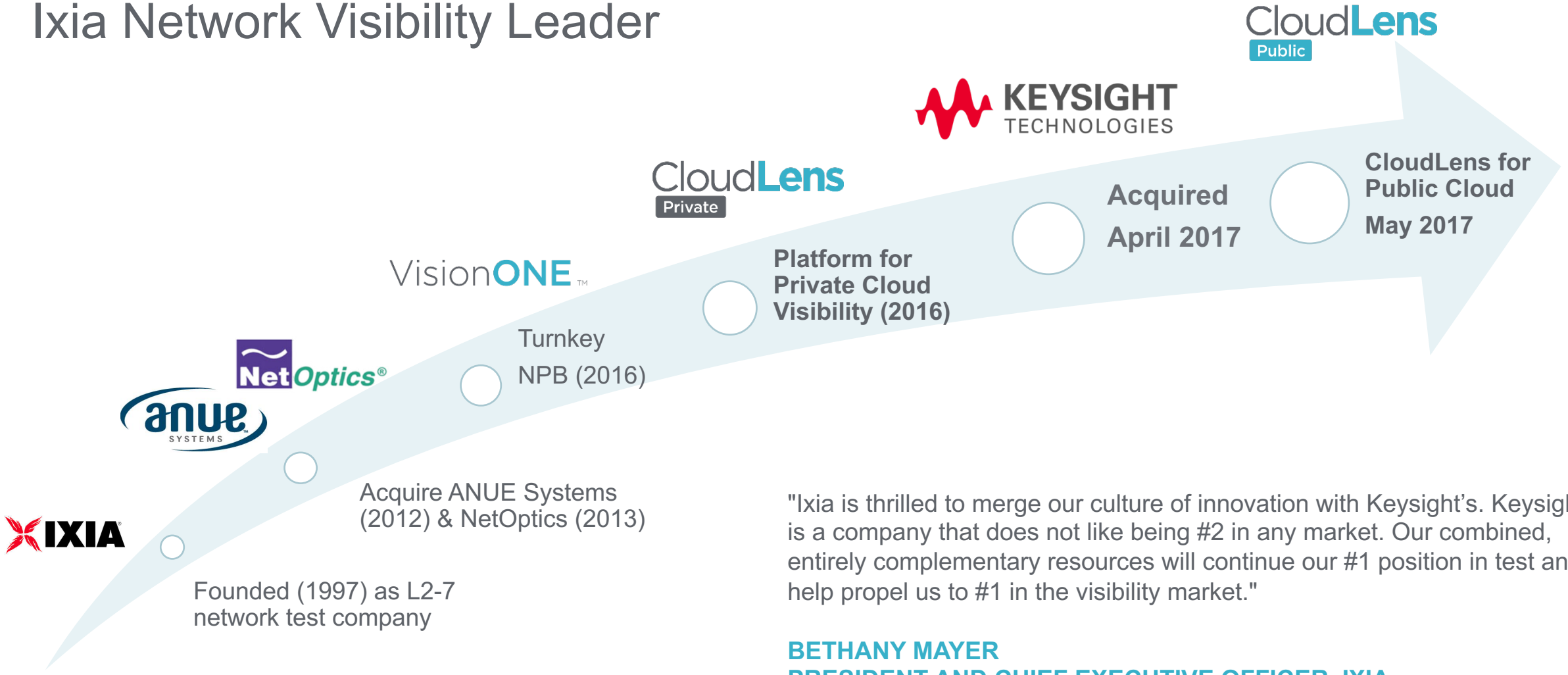
WE MAKE APPLICATIONS STRONGER

Раван Сафаров – технический консультант

ravan.safarov@keysight.com

НАША ИСТОРИЯ И КОМПЕТЕНТНОСТЬ

Ixia Network Visibility Leader



"Ixia is thrilled to merge our culture of innovation with Keysight's. Keysight is a company that does not like being #2 in any market. Our combined, entirely complementary resources will continue our #1 position in test and help propel us to #1 in the visibility market."

BETHANY MAYER
PRESIDENT AND CHIEF EXECUTIVE OFFICER, IXIA

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

IXIA ПОРТФЕЛЬ РЕШЕНИЙ

TEST

SECURITY

VISIBILITY

Для всех типов инфраструктуры

Mobile

Endpoint

Network

Data Center

Cloud

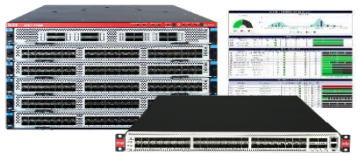
Различные платформы и технологии

IxNetwork/VE
Multis SDN

PerfectStorm
BPS vEPC
IxLoad/VE

802.11ac,
MU-MIMO

Flex Taps,
iBypass,
Virtual Taps



NTO, Vision ONE,
Hawkeye,
xStream40,
Control Tower

Threat
ARMOR,
ATI

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

ixia

A Keysight Business

РЕШЕНИЯ ПО ОБЕСПЕЧЕНИЮ ВИДИМОСТИ СЕТЕЙ

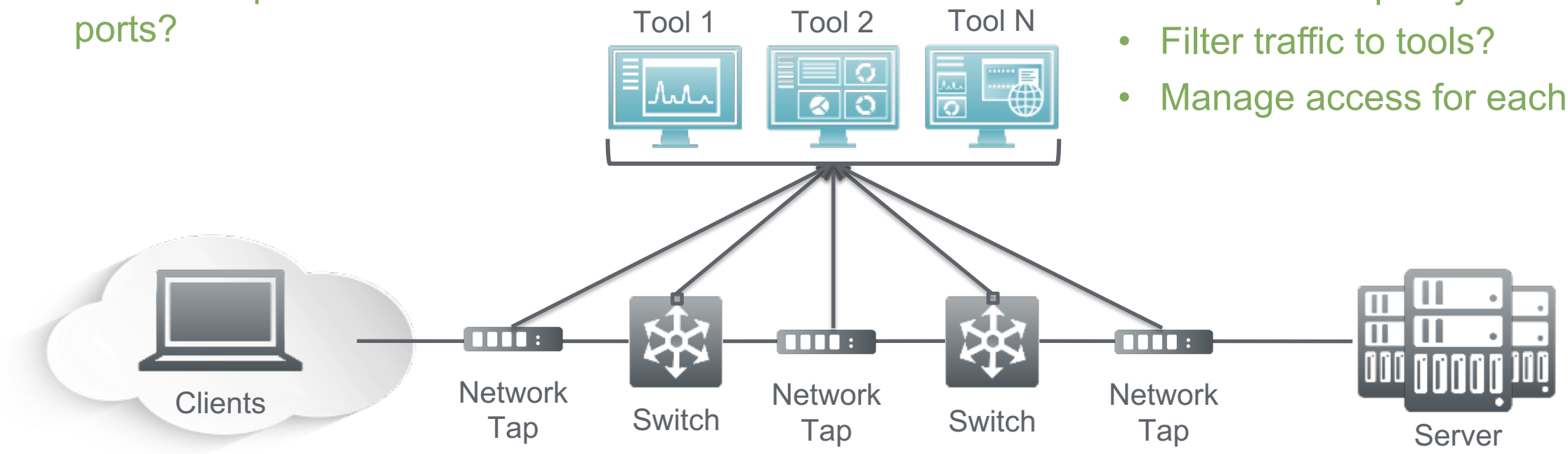
ДОСТУП К ТРАФИКУ - ПРОБЛЕМЫ

How to:

- Get data access for tools?
- Network taps instead of SPAN ports?

How to:

- Deal with limited tool ports?
- Scale tool capacity?
- Filter traffic to tools?
- Manage access for each tool?

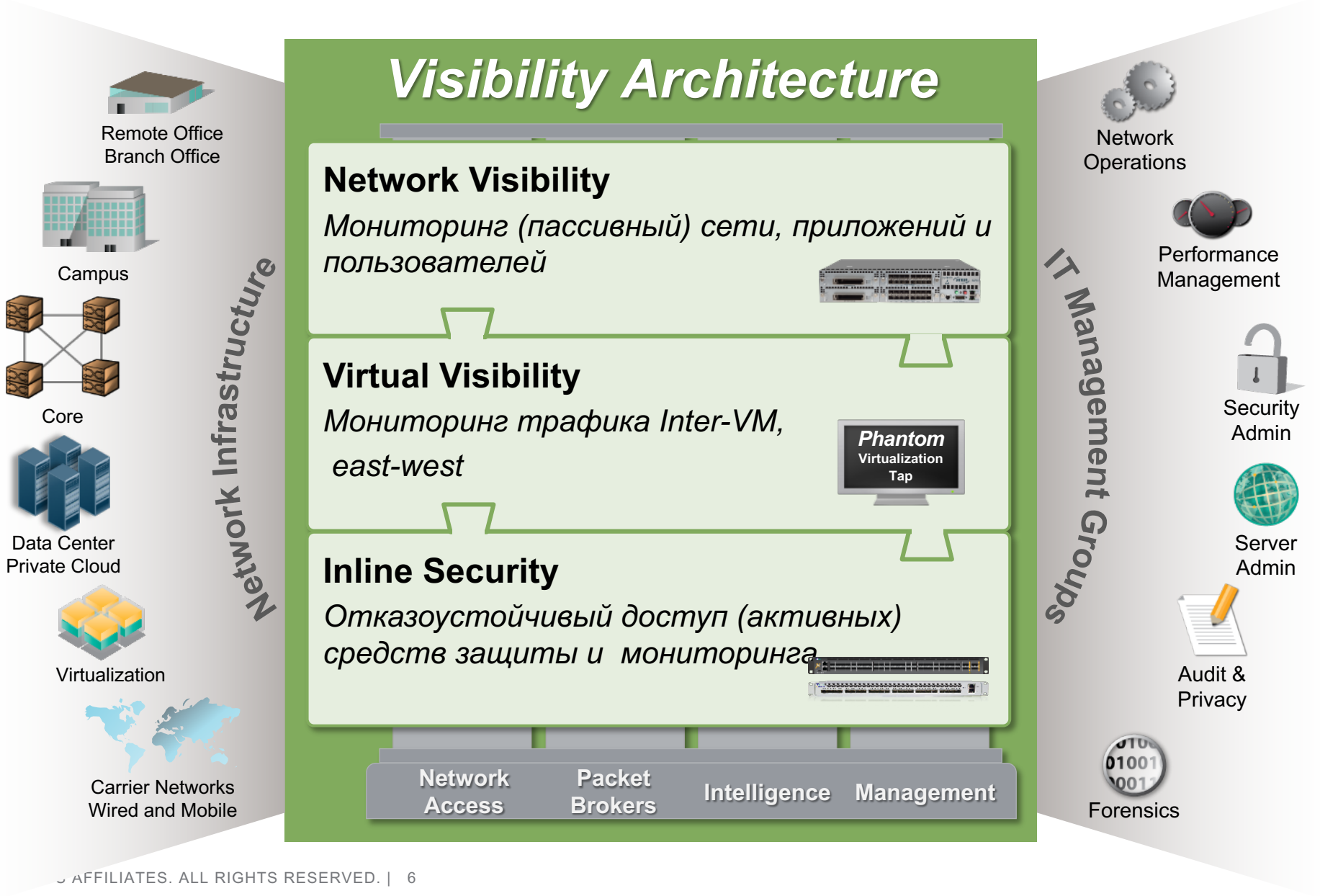


© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

АРХИТЕКТУРА ДОСТУПА

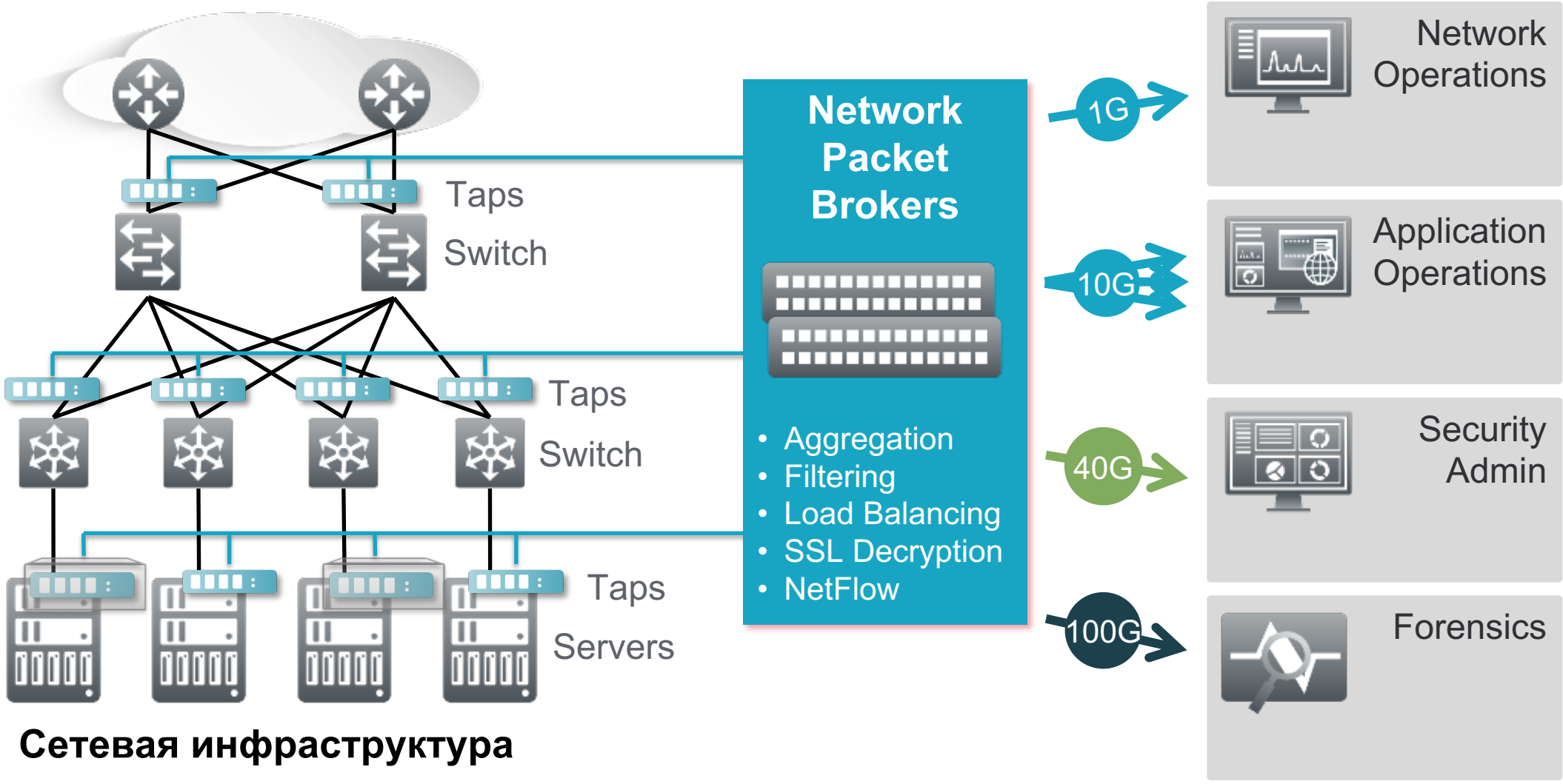
ОБЕСПЕЧЕНИЕ ПОЛНОГО ДОСТУПА К СЕТИ И ТРАФИКУ ПРИЛОЖЕНИЙ



© 2018 KEYSIGHT AFFILIATES. ALL RIGHTS RESERVED.

ПЛАТФОРМА ДОСТУПА К ТРАФИКУ

Доступ и распределение точка-точка



Сетевая инфраструктура

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

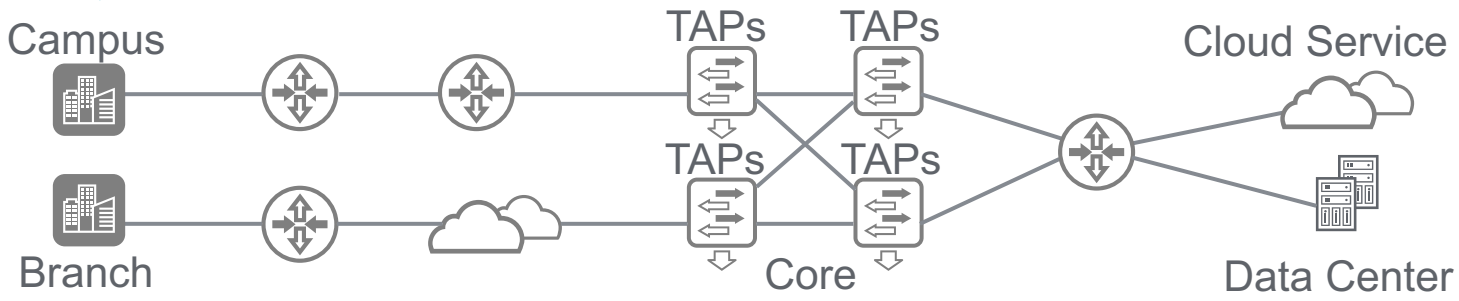
УЛУЧШЕННАЯ ВИДИМОСТЬ

Улучшает существующие инвестиции

SECURITY	APPLICATION PERFORMANCE	ANALYTICS / MANAGEMENT	CLOUD

imperva, FORTINET, A10, LogRhythm, savvius, RSA, paloalto NETWORKS, cisco, FireEye, riverbed, dynatrace, SevOne, VIAVI, Corvil, ca, ExtraHop, ORACLE, splunk>, solarwinds, plixer, IBM, LiveAction, vmware, Microsoft Azure, puppet, docker, amazon web services

Ixia Visibility Architecture



© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

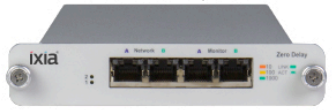
ixia A Keysight Business

ОБЗОР ОТВЕТВИТЕЛЕЙ СЕТЕВОГО ТРАФИКА

- Support for a variety of media and speeds
- Type of TAPs: network TAP, port aggregation TAPs, regeneration TAPs, link aggregation TAPs, BiDi (bidirectional) TAPs, and virtual TAPs

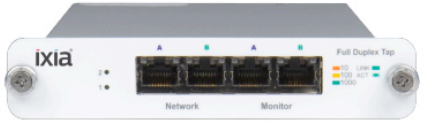
Flex Tap

Zero Delay Tap



iTap Port Aggregator

Full Duplex Tap



Regeneration Tap

	Flex Tap	Copper Taps	Regen Tap	Aggregators
Fabric	Fiber	Copper	Copper & Fiber	Copper & Fiber
Bandwidth	1G to 100G	10/100/1000M	10M to 10G	10M to 10G
Density	LC model: 24 per 1U MTP model: 12 per 1U BiDi: 12 per 1U	3 per 1U	1 per 1U	Link Agg: 1 per 1U Port Agg: 2 per 1U
Managed	No	No	No	Yes – iTap and iLink Agg No – Non-I models
Unique Features	Low insertion loss multimode model	Zero Delay (battery)	Copper models support Inline or Span inputs	1G Memory buffer for traffic spikes Virtual Zero Delay

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

ОБЗОР BYPASS

- Copper and Fiber Ports
- High availability Options

	iBypass 3	iBypass 10G	iBypass 40-10	iBypass HD	NEW! iBypass VHD
Fabric	Copper	Fiber	Fiber	Copper & Fiber	Fiber
Bandwidth	10/100/ 1000 Mbps	10 Gbps	4 x 10 Gbps	10/100/ 1000 Mbps	10Gbps
Density	1 per unit 8 per 1U	1 per unit 2 per 1U	4 per unit 8 per 1U	2 per line card 8 per 1U chassis	4 per line card 12 per 1U chassis
HA Capable	No	No	Active-Standby Active-Active	Active-Standby Active-Active	Active-Standby Active-Active Mixed HA support
Managed	Yes	Yes	Yes	Yes	Yes
Unique Features	• High MTBF >770k hours	• Ideal for distributed deployments	• Deploy with multiple inline tools	• Modular line cards • Independently controlled	• Modular line cards • Independently controlled • Flexible use of Bypass, Tap, Aggregation, & Regeneration in single appliance

iBypass 10G

iBypass 3

iBypass 40-10 (4x10G)

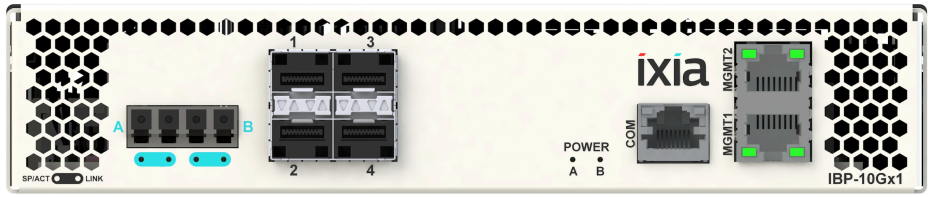
iBypass VHD

iBypass HD

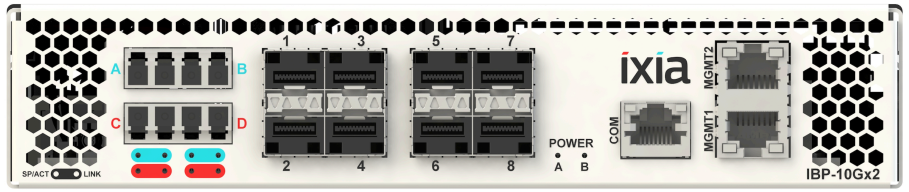
© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

IBYPASS DUO – NEXT GEN. 10G IBYPASS



2 x Network Ports LR or SR
4 x Monitor Ports



4 x Network Ports LR or SR
8 x Monitor Ports

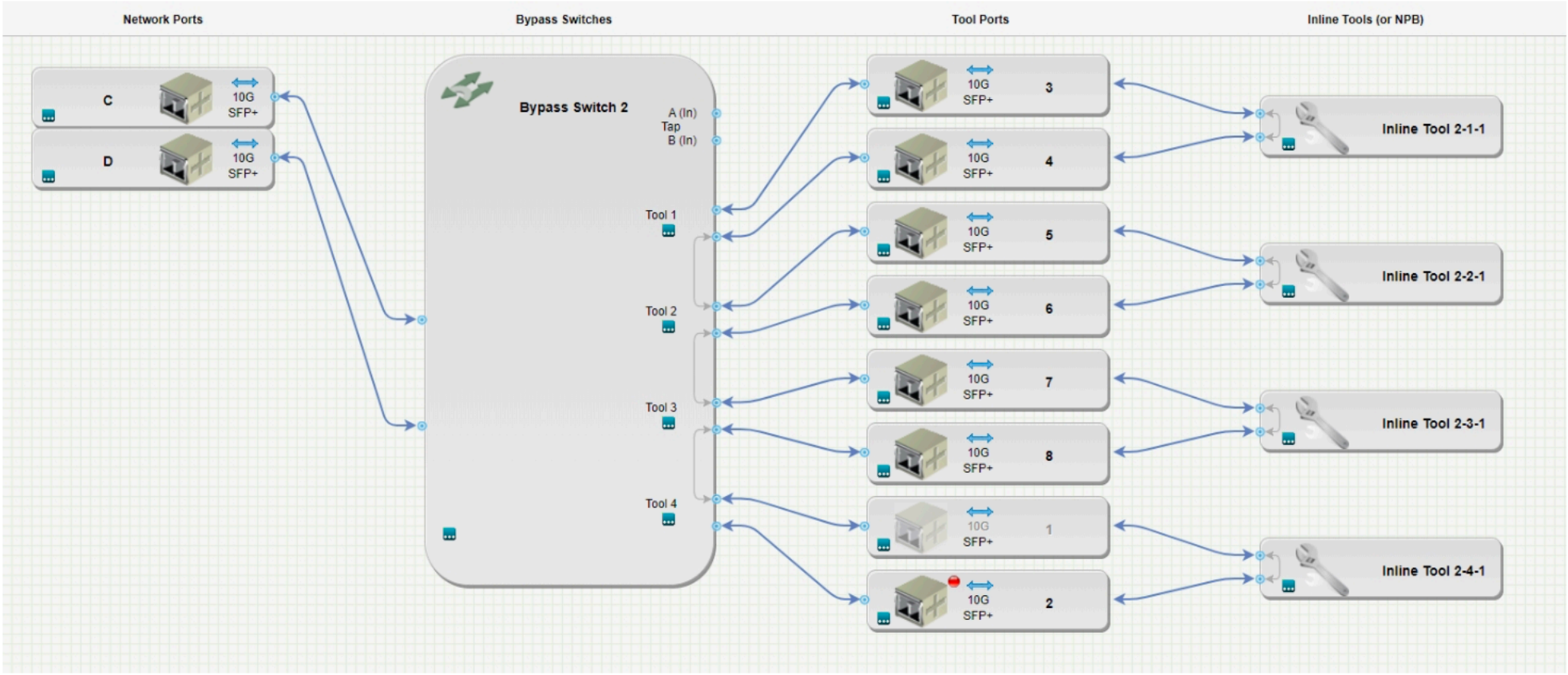
Key Features

- 1/10G Bypass Switches
- Choice of Power Off – Fail Open or Fail Close – Unique/Patent Applied for
- Two management ports – Unique
- Best in class visual GUI
- Best in class Active/Active and Active/Passive Modes
- Cost effective solution for with and without NPBs

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

ПРОСТОТА НАСТРОЕК

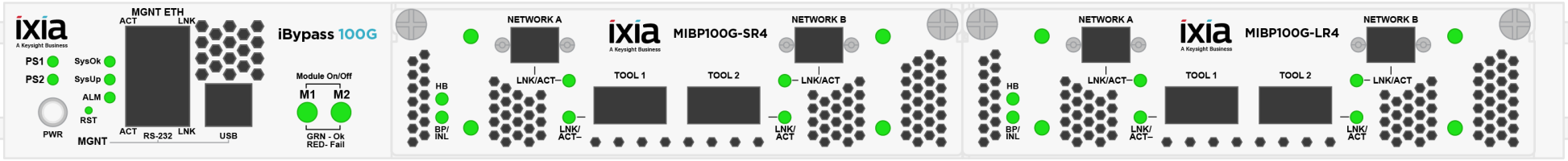


© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

IBYPASS 100G

Failsafe inline protection



- ✓Chassis Based – Up to 2 Modules
- ✓Modules support 1 network segment and 1 tool segment
- ✓Single Mode and Multi Mode Support
- ✓QSFP28 on Tool Ports
- ✓Choice of Power Off – Fail Open or Fail Close
- ✓Configurable Heartbeats to detect tool failure
- ✓Cost effective solution with and without NPBs

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

БРОКЕРЫ СЕТЕВЫХ ПАКЕТОВ – СЕРИЯ VISION

NPBs at every level, capable of working together to create the best fit for a customers need, from microscale to hyperscale.

Vision Edge 10S

48 ports of 1/10GE
10GE copper support
40Gbps of PacketStack
Tunneling
Inline mode
NetFlow

Vision Edge 40

10/40G Platform
48 ports of 1/10GE
6 ports of 40GE
Aggregation
Filtering
Load Balancing

Vision Edge 100

100G Platform
6,4 Tbit Full Duplex
32 ports of 40/100GE
128 ports of 10GE
Capable of (5) speeds
- 10G, 25G, 40G, 50G
Aggregation
Filtering
Load Balancing

Vision ONE

Single site or campus
1G/10G and 40G
All-in-one solution for filtering and tools
Full AFM (160G)
AppStack/SecureStack
Inline mode, Netflow
SSL and future upgrade capability

Vision 7300

Massive scale 3,8 Tbit
All speed 1G to 100G
Massive scale for packet processing in terabits/sec
AppStack/SecureStack
Inline mode, Netflow
SSL and future upgrade

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

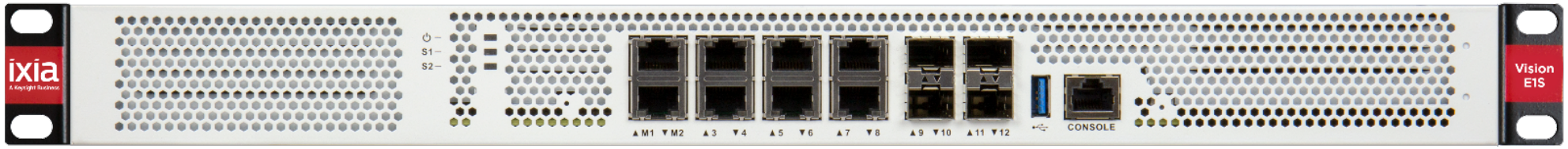
SOFTWARE DEFINED MONITORING FOR THE SOFTWARE DEFINED NETWORKS

Vision Edge 1S
The Universal Monitoring Platform for the Edge

PACKET MONITORING

FLOW MONITORING

SYNTHETIC MONITORING



© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

VISION EDGE 1S

Distributed network packet broker probes for remote site visibility and performance monitoring

Packet

Capture remote packets
Redistribute to data analytic tools

Flow

Generate NetFlow metadata
Track utilization, top applications, top talkers, etc…

Synthetic Monitoring

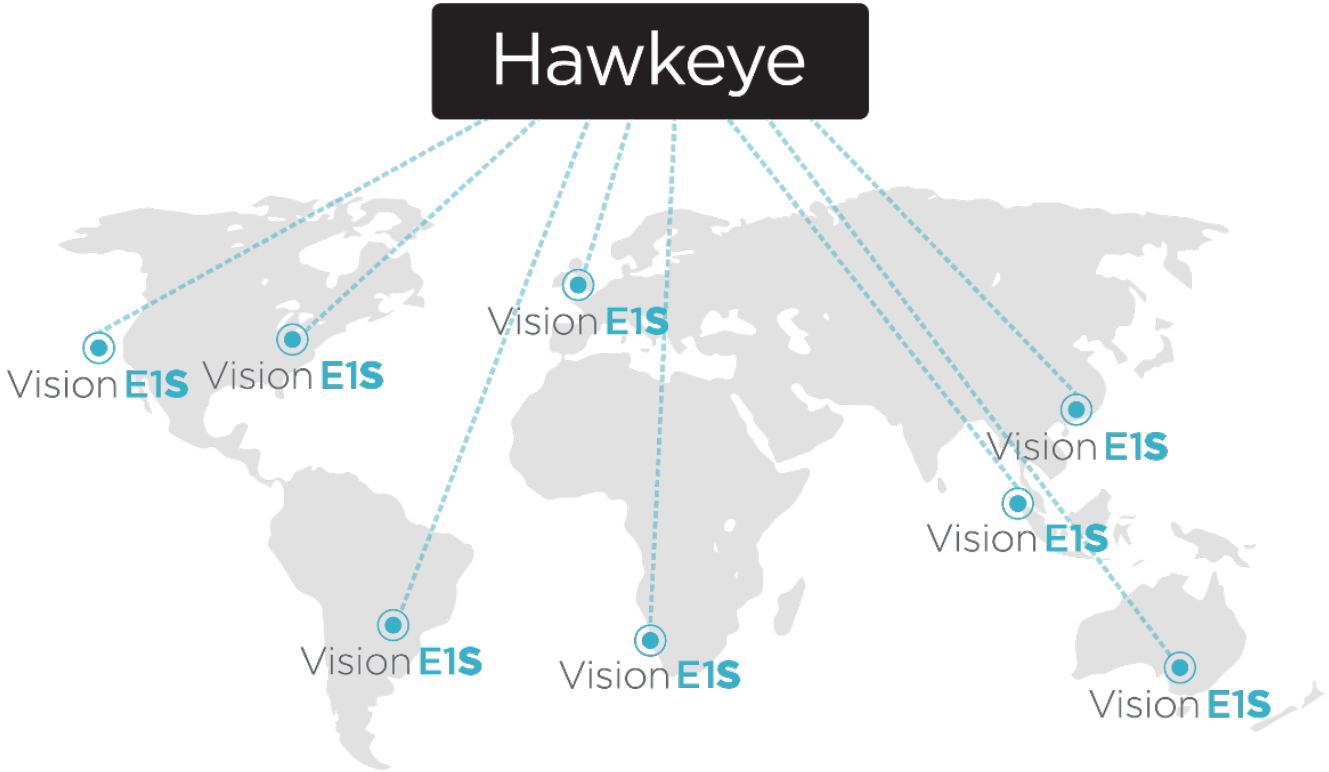
Proactive monitoring for visibility & diagnostics on connectivity to cloud, internet and WAN, LAN

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

BUILT-IN DISTRIBUTED MONITORING

Central Management Server



Hawkeye Controller

Cloud based or on Premise installation
Controls Vision Edge 1S appliances
One touch operations
Real time dashboards and reports
Historical trending

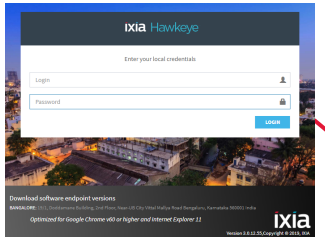
Built-in for remote management

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

VISION EDGE 1S OVERVIEW

100% software based solution running on x86 appliance

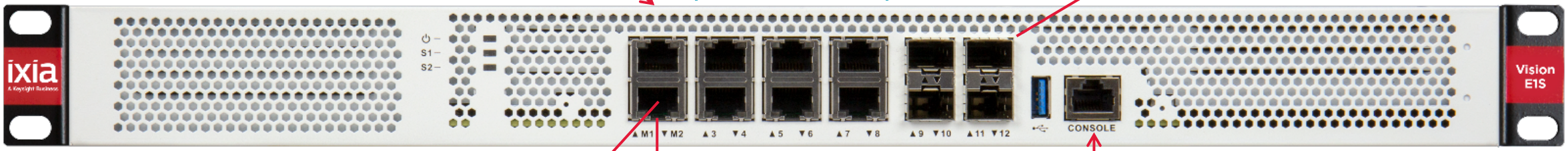


MGMT Network Connect to Hawkeye

6x 1G copper packet broker ports

4x 1G/10G optical packet broker ports

Optional Synthetic Monitoring 10G traffic generation



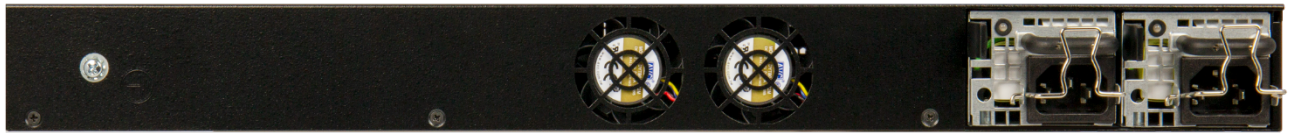
Front

NetFlow/IxFlow Collector

Synthetic Monitoring 1G traffic generation

Serial 115200 81NN

Redundant AC Power Supplies



Back

Integrated FAN quiet operation

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia A Keysight Business

ВОЗМОЖНОСТИ ПАКЕТНЫХ БРОКЕРОВ

Преимущества набора функций Stack

AppStack
Context aware, signature-based application layer filtering

- Application filtering w/ optional RegEx
- Geolocation & tagging
- Real-time dashboard
- NetFlow & IxFlow

PacketStack
Intelligent packet filtering, manipulation and transport

- Header stripping
- Protocol trimming
- Timestamping
- Data masking
- Burst protection
- Deduplication

NetStack
Robust filtering, aggregation, replication, and more

- 3 stages of filtering
- Dynamic Filter Compiler
- VLAN tagging
- Aggregation
- Load balancing
- Replication

SecureStack
Optimized handling for secure traffic

- Passive SSL decryption
- Active SSL decryption
- Threat insights
- Data Masking +
- Upcoming TLS 1.3 support
- Transparent proxy

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

SECURESTACK

Powerful decryption and more

SecureStack

- ✓ **Active SSL decryption**
- ✓ Passive SSL decryption
- ✓ Malicious activity detection
- ✓ No impact on other services
- ✓ Data masking +
- ✓ Threat insights

Active SSL

- ✓ Decrypt once, inspect many
- ✓ Offload decryption from multiple tools
- ✓ 1-10 Gb SSL capacity
- ✓ Licensed-based performance upgrades
- ✓ Dedicated cryptographic processor
- ✓ Policy-based SSL inspection
  - ▪ Upcoming URL categorization
  - ▪ SSL parameters
  - ▪ Granular controls

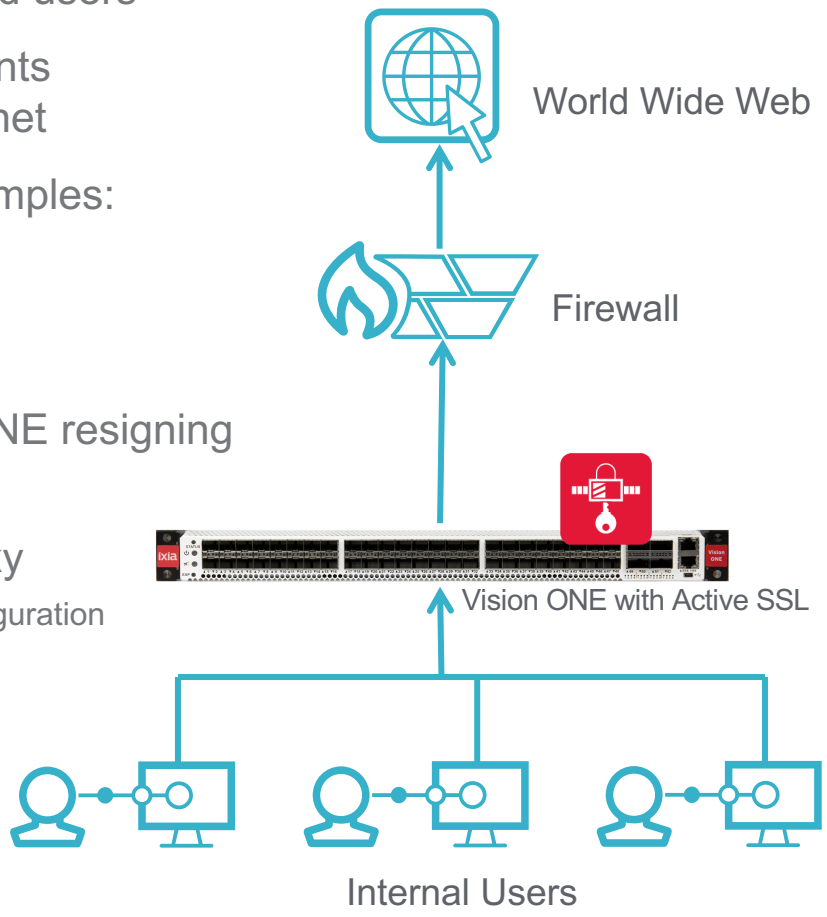
© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ACTIVE SSL FOR INBOUND AND OUTBOUND

FORWARD PROXY

Click for details

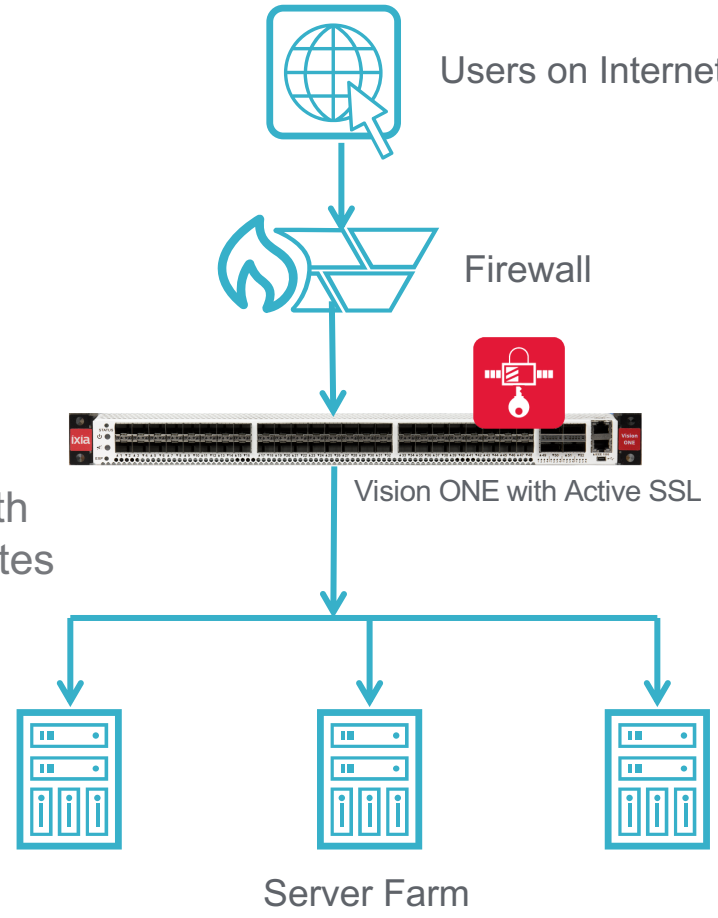
- Protects outbound users
- Sits between clients and firewall/Internet
- Security tool examples:
  - Antivirus
  - DLP
  - IDS/IPS
- Trusted Vision ONE resigning certificate
- Transparent Proxy
  - No browser reconfiguration



REVERSE PROXY

Click for details

- Provides service to servers
- Sits between servers and Internet
- Security tool examples:
  - WAF
  - IDS/IPS
- Transparent to users
- Reverse proxy signs with original Server Certificates



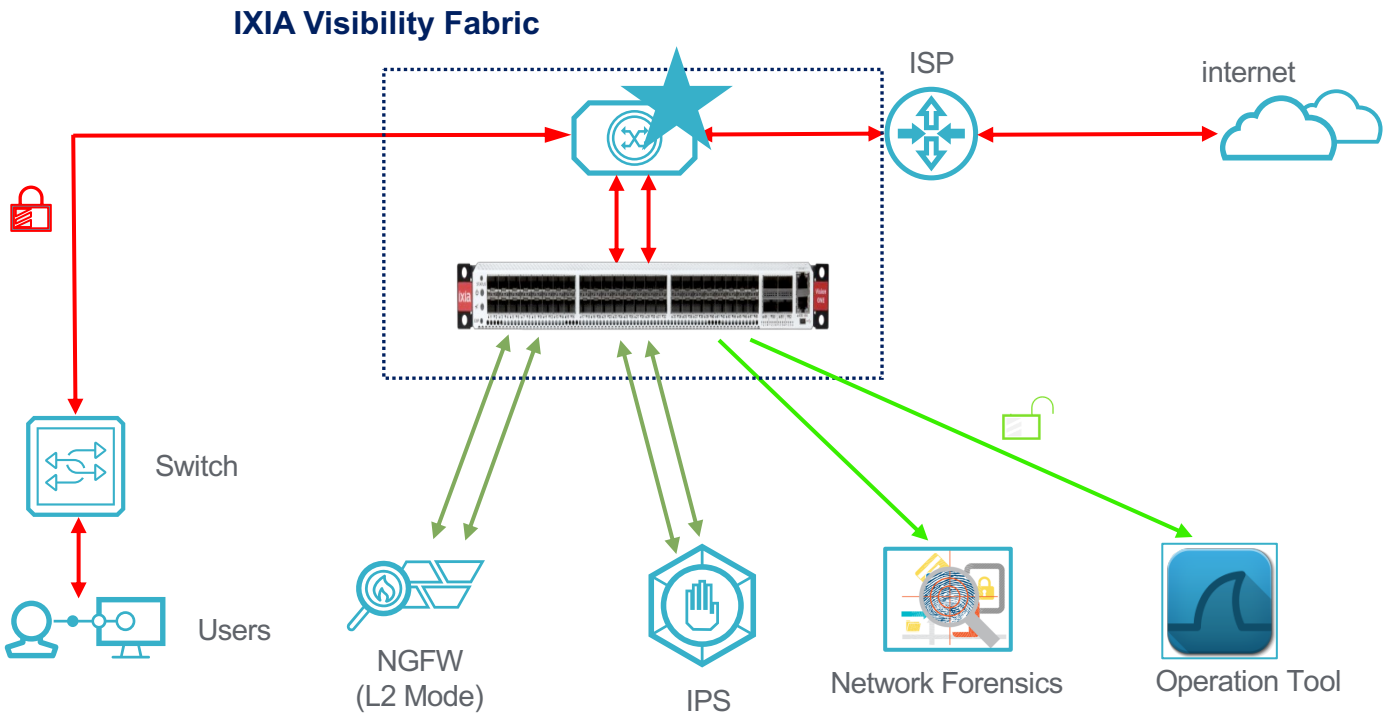
© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

FORWARD SSL PROXY SCENARIO

Standalone NPB, Active and Passive Tools for Single Link

Return to main slides



Encrypted Traffic, Bi-Directional

Decrypted Traffic, Bi-Directional

Decrypted Traffic, Uni-Directional

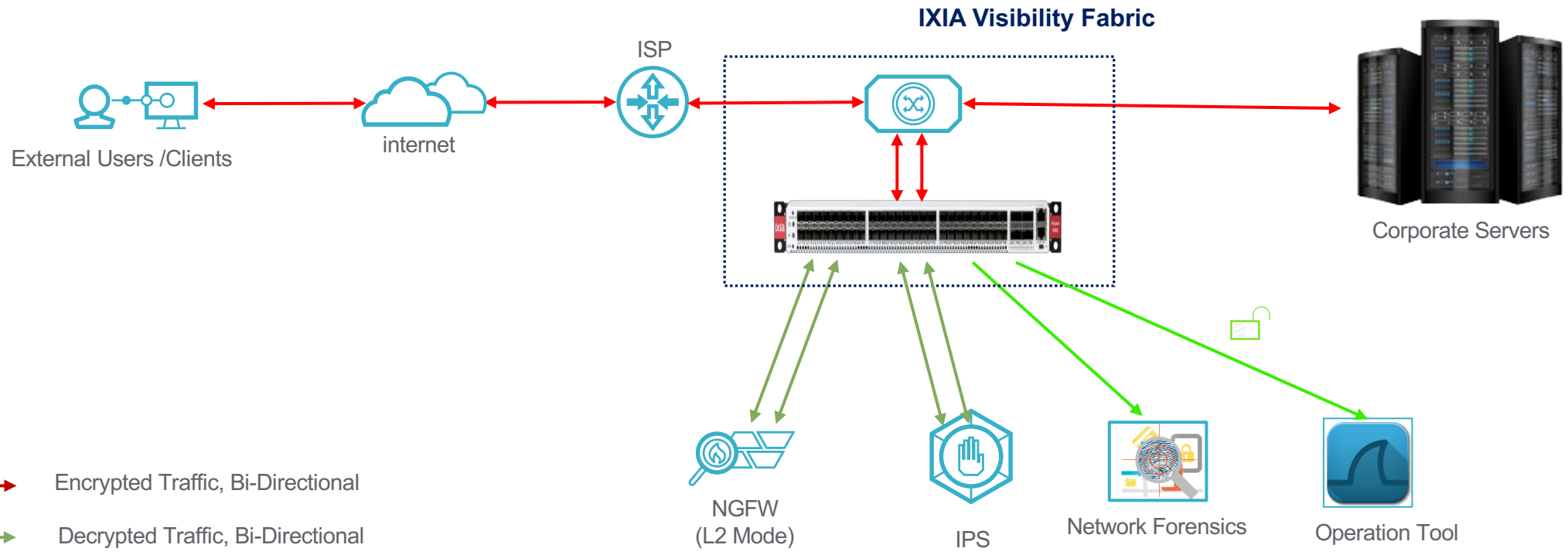
© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

REVERSE SSL PROXY SCENARIO

Standalone NPB, Active and Passive Tools for Single Link

Return to main slides



© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

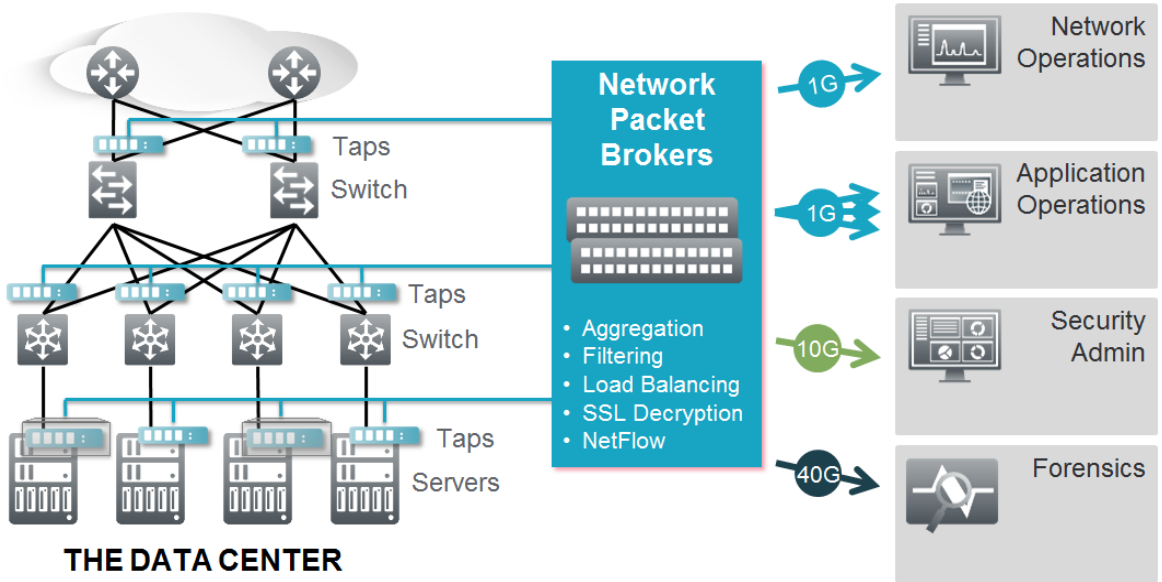
ixia
A Keysight Business

АРХИТЕКТУРА ДОСТУПА К ТРАФИКУ

Устранение слепых точек в сети

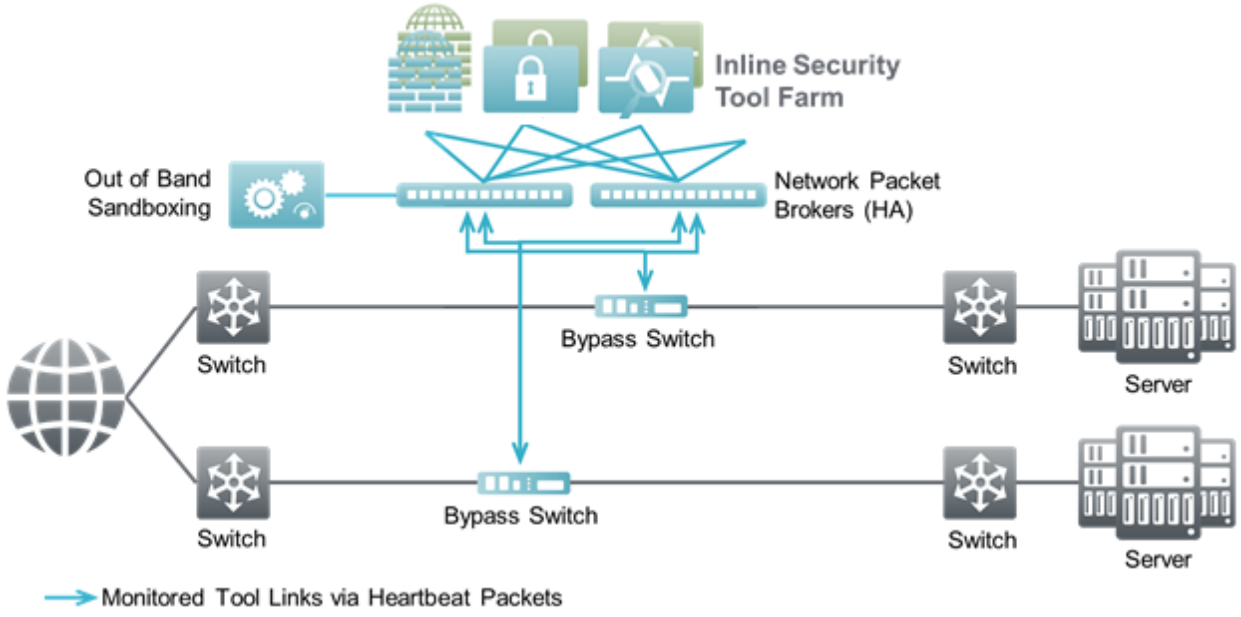
Out-of-Band

Framework



In-Line Security

Framework



© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

ОТКАЗОУСТОЙЧИВОСТЬ В РЕЖИМЕ INLINE

Система IDS/IPS в режиме Inline:

- В случае выхода из строя IPS трафик прерывается:
  > Нет связи на канале
  > Нарушена работа Online Banking, Online Shopping, Online Trading и т.д.
  > Высокое влияние на бизнес

- Высокие скорости требуют производительные инструменты безопасности и анализа:
  > Возможность потери данных по причине высокой загрузки канала и низкой производительности инструментов
  > Большие затраты на системы анализа и безопасности

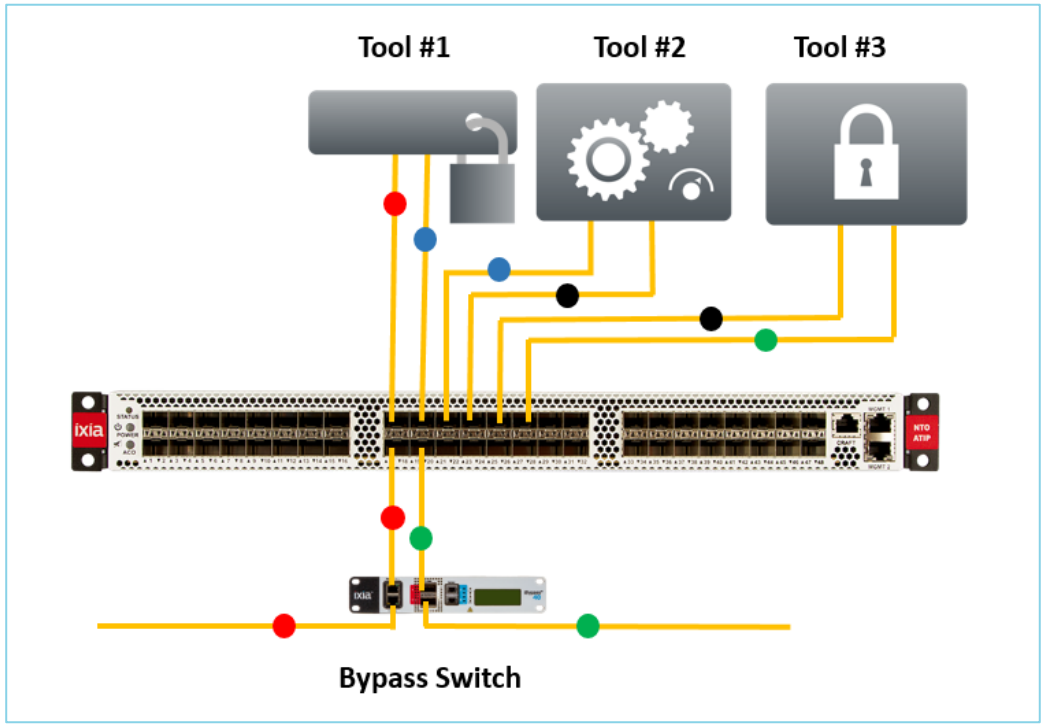
© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

РАБОТА В РЕЖИМЕ INLINE

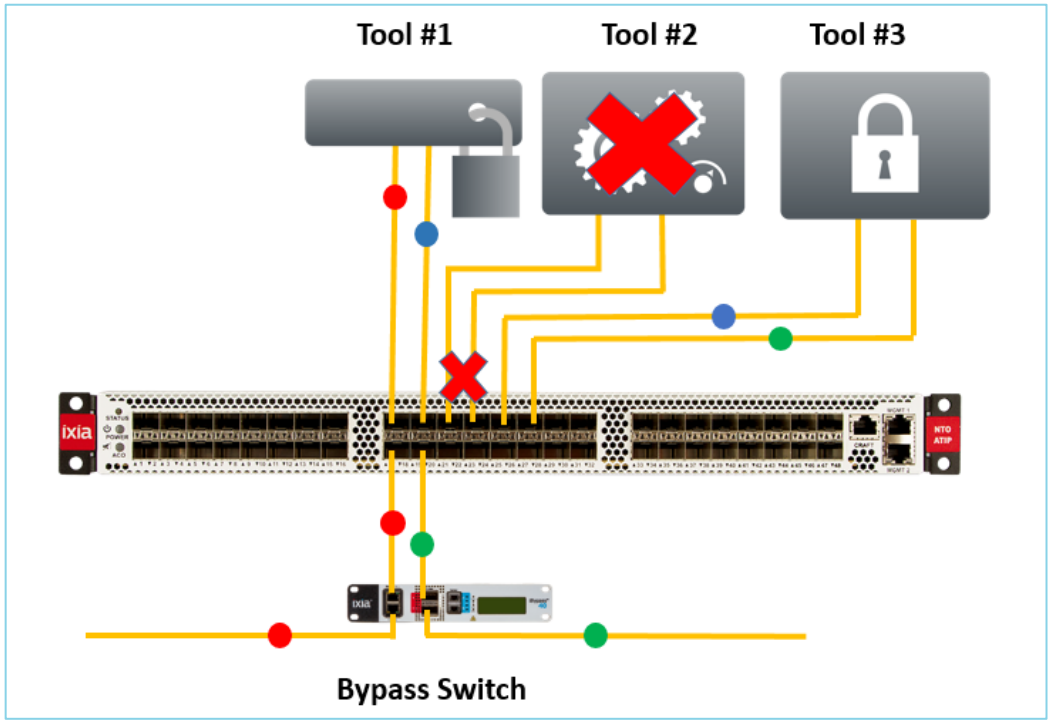
Инструменты анализируют и выборочно отбрасывают часть трафика или перенаправляют его обратно в сеть

Normal Operation



- 3 different security tools are connected to each other in series.

Tool #2 Failure



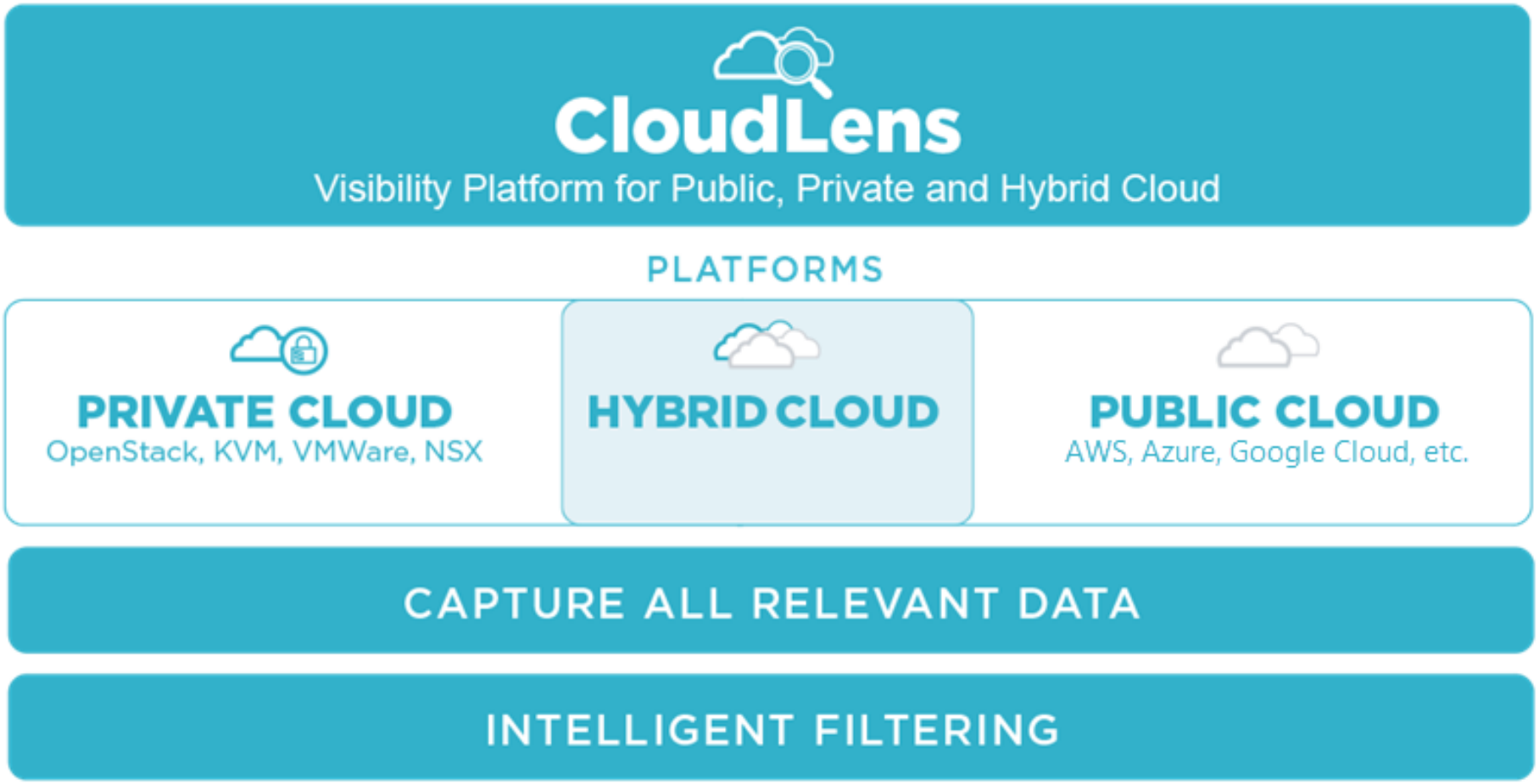
- If one or multiple tools fail traffic will be re-routed preventing that the working tool(s) are on fail as well.

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

CLOUDLENS

Видимость для всех облачных сред - публичных, частных и гибридных

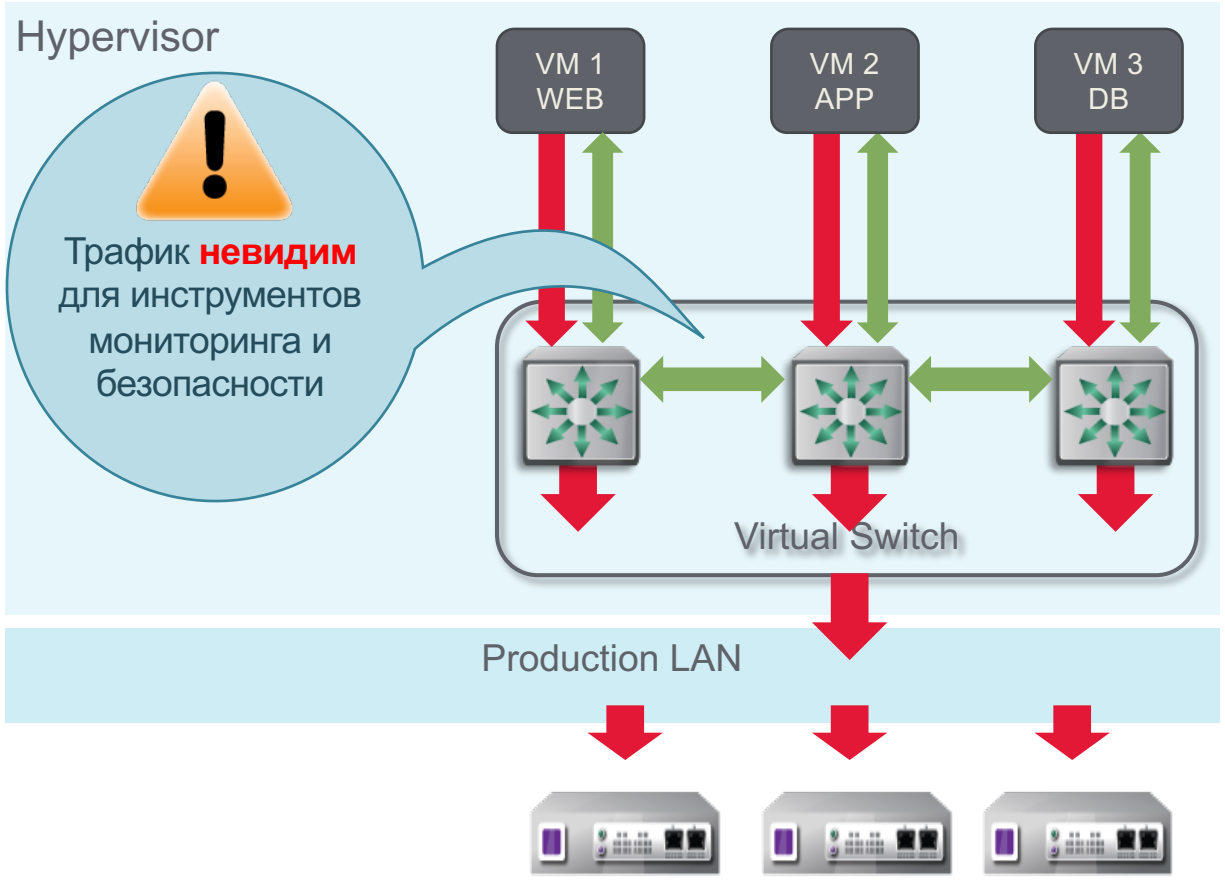


© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

СРЕДА ВИРТУАЛИЗАЦИИ

Взаимодействие виртуальных машин остается вне зоны видимости



- Security, Monitoring and Compliance Risks
- No Visibility
- No Audit Trail
- No Utilization Insight

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.

ixia
A Keysight Business

НАБОР ФУНКЦИЙ CLOUDLENS VISIBILITY INTELLIGENCE

Branch Office

Virtual Data Center

Private Cloud

Public Cloud

Cloud SP Network

CloudLens – Virtual Tapping – Packet & Application Intelligence Processing

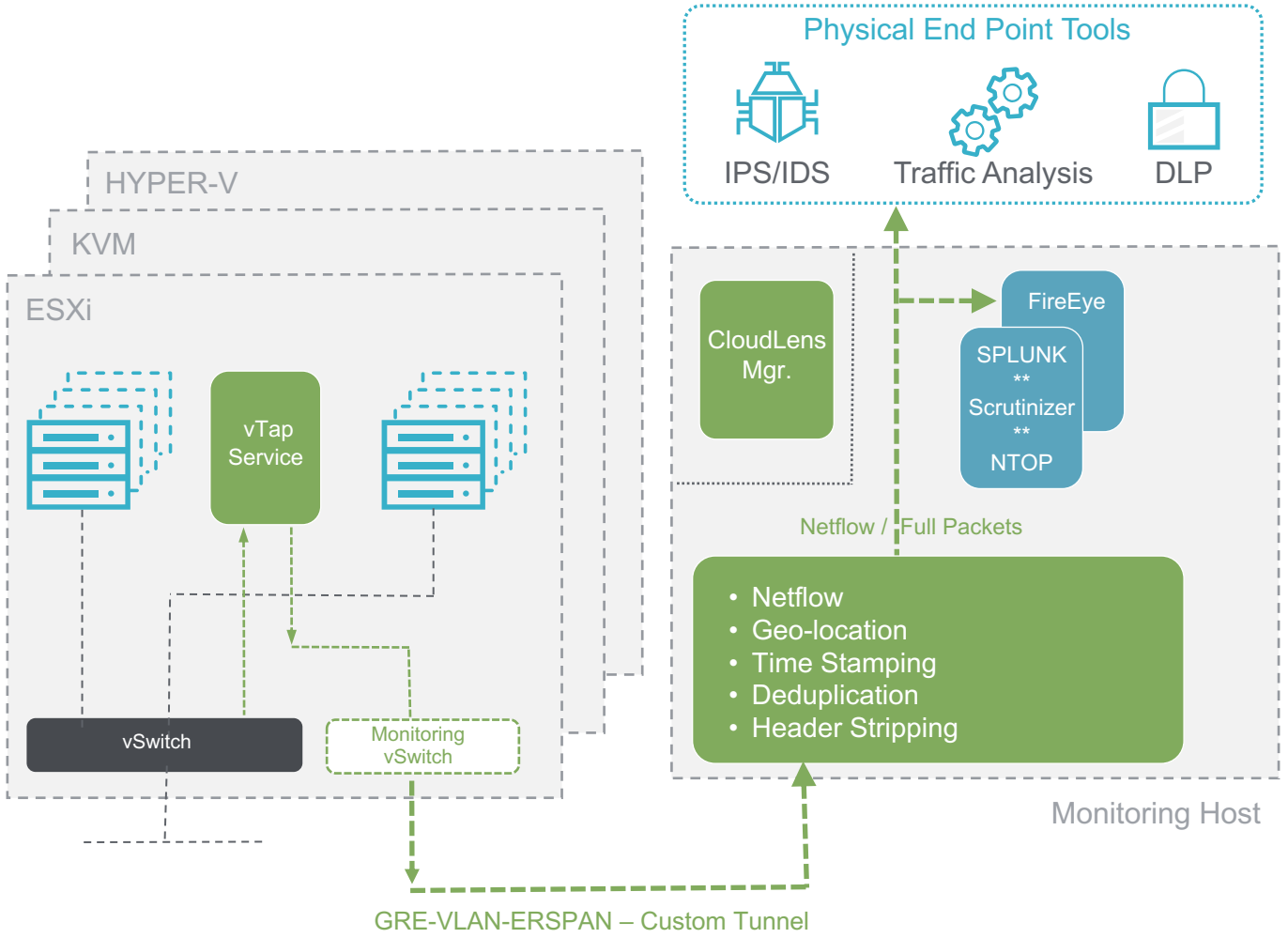
NetStack	PacketStack	AppStack	MobileStack
Filtering	Deduplication	Application Filtering	GTP Correlation
Aggregation	Header Stripping	Optional RegEx filtering	GTP Load Balancing
Replication	Protocol Trimming	Geolocation & Tagging	Subscriber filtering
Load Balancing	GRE Tunneling	NetFlow & IxFlow	Subscriber sampling
		Data Masking	Device filtering
		PCAP	Location filtering
		Real-time Dashboard	

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

CLOUDLENS – ДОСТУП К ТРАФИКУ СРЕДЫ ВИРТУАЛИЗАЦИИ

Inter-VM – East-West Traffic Monitoring – No Blind Spots



Virtual Traffic Visibility

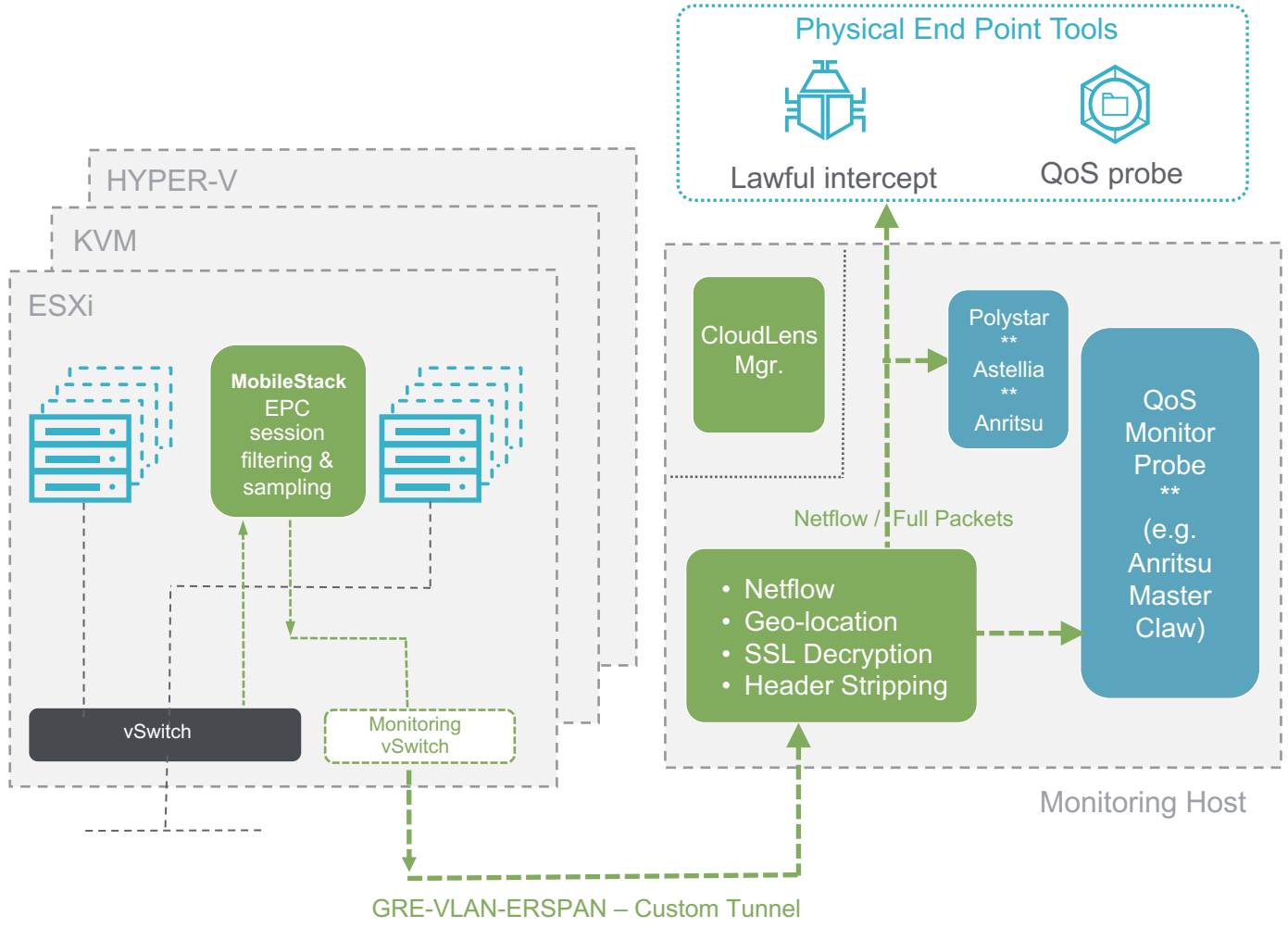
- Provides Visibility into Data Center Network (Inline/ Out of Band)
- Inter-VM Traffic Monitoring
- Multiple Hypervisor Support (ESXi, KVM)
- vSwitch/Router Agnostic (VSS, vDS, OVS)
- GRE – VLAN – ERSPAN Protocols
- Monitoring Tool Agnostic
- Centralized Management
- **No changes to existing VNFs**

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

ДОСТУП К ТРАФИКУ VIRTUAL EPC

Фильтрация и выборка абонентского трафика



Subscriber-aware visibility

- Filter and sample as close as possible to the source, allow virtual probes to scale
- Correlate GTP traffic for subscribers to always deliver traffic to same probe
- Includes Inter-VM Traffic Monitoring
- Works on both Physical and Virtual EPC
- Multiple Hypervisor Support (ESXi, KVM)
- vSwitch/Router Agnostic (VSS, vDS, Cisco Nexus)
- GRE Encapsulation and Decapsulation
- Monitoring Tool Agnostic

© 2018 KEYSIGHT AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business

АБСОЛЮТНАЯ ВИДИМОСТЬ СЕТЕЙ

Software Defined Architecture

Purpose Built
High Performance
Terabits/sec

Tool 1 - VLAN 1-3
Tool 2 - Port 1-3

Tool 1 - VLAN 1-4
Tool 2 - Port 1-4

Patented Filtering
Drag-n-drop UI

IFC

True SDN Fabric Controller
Distributed & Resilient
Scalable

Best of Breed Technologies

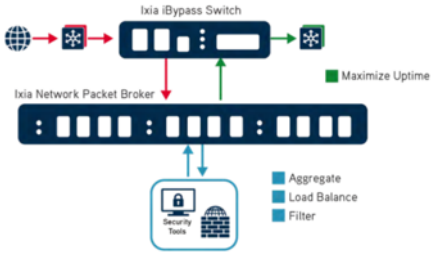
Complete Access to Virtual Environments

CloudLens Public
Container based sensor
Pre-filtered for optimized traffic
Cloud-native scale-out

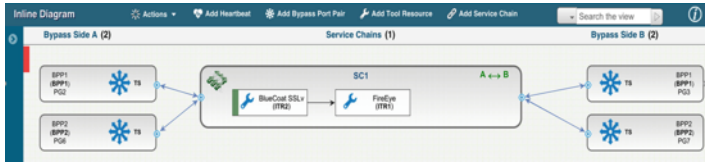
CloudLens Private
Instant access to guest
Integrated orchestration

Private Cloud DC and Public

Highly Available Security Architecture for Tools



High Availability Inline
Standalone Bypass
High MTBF (A-S)
NPB (Active-Active)



Incredibly simple inline design and deployment

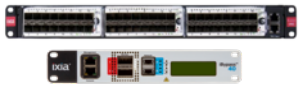
High Performance, High Availability Security

High Performance, Complete Platforms

Vision Edge
Software Defined NPB

Vision ONE
Full HA inline, AFM and ATIP

Vision 7300
7U High Capacity
100G to 10G
288 10G ports



Bypass for HA inline
Bypass VHD, HD

Physical Data Centers, Branch

Full line of Secure Taps and Virtual Sensors

Mirrored, Raw Data
High Density Taps

AWS
Private and Public

Branch Site

Data Center

Pervasive Access

TS AFFILIATES. ALL RIGHTS RESERVED. |

ixia
A Keysight Business