



The Evolution Of The High-Performance Trading Fabric ... And Where We Are Heading

Moderator: Paul Jameson, Global Director, Cisco

Panelist: Raymond Russell, CTO, Corvil

Panelist: Dave Malik, Senior Director, Cisco

Panelist: Angelo Preci, Managing Director, Fixnetix

April 7, 2014

... Today's Trading Imperatives

**How can I optimize
application
performance?**



**How can I enable event-
based dynamic decision
making?**

**How can I enhance
analytics in support of
risk/compliance?**

**How can I take
accuracy to the
next level?**

**How can I ensure
scalability?**

How Can I Ensure Performance and Intelligence?

Panel Discussion: The Evolution of the High-Performance Trading Fabric



Dave Malik
Senior Director
Solution Architecture
Cisco Systems



Raymond Russell
Chief Technology Officer
Corvil



Angelo Preci
Managing Director of Operations,
North America
Fixnetix

Panel Questions

- What are you doing to optimize overall application performance?
- How important is accuracy as you focus on enhancing analytics in support of risk/compliance?
- Managing scalability of these environments is a challenge. What are your firms doing to meet these requirements for your clients?
- What are your thoughts on 'SDN' constructs in supporting high performance workloads? Is it just a buzzword or do you think it has any relevance?

The network is the place to see your business in the now



All activity



All interactions



All communications

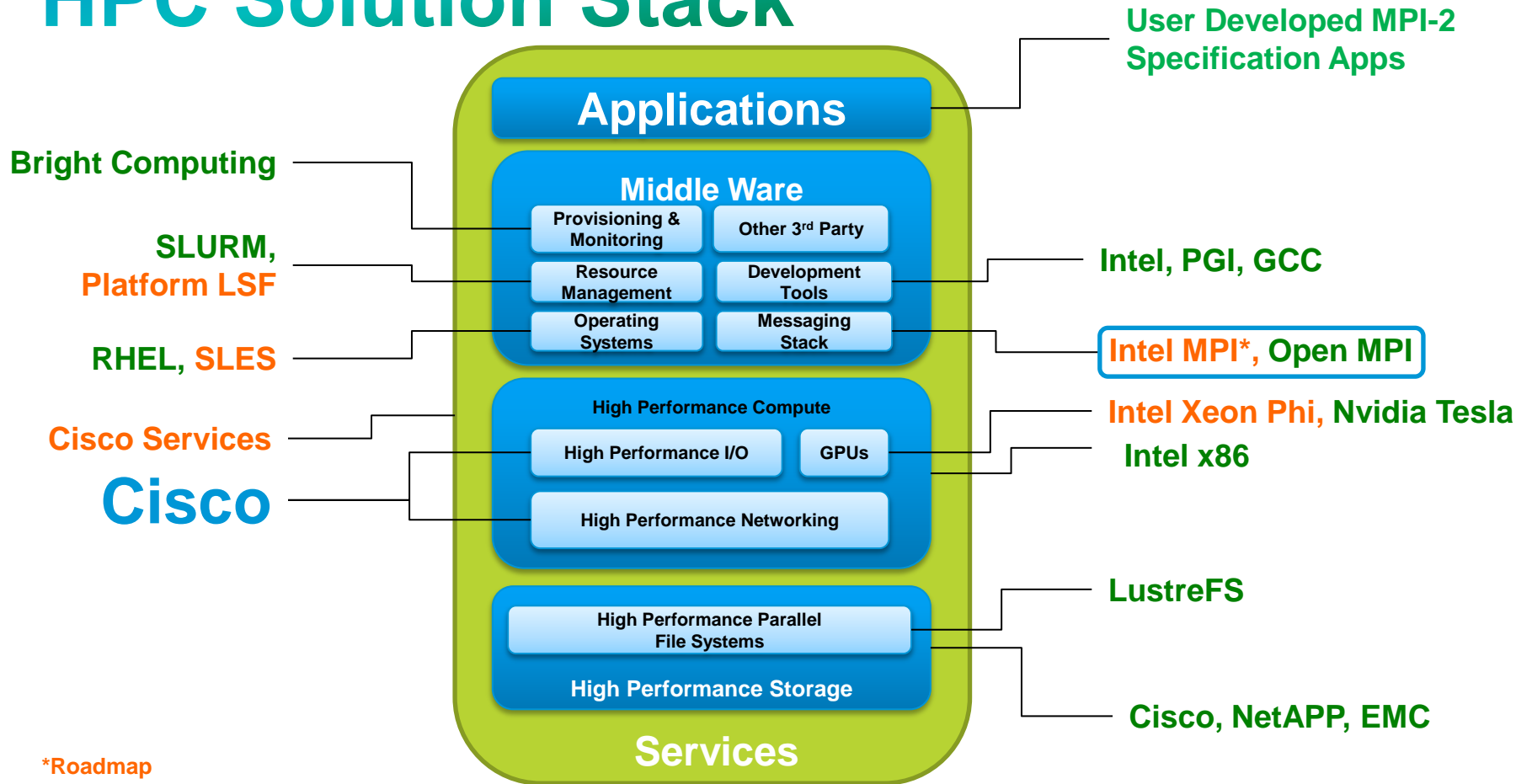


All transactions



All applications

HPC Solution Stack



*Roadmap

Application Awareness and Integration

Example: Hadoop Cluster Job(s) – Duration - Buffer Utilization Map

```
nexus-001# jobsBuffer
Hadoop Job Info ...
```

```
=====
1 jobs currently running
```

JobId	RunTime (secs)	User	Priority
job_201306131423_0009	120	hadoop	NORMAL

```
=====
Buffer Info - Per Port
```

Port	Server	1sec	5sec	60sec	5min	1hr
Eth1/1	c200-m2-10g2-001	0KB	0KB	0KB	0KB	0KB
Eth1/2	c200-m2-10g2-002	384KB	384KB	768KB	768KB	768KB
Eth1/3	c200-m2-10g2-003	384KB	384KB	1152KB	1152KB	1152KB
Eth1/4	c200-m2-10g2-004	384KB	1536KB	1536KB	1536KB	1536KB
Eth1/5	c200-m2-10g2-005	384KB	768KB	1152KB	1152KB	1152KB

```
.
.
```

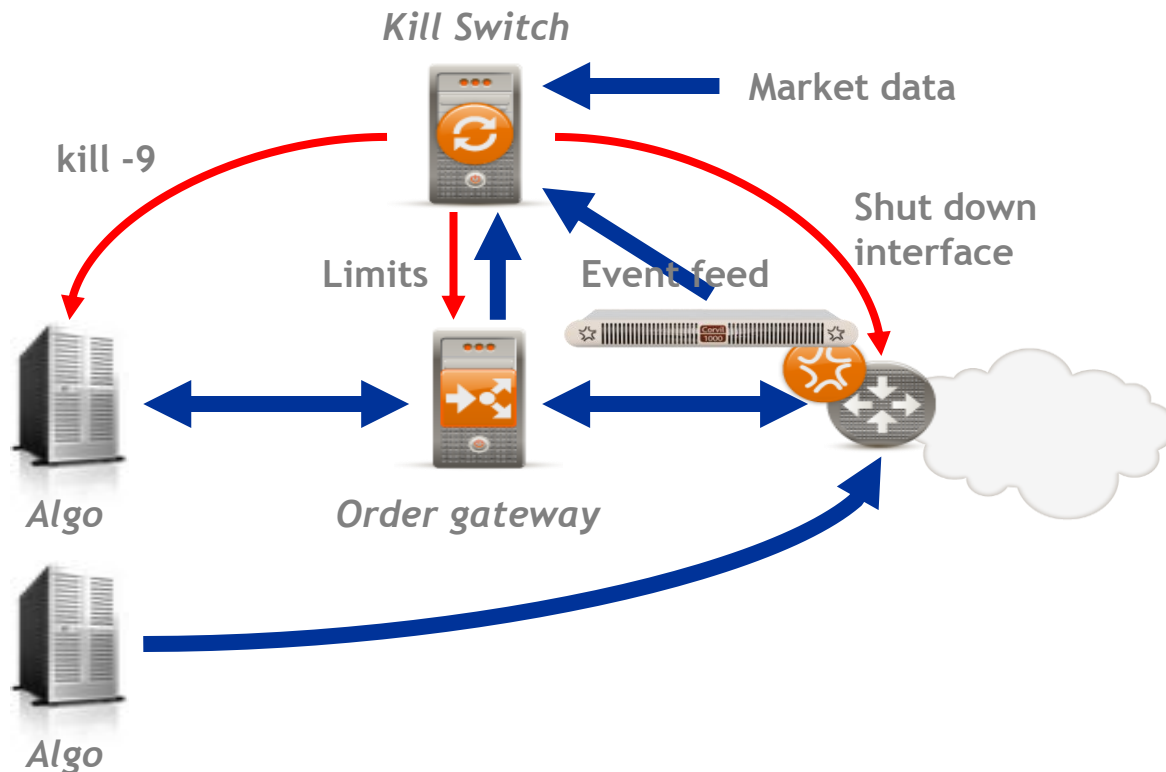
What jobs were running during peak buffer usage ... and for how long were they running

Kill-switch

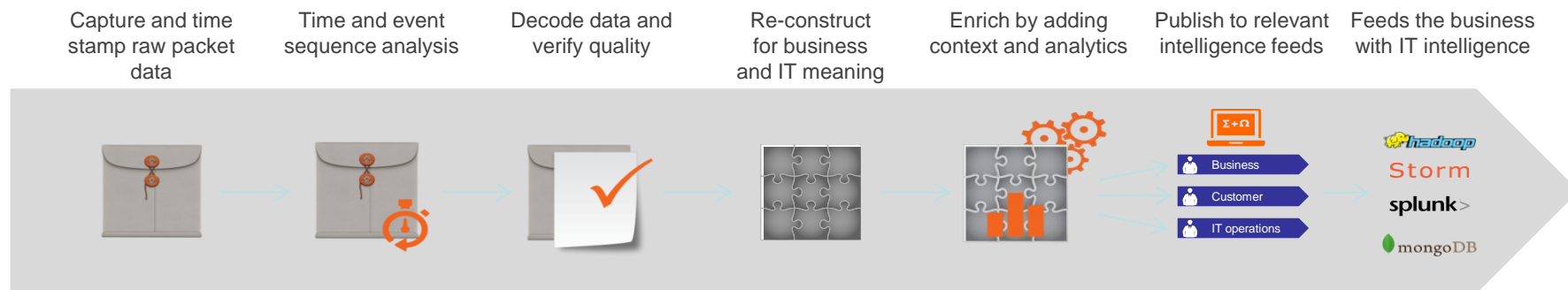
- Still uses drop-copy from gateways
- Also receives all wire events from CNE

Exercises control via:

- Trade limits
- Kill processes
- Terminate sessions
- Shut down network interfaces



The Corvil approach



- Data acquisition using peer to peer distributed architecture
- Full picture with synchronization across appliances
- Round trip: track across hops

- Shortest time scales for submicrosecond granularity
- Reconstruct event sequencing
- Pioneered moving time stamping into ecosystem partners' switches

- Make packet data usable: decode
- Never use corrupted data: proprietary analytics detect and screen out

- Developed wide array of decoders for reconstructing data for every layer, network to transactions

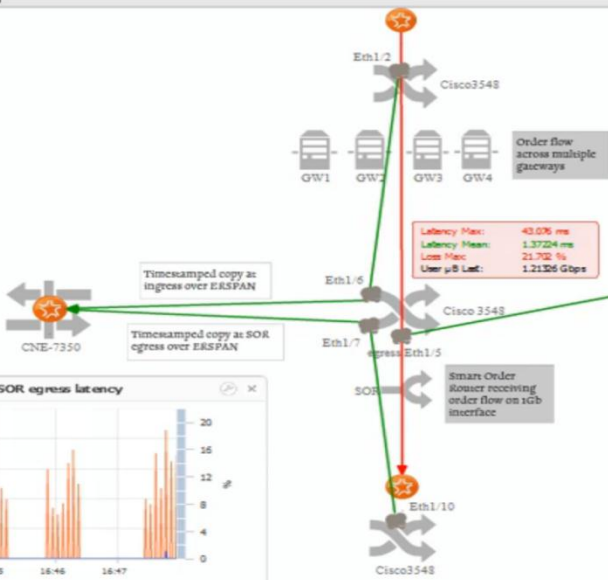
- Add context: match with app data
- Produce meta data and event recognition
- Patented algorithms

- Filter, classify, and publish for use by business and IT
- Full picture on the business and IT, as it happens
- Consume in Corvil, in-house or 3rd party apps

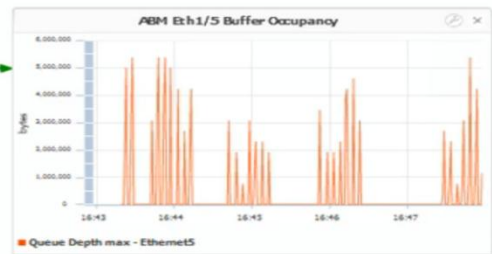
- Integrates with the leading big data management tools
- Scalable and flexible use of Corvil IT intelligence feeds
- On-demand development of analytics
- Continuous business value

Name: Cisco ABM Save

Layout: organic Clear All



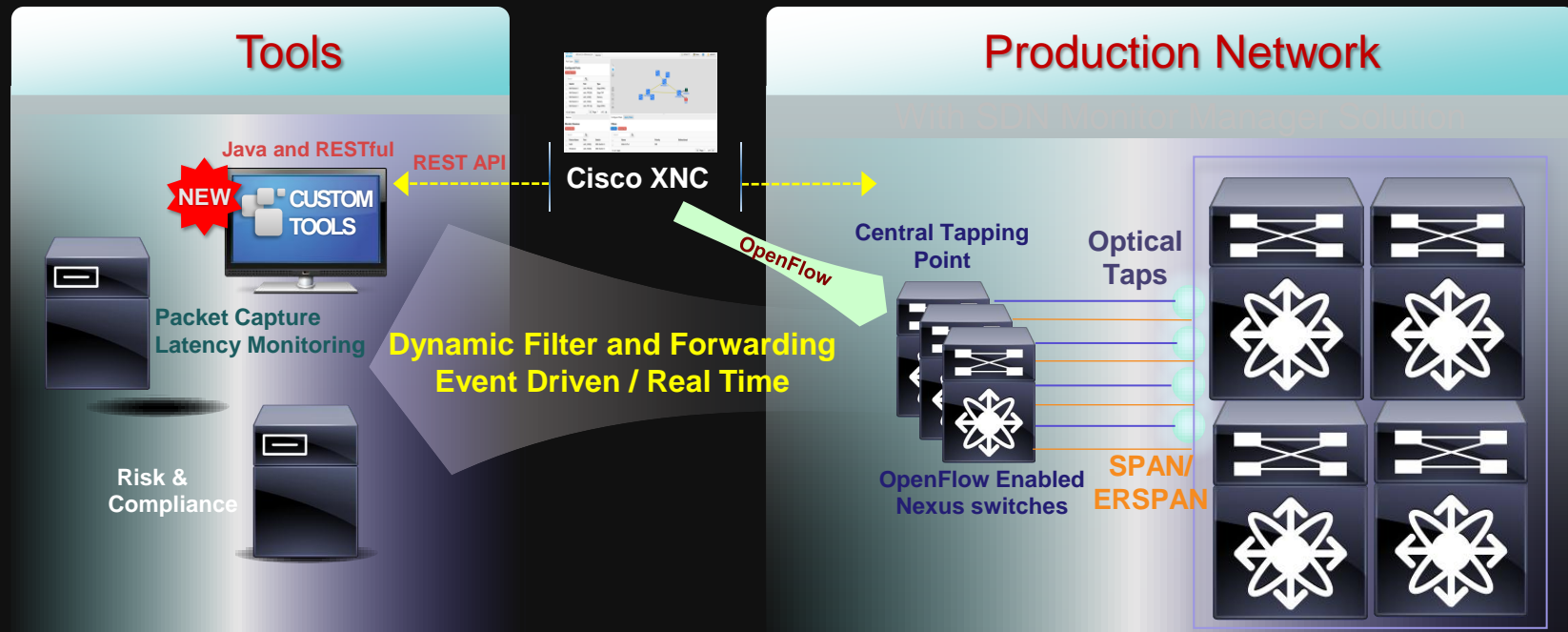
Latency Max: 43.036 ms
Latency Mean: 1.37224 ms
Loss Max: 21.702 %
User µS Lat: 1.21206 Gops



Buffer Occupancy visibility

Scalable Solution for Fabric Monitoring

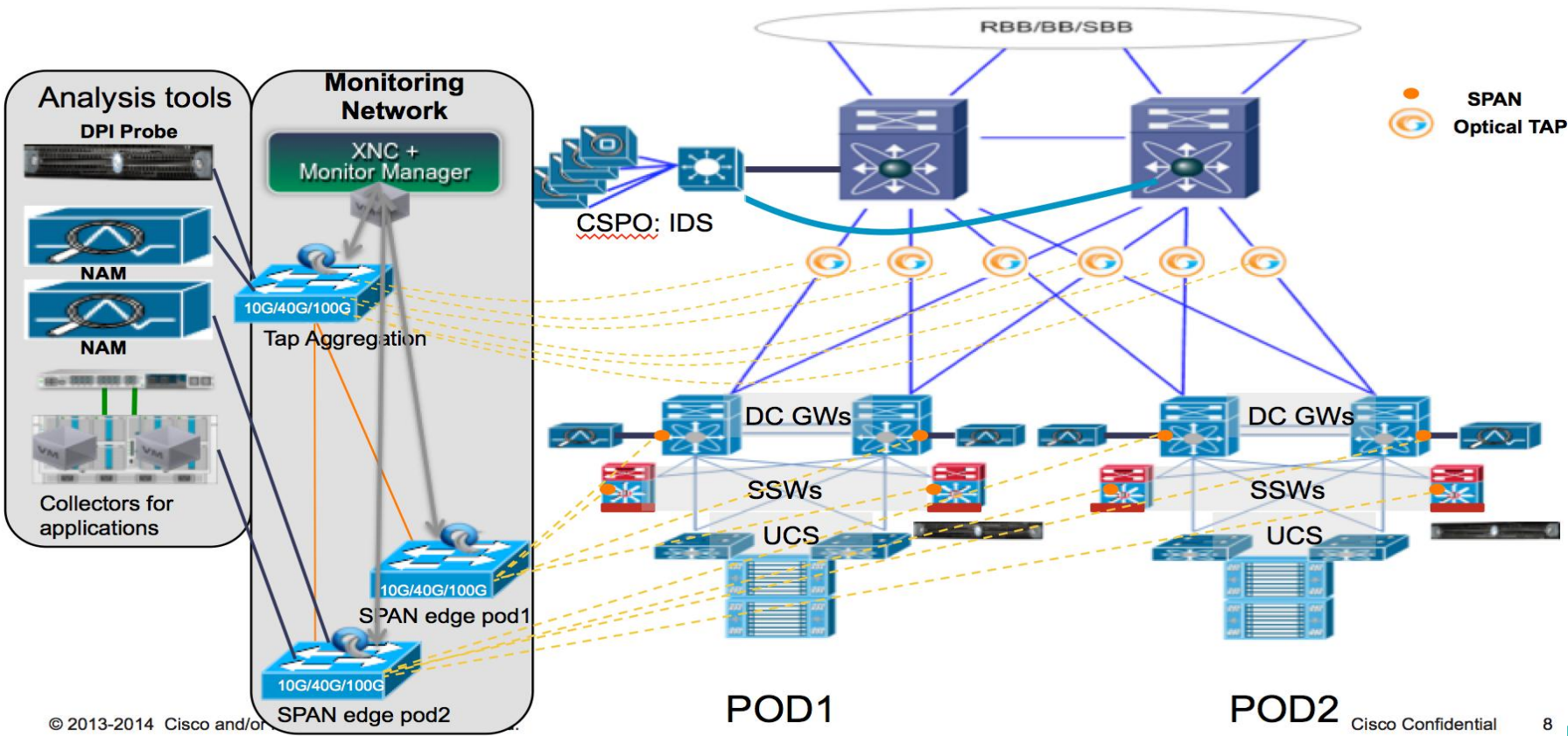
SDN: Controller or Embedded (YOUR Choice!)



CISCO'S SDN BASED MONITOR MANAGER APPROACH

Scalable Monitoring Solution

TAP Aggregation Architecture





Port Types Root

Configured Ports

Remove Port Configuration

Search

Configured Ports

<input type="checkbox"/>	sdn-lab-n3k-3	Eth1/47 (47)	(span-3)	Edge-SPAN	VLAN: 150
<input type="checkbox"/>	sdn-lab-n3k-1	Eth1/48 (48)		Edge-TAP	
<input type="checkbox"/>	sdn-lab-n3k-2	Eth1/47 (47)		Delivery	1 Device
<input type="checkbox"/>	sdn-lab-n3k-2	Eth1/48 (48)		Delivery	1 Device
<input type="checkbox"/>	sdn-lab-n3k-3	Eth1/48 (48)		Delivery	1 Device

1-5 of 5 items

Page 1 of 1

Devices

Monitoring Devices

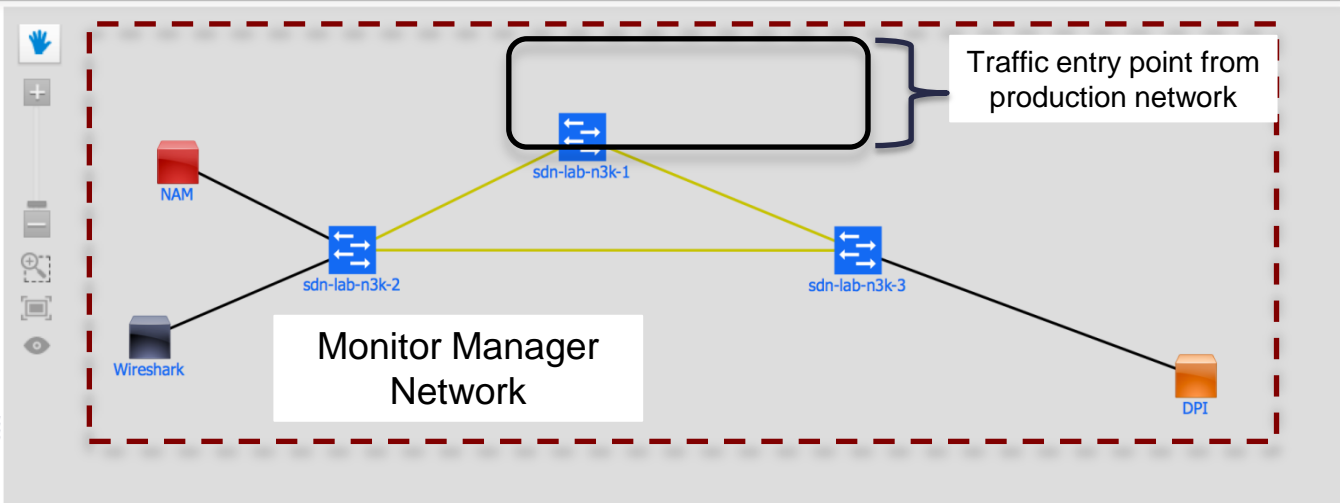
Remove Monitoring Devices

Search

<input type="checkbox"/>	Device Name	Delivery Port
<input type="checkbox"/>	DPI	sdn-lab-n3k-3 Eth1/48
<input type="checkbox"/>	NAM	sdn-lab-n3k-2 Eth1/48
<input type="checkbox"/>	Wireshark	sdn-lab-n3k-2 Eth1/47

1-3 of 3 items

Page 1 of 1



Configure Filters Apply Filters

Filters

Add Filter

Remove Filters

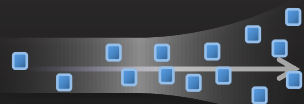
Search

<input type="checkbox"/>	Name	Bidirectional	Created By
<input type="checkbox"/>	Edit All-Internet In Use		admin (Network-Admin)
<input type="checkbox"/>	Edit Match-HTTPS In Use		admin (Network-Admin)
<input type="checkbox"/>	Edit Match-SNMP		admin (Network-Admin)
<input type="checkbox"/>	Edit Match-srrip In Use		admin (Network-Admin)

Accelerating Application Performance with ACI Fabric

Network Innovations

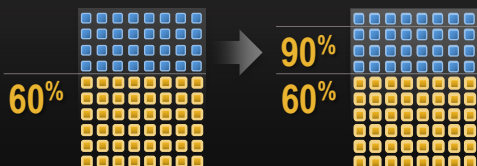
Dynamic Load Balancing



Dynamic Packet Prioritization



Congestion Management



Network Utilization

Case Study – Big Data Analytics

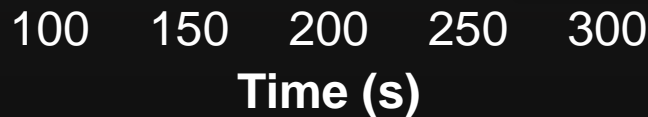
Traditional Network



ACI



**30% reduction
in application flow
completion time**

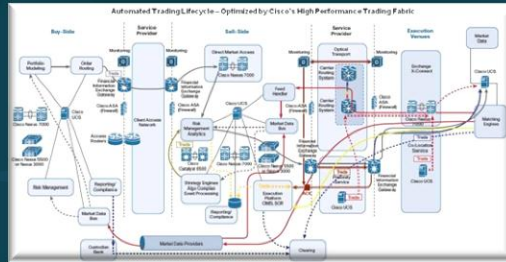


Based on common network load and link failure scenarios

Summary: Cisco's Evolving High-Performance Trading Fabric

BUSINESS REQUIREMENT

- How can I optimize application performance?
- How I can I enhance analytics in support of risk/compliance?
- How can I take accuracy to the next level?
- How can I enable event-based dynamic decision making?
- How can I ensure scalability?



CISCO ENABLED CAPABILITY

- Lowest Latency
- Health Monitoring
- Programmability
- Increased Visibility for Analytics
- Precision Time Synchronization
- Application Awareness



Questions and Answers

Cisco at HPC for Wall Street

- See demo and connect with Cisco executives and subject matter experts at the State Suite
- Join us at the Client Appreciation Reception in the Roosevelt Hotel Palm Room at 5:00 p.m.

