

Identifying The Needle In The 10/40/100G Haystack

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Intelligent Access and Monitoring Architecture



Goal

Present a methodology and solution of leveraging
access switching to overcome current and future
Lawful Interception challenges

Introduction to Net Optics

Customers

- 85% of the Fortune 100
- 52% of the Fortune 500
- 7,500 Global Deployments

Highlights

- Founded in 1996, Private, Self-Funded
- 60 Quarters of Growth & Profitability
- Strong Management Team
- Sales Offices in New York, Atlanta, Germany, China

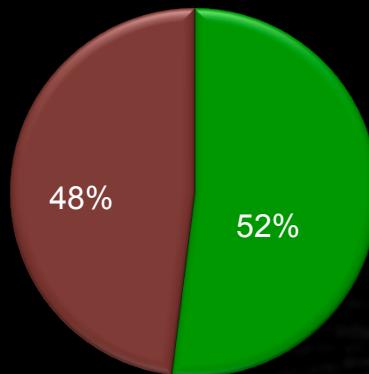
Go to Market Strategy

- 30% Direct Sales
- 25% OEM/Partner Relationship
- 45% Global Channel

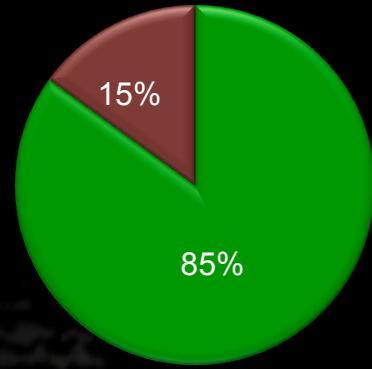
Technology

- Four new inventions each year
- 20+ patents and patent pending applications

Fortune 500 Customers



Fortune 100 Customers



Cause and Effect

Lawful Interception solutions have changed over time

Industry/
Networking

Data Center

Lawful
Interception

Networking Industry Trends and Pain Points

Network must be designed for scalability & agility

New Applications

- VoIP
- 4G/LTE
- Video

Network Complexity

Compliance

Internal/External Intrusions

Lawful Interception

Cybercrime

**Security must be architected in,
not a point solution**

No visibility into the virtualized network

Virtualization

**Explosive Growth
CAPEX Improvements**

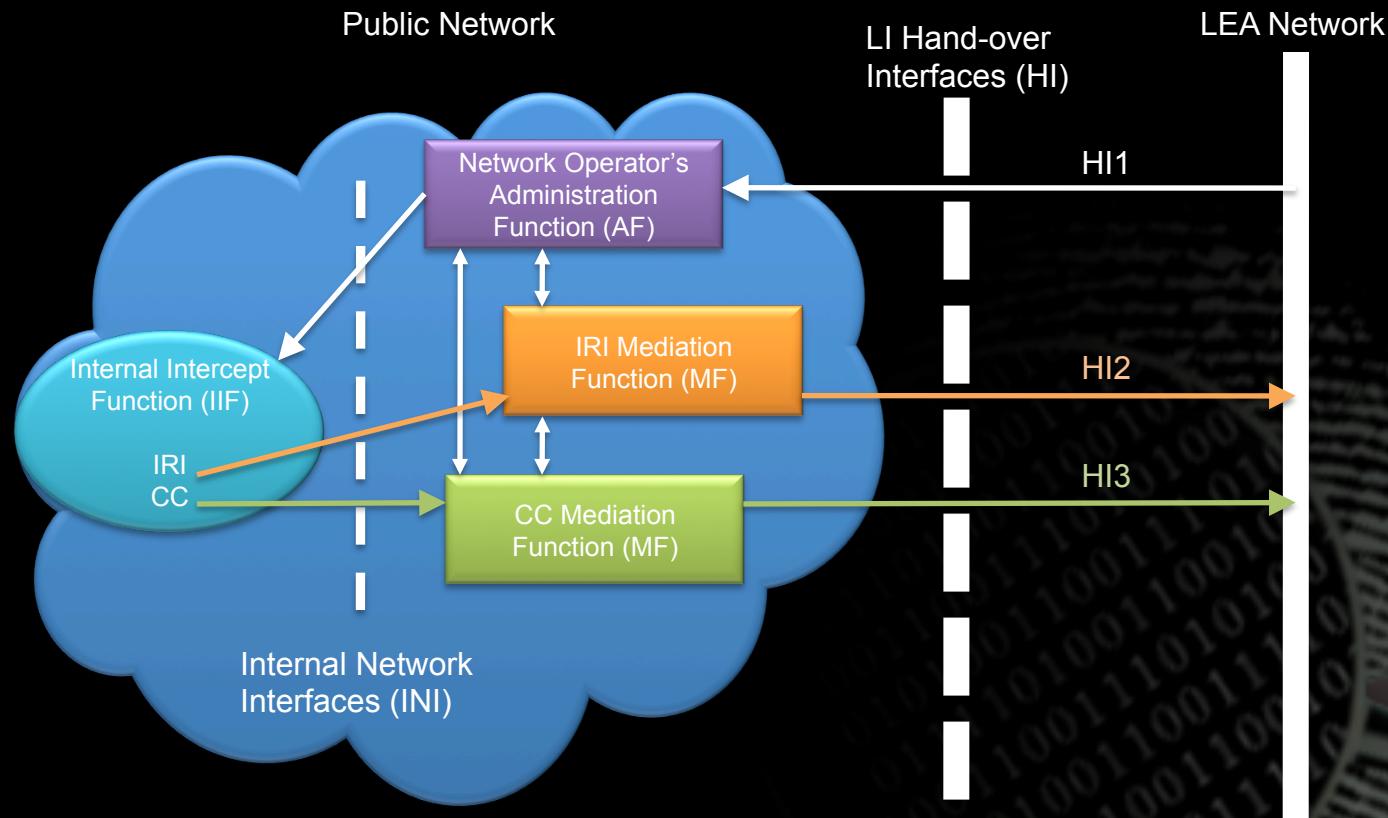
Network Speeds

**Link Saturation
Oversubscription
10G 40G 100G**

Tools & instruments can't keep up

Trends Affecting Lawful Interception

Triple Play Networks, Increased bandwidth, advanced services driving new Lawful Interception design requirements



Source: ETSI ES 201 158

Unique Operational Challenges With 10G

Common Lawful Interception deployment challenges:

Lack of Tools

- Availability of 10G monitoring tools and 10G security tools
- Tools ability to operate at line rate with low latency

Quality

- Content classification as an example: It's hard enough on 1G...

Cost

- New 10G tools (not the 10G network interface cards)
- Leveraging existing investments of 1G tools
- Cost of knowledge, migration, operations = TCO

Source: Net Optics Customer Advisory Board 7/2010

Other Technical Challenges

Jitter, Oversubscription and Blocking are more severe with 10G networks:

Switching Oversubscription

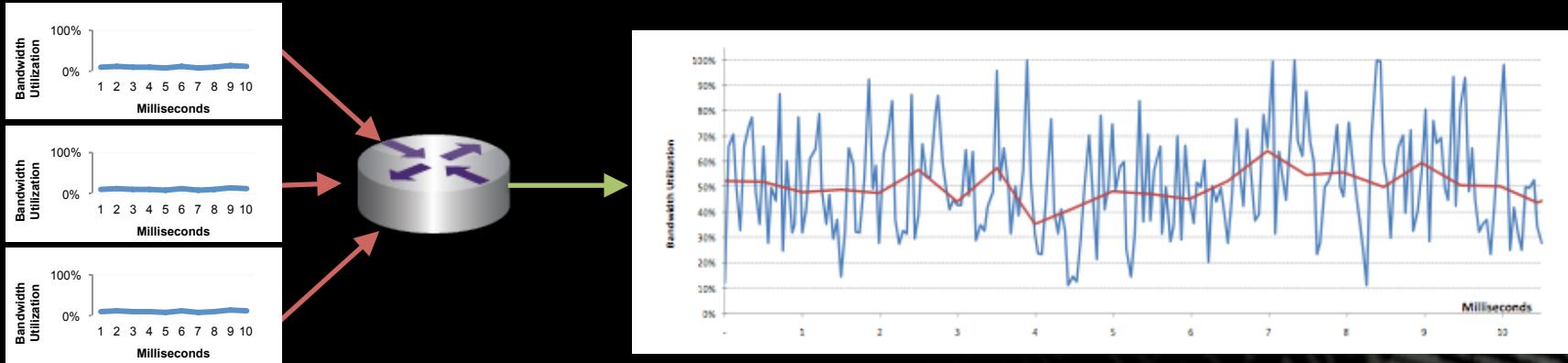
- If the queue exceeds the size of the physical hardware buffer, packets are dropped

Latency and Jitter

- At any time, only one packet can be transmitted from each physical output port of a switch
- Resource contention might happen when two packets arrive from separate input ports to the same output port (e.g. uplink) at about the same time

Microburst

Even at low traffic, when average traffic is low, head of line blocking phenomenon (“oversubscription”) causes queuing → short periods where the instantaneous bandwidth can reach maximum utilization

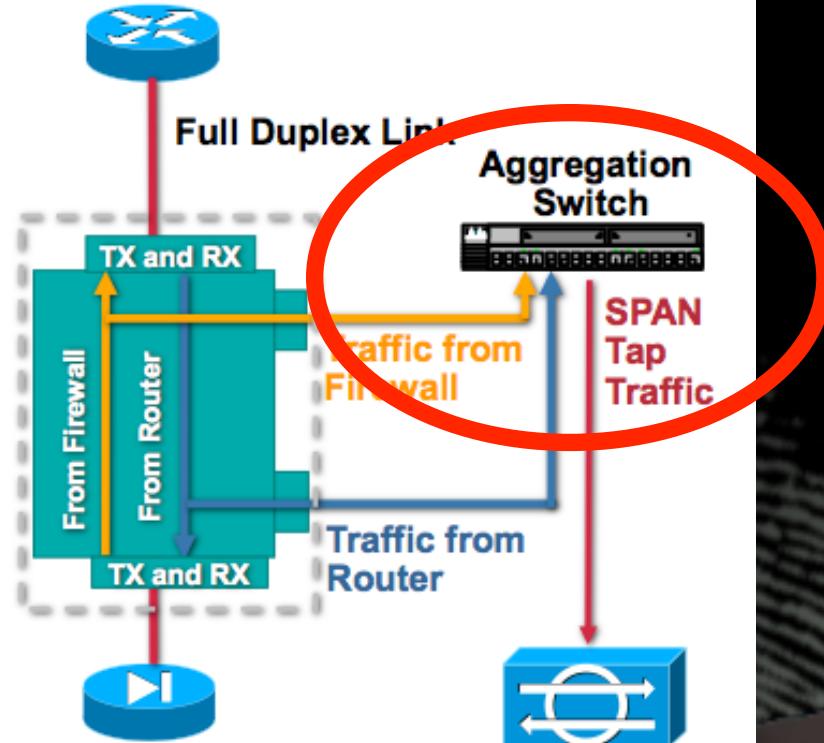


Oversubscription

Using a Network Tap

Cisco.com

- Tap splits full duplex link into two streams
- For sensors with only one sniffing interface, need to aggregate traffic to one interface
- Be careful of aggregate bandwidth of two tapped streams
 - Don't exceed SPAN port or sensor capacity



SEC-2030
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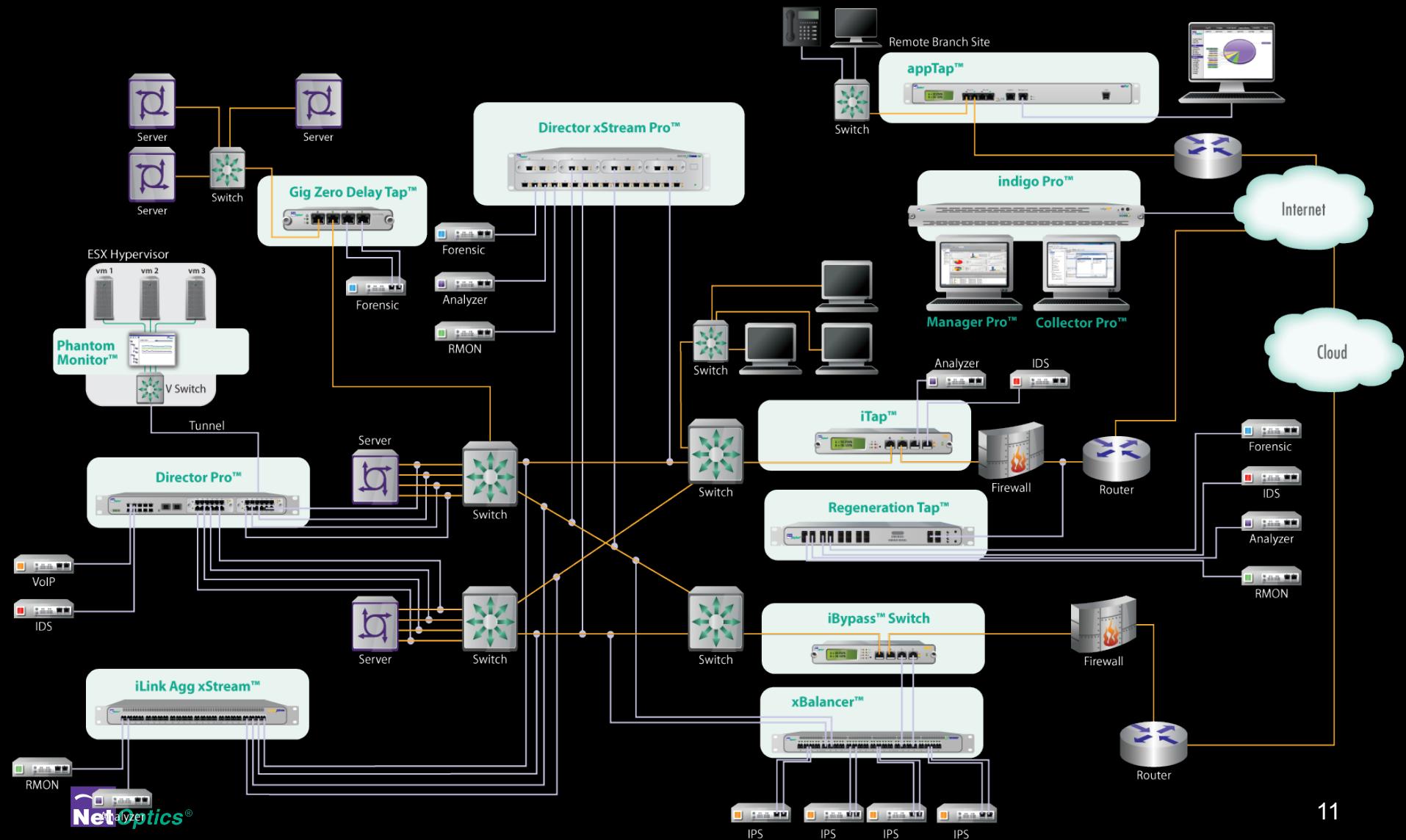
Source: Cisco

Total Visibility Across Your Entire Network

Data Center

Core Network

Remote Branches

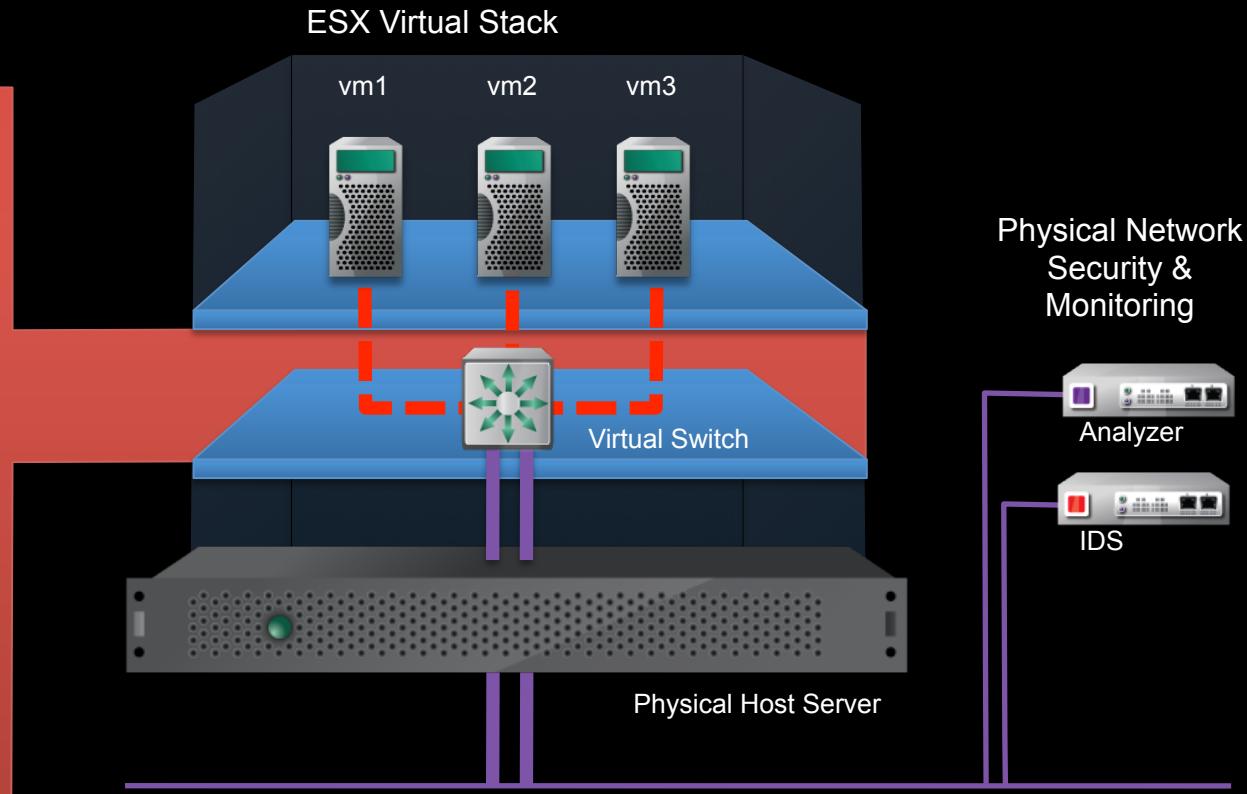


The Visibility Challenge In The Hybrid Data Center



Virtualization Creates Security, Monitoring and Compliance Risks

- No visibility into traffic, vulnerabilities and threats
- Data passing between servers not captured for auditing
- Resource utilization can pinpoint source of issues

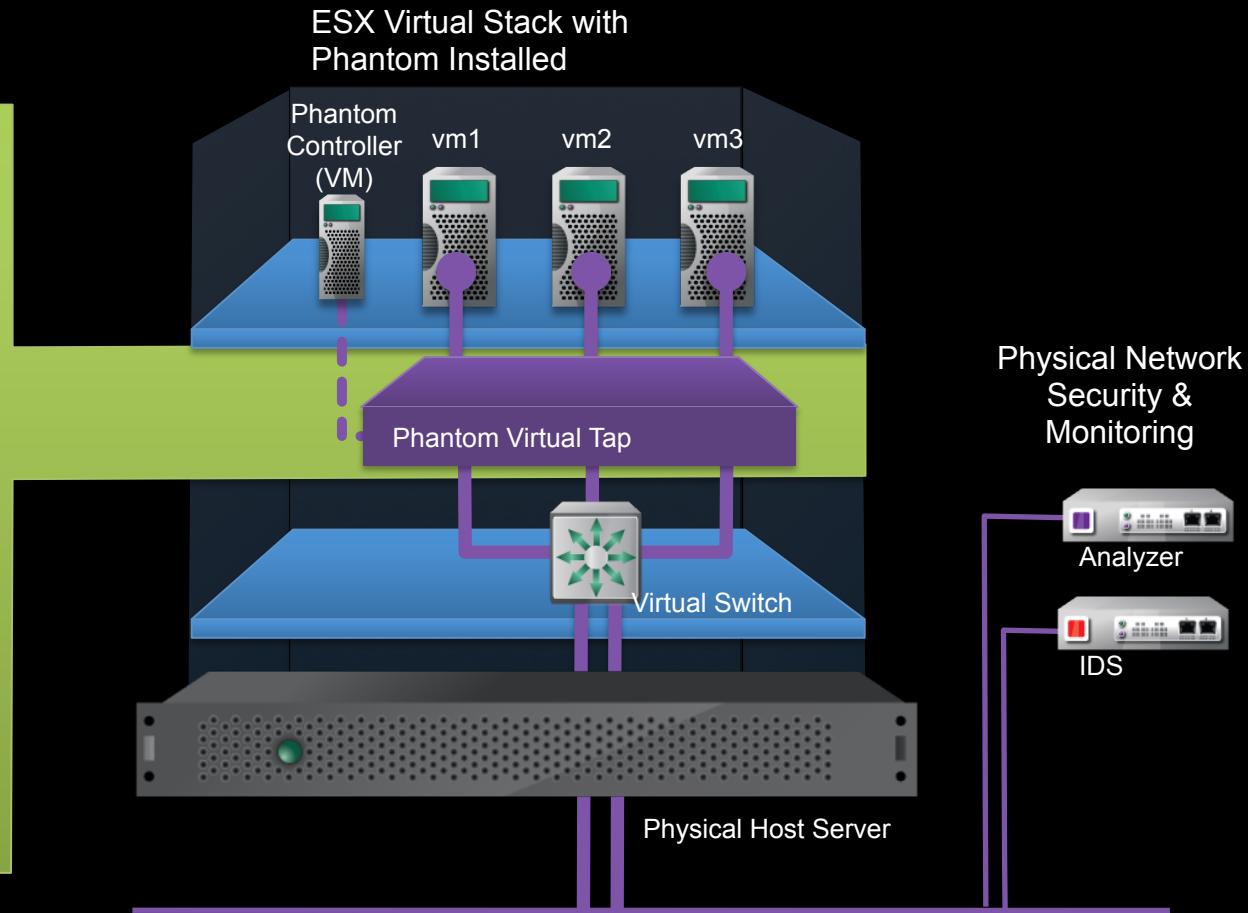


Goal: Increasing Visibility, Extending Wire Capabilities



Enables Security, Performance Monitoring and Compliance

- 100% visibility of inter-VM traffic
- Bridge virtual traffic to physical tools
- Eliminate barriers to virtualization
- Achieve security and compliance standards in a virtualized environment

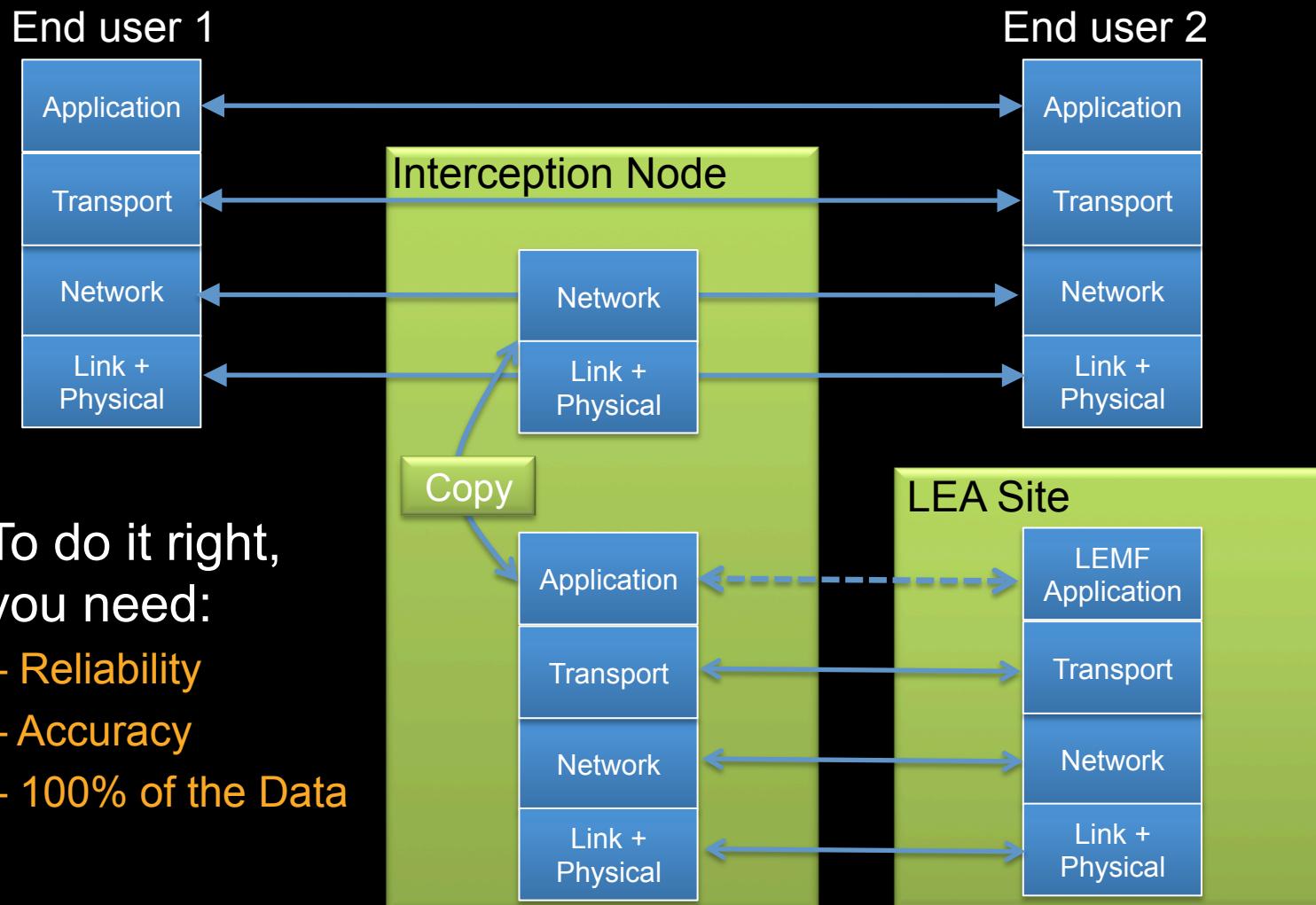


What Customers Want

Meet Lawful interception challenges in high capacity networks

But how?

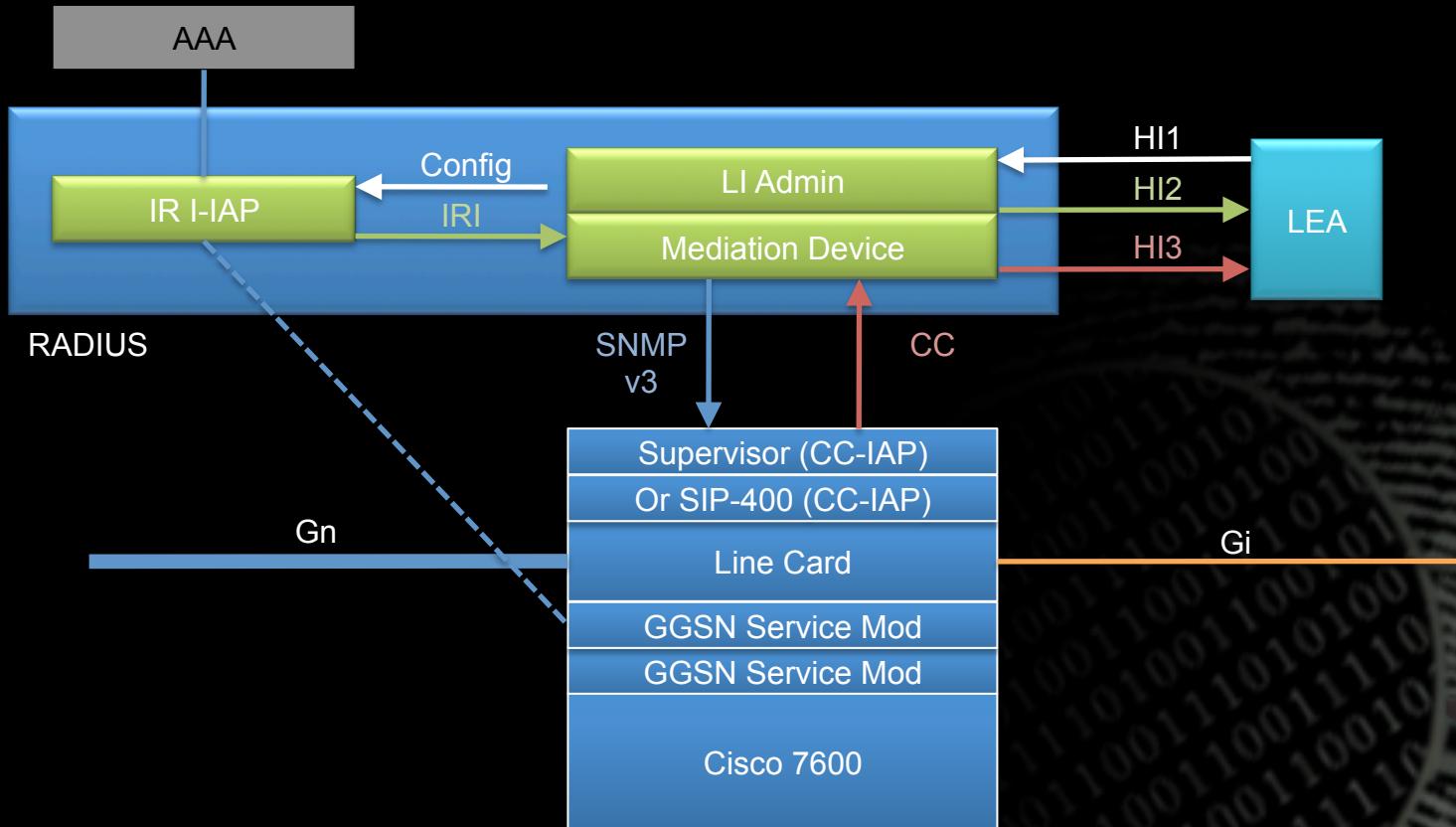
The LI Foundation: Reliable Copy



Source: ETSI TR 101 943 Concepts of Interception in a Generic Network Architecture

Current Approach Is Not Scalable

Invest in new systems capable to handle 10G/40G/100G
– Packet duplication add burden on the network

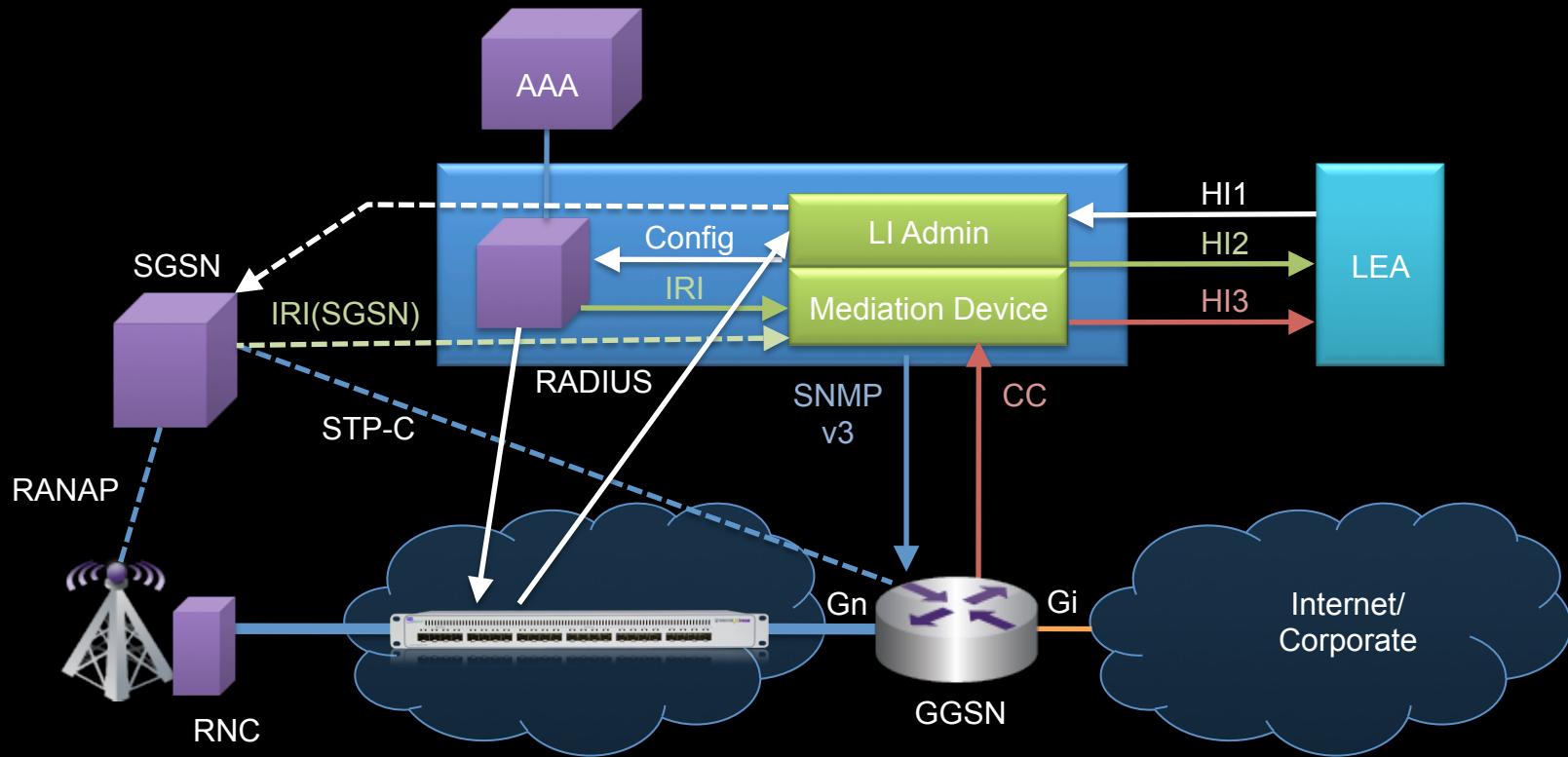


Source: Cisco systems 2010: Lawful Interception for 3GPP: Cisco Service Independent Intercept in the GGSN

The Solution: Leveraging Access Switching

Leveraging Access Switching

– Packet duplication does not burden on the network



Source: Cisco systems 2010: Lawful Interception for 3GPP: Cisco Service Independent Intercept in the GGSN

Access Switching: Do More With Less

10/40/100 Load Balancing

- Share the load between multiple tools
- Centralized intelligence for more endpoint
- Leverage existing / cheap / 1G tools
- Plan for growth

Pre-filter with DPI to detect desired traffic on any port

- Pre-filtering is a mature technology
- DPI allows to identify data of interest and forward to the monitoring/ recording tool

GRE tunneling

- Distribute the collection infrastructure

Cloud Monitoring

- Inter-VM and cloud based monitoring

Any type of media

- Fiber, copper or both

Summary

Modern and advanced Access switching technology provides the scalable solution to meet Lawful Interception challenges in high capacity networks by focusing on improving collection infrastructure.

Thank You



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