

# Vision 7816

The need for real-time visibility into network data has never been greater. Being able to know how applications and services are performing is no longer a nice to have. It is also imperative to have the ability to quickly quantify threats from within and outside of your network.

Current reality is that compute, storage and networks are now software defined and built by the rack and containers. And, in keeping with demand to deliver lower operating expense and offering the best-of-breed in software-defined flexibility, visibility is lost at every layer as installations get dense and traffic moves east-west within a rack and north-south between racks.

More servers, more switching layers, more virtual platform translate to more visibility blind spots.

Keysight's new Vision 7816 network packet brokers are designed to provide rack-level visibility through a solution that allows seamless integration into existing hybrid SDN architectures, offering true flexible multi-speed capability, and a comprehensive feature set for the versatility to adapt to the future ensuring your Security Fabric's strength, all while offering a compelling total cost of ownership.

## Key Features:

- **High-density multi-speed network packet broker** that is designed for deployment in racks to aggregate traffic
- **Exceptionally feature rich** stand-alone packet broker that support 10G, 40G, 25/50G, and 100G networks
- **Easy-to-use web-interface** allows you to focus on security rather than configuration
- **Space efficient** 2RU design with 64x100G ports saves rack space in your data center

## Highlights

- High density 2U platform for visibility per rack service
- 64 QSFP28 front ports
- Supports 10G, 25G, 40G, 50G and 100G
- Inline and OOB capable
- Ixia Fabric Controller (IFC) cluster support
- Fully featured with Keysight's robust NetStack capabilities: Aggregation, replication, filtering, and load balancing
- Keysight's patented filter compiler and three stages of filtering for one-of-a-kind flexibility in managing network and tool traffic profile
- Priority-based filtering including inline and HA configurations
- Native GRE/VxLAN tunneling (origination and termination)









- **Comprehensive wizards** that make inline tool deployment extremely easy
- **Inline and out-of-band capable** for flexibility
- **Secure serial console port** with authentication
- **Management port** IP allow-list
- **IFC cluster** supports any-to-any topology with tools either a single hop or multiple hops away
- **Filtering on IPv4/IPv6 fragments**
- **Memory optimization** to allow more filtering rules with limited space
- **Priority based filtering supports IPv4 and IPv6 filtering**
- **Native L2GRE/VxLAN** termination and origination including conditional header stripping

## Use Cases

- For top-of-the-rack visibility for a single site deployment with network taps and security tools
- In a leaf-spine architecture, aggregating across multiple racks in a smaller or microscale data center
- In a distributed network, Vision 7816 can be used with Vision E40/E100 or Vision ONE/Vision X to form an Ixia Fabric Controller (IFC) cluster for a single pane of glass management and operation, so tools at a central location can be shared among multiple branches
- IFC cluster in spine-and-leaf topology offers the most resilient architecture that provides auto failover and active-active load balance
- Taking traffic from Cisco ACI environment or other data centers and perform conditional VxLAN header stripping with matching VNI

## Product Capabilities

NetStack capabilities			
<b>The Ixia gold-standard baseline filtering functionality for network packet brokers</b>			
	<p><b>Dynamic filter compiler</b> Patented technology that resolves rule overlaps automatically and hence makes configuration simple and eliminates human errors</p>		<p><b>Three stages of filtering</b> 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</p>
	<p><b>Aggregation</b> 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><b>Replication</b> 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</p>

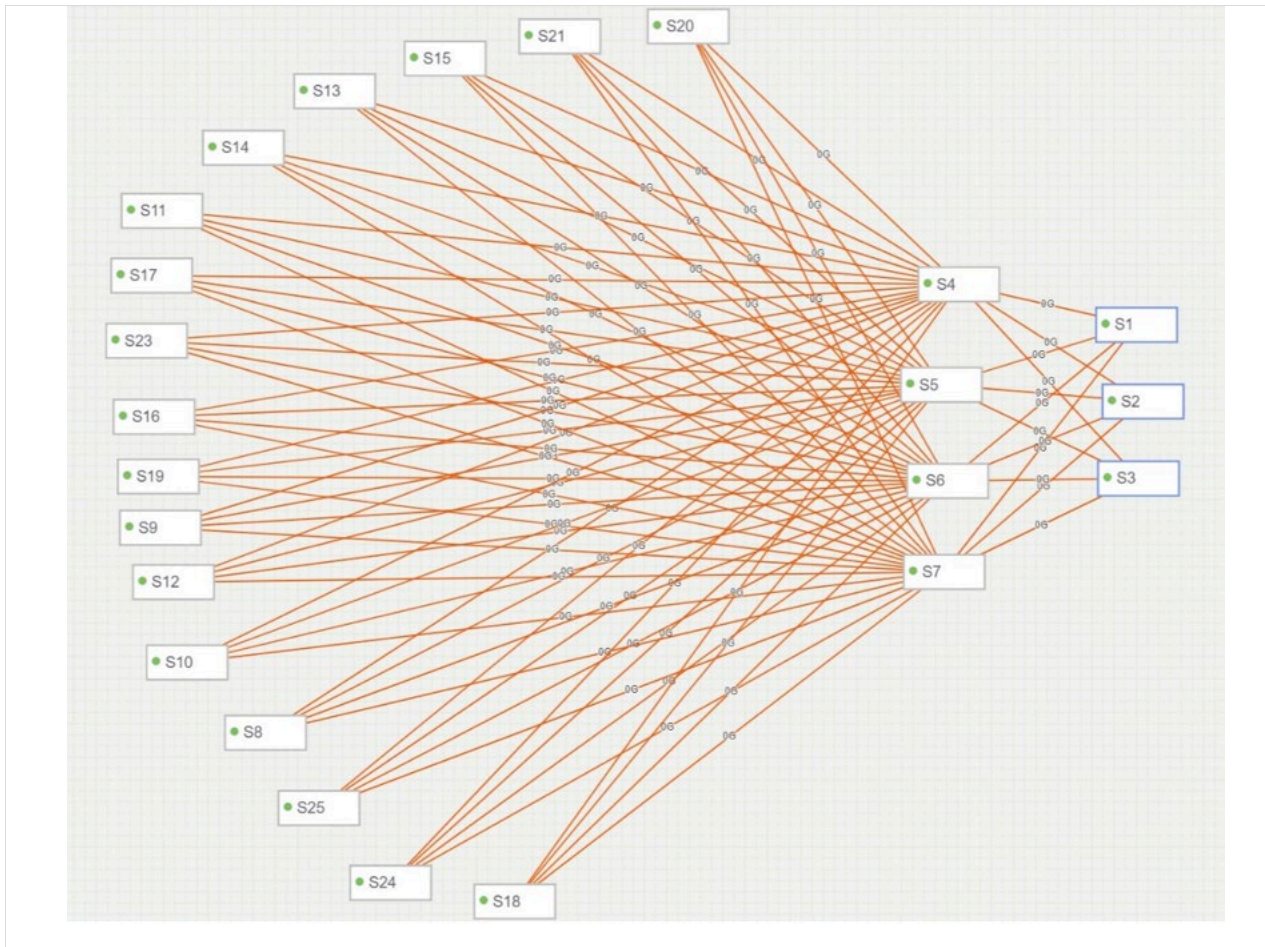
	<p><b>Load-balancing</b> Sophisticatedly distributes traffic across tools ports for monitoring in a session aware manner to preserve traffic integrity and to maximize up-time with fail-over protection</p>		<p><b>Native Tunnel Termination –</b> Terminate and conditional header stripping for L2GRE and VxLAN tunnels. Also support L2GRE/VxLAN origination</p>
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### Vision 7816 highlights

- Full duplex, non-blocking and line rate L2 forwarding of 12.8Tbps
- Capable of (5) speeds - 10G, 25G, 40G, 50G and 100G networks
- CLI support for NetStack features
- (64) QSFP28 front panel ports
- Supports QSFP28 (for 100G) or QSFP+ (for 40G) transceivers and their BiDi variants
- Each port is capable of any of the 5 speeds, set independently
- Support mgmt. port IP allow-list
- Hot swap redundant power supplies and fans
- Available in AC and DC model

### Ixia Fabric Controller (IFC) clustering

- Ixia Fabric Controller (IFC) clustering offers single pane of glass management for your network packet brokers. NPBs in a distributed environment can be managed and configured, 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 7816, 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 Node vs. Fabric Node to maximize resiliency
- 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 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
- User triggered path re-optimization to avoid failed links or nodes
- Supports LLDP auto discovery of interconnect links, and traffic auto failover on failed links or nodes
- A single IFC cluster size is  $\geq 50$  nodes



### Inline capabilities

- Supports failsafe serial service chaining, parallel load balancing with spares, or combined services
- 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
- Asymmetric hashing supports common use cases for lawful interception
- Weight based load balance and LBG threshold high-and-low watermark
- Bypass switches and Keysight Vision 7816 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

## Port Configuration and Density

System	10G	25G	40G	50G	100G
Keysight 64X100G Packet Broker Max # of ports	128	128	64	128	64
Support for 1x100G, 2x50G, 1x40G, 4x25G or 4x10G on each QSFP28 up to a maximum total of 128 logical ports					

## Specifications

General specifications	
<p><b>Performance</b></p> <ul style="list-style-type: none"> <li>All ports are bidirectional and fully non-blocking</li> <li>Full line-rate across all ports with filtering enabled</li> </ul>	<p><b>Management</b></p> <ul style="list-style-type: none"> <li>SNMP v1, v2, v3 support</li> <li>Local, RADIUS, and TACACS+ support (members and groups)</li> <li>Granular access control features</li> <li>Event monitoring and logging</li> <li>Syslog</li> <li>IT Automation control with RESTful API</li> </ul>

Physical specifications	
<ul style="list-style-type: none"> <li>1RU high interface card for 19" chassis</li> <li>Dimensions: 17.5W x 22.8L x 3.5H (inches)</li> <li>Weight: 31.1lb / 14.11kg</li> <li>MTBF: 25C - 209,904 hours; 40C - 122,581 hours</li> </ul>	<ul style="list-style-type: none"> <li>Operating input voltage: 100-240VAC, 50-60 Hz</li> <li>PSUs: 2 redundant load-sharing, hot swappable AC or -48 VDC</li> <li>Fans: Hot-swappable 3 + 1 redundant fans</li> </ul>

Operating specifications	
<p><b>Temperature</b></p> <ul style="list-style-type: none"> <li>Operating: 0 °C to 45 °C</li> </ul>	<p><b>Humidity</b></p> <ul style="list-style-type: none"> <li>Operating: 5% to 95% (non-condensing)</li> </ul>

## Power Consumption:

Input AC voltage (V): 90 V~264 V	Power consumption	
90 V/50 Hz	Min. Power	320 W
	Typical Power (Insert Eload)	793 W
	Max. Power (Send Packet)	910 W
100 V/50 Hz	Min. Power	318.9 W
	Typical Power (Insert Eload)	789 W
	Max. Power (Send Packet)	889 W
264V/50Hz	Min. Power	311.6W
	Typical Power (Insert Eload)	747W
	Max. Power (Send Packet)	840W
Input DC voltage (V): 36 V~72 V	Power consumption	
36 V	Min. Power	330.51 W
	Typical Power (Insert Eload)	794.75 W
	Max. Power (Send Packet)	894.14 W
48 V	Min. Power	327.49 W
	Typical Power (Insert Eload)	778.17 W
	Max. Power (Send Packet)	872.22 W
72 V	Min. Power	323.00 W
	Typical Power (Insert Eload)	762.06 W
	Max. Power (Send Packet)	845.11 W

## Ordering Information

Keysight 64x100G licenses	
Part number	Description
BD-7816AC-32PC	Keysight Bundle, Edge-core AS7816-64X AC Switch with network packet broker software, licensed for (32) 100G multi-speed port; features include local web UI, rest API, aggregation, filtering and load balancing and out of band use
BD-7816DC-32PC	Keysight Bundle, Edge-core AS7816-64X DC Switch with network packet broker software, licensed for (32) 100G multi-speed port; features include local web UI, rest API, aggregation, filtering and load balancing and out of band use
BD-7816AC-32PC-T	IXIA Bundle, TAA Compliant Edge-core AS7816-64X AC Switch with network packet broker software, licensed for out of band, (32) 100G ports (991-1130)
BD-7816DC-32PC-T	IXIA Bundle, TAA Compliant Edge-core AS7816-64X DC Switch with network packet broker software, licensed for out of band, (32) 100G ports (991-1131)
LIC-7816-32PC	Keysight, Add On (32) Port 100G license for Edge-core AS7816-64X AC/DC switch; Requires adjunct or prior purchase of BD-7816AC-32PC or BD-7816DC-32PC
LIC-7816-INLN	Keysight Vision 7816 enables Inline feature; licensed per system (993-xxx)
LIC-7816-IFC	Keysight, Add On Feature, IFC license for Edge-core AS7816-64X AC/DC switch. One per system. Requires adjunct or prior purchase of BD-7816AC-32PC or BD-7816DC-32PC

Learn more at: [www.keysight.com](http://www.keysight.com)

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Page 7