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# The Cloud-Sized Hole In Your Monitoring Stack

## ThousandEyes

Jack Riach, Technical Solutions Architect

BRKCLD-2001

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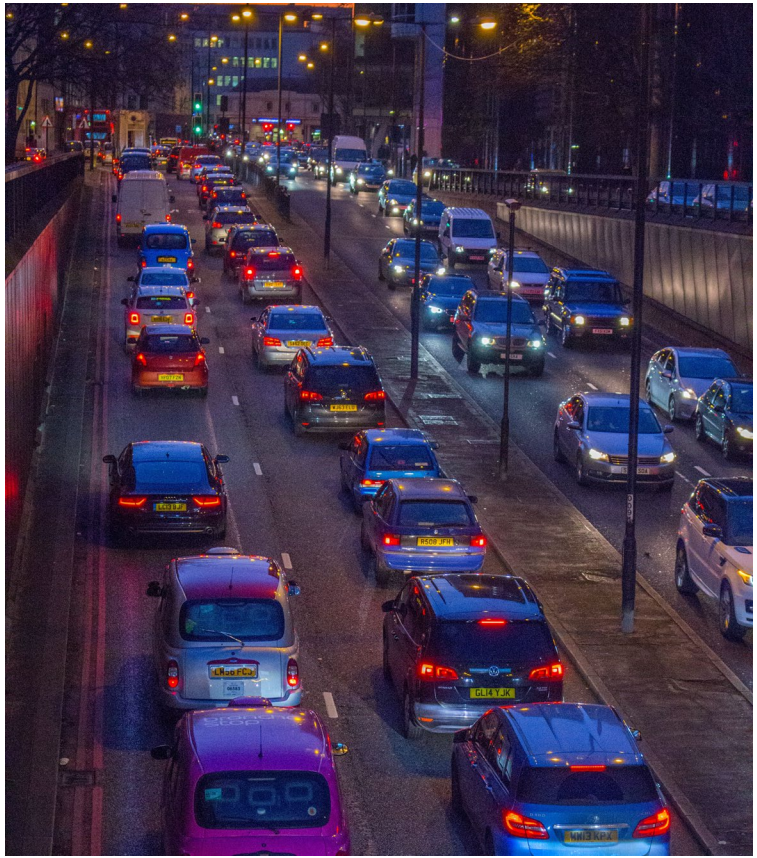
# Agenda

- Introduction
- The Move To Cloud
- The Problems
- What Can We Do?
- Why Should We Do It?
- Takeaways

# Introduction

# The Dream

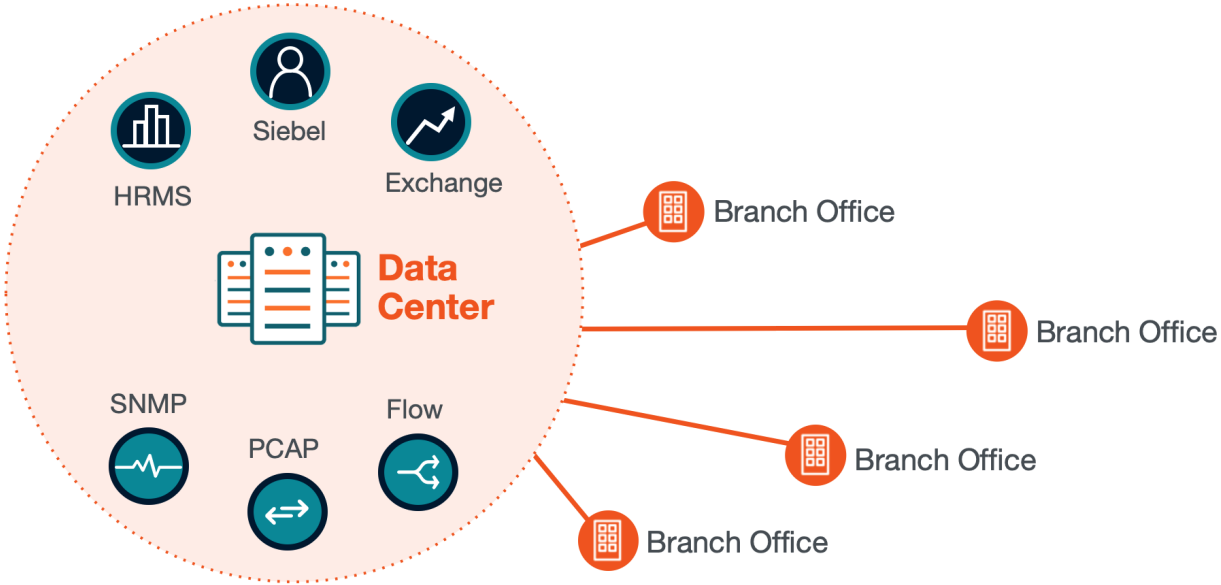
# The Reality



# Visibility is essential

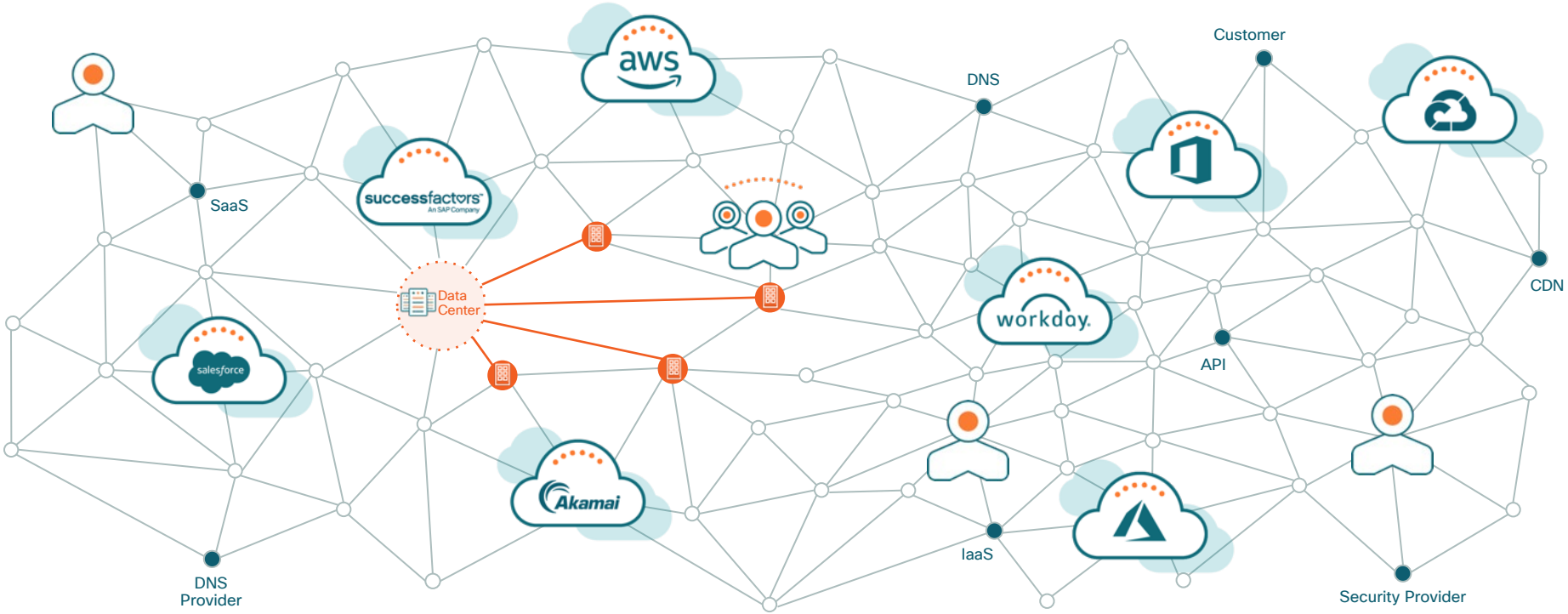
# The Move To Cloud

# How Enterprise Networks Used to Look




IT managed digital experience by controlling networks and applications

# How Enterprise Networks Look Now




Digital experience relies on many service providers and networks outside of IT's control

# Dramatic Shift In Control

**Cloud is the New Datacenter**

Legacy techniques are ineffective in understanding public cloud environments and their connectivity to the rest of the world.

**Internet is the New Network**

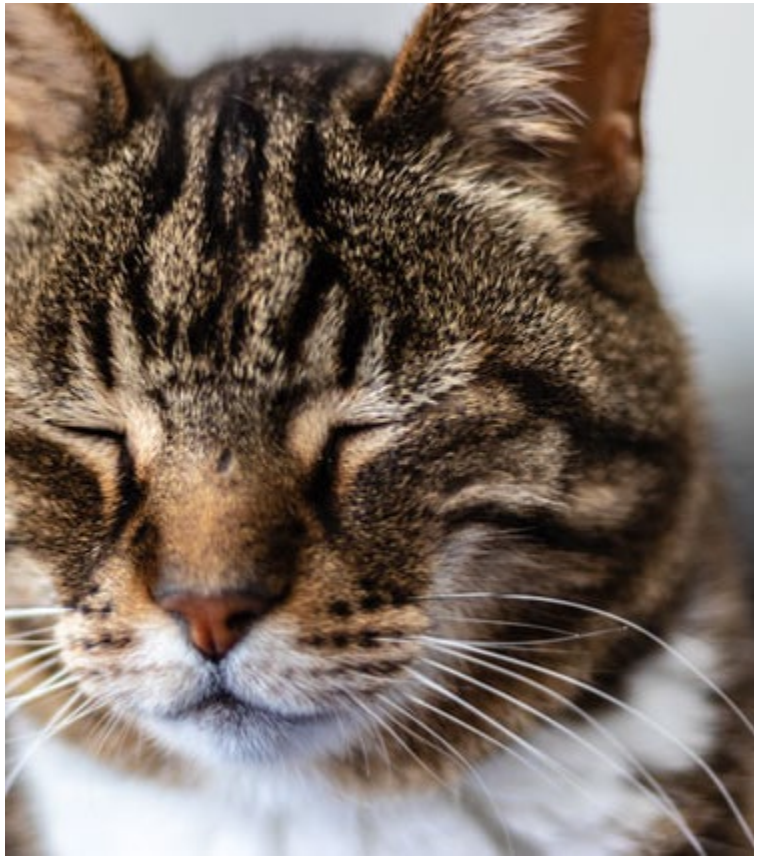
With Cloud, SaaS and SD-WAN Enterprises heavily rely on a best effort public Internet that is fragile, constantly changing and has no SLA.

**SaaS is the New Application Stack**

Enterprises are struggling to understand and improve user experience for SaaS Apps where traditional instrumentation does not work.

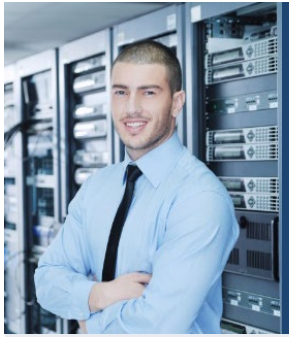
# The Problems

While the cloud enables agility, you are trading away control and visibility



# Challenges to Network Management and Monitoring in the Cloud

- Tool growth
- Tool failure
- Ineffective cloud-native tools
- Internet connectivity is hard to monitor
- Assembling the big picture isn't easy



"We struggle to see [cloud networking] from a holistic approach. I can see things individually, but there's not a single-pane tool that shows me that things are really working well across the cloud."

Senior network architect - global media company

# **Network** Visibility is essential on the journey **to the Cloud**

# What Can We Do?

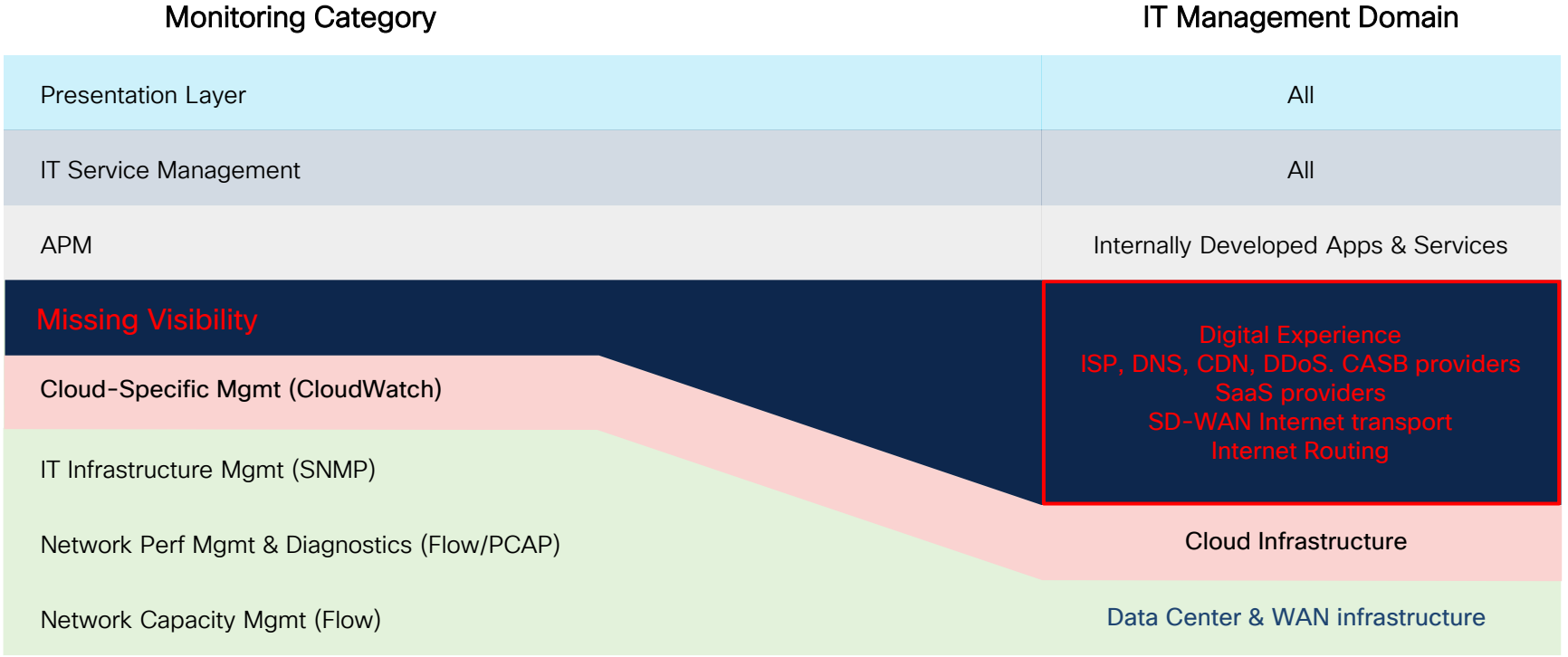
# Best Practices for A Cloud-Centric ITOps Team

1. Update your cloud monitoring stack
2. Establish a common monitoring platform across teams
3. Revamp your operations process
4. Integrate and automate

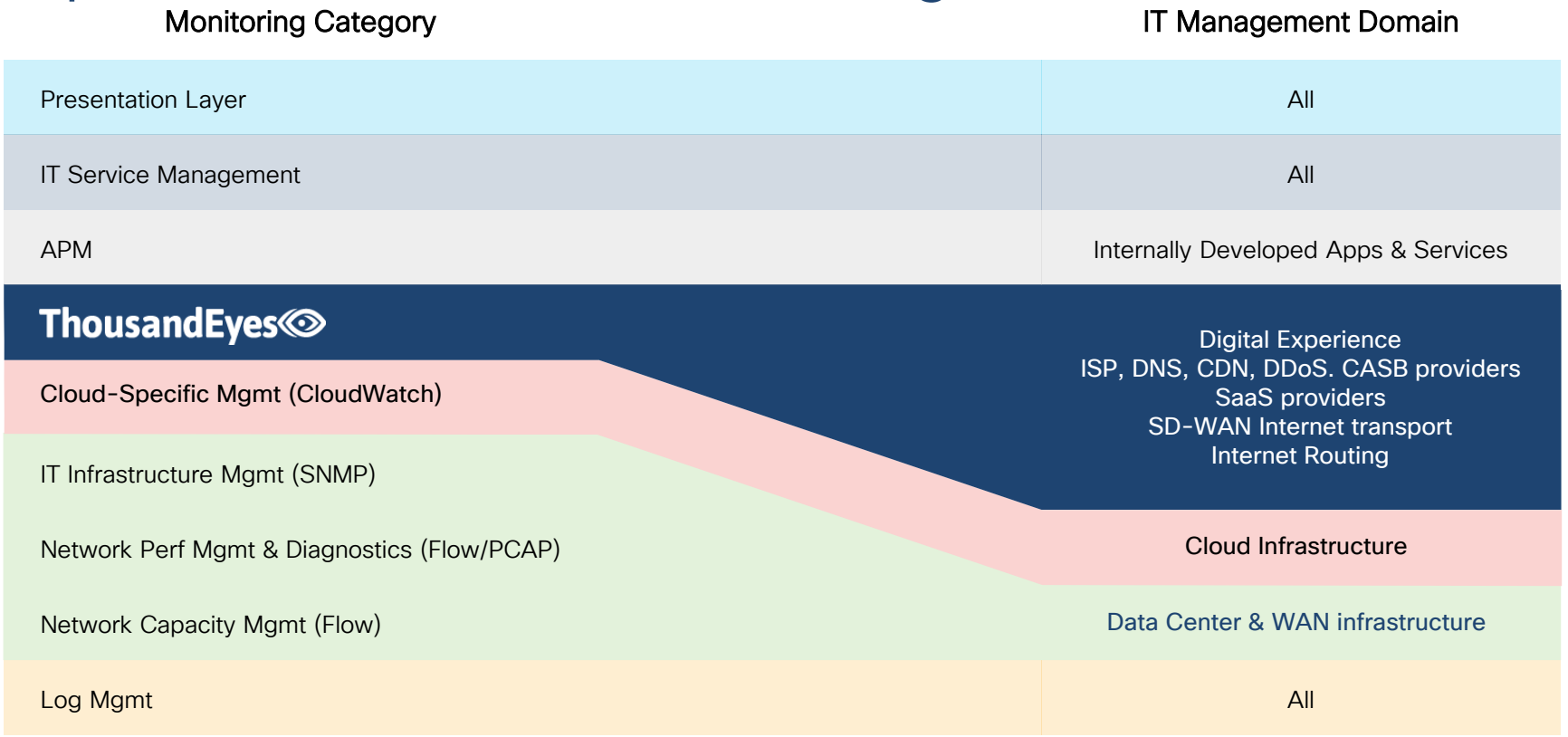
# Pre-Cloud Monitoring Stack

| Monitoring Category | IT Management Domain |
|---|---|
| Presentation Layer | All |
| IT Service Management | All |
| APM | Internally Developed Apps & Services |
| IT Infrastructure Mgmt (SNMP)<br>Network Perf Mgmt & Diagnostics (Flow/PCAP)<br>Network Capacity Mgmt (Flow) | Data Center<br>&<br>WAN infrastructure |
| Log Mgmt | All |

# Cloud-Sized Hole In Your Pre-Cloud Stack



# Update Your Cloud Monitoring Stack



# Understand Experience for Any User and App

ThousandEyes

## Cloud Agent

Globally distributed agents installed and managed by ThousandEyes in 175+ POPs around the world.

External Vantage Points

## Enterprise Agent

Lightweight software-based agents easily installed on your own network, in data centers, branch offices & VPCs.

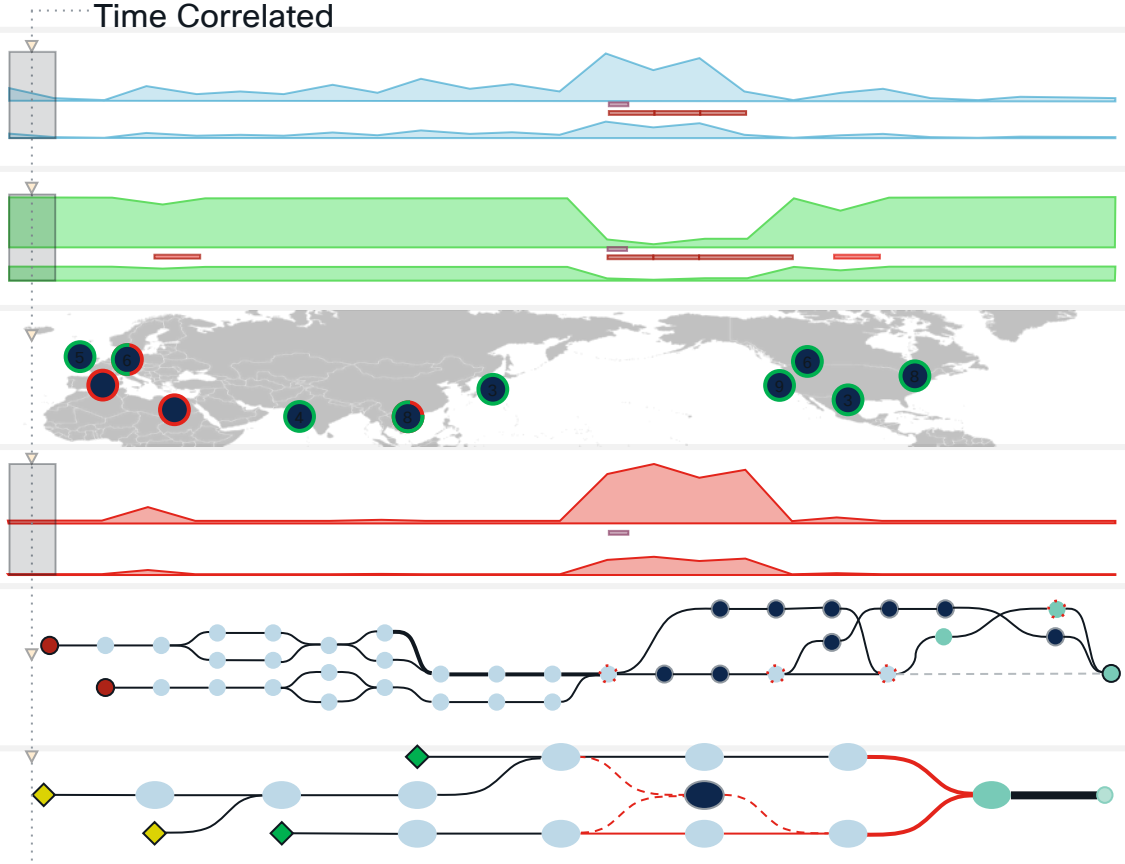
Internal Vantage Points

## Endpoint Agent

Browser-based plugins installed on end-user laptops and desktops.

End User Experience

# Most Correlated Visibility In One View




## App Experience
- Transaction scripting, page load

## HTTP/DNS/RTP Server
- HTTP Availability, response time, throughput

## Scope and Domain
- Geo, HTTP phase, errors

## Network Metrics
- Packet loss, latency, jitter

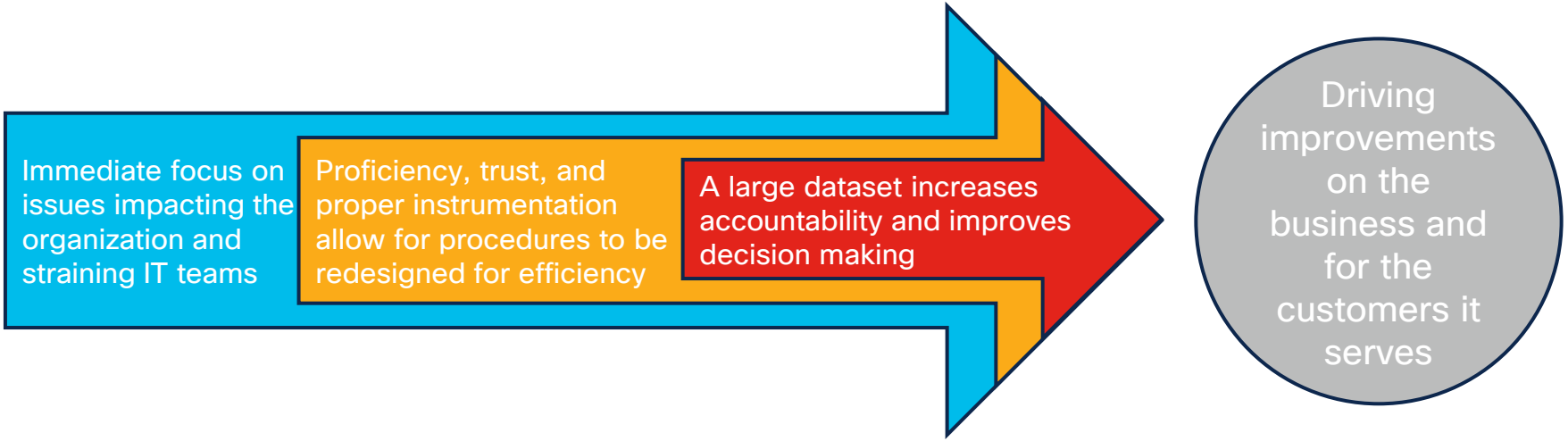
## Path Visualization
- Hop-by-hop; multi-point; bidirectional
- Metrics and data per hop
- Integrated Outage Detection

## BGP Monitoring
- Reachability, path changes, updates

# Demo

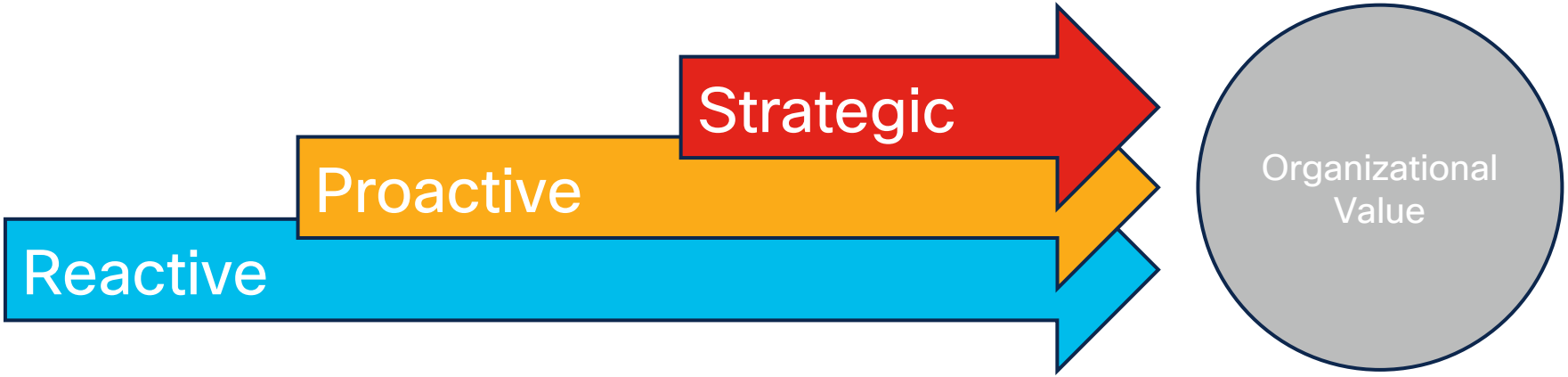
# Why Should We Do It?

# The ThousandEyes Cloud Journey




ThousandEyes

# The ThousandEyes Cloud Journey




ThousandEyes

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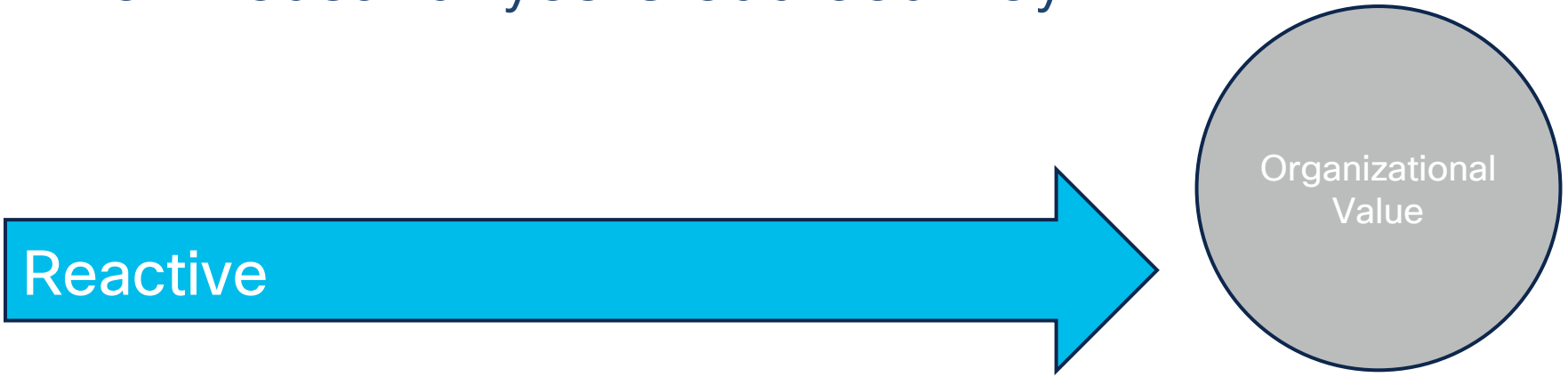
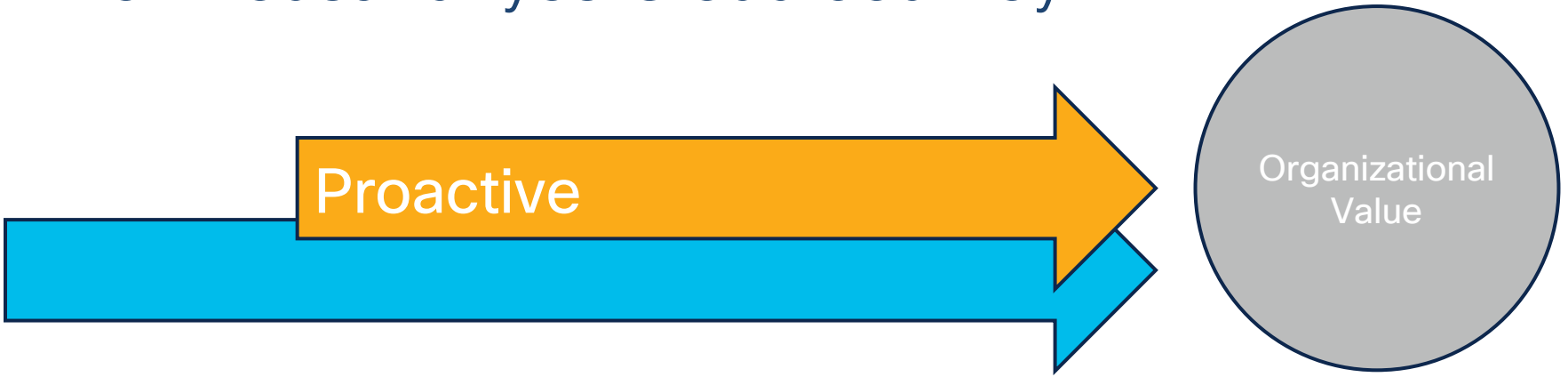



| | | | |
|---|---|---|---|
| When? | • During POC<br>• During onboarding<br>• Immediately following onboarding | How? | • Reduced incident duration<br>• Reduced ticket resolution time<br>• Reduced number of provider meetings<br>• Reduced postmortem reporting effort |
| Who? | • Service Desk<br>• Service Managers<br>• Network Engineers<br>• Network Architects | Impact? | Ranging from $50k to $150k depending on organization size |

# The ThousandEyes Cloud Journey




| | | | |
|---|---|---|---|
| When? | • 3 to 6 months of platform use | How? | • Reduced incident attendance<br>• Reduced ticket volume<br>• Reduced Tool Spend<br>• Reduced number of change rollbacks |
| Who? | • Service Desk<br>• Network Engineers | Impact? | Ranging from $50k to $500k depending on organization size, toolset |

# The ThousandEyes Cloud Journey


| | | | |
|---|---|---|---|
| When? | • 6+ months of platform use | How? | • Reduced project resourcing for WAN/digital transformation<br>• Increased IT return on investment<br>• Increased vendor collaboration<br>• Reduced risk of vendor churn |
| Who? | • Network Engineers<br>• Network Architects<br>• App Owners<br>• Procurement<br>• Transformation/Enterprise Teams | Impact | From $500k+ |

# Takeaways

# Dramatic Shift In Control

**Cloud is the New Datacenter**

Legacy techniques are ineffective in understanding public cloud environments and their connectivity to the rest of the world.

**Internet is the New Network**

With Cloud, SaaS and SD-WAN Enterprises heavily rely on a best effort public Internet that is fragile, constantly changing and has no SLA.

**SaaS is the New Application Stack**

Enterprises are struggling to understand and improve user experience for SaaS Apps where traditional instrumentation does not work.

# Cloud Blindness is Costly

Detection (MTTD) → Extremely Long Problem Isolation (MTTI) → Resolution (MTTR)

SD-WAN projects hit unexpected ISP issues


App experience unpredictable

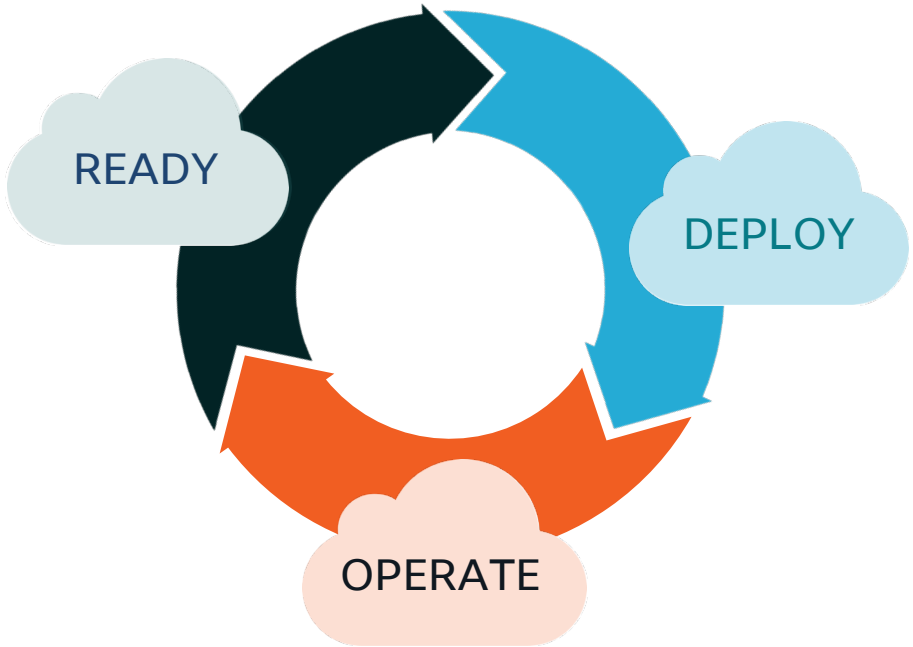
Cloud outages impact revenue and brand

Costly war-rooms wasteful finger pointing


Service desk costs spiking

# Implement a Cloud Readiness Lifecycle

Baseline performance and define success KPIs




Improve cloud, SaaS and SD-WAN project success rates

Improve MTTR by 90% prevent service desk costs from spiking

# Cisco + ThousandEyes

## Complete End-to-End Visibility

Networking | Cloud | Security | Applications

Users

Applications

### Cisco Intent-Based Networks

Provides network insights through Cisco vAnalytics and Cisco DNA Assurance

### Cisco SD-WAN

Provides advanced QoE analytics based on client traffic with Cisco SD-WAN

### Cisco AppDynamics

Provides domain isolation for problem resolution with business, user and application visibility

## ThousandEyes

- Provides customers with an end-to-end view into the digital delivery of applications and services over the Internet
- Enables organizations to visualize any network as if it was their own, quickly surface actionable insights, and collaborate and solve problems
- Delivers proactive application modelling for predictive application performance

# **Network** Visibility is essential on the journey **to the Cloud**

# Take Action!

**Do:**

Test our technology @ https://www.thousandeyes.com/signup

Ask me questions!

**Think:**

Resources @ https://www.thousandeyes.com/resources

Download these slides!

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# Thank you

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# Appendix

# ThousandEyes Platform and Use Cases

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# ThousandEyes Internet and Cloud Intelligence

# Use Cases

## Customer DX

- Websites & Apps
- DNS Services
- CDN providers
- DDoS Security
- BGP Routing
- ISP

## Modern WAN

- SD-WAN
- Cloud Security
- Network Devices
- Endpoints / LAN

## Employee DX

- IaaS Providers
- SaaS Providers
- UCaaS/Collaboration
- VoIP

# ThousandEyes Product Overview

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# ThousandEyes Internet and Cloud Intelligence

**Solutions**

Customer Digital Experience

Modern WAN

Employee Digital Experience

**Capabilities**

| Real-time Visualizations | Trending and Aggregation | Anomaly Detection | Eco-System Integration |
|---|---|---|---|
| Timeline, Path Viz, Route Viz | Reports Dashboards | Alerts, Notifications | Native REST API, Integrations |

**Algorithmic Layer**

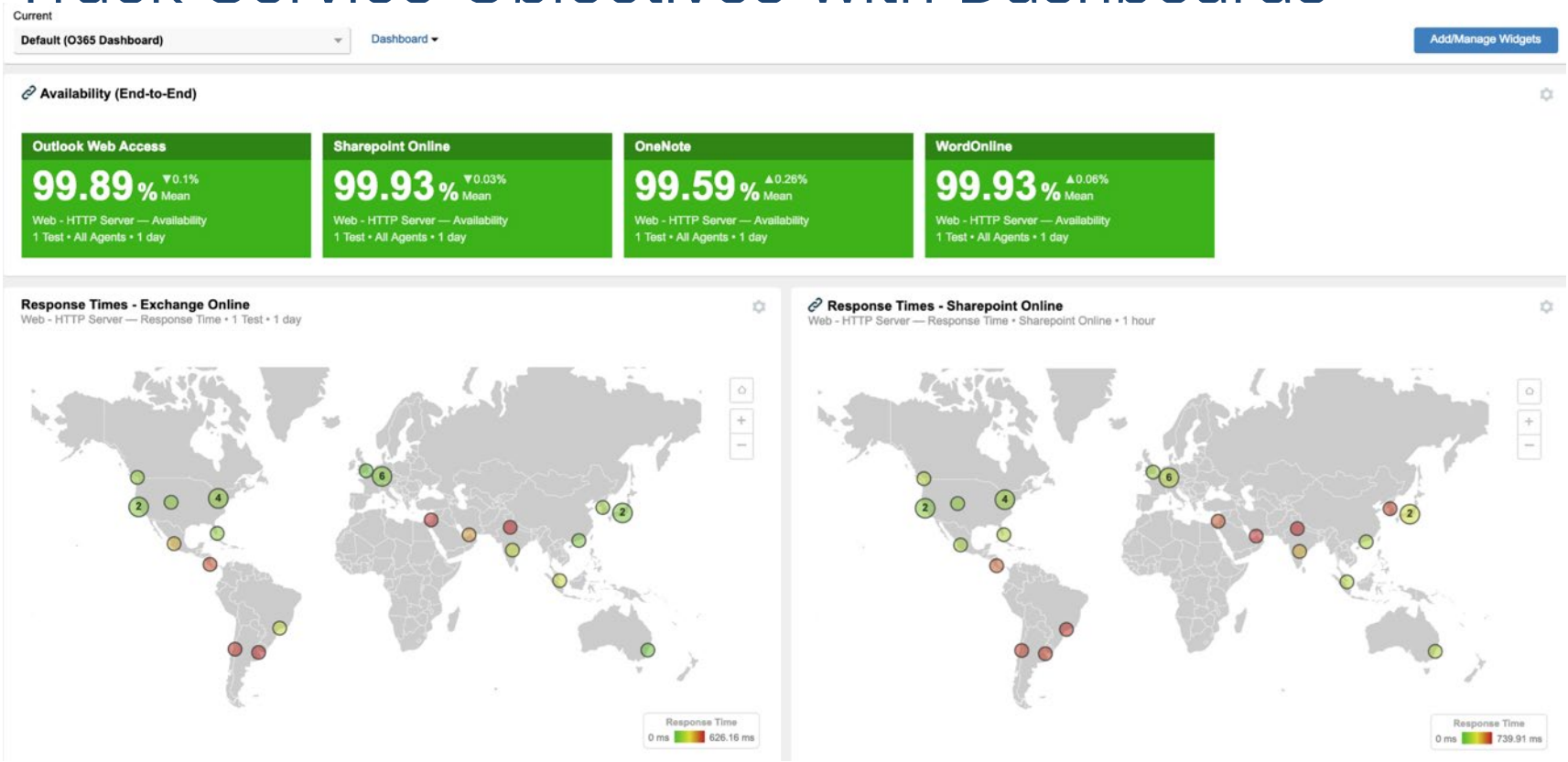
Cross-Correlation and Collective Intelligence

Global Inference Engine

**Data Sources**

| Application Layer Tests | Network Layer Tests | End User Experience | Device Layer | BGP Routing |
|---|---|---|---|---|
| HTTP server, Page Load, Transaction, FTP server, DNS, RTP, SIP | L3 Paths with hop-by-hop metrics | Endpoint Agent Tests | LLDP and SNMP | Global BGP RIB Feeds |

# Track Service Objectives with Dashboards



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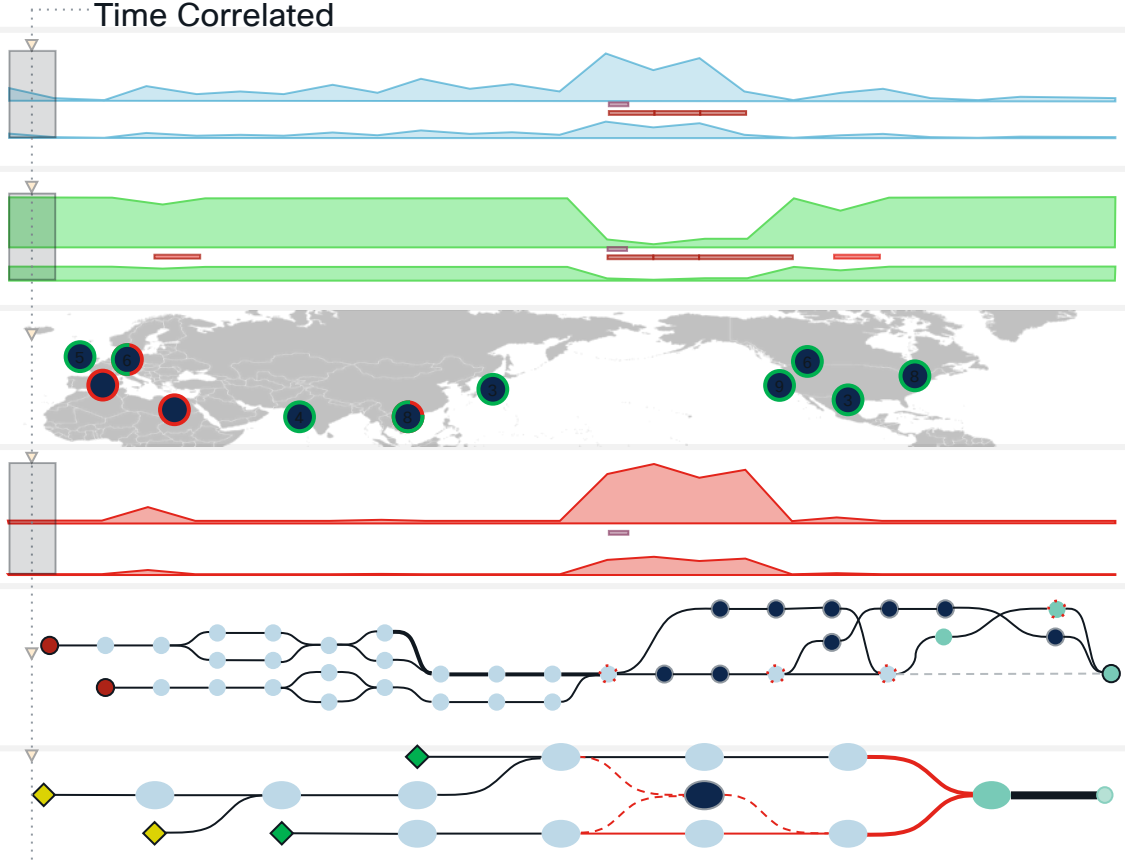


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## BGP Monitoring
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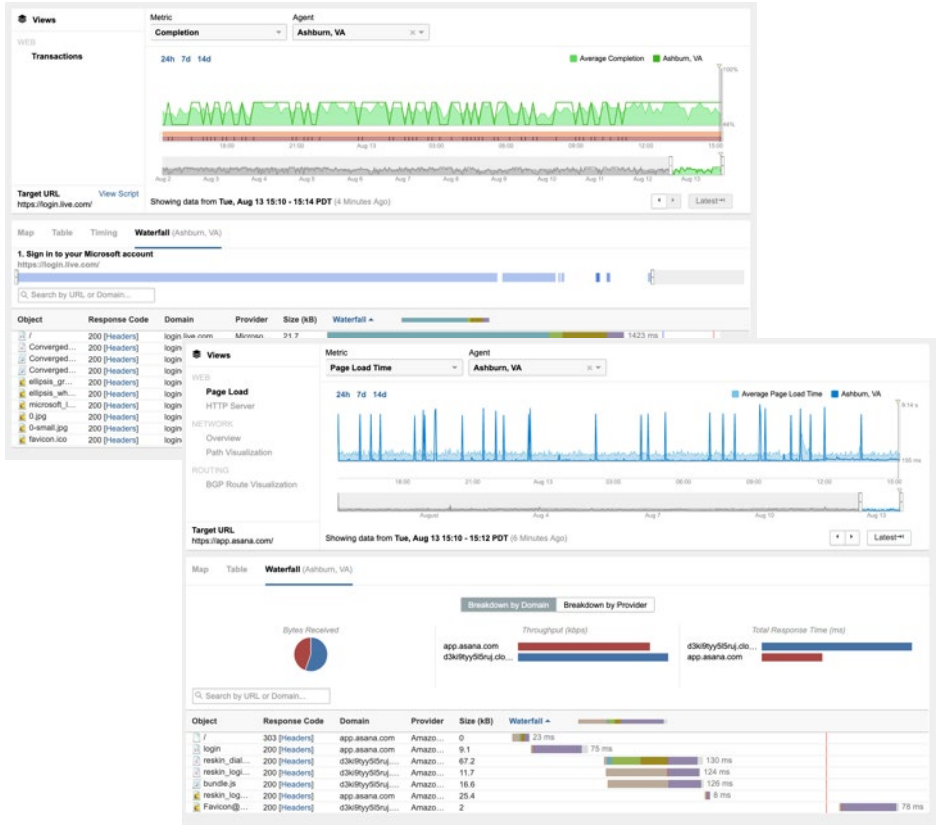
# Understand App Experience with Web Synthetics

- Agent-based measurements of web applications
- Measure entire multi-page workflows simulating a complete user journey
- Multi-layer correlation
  - Transaction scripting
  - HTTP, Path Viz, BGP, Outages
- Baseline and track user experience with page load tests



# Programmable Scripting Engine

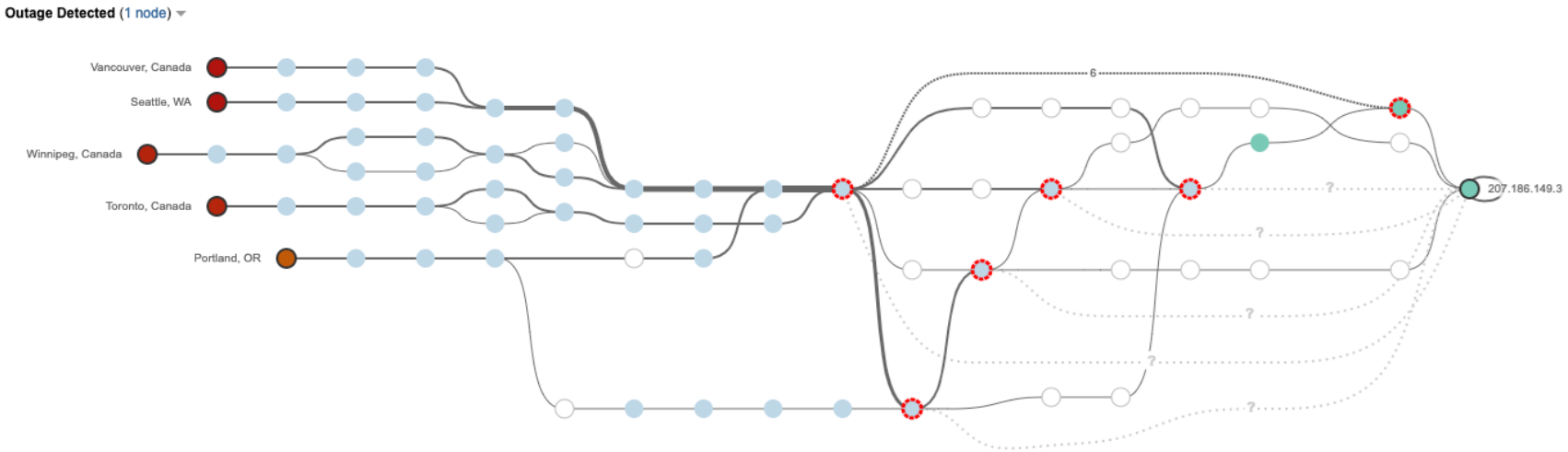
- JavaScript transaction scripting
  - Based on JS bindings for Selenium webdriver 4.x
- Create user journey through an in-built recorder for Chrome
- Logical grouping for multi-step transactions
  - Alert and report on critical business transactions
- Credential handling
  - Command mask & centralized credential storage
- Support for screenshots at any point in the user journey
- Flexible and granular round-robin scheduling

# Unmatched Active Monitoring Vantage Points

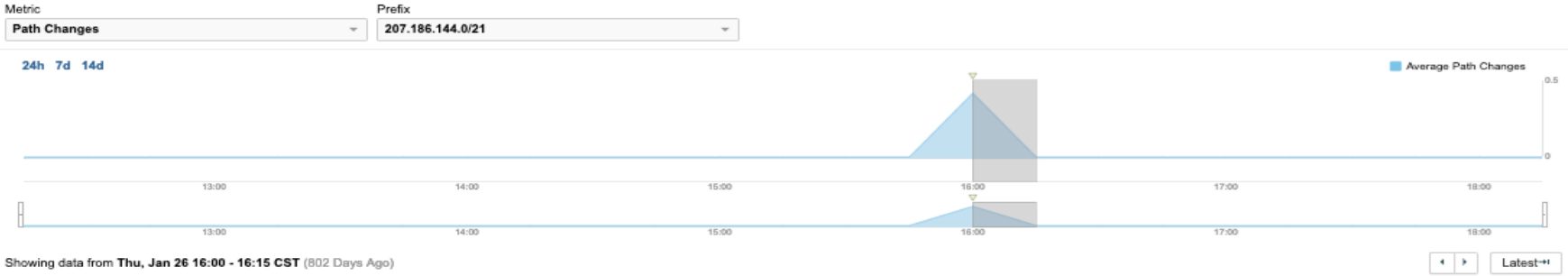
- Cloud Agents:
  - 187 cities
  - 58 countries
  - Tier 1, 2, 3 and broadband ISPs
  - AWS, Azure, GCP, Alibaba cloud regions
- Enterprise Agents
  - Cisco, Microsoft, Linux, VMware, Docker and many others

# The Gold Standard for Path Visualization

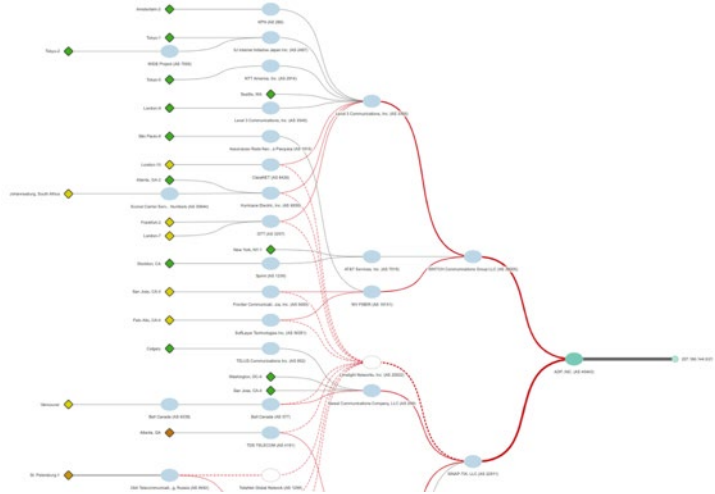
- 16 categories of data and metrics
- Unified, interactive and tune-able visualization
- Hop-by-hop, multi-point, interactive
- Visual error indicators based on multiple metrics



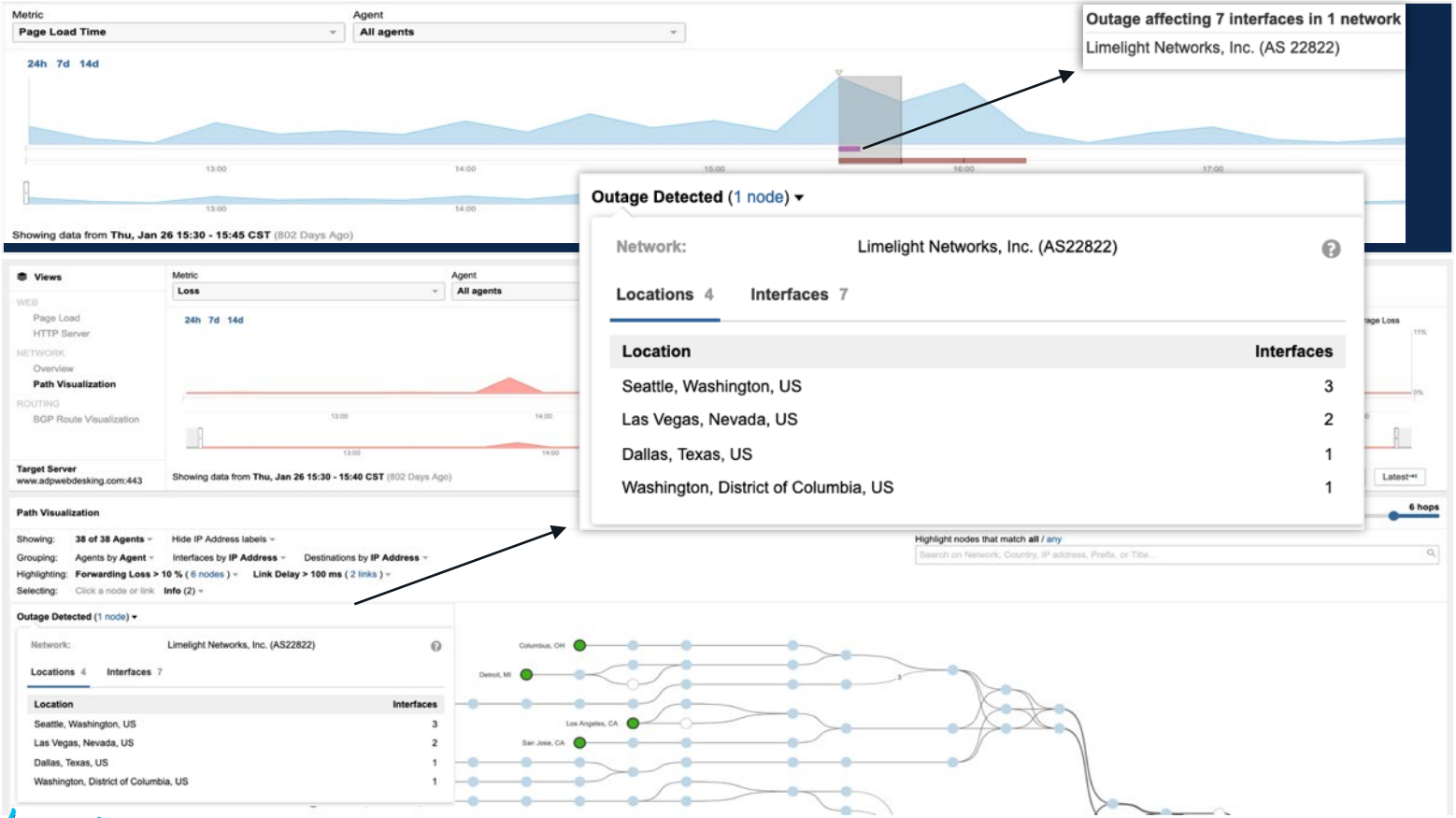
# Industry's Leading BGP Monitoring




- Dozens of global BGP feeds for accuracy
- Metric history
  - reachability, path changes, updates
- World-class visualizations

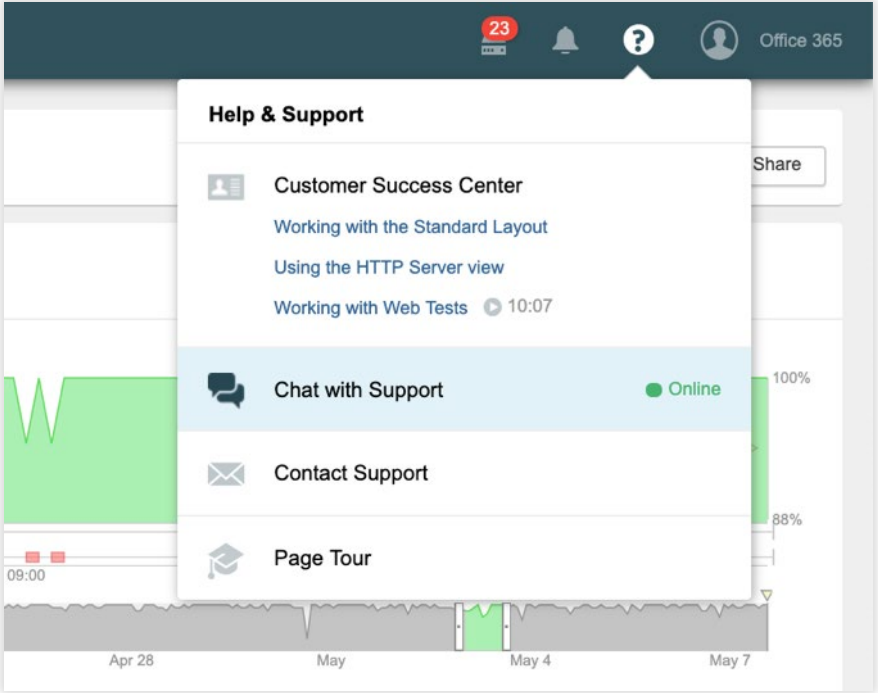


# Collective Intelligence: Outage Detection



# Leverage ThousandEyes Expertise

- Customer Success
  - Instantly access Internet experts 24x7 via live chat from within the product
  - Beyond support; solve your challenges
  - Extension of your NOC
- Professional Services
  - Onboarding, training and integration services to speed time to value and increase ROI



# Automation and Integration

- Open, native REST APIs
- Full automation of configuration, operation and data consumption
- Integrations with popular configuration automation tools, ITSM and data platforms
- ThousandEyes Github
- developer.thousandeyes.com





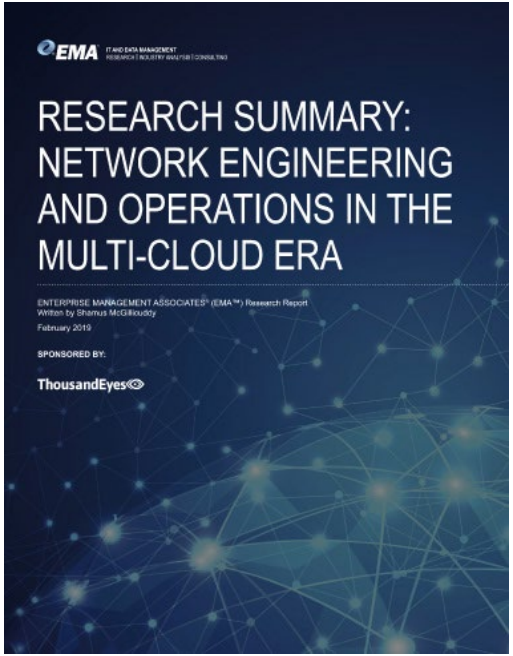


# EMA Primary Research

# EMA Primary Research

## Network Engineering and Operations in the Multi-Cloud Era

- Primary research conducted by Enterprise Management Associates (EMA)
- Over 250 IT professional across North America and Europe
  - Directly involved in making decisions on networking & cloud strategy
- Supplemented by several deep dive interviews
- Available on the ThousandEyes Resource Centre
  - https://www.thousandeyes.com/resources



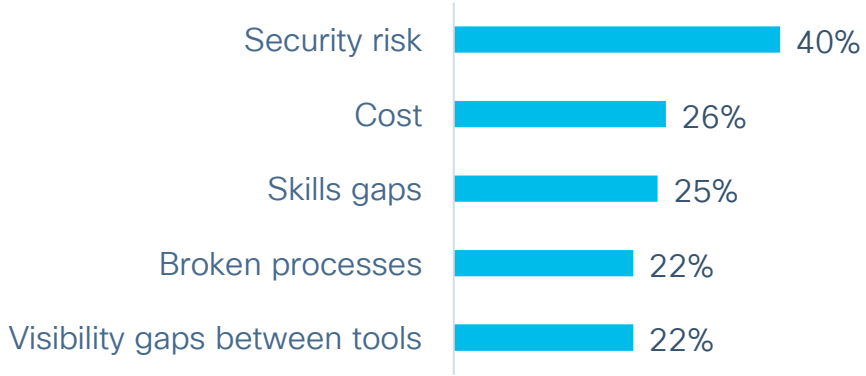
# Tool Growth

## The Folly of “Don’t Worry, Buy Another Tool”

### Everyone is adding tools for the cloud

- 32% report significant tool growth
- 52% report slight tool growth

### Top challenges of cloud-driven tool expansion



# Tool Failure:

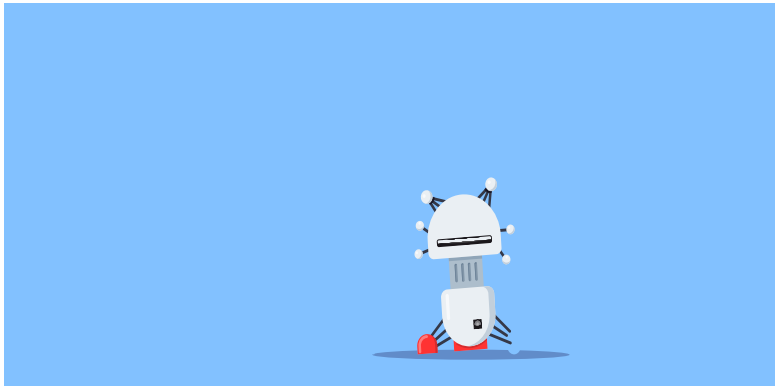
## At Least One Tool Will Let You Down

### Three-quarters of network managers had an incumbent tool fail in the cloud

- 39% had to find another solution
- 35% customized the tool

### Common reasons for tool failure

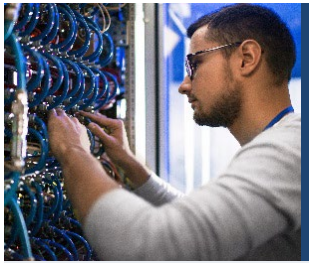
- Complexity (44%)
- Poor cloud execution (35%)



# Ineffective Cloud-Native Tools:

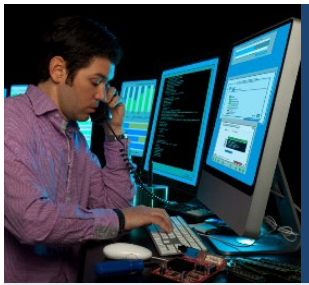
## CloudWatch is Not for NetOps

- 99% of network teams use cloud-native monitoring tools
- Only 55% consider them particularly helpful to network operations
- Useful for tracking network costs, not for performance management



*"I don't find [AWS CloudWatch] useful. It requires a lot more fine-tuning and extrapolation to make it useful for [NetOps]."*

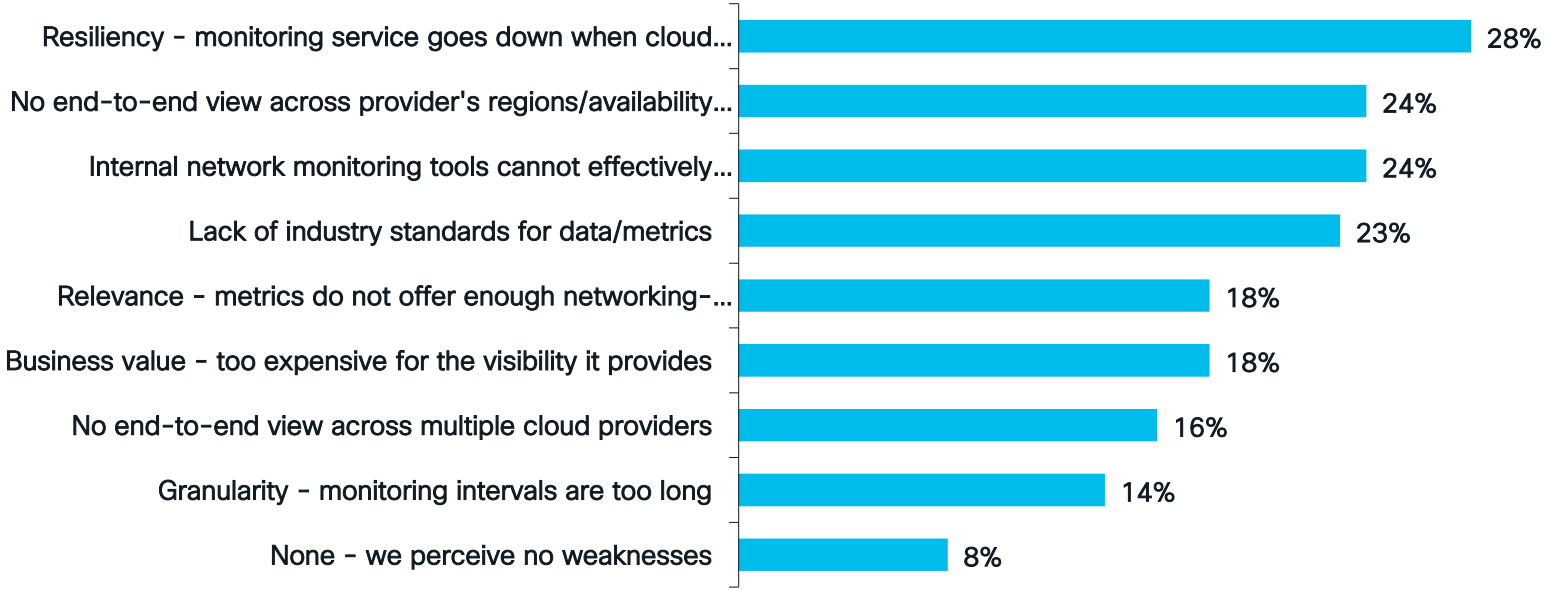
Senior network architect, global media company



"Native tools that come from Azure are not ready for prime-time. We can get the data we need, but you have to build the tools yourself. That's no fun."

Network architect, large North American retailer

# 92% of NetOps Teams See Challenges with Native Cloud Monitoring Services



# Internet Data is Essential

- 95% of NetOps teams assess cloud QoE with internet metrics
- Most popular metrics
  1. End-to-end loss, latency, jitter across internet paths (52%)
  2. DNS availability and resolution time (52%)
  3. Internet and ISP outage reports (48%)
  4. BGP routing changes (41%)
  5. Hop-by-hop loss, latency, jitter across internet paths (32%)
  6. CDN edge availability and response times (31%)

# Internet Connectivity is Hard to Monitor

## Cloud-related connectivity that NetOps struggles to monitor and manage

- IaaS VPCs to SaaS services (33%)
- Customer-facing, cloud-based apps to internet-based users (23%)
- SaaS to user/branch office (22%)

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