x NetStack modules | Main switch +4 x Packet Stack modules |
|-----------------------------------|---------------------------------------|
| Up to 60 100 GbE | Up to 44 100 GbE |
| Up to 108 50GbE | Up to 88 50GbE |
| Up to 76 40Gb | Up to 76 40GbE |
| Up to 108 10/25GbE | Up to 108 10/25GbE |

Vision X Product Capabilities

NetStack capabilities

The Keysight gold-standard baseline filtering functionality for network packet brokers

| | | | |
|--|---|--|--|
| | <p>Dynamic filter compiler Patented technology that resolves rule overlaps automatically and hence makes configuration simple and eliminates human errors</p> | | <p>Three stages of filtering Filter at ingress ports, in the middle, and at egress ports for maximum flexibility in designing complex Boolean logic without the need of using extra ports for loopback</p> |
| | <p>Aggregation Consolidate incoming traffic to optimize port usage and simplify filter logic. Supports 1:1, 1: Many, Many:1 and Many:Many traffic mapping</p> | | <p>Replication At the ingress port as well as at the dynamic filter. Replication at the ingress enables the same input to connect to multiple dynamic filters. Replication at the dynamic filter enables multiple tools to get identical traffic from the same dynamic filter</p> |
| | <p>Load-balancing Sophisticatedly distributes traffic across tools ports for monitoring in a session-aware manner to preserve traffic integrity and also to maximize up-time with fail-over protection</p> | | <p>Source port labeling (VLAN Tagging and Untagging) VLAN tag management (ingress tagging and egress stripping)</p> |

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

| | | | |
|--|--|--|---|
| | <p>Deduplication 400 Gbps capacity per module (100G increments) and up to 2 Tbps per chassis</p> | | <p>Header Stripping Includes FabricPath, ETag, VNTag, GTP, MPLS, VxLAN, L2GRE, ERSPAN, LISP Generic Header Stripping can be used to strip protocols headers not in above list. Examples are: L3GRE, GENEVE, JMirror, PBB-TE, VSL, OTV, PPPoE</p> |
| | <p>Packet Trimming (Slicing) To modify packet slice or retain only relevant data</p> | | <p>Timestamping Timestamping (local, NTP, PTP 1588)</p> |
| | <p>Native Tunnel Termination Terminate and conditional header stripping for L2GRE and VxLAN tunnels. Support L2GRE/VxLAN origination as well.</p> | | <p>Data Masking Protect PII and sensitive data with an offset</p> |

Inline capabilities

- 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.
- Link Force Down (LFD) and its triggered response provide coordinated link status change in either standalone or High Availability (HA) mode.
- 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
- Bypass switches and Keysight Vision ONE 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.
- Hardware option to support integrated Active SSL. Integrated ASSL enables significant saving of both deployment and troubleshooting time.
- ThreatARMOR bundles eliminate decryption of known-bad traffic and reduce attack surface and non-actionable security alerts.

AppStack capabilities

Classifies traffic based on the following:

- Application, geography, device information, and service provider
- Application signatures are regularly updated via ATI subscription

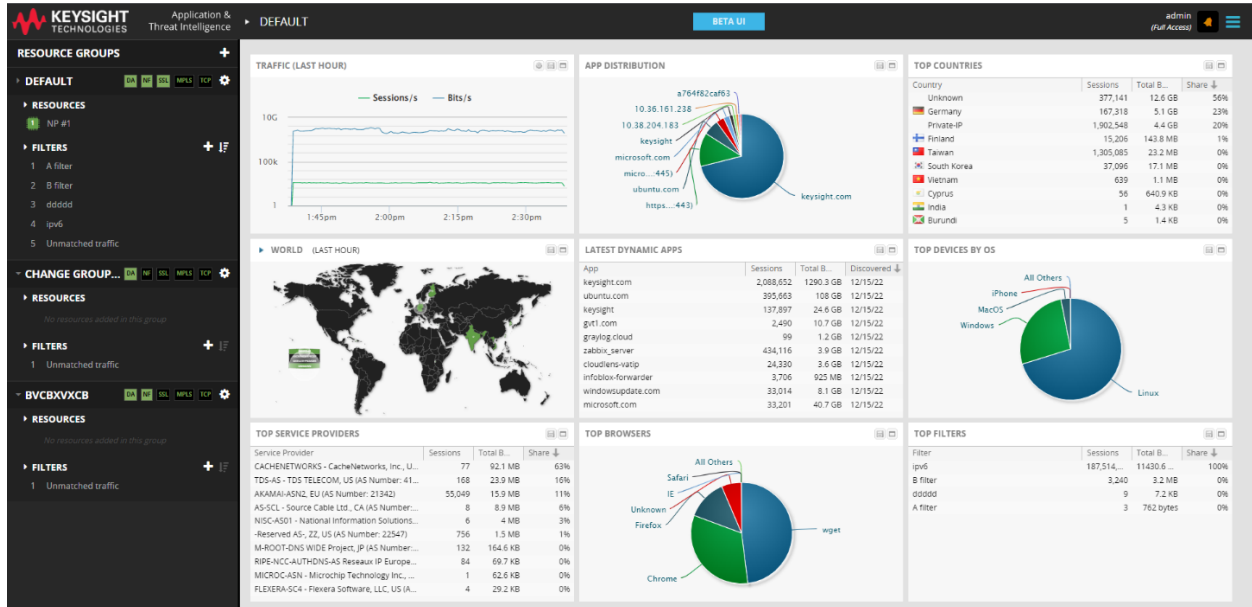
Regular expression matching

Actions during matching sessions:

- Forward all related packets to an analysis tool
- Drop traffic that matches certain filters
- Perform packet modifications such as L4-7 data masking, MAC header rewrite
- Enhanced NetFlow v9 and IPFIX v10, optionally adding IxFlow fields can be generated and sent to up to 10 collectors

Simple pricing

The ATI subscription includes all the current and new features and application signatures released.



Inline decryption capabilities

- Delivered through an Application Module with a dedicated cryptographic processor
- 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
- Dedicated high-performance cryptographic processor handles up to 25 Gb aggregate TLS traffic
- Does not impact the ability to use any other feature of the Vision X

MobileStack capabilities

Mobilestack is a suite of visibility solutions that helps service providers enhance their service assurance platform and reduce costs. With its focus on 5G data access and processing capabilities, Mobilestack offers a comprehensive solution to ensure full coverage for service providers as they transition to 5G. Mobilestack solutions provide the highest performance and flexibility, regardless of the stage of migration that a service provider is in. With subscriber-aware metadata generation and 5G processing options, Mobilestack includes the tools necessary for service providers to stay ahead in the fast-evolving world of 5G technology.

GTP Correlation & Flow Distribution \ Elastic Load Balancing (ELB)

GTP (GPRS Tunneling Protocol) correlation is a key aspect of network visibility for service providers and can efficiently process and manage the vast amounts of data generated by 5G networks. Mobilestack offers two methods for handling GTP traffic, GTP Flow Distribution and GTP Correlation. While both methods deliver optimized network performance, they handle subscriber traffic differently.

Control plane: GTP flow distribution broadcasts all control plane traffic to all probes, while GTP correlation sends individual subscriber flows.

User plane: GTP flow distribution load balances all GTP-U traffic to all probes, while GTP correlation sends correlated control and user plane flows to probes.

GTP correlation provides additional benefits compared to traditional GTP flow distribution, including the ability to perform efficient and effective 5G data access and analysis using techniques such as sampling and whitelisting. These capabilities enhance the overall performance and usefulness of GTP correlation.

GTP Correlation Features:

- Robust processing architecture delivers correlated GTP data to monitoring probes and tools consistently with up to 1600G GTP-U and up to 512M subscriber sessions
- Utilizes subscriber correlation, sampling, and filtering to dramatically reduce probe and tool costs while maintaining subscriber Quality of Experience (QOE)
- Enables multiple session filters to maximize flexibility and ease of use, filters include SUPI, IMSI, MSISDN, GPSI, IMEI, PEI, DNN, APN, QFI, QCI, NSI, NSSAI, RAN ID
- Provides integrated session table backup and enables session table persistence between reboots and upgrades
- Features multiple allow listing capacity to maintain visibility into important subscribers while sampling

GTP Flow Distribution Features:

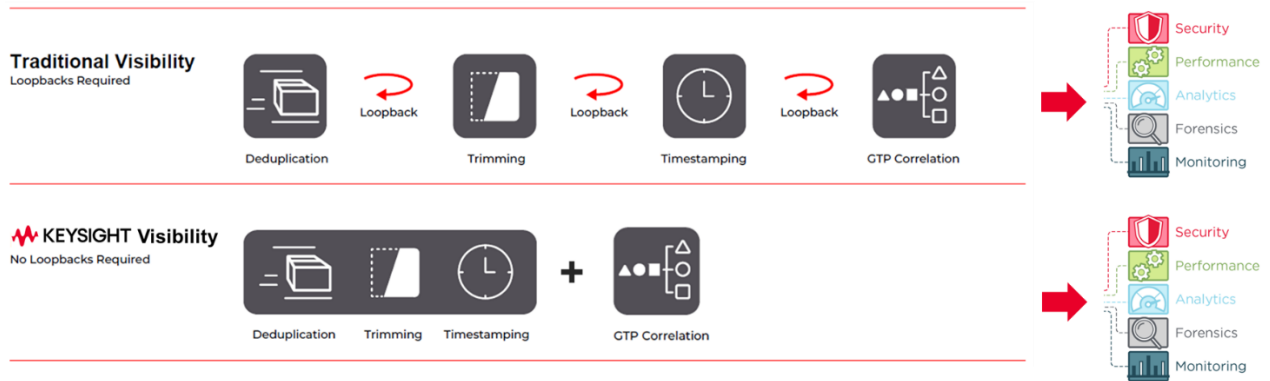
- Uses Elastic Load Balancer (ELB) to load balance GTP traffic using GTP Flow Distribution
- Delivers smooth GTP-U IP flow distribution across multiple tool ports
- Broadcasts GTP-C packets to one or multiple tool ports
- Handles up to 2TB of GTP traffic per Vision X chassis within dedicated hardware acceleration architecture for high performance

5G Data Access / Third-Party Virtual Tap Termination

Maintaining visibility into 5G networks is a complex challenge due to the high encryption and dynamic nature of the traffic; network equipment manufacturers are addressing this issue by developing their own virtual tapping solutions. The Vision X with virtual tap termination support offers seamless integration with network function providers' virtual taps, providing easier maintainability, and enhanced troubleshooting by enabling message format translation between network function vTap vendors and probe vendors.

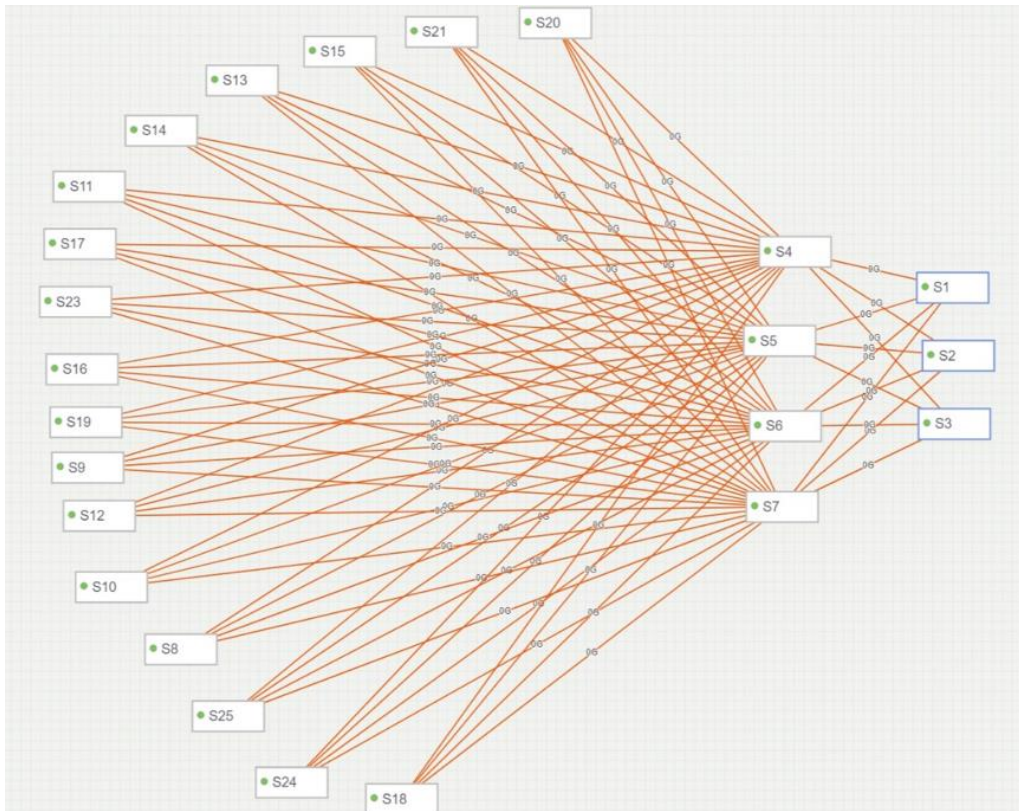
MobileStack PLUS

Unlike traditional visibility, which requires complex processing operations to loopback through the same device, Keysight's MobileStack on Vision X has the horsepower to process GTP correlation in the same visibility flow and in combination with deduplication, QUIC/HTTPs trimming and timestamping. This provides service provider operations teams with a more efficient visibility layer by processing.



Ixia Fabric Controller (IFC) clustering

- Ixia Fabric Controller (IFC) clustering offers a single pane of glass management for your network packet brokers. Manage and configure NPBs in a distributed environment using a single user interface as if one centralized visibility and security fabric
- IFC clustering supports any combination of Vision Edge 40/100/10S, Vision ONE/7300/X platforms
- Typical topologies supported include hub-and-spoke, spine-and-leaf, tree, ring, full mesh, partial mesh, or any combination of above
- User configurable number of controller nodes vs. fabric nodes to maximize resiliency. Full redundancy among controller nodes
- 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
- Best routes are calculated based on the least hop count using the Shortest Path First (SPF) algorithm
- Intelligent load balance among Equal Cost Multiple Paths (ECMP) to guarantee session integrity and avoid packet reordering
- A single IFC cluster can scale to more than 50 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 the industry's best resilient architecture for OOB monitoring



Specifications

| Specification | Description | |
|--------------------------------------|---|---------------------------|
| Performance | Fully non-blocking 6.4Tb one-way or 12.8Tb full-duplex switch capacity Line rate across all ports with filtering enabled 10GbE/25GbE/40GbE/50GbE/100GbE support | |
| Management | Fully non-blocking 6.4Tb one-way or 12.8Tb full-duplex switch capacity Line rate across all ports with filtering enabled 10GbE/25GbE/40GbE/50GbE/100GbE support | |
| Size & weight | 3RU high rack-mountable Dimensions: 5.25" H x 17.5" W x 31" D (inches) 125 lbs. (57 kg) | |
| MTBF | Vision X | MTBF (hours), 25°C |
| | AC base chassis | 115,167 |
| | AC chassis + rear PS | 95,102 |
| | AC chassis + 4x front PS | 54,297 |
| | AC chassis + 4x NS | 86,855 |
| | DC base chassis | 104,653 |
| | DC chassis + rear PS | 87,924 |
| | DC chassis + 4x front PS + rear PS | 47,719 |
| | DC chassis + 4x NS | 80,789 |
| AC Power | Quad hot-swappable AC power supplies Input AC Voltage: 90-240 VAC RMS Maximum power, each power supply: <ul style="list-style-type: none"> AC power low line [100VAC] 1260W max power per power supply AC power normal line [110VAC-120VAC] 1400W max power per power supply AC power high line [200-240VAC] 1500W max power per power supply Maximum heat/power dissipation for the system: 3000 W/11942BTU/hour | |
| DC Power | Quad hot swappable DC power supplies Operating input voltage: 40-to-72 VDC operation 1500W max source per power supply Maximum heat/power dissipation for the system: 3000 W/11942BTU/hour | |
| Normal operation | Four (4) power supplies deployed, with 600W per power supply as the typical max load. | |
| Deployment example | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | |
| Safety certifications and compliance | IEC/UL/CSA 60950-1, IEC/UL/CSA 62368-1, CE, ETSI EN 300 386, FCC Part 15B - Class A, ICES-003 - Class A, AS/NZS CISPR 32 and 24, KN 32 and 35, BSMI | |
| Country of origin | Malaysia | |
| Size & weight | 3RU high rack-mountable Dimensions: 5.25" H x 17.5" W x 31" D (inches) 125 lbs. (57 kg) | |
| Temperature | Operating: 5 °C to 40 °C Short-term*: -5 °C to 55 °C, (*not to exceed 96 consecutive hours) Short-term* with fan failure: -5 °C to 40 °C, (*not to exceed 96 consecutive hours) | |
| Humidity | Operating: 5% to 85% (non-condensing) Short-term*: 5% to 90% (non-condensing), (*not to exceed 96 hours) | |

Ordering Information

Vision X Chassis

| 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-CHAS-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 |
| 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 (991-2049) |
| 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 (991-2050) |

Vision X main switch and interface modules

| 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 |
| 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) |

Vision X Licenses

| Part number | Description |
|-----------------------------------|--|
| AppStack licenses | |
| LIC-VX-SSAS | Keysight Vision X, AppStack perpetual feature; Licensed for one (1) CPU on MVX-AM4PC 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 |
| SUB-VX-APTL | Keysight Vision X, one (1) year subscription; Includes AppStack signature updates, QTY (1) per system |
| Inline Decryption licenses | |
| LIC-VX-ASSL | Keysight Vision X, Active SSL perpetual feature; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module |
| SUB-VX-ASSL-HCS | Keysight Vision X, Host Categorization Service subscription; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module |
| SUB-VS-ASSL | Keysight Vision X, one (1) year Active SSL and Host Categorization Service subscription; Licensed for one (1) CPU on MVX-AM4PC module; Max (2) per module |
| MobileStack licenses | |
| 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 |

Vision X Accessories

| Part number | Description |
|---------------------|--|
| Power supply | |
| MVX-DCPS | Keysight Vision X, (1) DC power supply |
| MVX-ACPS | Keysight Vision X, (1) AC power supply |
| Fan module | |
| MVX-FAN | Keysight Vision X, (1) FAN module |
| Accessories | |
| 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) |

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.



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