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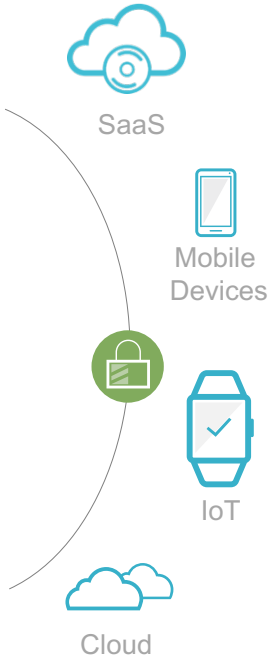
CLOUDLENS
Virtual Visibility Solution
Paulo Rebelo – Director Business Development

THE NETWORK PERIMETER IS VANISHING

More cloud. More mobility. More data.

- 25% of corporate data traffic will bypass traditional security defenses and flow directly from mobile devices to the cloud by 2018 – Gartner ’13
- 48% of companies have workload portability across public and private cloud resources – Verizon 2016
- Two of top 5 CIO concerns with cloud are performance and availability – Forbes ‘15
- SD-WAN will be a $6B market by 2020, complicates visibility, IDC 2016



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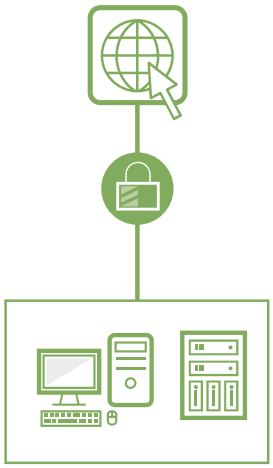
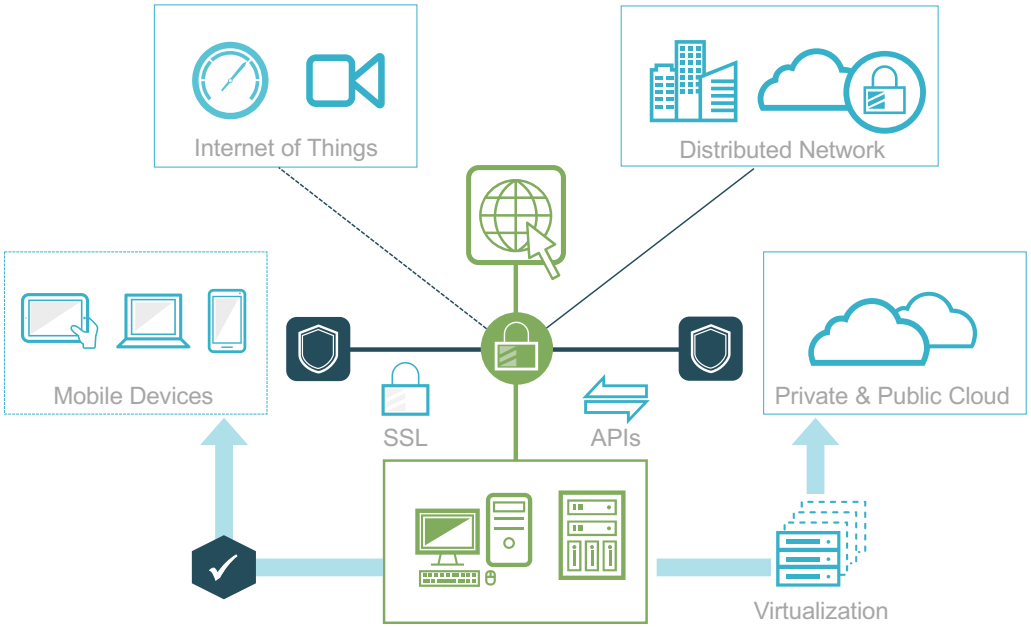
ENTERPRISE NETWORK EVOLUTION

More data is created and accessed everywhere now

Then



Now



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PROTECTION USED TO BE EASIER

Enforcement of security and compliance is more difficult

Application Performance Monitoring | Threat & Vulnerability Identification | Identity & Access Management | Data Protection & Loss Prevention | Compliance | Infrastructure Protection

Then

- Own infrastructure
- Global locations
- On-prem dedicated security and analytics tools
- Virtual compute infrastructure

Now

- Public and private clouds (i.e. shared infrastructure)
- Mix of physical and virtual analytics and security tools
- Elastic load and scale
- Dynamic infrastructure
- Many more internet-enabled devices
- More advanced WAN technologies (i.e. SD-WAN)
- Distributed multi-tier applications and services

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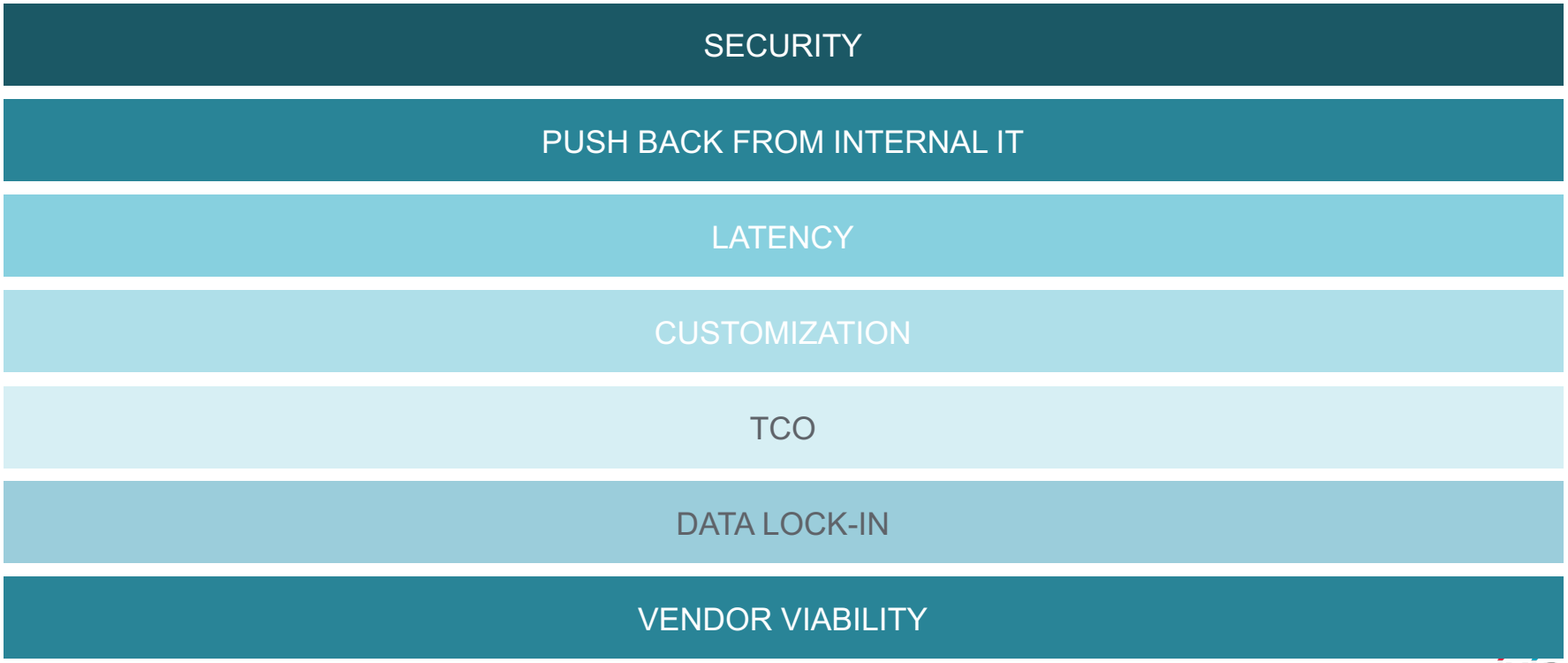
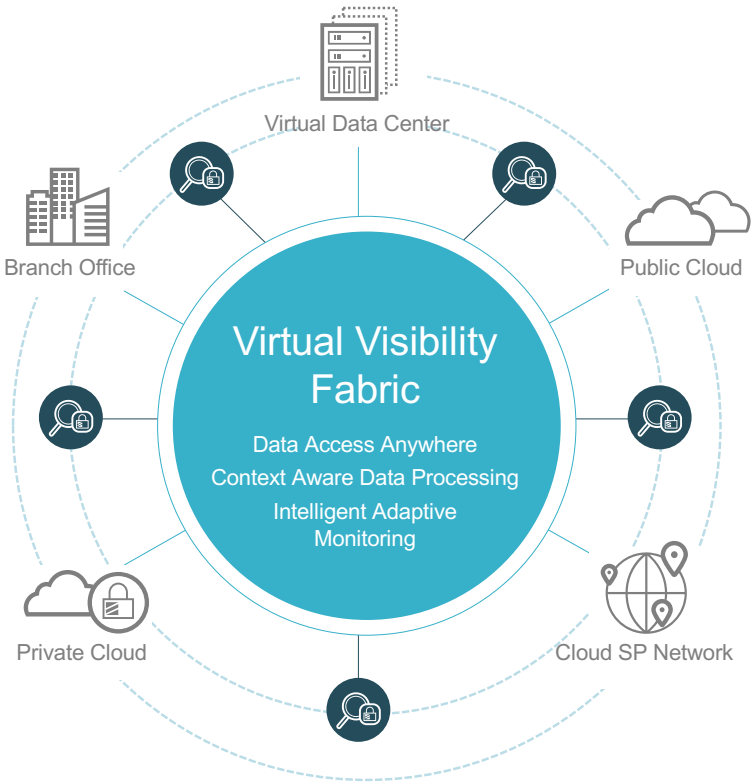
PUBLIC CLOUD ADOPTION BARRIERS



INTRODUCING VIRTUAL VISIBILITY FABRIC

How to provide end-to-end insight

- Monitor virtual traffic at the branch office, data center or cloud
- Capture, load-balance and send packets, flows and sessions of interest to monitoring tools
- Limit amount, type of data, sessions sent to monitoring tools, adjust dynamically
- Support both physical and virtual environments
- Tenant aware



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PROBLEMS CLOUDLENS SOLVES

Data access

- Packet data to Tools
- Platform agnostic service

Elasticity & Scale

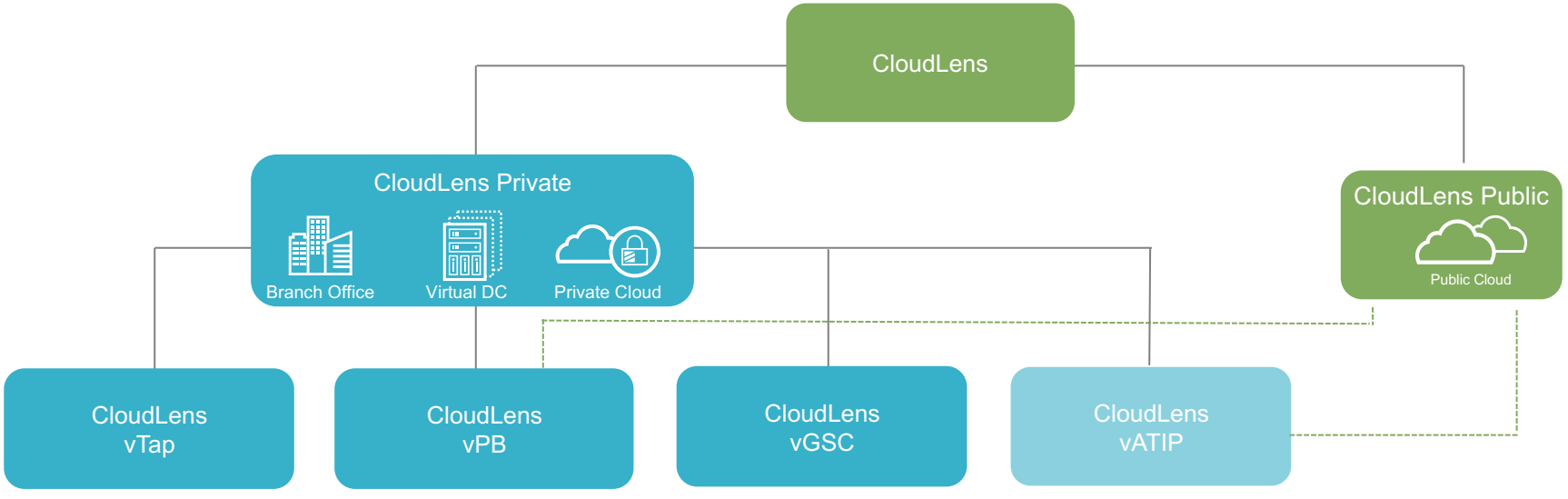
- Manual vs On-demand vs Scheduled
- Solves Scale Up as well as Scale Out

Infrastructure churn

- Effective handling of transient data
- Configuration management
- Dynamic - no dependency on the physical location

CLOUDLENS

Visibility across all your cloud environments - public, private, and hybrid clouds



- Virtual Tap deployment and configuration
- Policy Management
- High availability
- L2-4 Filtering
- Event Handling
- Automation

Virtual Packet Broker (vPB)
- Packet Processing
- L2-4 Filtering
- Deduplication
- Load Balancing

Virtual GTP Controller (vGSC)
- Session correlation
- Session load balancing
- Session sampling
- Subscriber aware filtering

Virtual Application Intelligence (vATIP)
- Netflow Generation
- Application Intelligence
- Geo-location

- Infrastructure Independent Network Visibility Solution
- Self-Serve Deployments
- Centralized Data Repository
- Built to Scale Out

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CLOUDLENS VIRTUAL MONITORING SOLUTION

Key Considerations

- **Unified Comprehensive Virtual Visibility Platform**
  - Multiple Functions (Virtual Taps, Filtering, NetFlow, De-duplication, Tunneling, Header Stripping…)
- **Can Accommodate Hybrid Environments**
  - Virtual Compute + Virtual Tools
  - Virtual Compute + Physical Appliances (NPB & Analyzing Tools)
- **Management and Orchestration**
  - Provide Centralized Control across Visibility Infrastructure
  - Integrate with Virtualization Orchestration Platforms to Automate Deployment and Management
- **Automation**
  - Auto Deploy and Configure VNFs to Support the Defined Strategies and Associated Policies
  - Include APIs to Support Real-time Monitoring Decisions
- **Scalability & Flexibility**
  - Leverage the Flexibility of the Virtualized Environment
  - Adaptive Solution (Right Data in Right Format at the Right time)
  - Provide High Availability Mechanisms across the Infrastructure

CLOUDLENS PILLARS

Maximize the effectiveness of security and analytics tools

DATA ACCESS ANYWHERE

- Data access in any virtual or cloud environment

Get the right data to the right security or app monitoring tool

CONTEXT-AWARE DATA PROCESSING

- Application and session awareness
- Traffic deduplication, load balancing, sampling, filtering

Make your security and analytics more responsive and intelligent

INTELLIGENT ADAPTIVE MONITORING

- Security Intelligence and Analytics
- Dynamic monitoring based on “feedback loop”

Activate your security and APM tools with a context-aware, resilient dataflow

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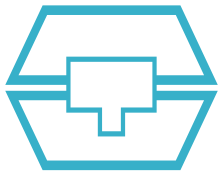
Intelligent, Adaptive Monitoring

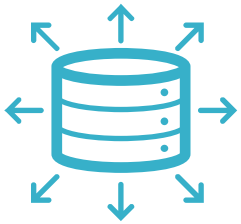
Context-Aware Data Processing

Data Access Anywhere

DATA ACCESS ANYWHERE

Eliminate blind spots for complete network visibility





Visibility into VM Traffic

- Data access and contextual filtering of east-west traffic
- Conditioning and forwarding of filtered traffic to monitoring tools

Flexible Data Access

- Tapping multi-tenant virtual environments
- Tapping based on workload type, security zone, tenant, network segments

Many Virtual Environments

- Support for multiple hypervisors VMware ESXi, *NSX,* OpenStack, KVM, Hyper-V
- Centralized management

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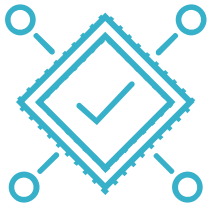
Intelligent, Adaptive Monitoring

Context-Aware Data Processing

Data Access Anywhere

CONTEXT-AWARE DATA PROCESSING

A context-aware engine gets the right data to the right tools



Context Awareness	Application Intelligence	Data Conditioning
• Recognize rich metadata • Deliver enhanced NetFlow generation	• Identify custom and dynamic applications • Aggregate or isolate application activity by country, region, or neighborhood	• Deduplication • Timestamping • Burst protection

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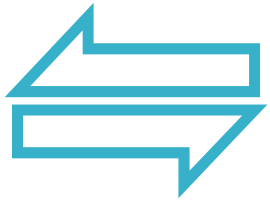
Intelligent, Adaptive Monitoring

Context-Aware Data Processing

Data Access Anywhere

INTELLIGENT ADAPTIVE MONITORING

Intelligent Security and Application Monitoring with Ixia Partners



Ecosystem Integration

- Coupling with monitoring, security and orchestration tools
- Dynamic data access, filtering and distribution

Selective Data Access

- Capture application data of interest, send NetFlow or packet data based real-time tool feedback

Event-Aware Monitoring

- Reactive data access based on security events
- Feedback mechanisms between CloudLens and tools

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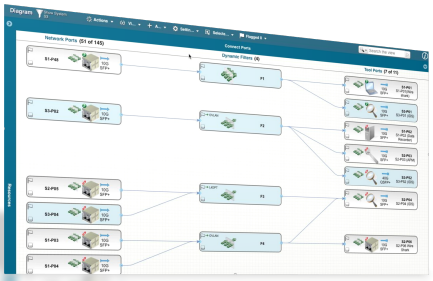
SOFTWARE DEFINED VISIBILITY ARCHITECTURE



SINGLE PANE OF GLASS WITH IXIA FABRIC

CloudLens Public

Public Cloud

CloudLens Private

Private Cloud

Vision **Edge**

Vision **ONE**

Vision **7300**

NETSTACK

PACKETSTACK

SECURESTACK

APPSTACK

MOBILESTACK

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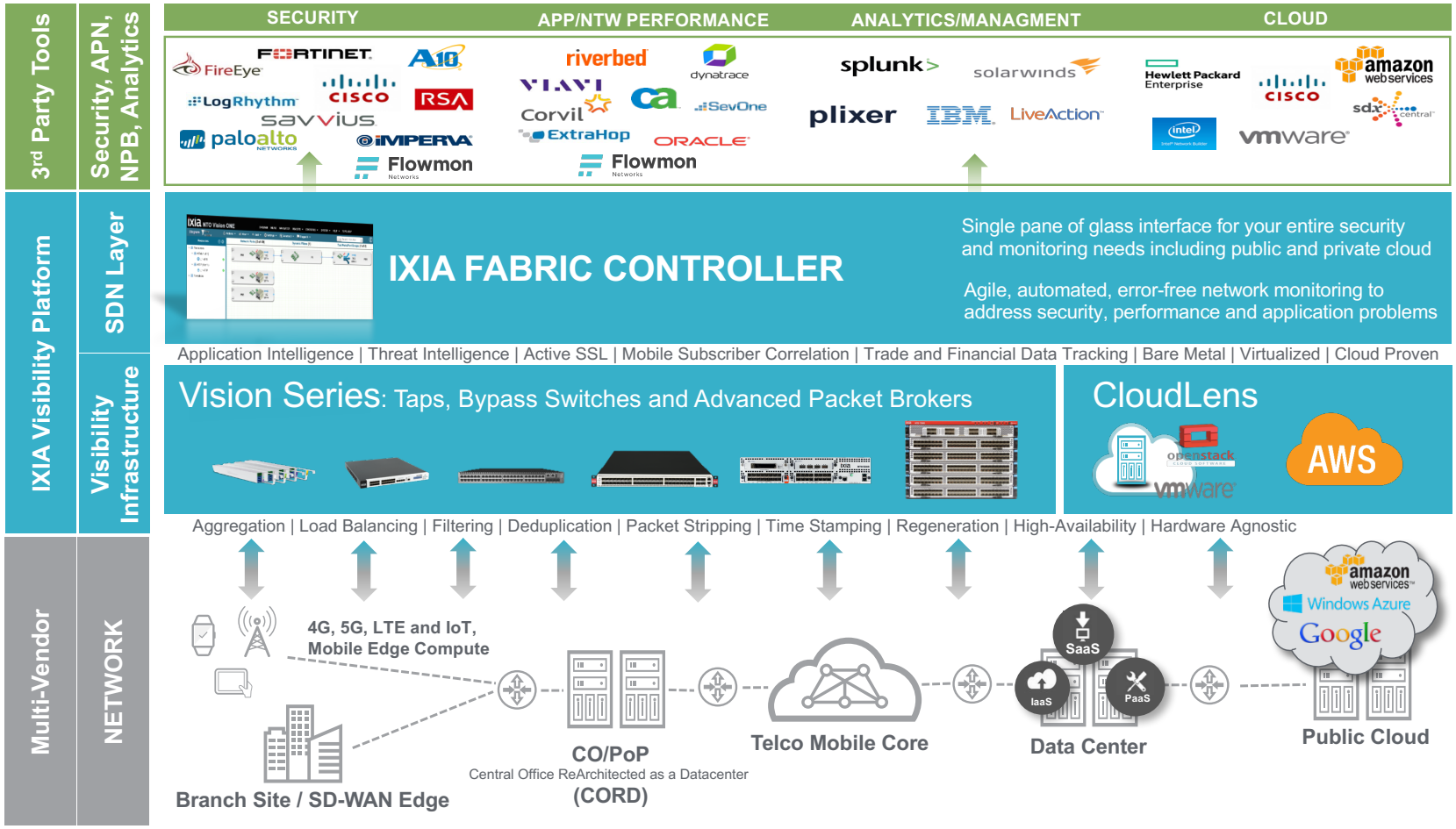

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GETTING INTO DETAILS

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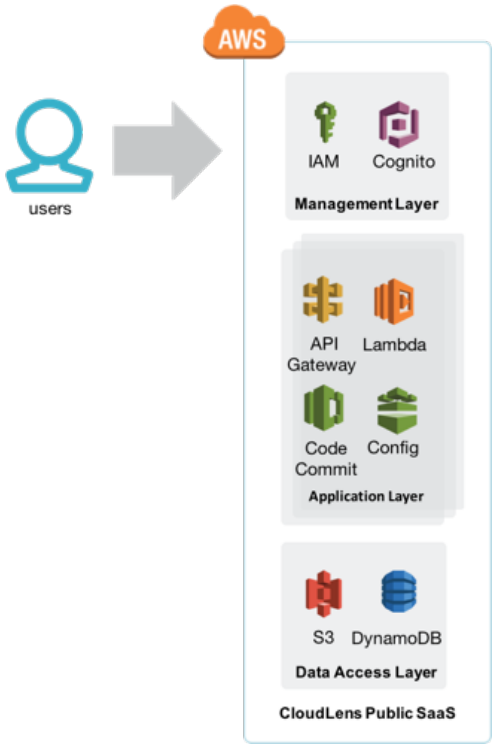
IXIA CLOUDLENS PUBLIC COMPONENTS



CloudLENS Public

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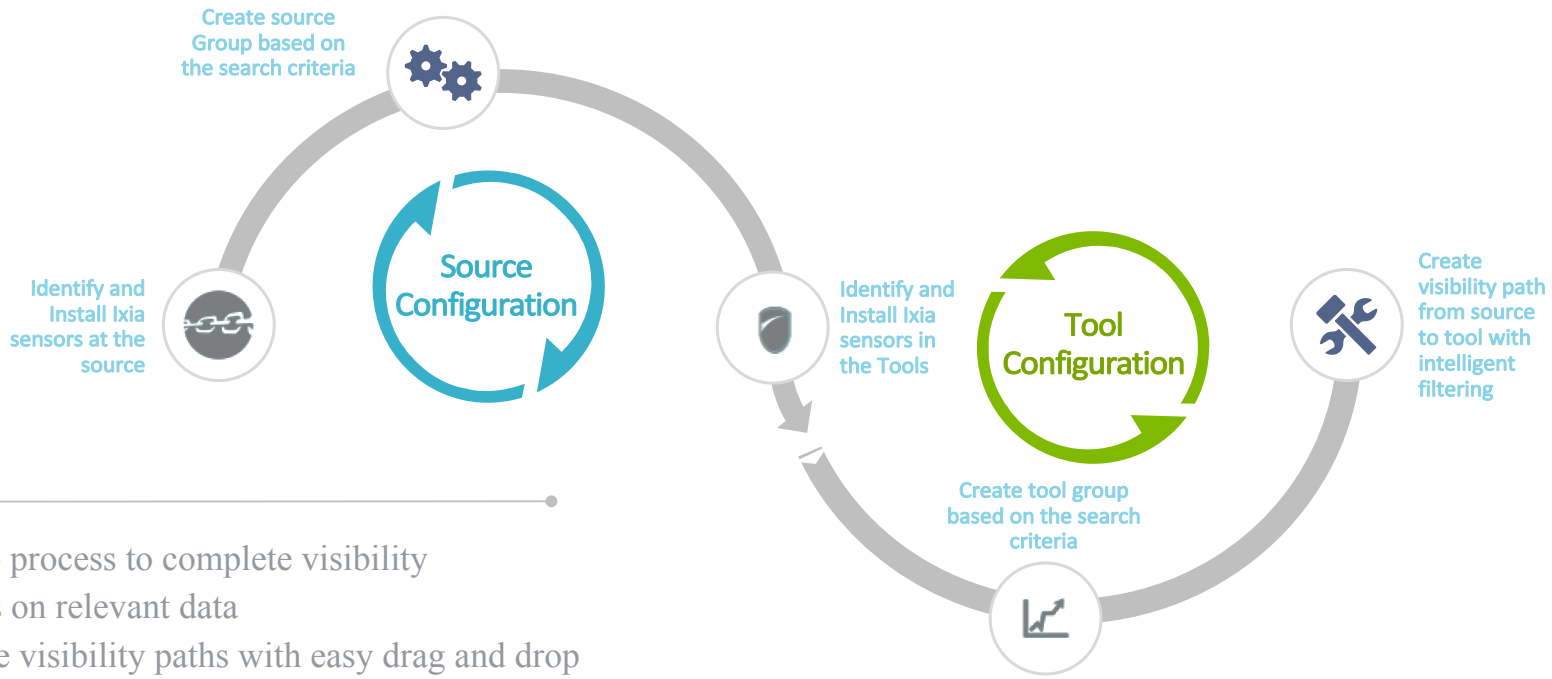
CLOUDLENS PUBLIC SOLUTION WORKFLOW



- ✓ 5 step process to complete visibility
- ✓ Focus on relevant data
- ✓ Create visibility paths with easy drag and drop

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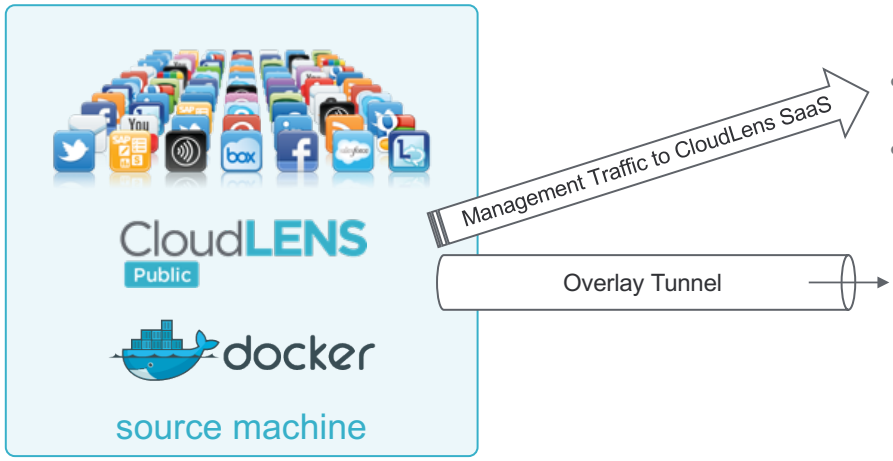
CLOUDLENS PUBLIC SENSORS

Source set up

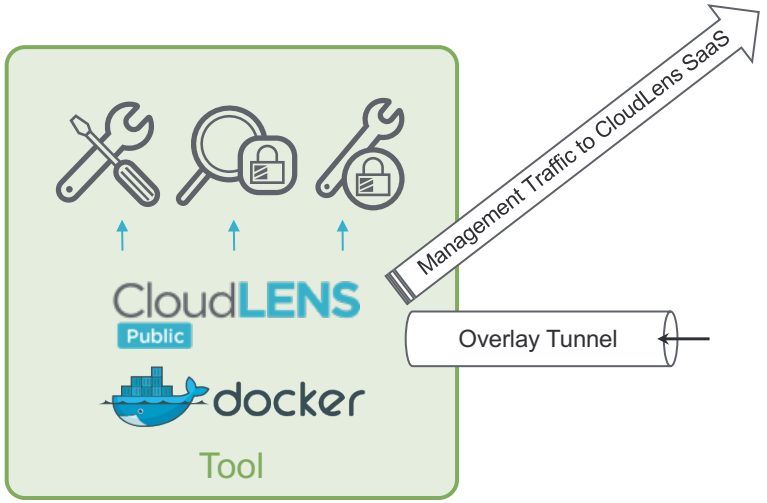


- Connects to central management for its configuration
- Sends only the interesting wire data
- Packets go point-to-point to tools on a overlay network
  - Stays within same security domain
  - Independent of network infrastructure
  - No VMs inline
  - One sensor covers multiple different tools
- Share primary interface, or add dedicated visibility interface(s)

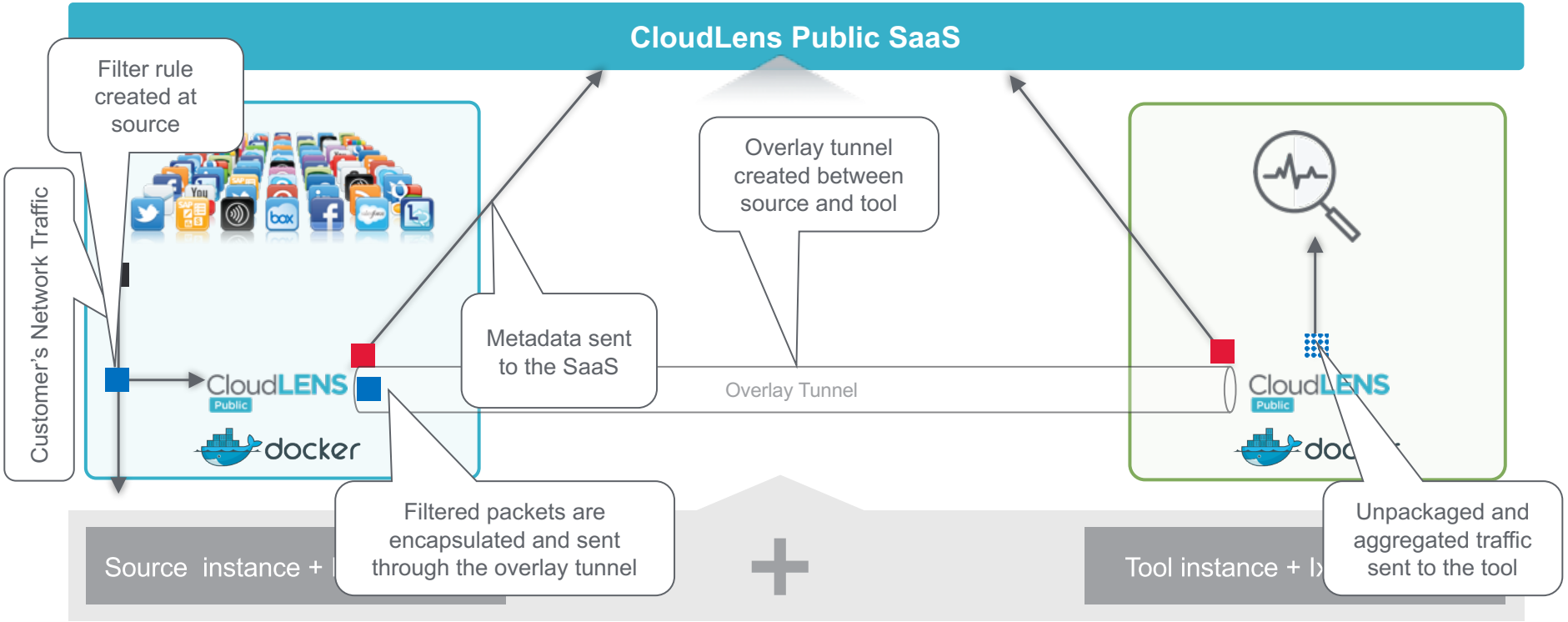
CLOUDLENS PUBLIC SENSORS

Destination set up

- Lives in the tool instance
- Unpacks data from overlay network
- Aggregate tunnels coming from multiple sources
- Manage scale changes for the tool(s)



CLOUDLENS PUBLIC SOLUTION WORKFLOW



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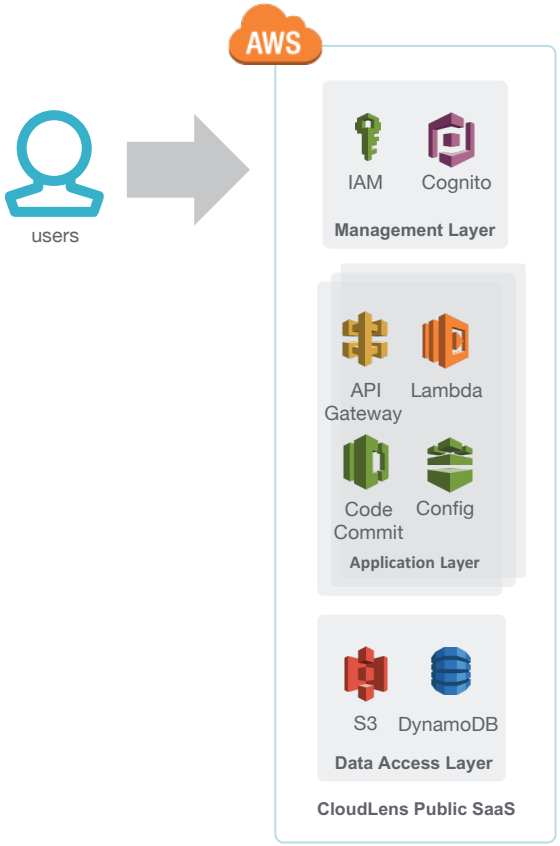
CLOUDLENS PUBLIC SaaS

- Central management service operated in the cloud
- Built for Cloud scale
- Minimize customer configurations
- Make use of aggregated data
- Serverless architecture



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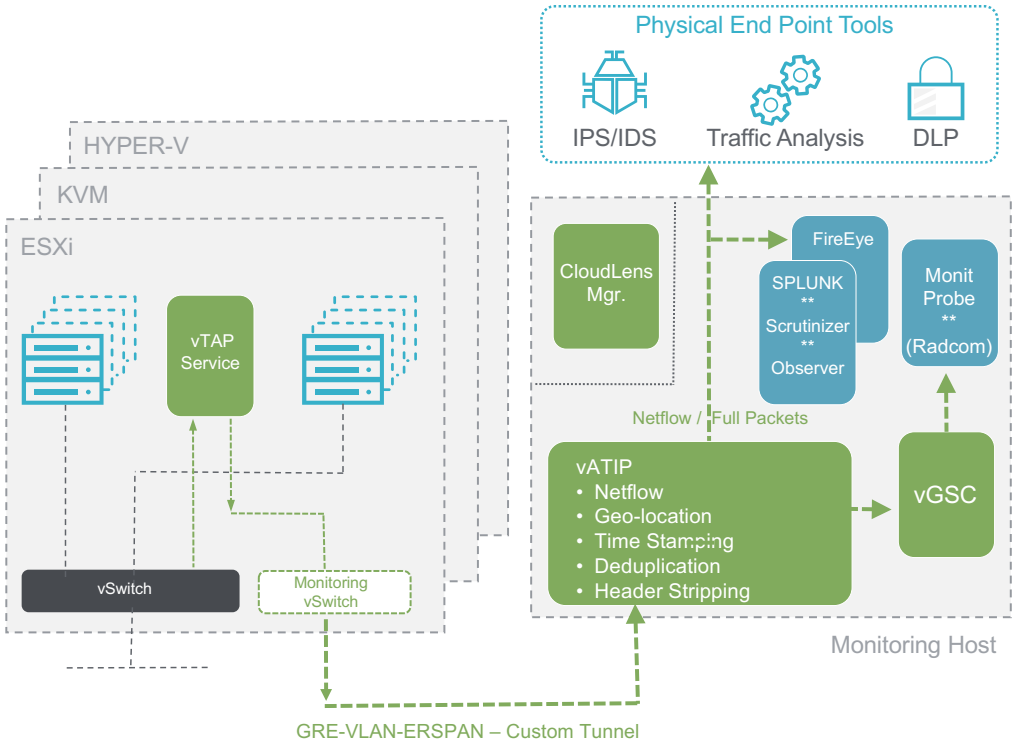
CLOUDLENS PRIVATE CLOUD AND DATACENTER VISIBILITY

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



Virtual Traffic Visibility

- Provides Visibility into Private Cloud and Data Center Network (Inline/ Out of Band)
- Inter-VM Traffic Monitoring
- Multiple Hypervisor Support (ESXi, KVM)
- vSwitch/Router Agnostic (VSS, vDS, Cisco Nexus)
- GRE – VLAN – ERSPAN Protocols
- Monitoring Tool Agnostic
- Centralized Management

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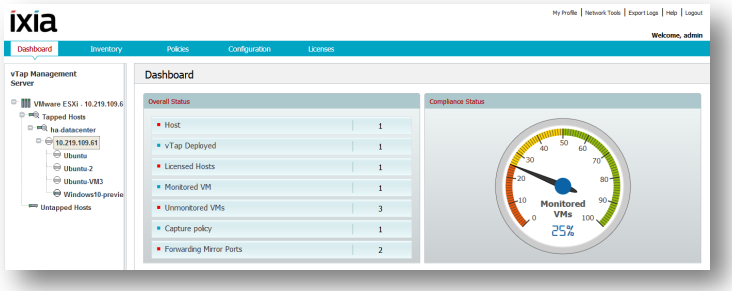
CLOUDLENS VTAP

Virtual Private Cloud and Data Center Tapping Module

- Tapping of inter-VM traffic
- Unified Visibility Management Across Different Market Leading Hypervisor Platforms
    - Vmware ESXi, Microsoft Hyper-V, KVM, OpenStack KVM
- Multi-Tenancy Support in OpenStack Environments
- Automated Deployment and Monitoring
- Packet Filtering at the Source for Maximum Scalability and Low Overhead



POLICY DRIVEN VISIBILITY MANAGEMENT

CloudLens vTap Management Based on Capture policies and Forwarding policies

- **Capture Policies**
  - Determine which traffic to monitor
  - Filter traffic based on L2-L4 headers
  - Benefit: Optimize utilization to focus on relevant traffic only

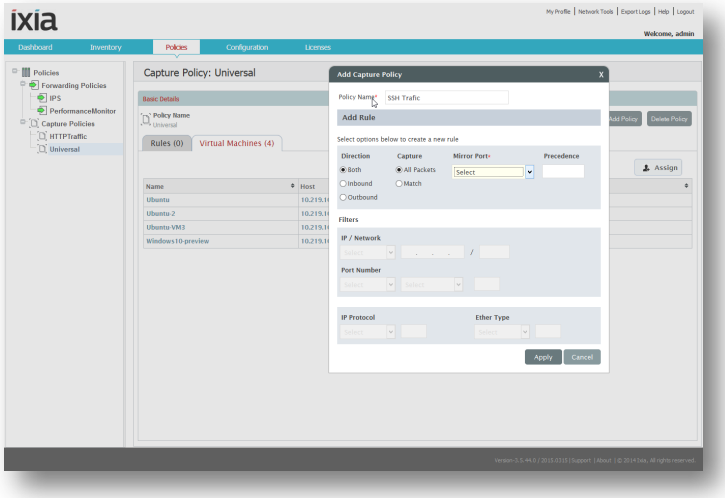
- **Forwarding Policies**
  - Determine how and where traffic should be forwarded
  - GRE/ERSPAN used for forwarding encapsulated traffic
  - VLAN forwarding for direct routing

CENTRALIZED MANAGEMENT

CloudLens Service Manager

Central Management of vTaps and Policies

- **Key functions**
  - Virtual Taps Deployment & Management
  - Configuration
  - License Management
  - Software Upgrades
- **Installation**
  - Can be deployed anywhere as a Virtual Appliance
  - Can Manage vTaps on Different Hypervisors
  - Requires a direct path to all monitored hosts



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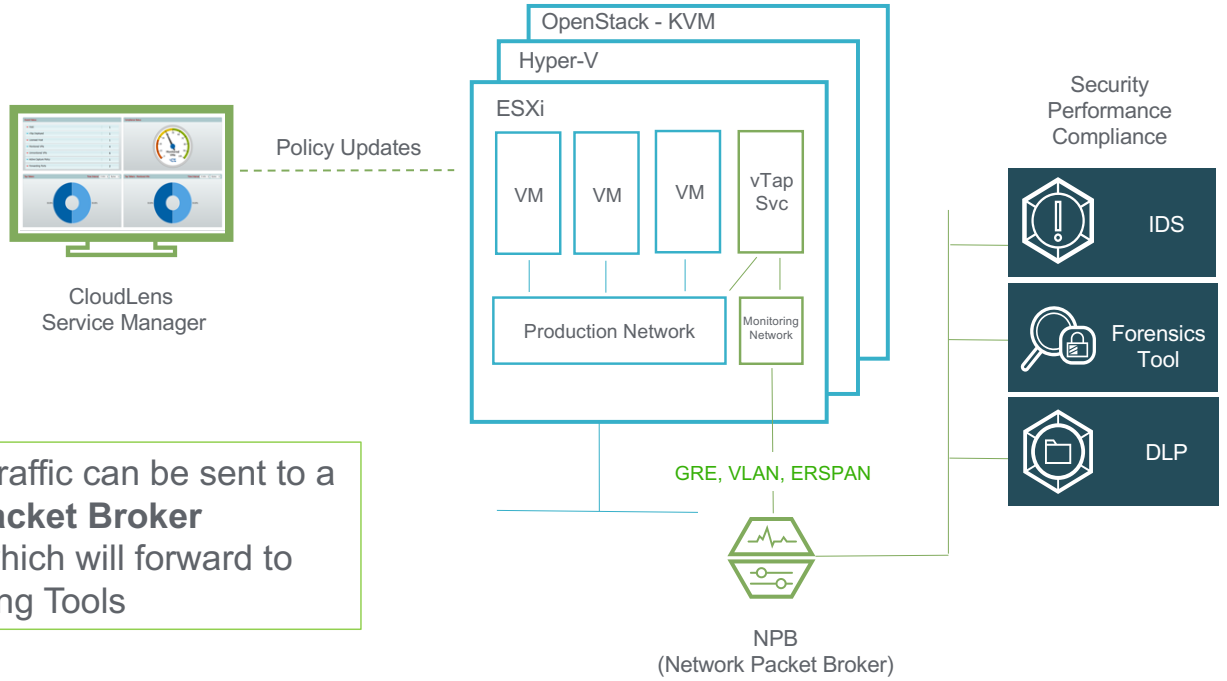
GETTING VIRTUAL TRAFFIC TO MONITORING TOOLS

CloudLens vTap – Hybrid Visibility Deployment



Monitored Traffic can be sent to a **Physical Packet Broker** Appliance which will forward to the Monitoring Tools

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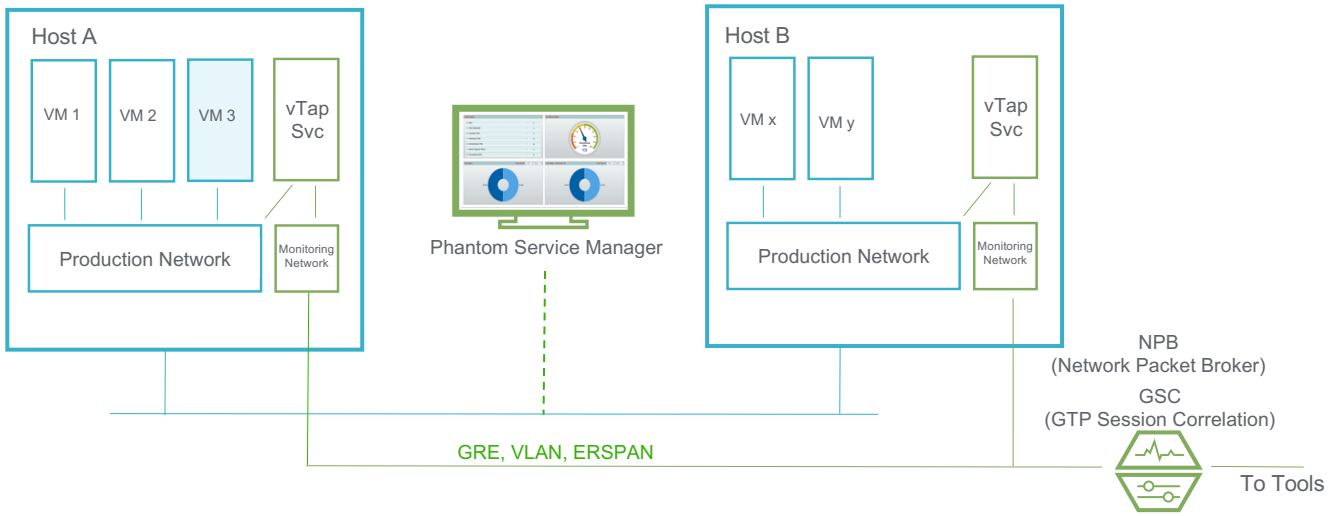
GETTING VIRTUAL TRAFFIC TO MONITORING TOOLS

CloudLens vTap – Roaming VMs Support



As VMs move from one host to another, CloudLens' VM based monitoring automatically detects the change and reapplies the monitoring policies at the VM's new location

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CLOUDLENS VTAP

Tapping Methods for OpenStack Environment

KVM/OVS direct integration

- Well suited for infrastructure monitoring
- No tenant footprint (tapping occurs in OVS)
- Less virtual infrastructure overhead
- Integrates with Nova Services
- Dependent on OVS – requires Compute access from Administrator
- **Downside:** Currently, no control of consumed resources

Tap As A Service (TaaS)

- Monitoring at the Tenant level (Multi-tenancy Support)
- Service VM implementation – Controlled Resource Allocation
- Requires OpenStack updates (Port security extension + TaaS)
- Integration with OpenStack Nova and Neutron Services
- Per Tenant Service Deployment using Heat Template
- **Downside:** overhead required for the Service VM (SVM)

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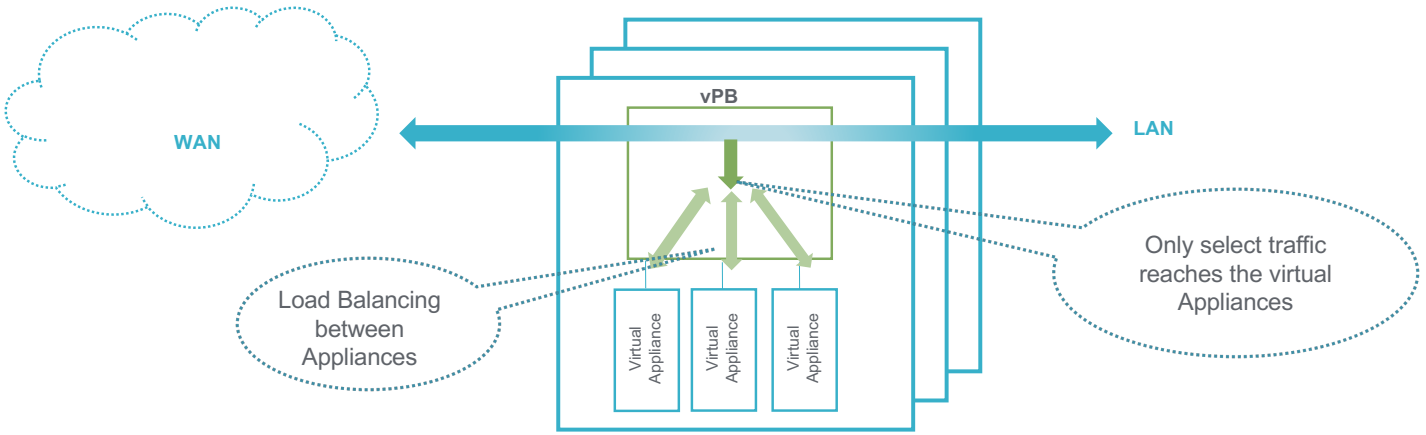
CLOUDLENS VIRTUAL PACKET PROCESSING (CLOUDLENS VPB)

Features

- GRE Tunnels Termination
- GRE Origination
- NPB Functions
  - 10000 rule Filtering (L2-L4) & Forwarding
  - Traffic Forwarding to Virtual Ports (L2) or Over IP GRE Encapsulated Tunnels
  - Packet Processing (Header Stripping, Deduplication)
- Load Balancing

GETTING VIRTUAL TRAFFIC TO MONITORING TOOLS

CloudLens vPB – Selective Load Balancing for Inline Devices



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VIRTUAL APPLICATION INTELLIGENCE PROCESSING

Virtual Application & Threat Intelligence Processor (vATIP)

- Netflow generation
- Application Filtering
- Data masking
- App Intelligence (Geo-location)

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