NextGen Network Packet Broker: Vision 400

Scale your visibility to 400G speed

Keysight's Vision 400, just like its companion product E400S, is yet another next-generation network visibility solution with comprehensive feature sets to meet the ever-evolving visibility needs of your production network, for up to 400Gbps network speed.

Highly compact and 1RU in size, Vision 400 front panel provides 24 QSFP56 and 16 QSFP-DD ports. Each QSFP-DD can break out to many smaller speed ports (200G, 100G, 40G, 50/25/10G) via fan-out cable. It's the only NPB that supports all possible permutation of speeds, increasing the chance of interoperating with legacy devices while maximizing design flexibility.

The re-programmable nature of the silicon allows fast implementation of a new parser or header stripping option of any new protocols, well-known or proprietary. Additional FPGA based PacketStack supports 400G deduplication, packet trimming, legacy Ixia trailer timestamping, and burst protection. New load balance options support load balancing per port group. In addition to traditional session-aware load balance, new options also allow asymmetric LB, weighted LB, random LB, and LB using tunneled IP header.

The built-in powerful 16-core CPU allows support of AppStack in the first release, and Decryption, MobileStack, TradeStack in subsequent releases – this is truly an all-in-one solution.

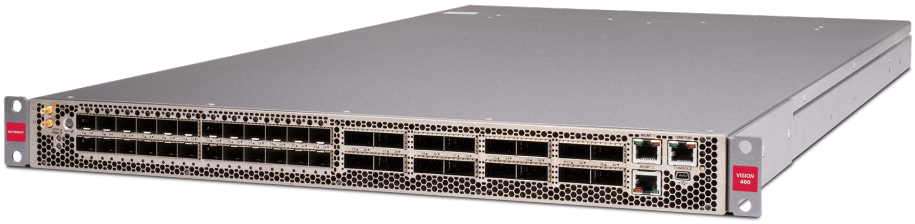

Figure 1. Keysight Vision 400

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Highlights

- Compact 1RU NPB that supports 10/25/40/50/100/200/400G port speeds
- P4 and Tofino based programmable silicon
- Full-duplex, non-blocking, and line rate L2 forwarding of 9.2 Tbps
- Front panel includes 24 SFP56 and 16 QSFP-DD ports
- Hot-swappable fans, power supplies
- Industry only 400G NPB that supports all QSFP-DD speed permutations: 1x400G, 2x200G, (1,2,4)x100G, (4,8)x50G, (1,2)x40G, 8x25G, 8x10G
- NTP, 1588 PTP and 2 independent 1PPS timing sources
- All ports of all speeds support up to 20 protocols header striping/masking and time stamping (PacketStack+)
- Additional 400G FPGA based PacketStack supports deduplication, packet trimming, Ixia trailer TS, and burst protection
- Built-in 16-core CPU supports AppStack and SecureStack
- Flexible L2GRE and VxLAN tunneling
- Supports both Inline and OOB tool deployments
- Per port group load balancing. Algorithms include session aware, asymmetric, weighted, tunneled packet type, and random
- Integration with Keysight Visibility Orchestrator (KVO) for Intent Based Visibility (IBV)
- Ease of use, best in the class WebUI

Key Features

- **Automated filter compiler** resolves overlap rules seamlessly, allowing quickest response to tool or filtering changes without worry of blind spots
- **Header stripping, tunnel termination, IP/MAC masking and timestamping on all ports** and require no FPGA resources (PacketStack Plus)
- Built-in **400G FPGA based PacketStack** support 16 lanes of 25Gbps each for advanced packet processing such as Deduplication, Packet Trimming (including HTTPS and QUIC trimming), Ixia trailer Timestamping, and burst protection/traffic shaping.
- Built-in powerful 32-core CPU supports **AppStack** in the first release, and **Decryption**, **MobileStack**, **TradeStack** in subsequent releases
- **Supports up to 20 protocols** header stripping and tunnel termination
- **Two banks** of load balance options, and load balancing on per port group basis

- **Load Balance** on both outer IP and tunneled inner IP. All well-known tunnel protocols are supported
- **GTP User Plane Load Balance** based on inner IP information (User sessions)
- **User session filtering** inside GTP User Plane tunnels (Explicit tunneled IPv4 and IPv6 filtering)
- **Space efficient 1RU design** saves rack space in your data center
- **Flexible L2GRE and VxLAN** tunnel origination. Up to 256 tunnels per chassis.
- **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
- **Timing sources** support NTP, 1588 PTP, or 1PPS+ToD(G.8271) with two independent 1PPS SMA/SMP connectors (T1 and T2). As such, Vision E400S allows rich combination of timing sources:
  - PPS-T1 + NTP = Take ToD from NTP and use 1PPS from T1 input
  - PPS-T2 + NTP = Take ToD from NTP and use 1PPS from T2 input
  - PPS-T1 + PTP = Take ToD from PTP and use 1PPS from T1 input
  - PPS-T2 + PTP = Take ToD from PTP and use 1PPS from T2 input
  - PPS-RJ45+G.8271 = Take ToD from G.8271 format and use 1PPS from RJ45 pin
  - PPS-T1+G.8271 = Take ToD from G.8271 format and use 1PPS from T1 input (ignore the RJ45 1pps input)
  - PPS-T2+G.8271 = Take ToD from G.8271 format and use 1PPS from T2 input (ignore the RJ45 1pps input)

Port Flexibilities

24 SFP56 fronts ports and each support:

- 10G or 25G using NRZ encoding
- 50G using PAM4 encoding

16 QSFP-DD front ports and each support:

- 1x400G
- 2x200G
- (1,2,4)x100G
- (4,8)x50G
- (1,2)x40G
- 8x25G
- 8x10G

Product Capabilities

Netstack capabilities

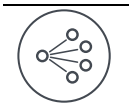
The Keysight gold-standard baseline filtering functionality for network packet brokers

Three stages of filtering – Filter at ingress ports, in the middle and at egress ports for the maximum flexibility in designing complex Boolean logic without the need of using extra ports for loopback

Dynamic filter compiler – Patented technology that resolves rule overlaps automatically hence makes configuration simple and eliminates human errors

Aggregation – consolidate incoming traffic to optimize port usage and simplify filter logic. Support 1:1, 1:Many, Many:1 and Many:Many traffic mapping

Replication – At the ingress port as well as at the dynamic filter. Replication at the ingress allows the same input to connect to multiple dynamic filters. Replication at the dynamic filter allows multiple tools to get identical traffic from the same dynamic filter.



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

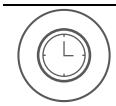
Source Port Labelling (VLAN Tagging and Untagging)
VLAN tag management (ingress tagging and egress stripping)

Packetstack+ capabilities

Perform advanced packet processing such as header (protocol) stripping, data masking, timestamping, and GRE/VxLAN tunnel origination at all ports of all speeds

Native Tunnel Origination
L2GRE and VxLAN

Data Masking
Mask Source or/and Destination MAC or IP

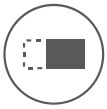


Timestamping
Timestamping (local, NTP, PTP 1588) using source MAC substitution

Native Tunnel Termination/Protocol Stripping – Includes VLAN, FabricPath, ETag, VNTag, GENEVE, L2GRE, L3GRE, L2GRE and L3GRE, VxLAN, GTP, LISP, GTP and LISP, MPLS L2VN with or without Control Word, MPLS L3VPN, MPLS L2VPN and L3VPN, MPLS over GRE, MPLS over UDP, ERSPAN, PBB-TE, PPPoE, OTV, INT

Packetstack capabilities

Perform advanced packet processing such as deduplication, packet trimming, Ixia trailer timestamping, burst protection and traffic shaping. FPGA based PacketStack supports 16 lanes each with 25Gbps speed that can be applied incrementally to Network Port, Dynamic Filter, or Tool Port.



Deduplication
Remove duplicates from the tapped traffic. Support both timer based or first-come-first-serve based operation. Support various options to ignore packet header in

Ixia Trailer Timestamping
This is for backward compatibility. Timestamp is inserted at the end of packet and right before CRC bytes using proprietary TLV encoding.

order to remove duplicates based on packet payload

Packet Trimming
Offers generic packet trimming based on user specified offset and bytes to trim; as well as the advanced HTTPS/QUIC trimming with or without protocol encapsulation.

Burst Protection
The FPGA offers large number of buffer pool to allow burst protection to tools speeds operating at 25G or 10G speeds

Appstack capabilities

- Classifies traffic based on the follow:
  - Application, geography, device information and service provider
  - Application signatures are regularly update via ATI subscription
- Regular expression matching
- Multiple actions can be taken on 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

ATI subscription includes all current and new features and application signatures released

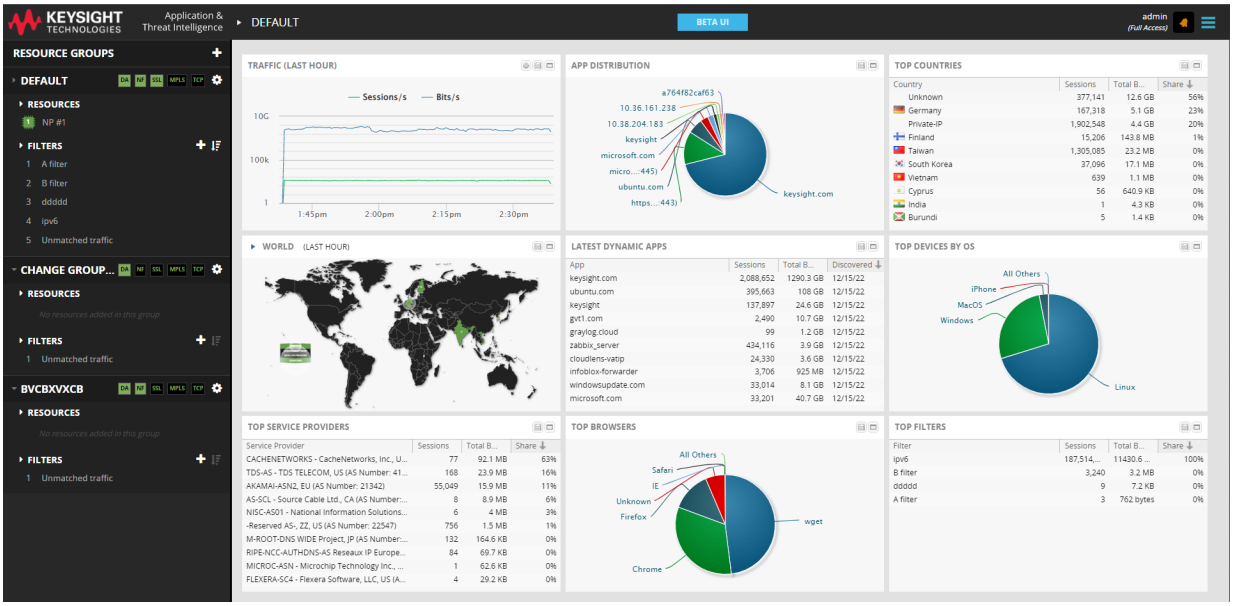


Figure 2. Appstack capabilities

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 allow each tool to have its own unique HB
- Link Force Down (LFD) and its triggered response can bring coordinated link status change in either standalone or High Availability (HA) mode
- Tool Sharing (TS) allows the same set of inline tools to be shared among multiple network segments without cross talk
- VLAN translation allows inline tools that don't support QinQ to enjoy Tools Sharing as well
- Asymmetric hashing supports common use cases for lawful interception
- Bypass switches and Ixia Vision 400 can have different HB so multi-tier design is possible to increase overall resilience for High Availability (HA)
- Our Active-Active Inline HA solution is the gold standard in the industry and offers the most resilient architecture to protect all kinds of failures

Specifications

Physical specifications

Size and weight	
• 1U high rack mountable enclosure • Dimensions: 17.5"W x 31.0"L x 1.75"H (inches) • Weight: 40lbs or 18kg	**MTBF**: <table><tr><td>Vision 400</td><td>MTBF (hours) 25° C</td></tr><tr><td>Base Chassis</td><td>98728</td></tr><tr><td>Chassis + 2 AC PSUs + 7 fans</td><td>79833</td></tr><tr><td>Chassis + 2 DC PSUs + 7 fans</td><td>78233</td></tr></table>
AC power	• Dual hot swappable AC power supplies • AC 100-240VAC (x2) 9A MAX • Maximum heat/power dissipation for system: 800W / 2730 BTU/hour
DC power	• Dual hot swappable DC power supplies • Input DC 52-60VDC (x2) Nominal 20A MAX • DC input range 44-72VDC • Maximum heat/power dissipation for system: 800W / 2730 BTU/hour *Note: Typical standoff voltage in DC deployment is 52-53VDC. 48V is the power provided by batteries upon a AC power failure/loss/brownout i.e. general power outage. The "Bel Power" DC power supply is designed to support the standoff voltage for nominal power, or power under charge 52-60VDC range, but supports 44-72VDC power input MIN-MAX*

Operation specifications

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)
EMC	• FCC Part 15B - Class A • ICES-003 - Class A • AS/NZS CISPR 32 & 24
Safety certifications and compliance	• IEC 62368-1:2018 • CB 154258-80132943

Ordering Information

Keysight Vision 400 Chassis

Part number	Description
SYS-V400-BASE-AC	Keysight Vision 400, base AC system, includes chassis power supply and fan (991-0256)
SYS-V400-BASE-AC-T	Keysight TAA Compliant Vision 400E, base AC system, includes chassis power supply and fan (991-0267)
SYS-V400-BASE-DC	Keysight Vision 400, base DC system, includes chassis power supply and fan (991-0257)
SYS-V400-BASE-DC-T	Keysight TAA Compliant Vision 400, base DC system, includes chassis power supply and fan (991-0274)
SYS-V400-SPR-AC	Keysight Vision 400, AC cold spare unit (991-0258)
SYS-V400-SPR-AC-T	Keysight TAA Compliant Vision 400, AC cold spare unit (991-0268)
SYS-V400-SPR-DC	Keysight Vision 400, DC cold spare unit (991-0292)
SYS-V400-SPR-DC-T	Keysight TAA Compliant Vision 400, DC cold spare unit (991-0293)

Port Licenses

Part number	Description
LIC-V400-1PC	Keysight Vision E400S and 400, 10/25/40/50/100G port speed enabled on (1) QDD port (993-0300)
SUB-V400-1PC	Keysight Vision E400S and 400, one year subscription for 10/25/40/50/100G port speed enabled on (1) QDD port (993-0350)
LIC-V400-1PCD	Keysight Vision E400S and 400, 10/25/40/50/100/200/400G port speed enabled on (1) QDD port (993-0302)
SUB-V400-1PCD	Keysight Vision E400S and 400, one year subscription for 10/25/40/50/100/200/400G port speed enabled on (1) QDD port (993-0351)
LIC-V400-1PL	Keysight Vision E400S and 400, 10/25/50G port speed enabled on (1) SFP56 port (993-0301)
SUB-V400-1PL	Keysight Vision E400S and 400, one year subscription for 10/25/50G port speed enabled on (1) SFP56 port (993-0352)

Feature Licenses

Part number	Description
LIC-V400-INLN	Keysight Vision E400S & 400, Inline feature, per chassis (993-0306)
SUB-V400-INLN	Keysight Vision E400S and 400, one year subscription for Inline feature, per chassis (993-0353)
LIC-V400-PS2C	Keysight Vision 400, 200G of PacketStack enabled features. Fully featured for FPGA. Max of (2) per Vision 400 device (993-0307)
SUB-V400-PS2C	Keysight Vision 400, one year subscription for 200G of PacketStack enabled features. Fully featured for FPGA. Max of (2) per Vision 400 device (993-0354)
LIC-V400-PSPL	Keysight Vision 400. Fully featured PacketStack Plus features activated on every port. (993-0308)
SUB-V400-PSPL	Keysight Vision 400. One year subscription for Fully featured PacketStack Plus feature activated on every port. (993-0355)
LIC-V400-AS-SSAS	Keysight Vision 400 AppStack perpetual feature; licensed for one (1) NSI (netservice instance), fully featured AppStack (993-0362)
SUB-V400-AS-SSAS	Keysight Vision 400 one year subscription for fully featured AppStack, licensed for one (1) NSI (netservice instance) (993-0363)
LIC-V400-AS-APFL	Keysight Vision 400 AppStack Application Filtering feature per NSI (netservice instance) (993-0303)
SUB-V400-AS-APFL	Keysight Vision 400 one year subscription for AppStack Application Filtering feature per NSI (netservice instance) (993-0311)
LIC-V400-AS-NTFL	Keysight Vision 400 AppStack NetFlow/IxFlow feature per NSI (netservice instance) (993-0305)
SUB-V400-AS-NTFL	Keysight Vision 400 one year subscription for AppStack NetFlow/IxFlow feature per NSI (netservice instance) (993-0314)
SUB-V400-AS-APTL	Keysight Vision 400 one year subscription for AppStack signature per device (993-0312)

Power Supply

Part number	Description
MV400-ACPS	Keysight Vision 400 & E400S, (1) AC power supply (991-0253)
MV400-DCPS	Keysight Vision 400 & E400S, (1) DC power supply (991-0254)

Fan Module

Part number	Description
MV400-FAN	Keysight Vision 400 & E400S, (1) Fan module (991-0255)