PacketStack

Advanced packet processing feature rich and at line-rate

Introduction

Advanced packet processing is one of the most important features of a Network Packet Broker (NPB). Many security tools cannot work efficiently without the help of a NPB to perform some levels of advanced packet processing like packet deduplication, protocol header stripping, packet trimming or a combination of many, performing as a cascaded operation. It's one of the Key Performance Indicators (KPI) to consider when evaluating and selecting a packet broker.

Solution

There are two general types of NPB implementations for advanced packet processing: Hardware FPGA-based or software CPU based.

Keysight network packet brokers are purpose-built to perform intensive processing at line rate and are optimized with a field-programmable gate array (FPGA). FPGA hardware accelerates the packet processing of the NPB and offers significant architectural benefits including accelerated advanced packet processing with zero packet-loss at line-rate, independent of packet size. A combination of advanced functions can cascade to operate with no performance degradation.

In contrast, NPBs that rely on onboard software-based CPU processing commonly drop packets as traffic volumes increase and more often than not, cannot use all features simultaneously because of limited CPU power. This significantly slows down application detection and reporting and requires ongoing investment in additional modules. Keysight NPBs operate on a single module with high-density, modular chassis and customizable bays, and do not have these limitations.

These advanced functions perform either on standalone, or in an Ixia Fabric Controller (IFC) cluster which makes the feature universally available even within a distributed monitoring infrastructure.

PacketStack software is designed specifically for Keysight NPBs that utilize FPGA accelerated hardware processing and allows them to perform at their highest level. PacketStack adds value to your Keysight NPBs, enabling intelligent network visibility and unlocking more capabilities with advanced features.

KEYSIGHT

Highlights

- Protect monitoring tools so they operate more effectively and remove all duplicated packets, at full line rate with no loss
- Enable tools to analyze encapsulated traffic by removing VLAN or QinQ, FabricPath, ETag, VNTag, GTP, MPLS, VxLAN, GENEVE, ESP, L2GRE, or ERSPAN headers from the packet stream
- Strip newer or proprietary protocols such as: L3GRE, JMirror, PBB-TE, LISP, VSL, OTV, PPPoE using Generic Header Stripping.
- Boost tool performance and retain only needed header bytes by trimming payload to a user configurable length
- Hide personally identifiable information (PII), such as credit card and social security numbers, before sending the data to your analysis tools
- Terminate L2GRE or ERSPAN tunnels from vTap and deliver plain Ethernet traffic to your tools
- Originate L2GRE tunnels and perform IP segmentation before tunneling
- Monitor tools to measure latency, with nanosecond resolution and accuracy, by timestamping all packets for time-sensitive applications

Key Capabilities

Capability	Description
Packet de-duplication	Packet duplicates occur in networks when a packet traverses multiple taps or SPAN ports that generate multiple copies of the same packet. De-duplicating packets reduces the amount of redundant data sent to security and monitoring tools, directly improving tool efficiencies and preserving their integrity. Flexible configuration parameters let you ignore specific headers and control whether the deduplication window is packet- or time-based.
Protocol header stripping	Monitoring tools, legacy or even modern ones, cannot analyze traffic encapsulated inside of an unsupported protocol. This feature enables tools to monitor all required data by removing VLAN or QinQ, FabricPath, ETag, VNTag, GTP, MPLS, VxLAN, GENEVE, ESP, L2GRE, or ERSPA headers from the packet stream. Generic Header Stripping can also remove new or proprietary protocol headers such as: L3GRE, JMirror, PBB-TE, LISP, VSL, OTV, PPPoE etc.
L2GRE tunnel termination	Many virtual taps, including Keysight's Phantom vTap, will originate VM traffic in L2GRE encapsulation. PacketStack can terminate the L2GRE tunnel so plain Ethernet traffic can be directed to tools for processing; hence removing the burden of tunnel termination from the attached tools.
Extended burst protection	Deep buffering allows monitoring tools to see every packet, even under microburst conditions where aggregate bandwidth temporarily exceeds port capacity. This condition commonly occurs when traffic from a high-speed network adapts to feed a lower-speed tool. PacketStack's extended burst protection allows data flow from higher- speed, bursty traffic to lower speed tools.
Packet trimming	Many monitoring tools, especially legacy ones, only need to analyze packet headers. In other monitoring applications, regulatory compliance requires tools to remove sensitive data from captured network traffic. The Packet Trimming function can remove payload data from the monitored network traffic, which boosts tool performance and keeps sensitive user data secure.
Data masking	Network operators commonly need to remove personally identifiable information (PII), such as credit card or social security numbers, before sending the data to analysis tools. Data Masking removes this data from the packet in real-time and replaces it with a fixed-field value before forwarding to security and monitoring tools.
Time stamping	Network operators require high-accuracy timestamps on packets to correlate events with other device logs in low-latency financial data centers and to correlate traffic events across a WAN. PacketStack Timestamping inserts a high-accuracy timestamp into every packet at ingress. Timestamp sources include local, NTP, and PTP.

Feature Parity Between Packet Broker Platforms

Advanced packet processing functions	Vision X	Vision ONE	Vision E10S	Vision 400
VnTAG stripping	Y	Y	Y	NA
MPLS stripping	Y	Y	Y	NA
GTP stripping	Y	Y	Y	NA
GRE/ERSPAN termination and stripping	Y	Y	Y	NA
FabricPath stripping	Y	Y	Y	NA
802.1br stripping	Y	Y	Y	NA
PPPoE stripping	Y	NA	NA	NA
LISP stripping	Y	Y	Y	NA
VXLAN stripping	Y	Y	Y	NA
Generic header stripping	Y	Y	Y	Y
GENEVE stripping	Y	NA	NA	NA
ESP header and trailer stripping	NA	NA	Y	NA
Deduplication	Y	Y	Y	Y
Deduplication ignore L3 header but IP	Y	Y	NA	NA
IP reassembly	Y	NA	NA	NA
Source port labeling	NA	Y	NA	NA
Arista timestamp translation	Y	NA	NA	NA
Timestamping	Y	Y	Y	NA
1G burst protection	NA	Y	Y	NA
QUIC slicing	Y	Y	Y	Y
HTTPS slicing	Y	Y	Y	Y
Slicing/trimming	Y	Y	Y	Y
Add trailer with original packet length	Y	Y	Y	Y
Jumbo packets size in bytes	9412	10221	10221	9000
Shaper speed	10/25/50G	1G	1G	10/25G
Data masking	Y	Y	Y	NA
GRE over HiGig (IFC interconnect)	NA	Y	Y	NA
GRE origination	NA	Y	Y	NA
GRE fragmentation	NA	Y	Y	NA
NetFlow export	Y	NA	Y	NA
NetStack tunneling (L2GRE/VxLAN)	Y	NA	NA	NA

Note: Vision 400 delegates most PacketStack functions to PacketStack+ while preserving only a few selected functions. Refer to PacketStack+ data sheet for details.

Ordering Information

PacketStack features are available on Vision X, Vision 400, Vision ONE, and Vision E10S

Vision X ordering information

Part number	Vision X
MVX-PS8PC	Keysight Vision X, PacketStack (8) port 100G module (Front); Multi speed supported per port; Check Release Notes for support of (10G, 25G, 40G, 50G and 100G); Requires port licenses to operate, sold separately (LIC-VX-2PC, Max QTY 4 per module) to operate; To enable PacketStack, requires at least (1) or max (2) LIC-VX-PS2C per module; Additional PacketStack features sold separately; Chassis Serial Number required if purchased separately
MVX-PS-R	Keysight Vision X, Rear PacketStack card; Performance/feature license sold separately; Installs in rear bay; No ports; Requires at least (1) or max (2) LIC-VX-PS2C license per module to operate; Additional PacketStack features sold separately; This module is required for NEBS (Alarm) support; Chassis Serial Number required if purchased separately
LIC-VX-PS2C	Keysight Vision X, 200G PacketStack feature license; licensed per PacketStack module for up to 200Gbps; Features include packet trimming, timestamp, packet length trailer and fixed length data masking; Maximum of 2 licenses per PacketStack module (up to 400Gbps); Chassis SN is required if purchased separately
LIC-VX-STRP	Keysight Vision X, (1) Header stripping feature; Licensed per PacketStack module; Requires at least (1) or max (2) LIC-VX-PS2C license per module as pre-requisite to use this feature; Chassis Serial Number required if purchased separately
LIC-VX-TUNL	Keysight Vision X, (1) Tunneling feature; Licensed per PacketStack module; Requires at least (1) or max (2) LIC-VX-PS2C license per module as pre-requisite to use this feature; Chassis Serial Number required if purchased separately
LIC-VX-DDUP	Keysight Vision X, (1) Packet Deduplication feature; Licensed per PacketStack module; Requires at least (1) or max (2) LIC-VX-PS2C license per module as pre-requisite to use this feature; Chassis Serial Number required if purchased separately

Vision 400 ordering information

Part number	Vision E10S
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)

Vision ONE ordering information

Part number	Vision ONE
LIC-V1-PS8X	Keysight Vision ONE PacketStack (AFM) license - to enable 80Gbps additional PacketStack capability. Includes deduplication, header stripping, packet trimming, timestamping and data masking
LIC-V1-PS4X-F	Keysight Vision ONE PacketStack (AFM) full license enables functionality at 40Gbps operation. PacketStack features included: data masking, packet trimming, 1Gbps burst protection, timestamping with a non-PTP time references, and add trailer with original packet length
LIC-V1-PSX-E	Keysight Vision ONE PacketStack (AFM) entry license enables functionality at 10Gbps operation. PacketStack features included: data masking, packet trimming, 1Gbps burst protection, timestamping with a non-PTP time references, and add trailer with original packet length for a (1) port or (1) dynamic filter. Additional functionality can be added with additional specialized feature licenses. Max one performance license per chassis. This license can be upgraded to 40G processing with an upgrade license LIC-V1-PS4X-U. (993-0098)
LIC-V1-TUNL	Keysight Vision ONE feature license - enables PacketStack (AFM) - GRE tunneling (L2GRE and ERSPAN tunneling). Max of one license per chassis. LIC-SYS-V-ONE-ADV-ENTRY or LIC-SYS-V-ONE-ADV-FULL is required. (993-0105)
LIC-V1-STRP	Keysight Vision ONE feature license - enables PacketStack header (protocol) stripping. Max of one license per chassis. LIC-V1-PSX-E or LIC-V1-PS4X-F is required. (993-0106)
LIC-V1-DDUP	Keysight Vision ONE series feature license enables advanced packet de-duplication feature. Max of one license per chassis. LIC-V1-PSX-E or LIC-V1-PS4X-F is required. (993-0107)
LIC-V1-TMSP	Keysight Vision ONE series feature license enables advanced packet time stamping. Feature license enables (PTP) 1588 timestamp source for timestamp insertion. Max of one feature license per chassis. LIC-V1-PSX-E or LIC-V1-PS4X-F is required. (993-0108)

Vision E10S ordering information

Part number	Vision E10S
LIC-E10S-PS-10G	Keysight Vision E10S, Add 10Gbps PacketStack (1G Burst Protection, Masking, Timestamp, Packet Trimming, Add Trailer), Max (2) license per system
LIC-E10S-DDUP	Keysight Vision E10S, Enables PacketStack Deduplication feature, licensed per system; Up to 40Gbps supported if PacketStack is licensed at 40Gbps
LIC-E10S-STRP	Keysight Vision E10S, Enables PacketStack Header stripping feature, licensed per system; Up to 40Gbps is supported if PacketStack is licensed at 40Gbps
LIC-E10S-TUNL	Keysight Vision E10S, Enables PacketStack Tunneling feature, licensed per system; Up to 40Gbps supported if PacketStack is licensed at 40Gbps
LIC-E10S-NTFL-10G	Keysight Vision E10S, Enables up to 10Gbps Netflow generation feature; Max (2) licenses per system

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 Keysight 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

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