



The bridge to possible

ThousandEyes

Cloud and Network Intelligence for The New Enterprise Reality

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System Engineer
Oct 2021

The New Enterprise Reality

Hybrid Workers



58%

Of workers will work
8 or more days
each month from home

Modern App Architectures



35%

Increase in spending
in public cloud
during 2021

SaaS Adoption



\$20 BN

Increase in spending on
SaaS in 2020 vs 2019

Agile Networks



50%

Increase in spending
on SD-WAN technologies
2021 vs 2020

Today's Challenges

Can people connect to my business?



Serve Customers

Is my network able to keep my business running?



Run Your Business

Are my employees able to get their jobs done?



Empower Employees

The Internet is the common denominator

Enterprise IT is rapidly losing visibility and control

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

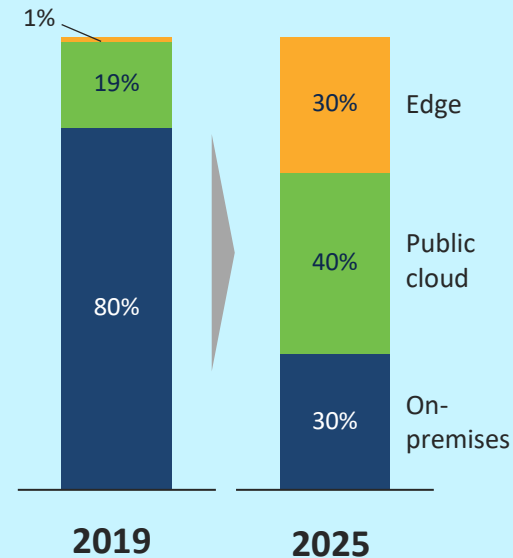
14,000+ routing errors per year¹



Hybrid IT outages due to external providers²

31%

Estimated distribution of workloads³



50%

Enterprise infrastructure provisioned at edge by 2022⁴

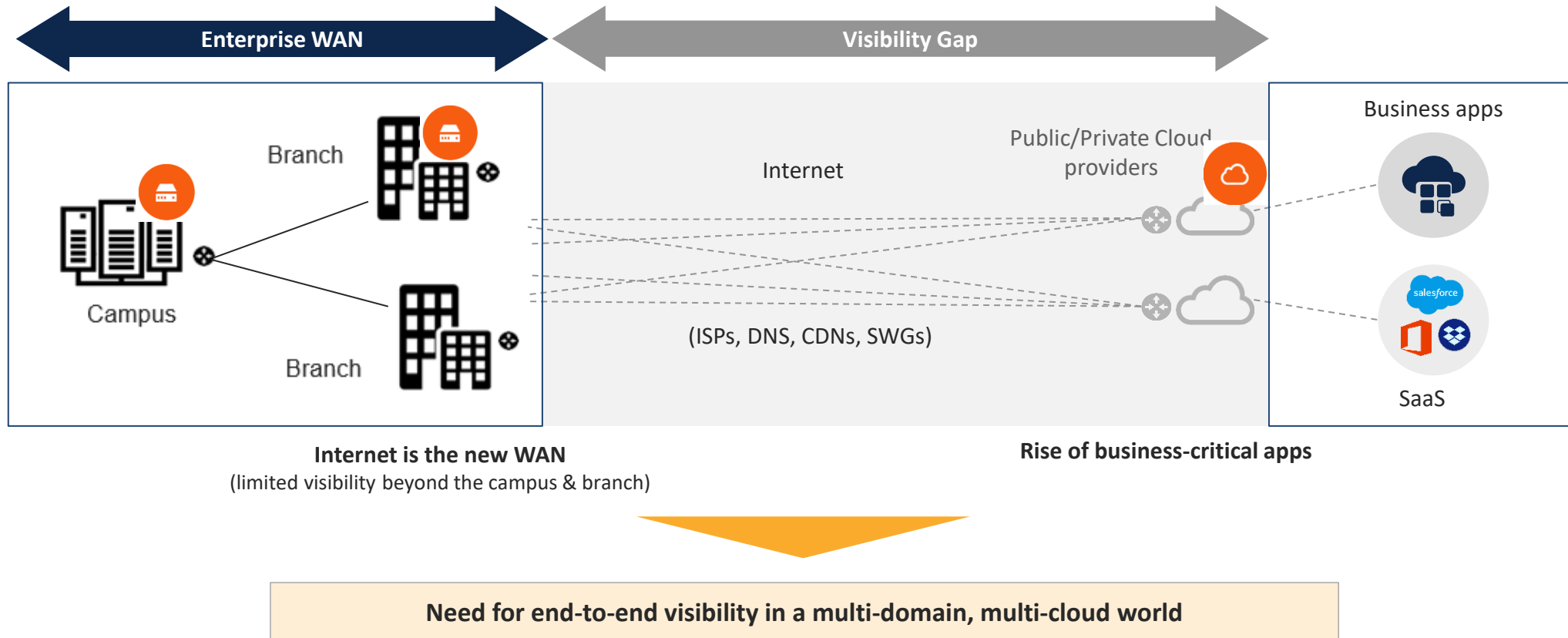
17million

DDoS attacks annually by 2020⁵

1. Internet Society, 2018; 2. Uptime Institute survey of data center managers 3. Gartner - "I&O 2025 —Reimagine, Revitalize, Reenergize"; 4. The Future of Digital Infrastructure: Development of a Robust Digital Ecosystem Is Critical, IDC, Pam Miller, Rick Villars, Alizabeth Calder, Dec 2020 5. Cisco research study 2019

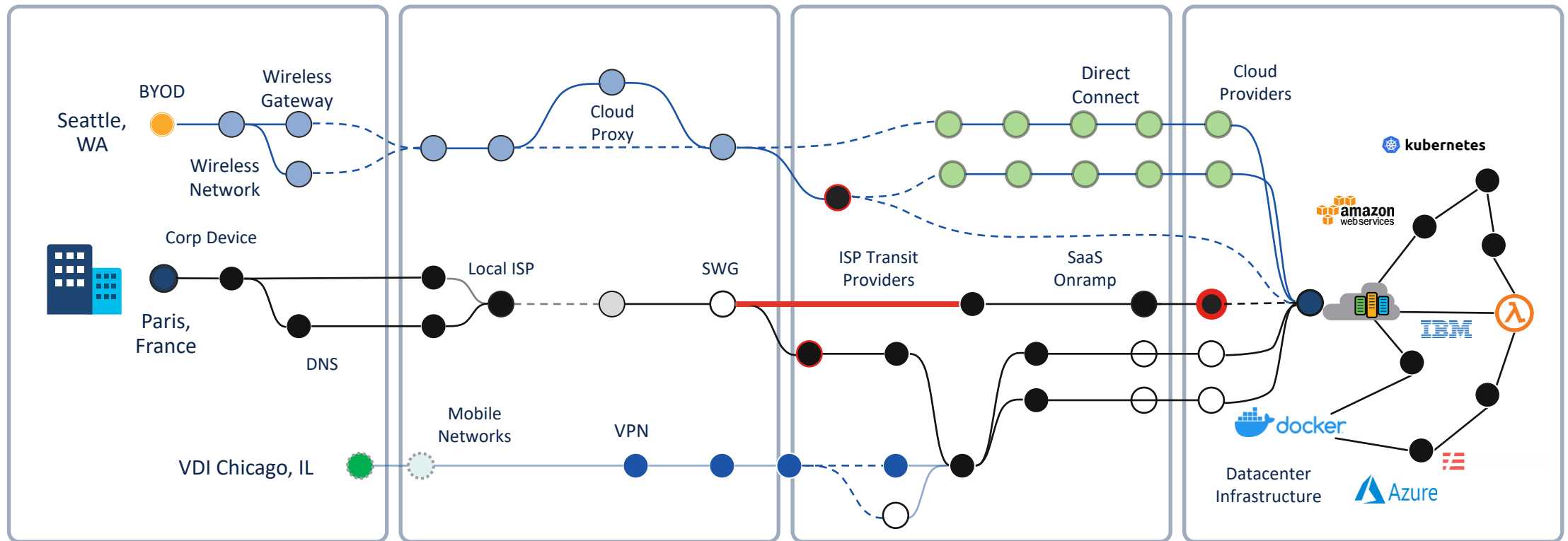
The Digital Experience Visibility Challenge

How can IT deliver business-critical, flawless user experiences if it can't see and manage problems outside the network?



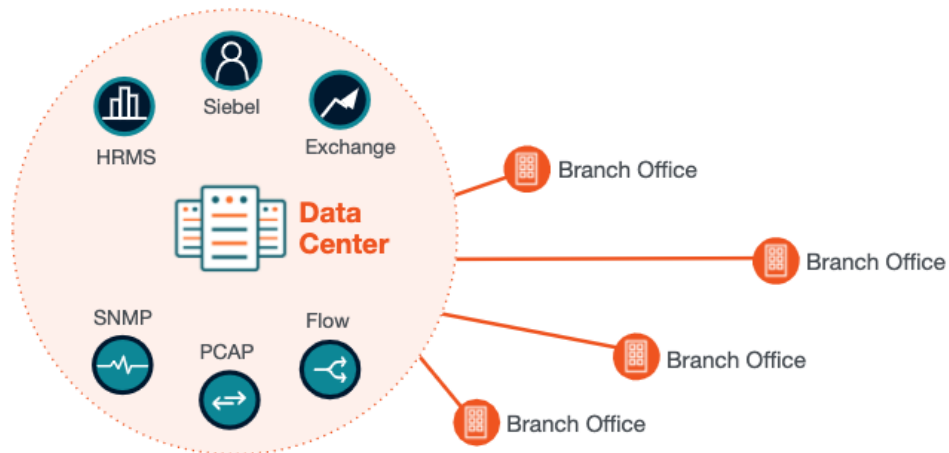
The more you can see...The more you can solve

REMOVE THE BLIND SPOTS FROM THE DIGITAL SUPPLY CHAIN



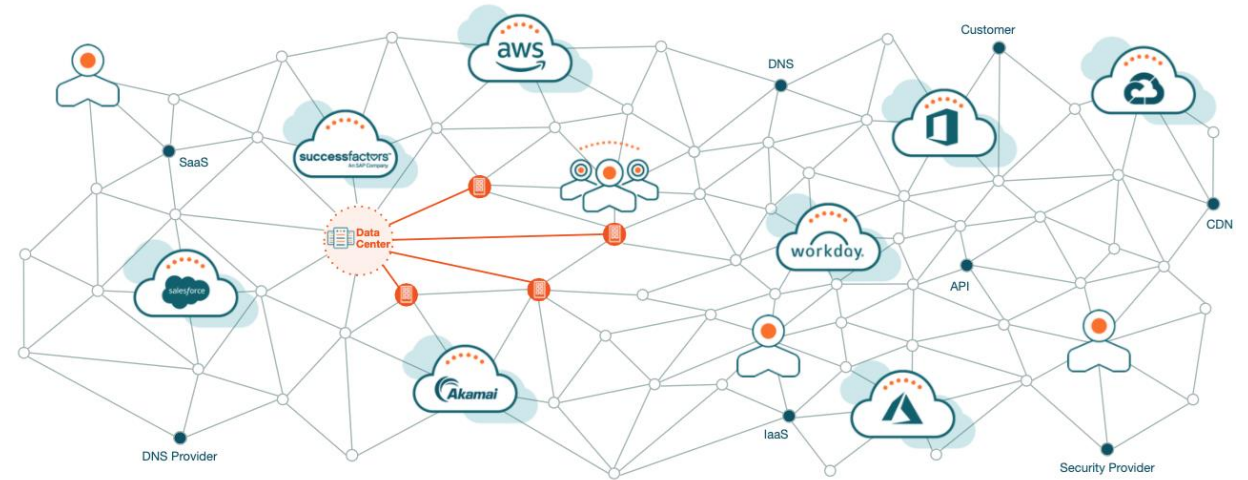
Why Does It Matter

- Historically, critical apps and services ran in the datacenter
- Customers had full control over the app stack, network and infrastructure
- Leveraged traditional monitoring methods such as SNMP, PCAP, Flow, Logs...
- Expensive, static WAN technologies



THE WAY IT WAS

- Apps and services are moving OUT of the datacenter
- SaaS applications and infrastructure play critical roles in customer experience and running a successful business
- Networks are becoming dynamic
- Traditional monitoring tools no longer effective
- Business is now running over the internet



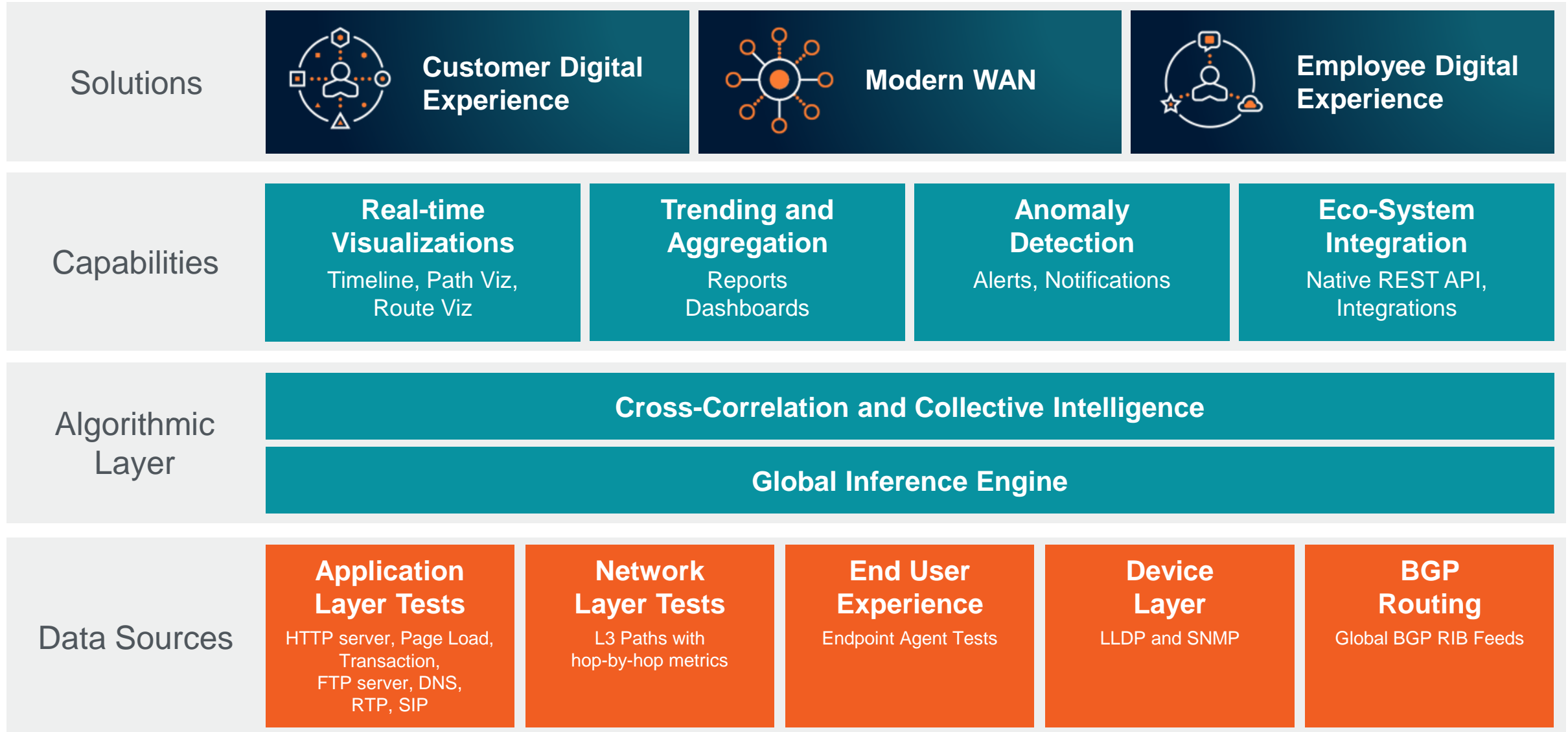
THE WAY IT IS

CLOUD is the new
DataCenter

INTERNET is the
new Network

SaaS is the new
App Stack

ThousandEyes Internet and Cloud Intelligence



High Level Agent Comparison


Enterprise Agent



- Inside-Out monitoring (on-prem)
- Deployment Options
 - OVA / Physical Appliance
 - vmware VirtualBox Microsoft Hyper-V
 - Linux Package/NUC/rPI
 - ubuntu redhat CentOS
 - Docker
 - Cisco ASR 1k / ISR 4k
- Commonly for internal applications, SaaS and Site-to-Site

Cloud Agent



- Outside-In monitoring
 - 370+ Locations
 - Tier 2 and 3 service providers, broadband, cloud
 - www.thousandeyes.com/map
- 
- Commonly for customer/public facing applications

Endpoint Agent



- Last-mile monitoring
- Extends network and service visibility in a way that is agnostic to the location of the user
- Deployment Options
 - Operating Systems
 - Windows 7 / 8 / 8.1 / 10
 - Mac OS X 10.9 / 10.10 / 10.11
 - Browsers
 - Google Chrome 41+
 - Internet Explorer 11+

Enterprise Agent on IOS-XE

Requirements

- Cisco IOS XE 16.1 or higher (or IOS XE 3.17 or higher under the old versioning scheme)
- ISR 4000 series router, ASR 1000 series router or **ISRV software** on a supported hardware platform
- Minimum 8 GB RAM (ISR 4000) or 16 GB (ASR 1000)
- 2GB of free memory per installed Virtual Appliance
- Solid-state drive storage (NIM-SSD or MSATA-SSD)
- Internet connectivity from the ISR/ASR

The virtual service should now be **activated**. VirtualPortGroup interface should change its status to up and up

```
1  isr# sh virtual-service list
2  Virtual Service List:
3  Name      Status    Package Name
4  -----
5  hitman    Activated teva-cisco.ova
```

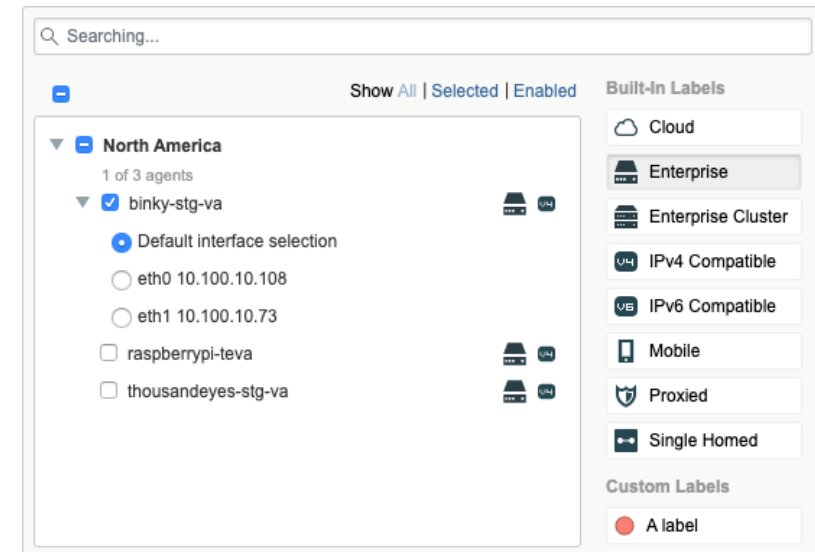
ThousandEyes Virtual Appliance

```
| To configure your ThousandEyes Virtual Appliance, please |
| point your browser to http://10.100.152.1/.                |
| Username is 'admin', default password is 'welcome'.        |
|                                                             |
| Press N if you need to change the network configuration.   |
| Press R to reset the appliance password.                   |
|                                                             |
| Press Enter to update this screen.                         |
```

Interface Selection and multiple tests

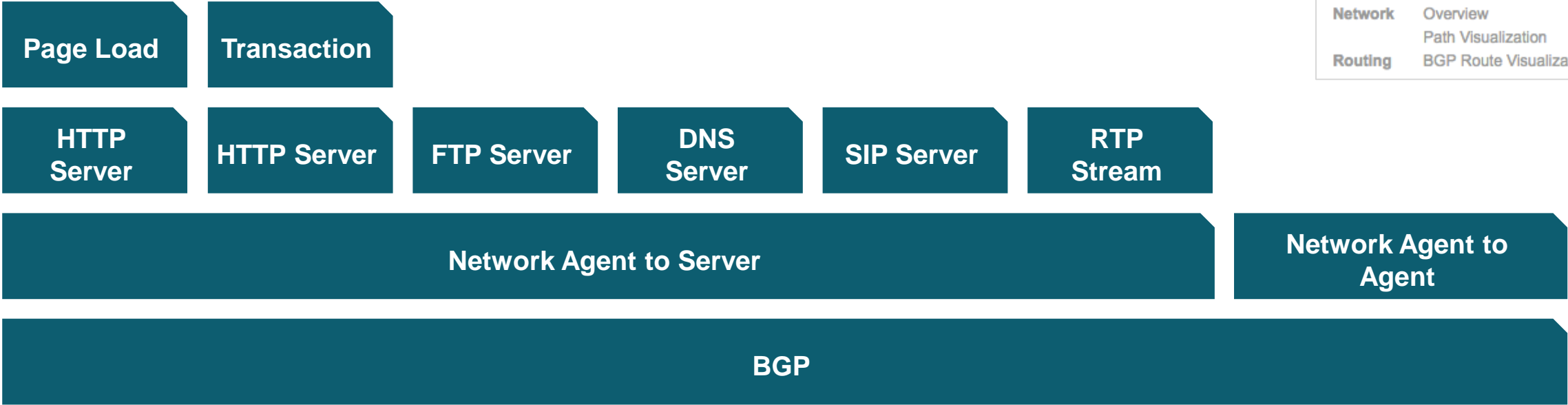
a customer can configure a single Enterprise Agent to monitor a given target via multiple paths.

For SD-WAN use cases. The Path Visualization will display hops specific to a path, whether **overlay** or **underlay**. Alerts may be constructed based on the IP addresses of hops in the the path.



Test Type Layering

LAYERED TESTS



STANDALONE TESTS



The ThousandEyes Platform

Test Types

New Test

Layer

RoutingNetworkDNSWebVoice

Test Type

HTTP ServerPage LoadTransactionFTP Server

Views Enabled for This Test

Web

Page Load

HTTP Server

Network

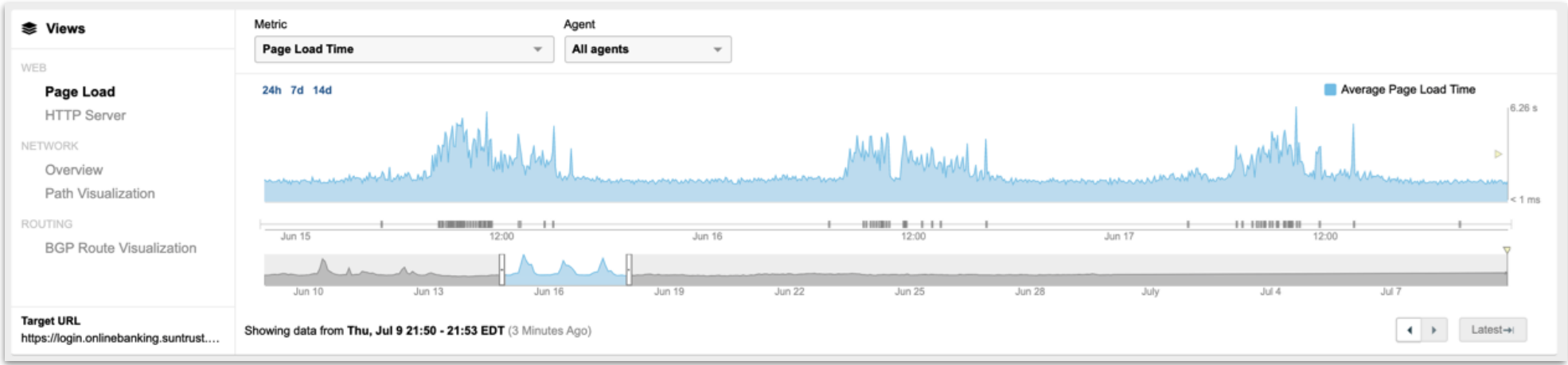
Overview

Path Visualization

Routing

BGP Route Visualization

Test Layers



Time / Test Layer Correlation

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





We empower companies with Internet and cloud intelligence enabling them to deliver superior digital experiences.

2010 | Founded

HQ | San Francisco

Locations

Austin, USA
New York, USA
Seattle, USA

Toronto, CA
Tokyo, JP
Sydney, AU

Amsterdam, NL
Dublin, IE
London, UK
Munich, DE

130+

Global 2000
Companies

70+

Fortune 500
Companies

6 of the 7

Top US Banks

20 of the 25

























































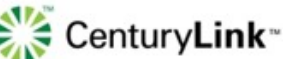



















Top SaaS Companies

8 of the 10

Top Global Software
Companies



We Help Companies Like These Manage Digital Experiences

SOFTWARE AND SERVICES	FINANCIAL SERVICES	RETAIL AND ECOMMERCE
          	         	          
HEALTHCARE	MEDIA AND ENTERTAINMENT	EDUCATION
     	         	       
COMMUNICATIONS	CLOUD INFRASTRUCTURE	TECH HEAVYWEIGHTS
        	     	    

Enabling a Fast Start to Long-Term Success



Rapid Time to Value

- Zero-deployment visibility into the Internet and user experience
- Rapidly deploy vantage points into branches, DCs, cloud VPCs
- Visibility to end-user devices



Customer Success

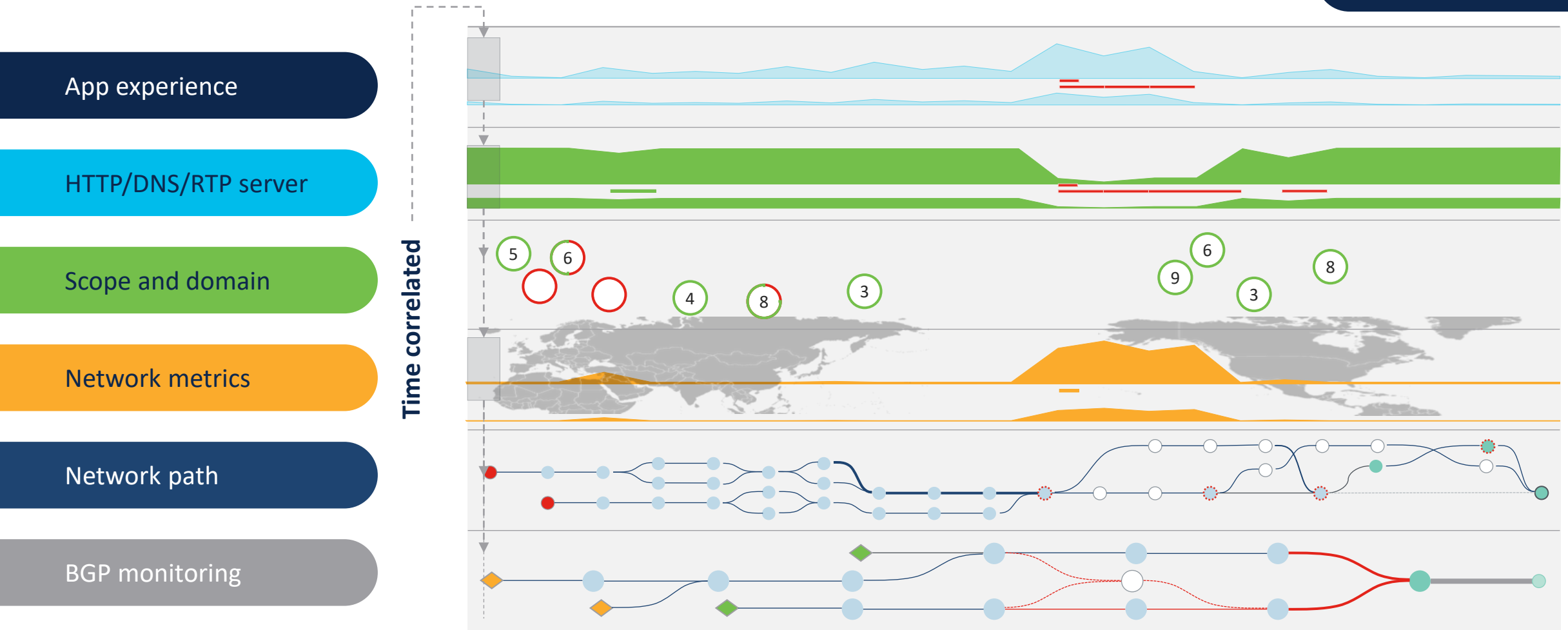
- Staffed by engineers not support staff
- 24x7 extension of your NOC
- Achieve cloud migration and user experience goals



Professional Services

- Complete suite of professional services offerings
- Realize full value of ThousandEyes investment
- Faster ROI and more impactful business results

Deep visibility into every layer



Actionable insights across any network and app

ThousandEyes

Network visibility

- End-to-end network path and metrics across any network
- Identify issues down to the service provider, location, and interfaces



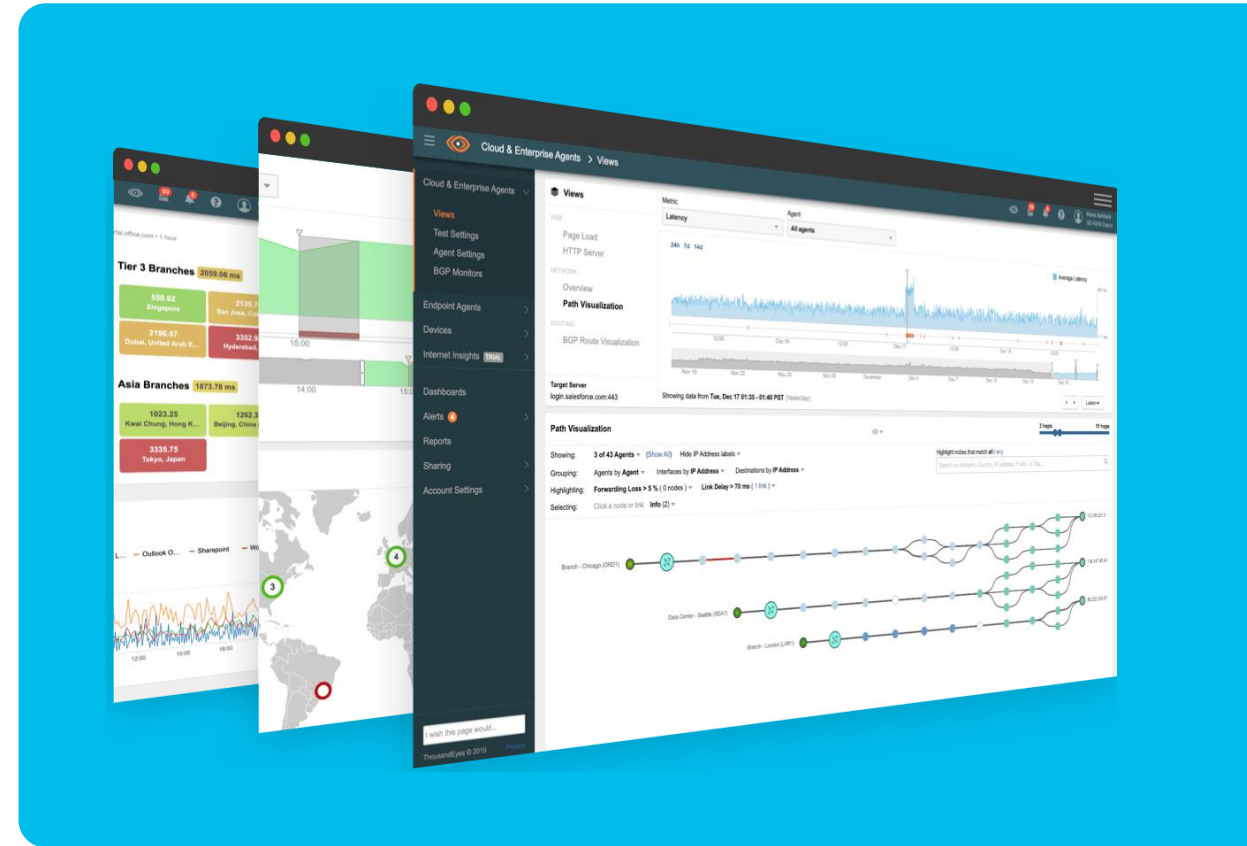
App experience

- Quickly isolate issues to application, network, or other service
- Understand performance of user interactions with applications



Correlated insights

- Correlate network and app issues with internet routing, internal network devices, and global outage events



How Customers Gain Value from ThousandEyes



Customer DX

See, understand and improve connected experiences everywhere



Workforce DX

Ready your network and successfully empower your workforce



Enterprise DX

Increase agility by embracing multi-cloud, SaaS and SD-WANs with confidence

Example customers:



Example customers:



Example customers:



ThousandEyes 



CUSTOMER DX

Visibility into

App and service experience
Hybrid cloud connectivity
Third party API performance
BGP and DNS integrity



Customer DX

- Monitor the availability of customer facing applications from external vantage point
- Simulates customer experience from external vantage point
- Map out the user journey using synthetic tests
- Be alerted to internet hacking and hijacks of website

SaaS

Web - HTTP Server — Availability • 8 Tests • 1 day

All **98.93 %**

94.41 SuccessFactors DC...	98.38 SAP Cloud Platform	99.6 DocuSign NA1	99.77 JIRA	99.83 Salesforce AP0	99.86 Box	99.86 GitHub	99.9 Microsoft Office 365...
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SaaS Response Time

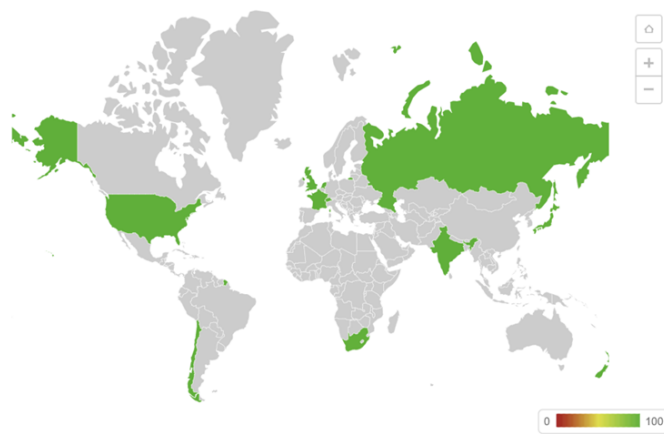
Web - HTTP Server — Response Time • 6 Tests • 1 day

Shared **510.41 ms**

901.45 Salesforce AP0	636.1 DocuSign NA1	533.74 SAP Cloud Platform	481.69 SuccessFactors DC...	309.47 JIRA	238.48 Microsoft Office 365...
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Map

Web - HTTP Server — Availability • 9 Tests • 1 day





WORKFORCE DX

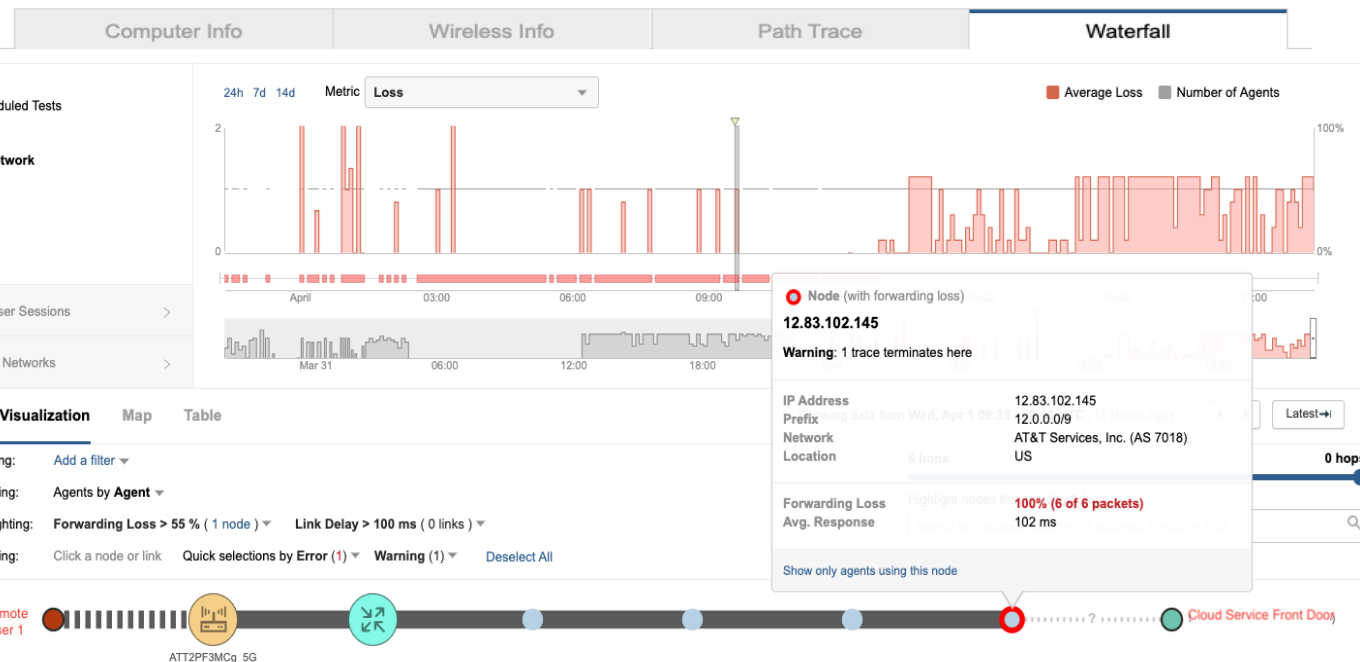
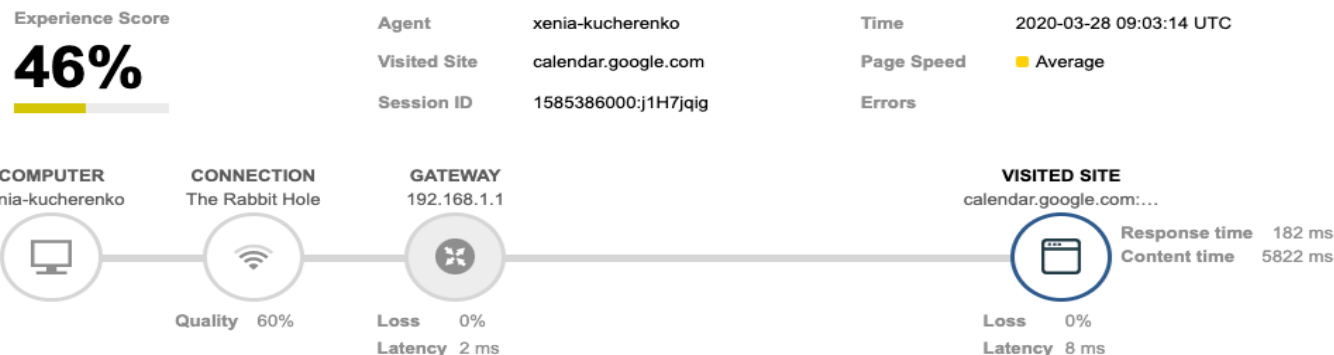
Visibility into

Branch and remote employee experience
SaaS and multi-cloud
Internal data center apps



Hybrid Workforce

- Ensures that employees continue to be productive working remotely or in the office/campus
- Ensure the reachability and availability of campus-critical SaaS, internally hosted apps, and cloud-based services across any network
- Historical data to help identify and troubleshoot 'last mile' connectivity issues





ENTERPRISE DX

Visibility into

SD-WAN, Hybrid WAN, DIA

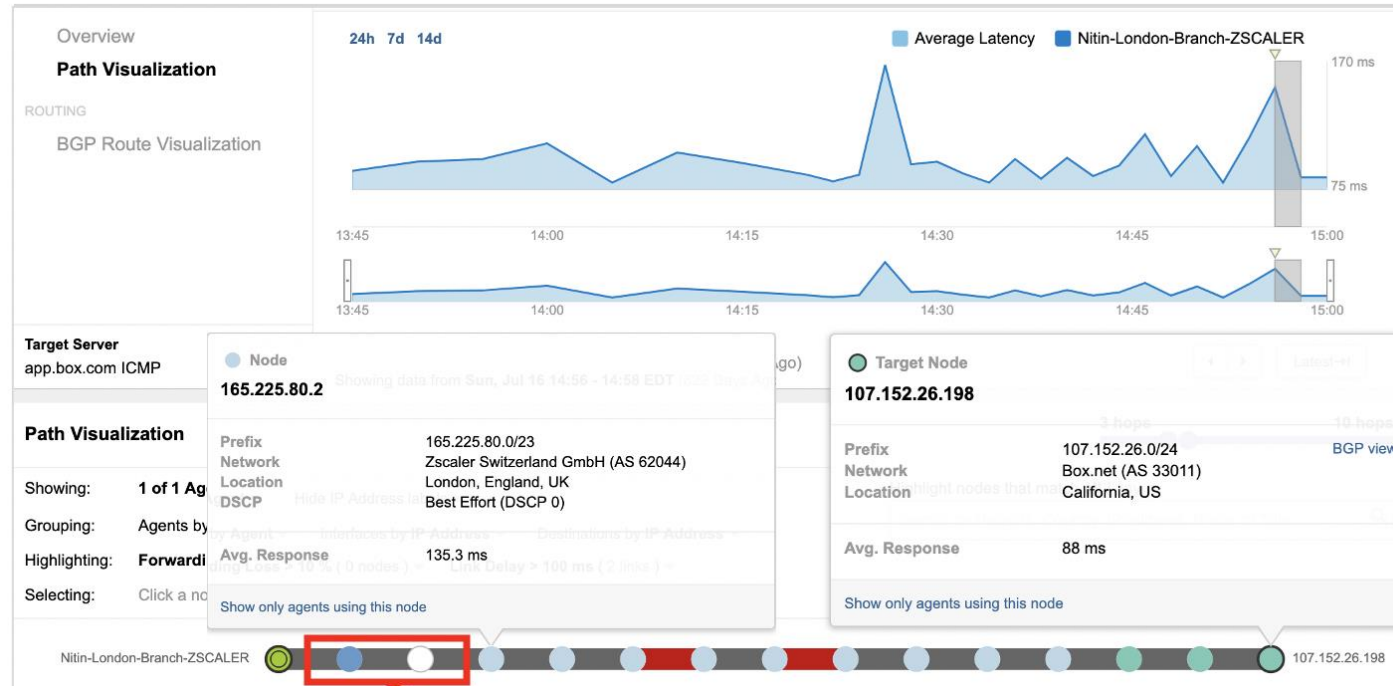
Underlay and overlay connectivity

Cloud security performance



WAN / SD-WAN

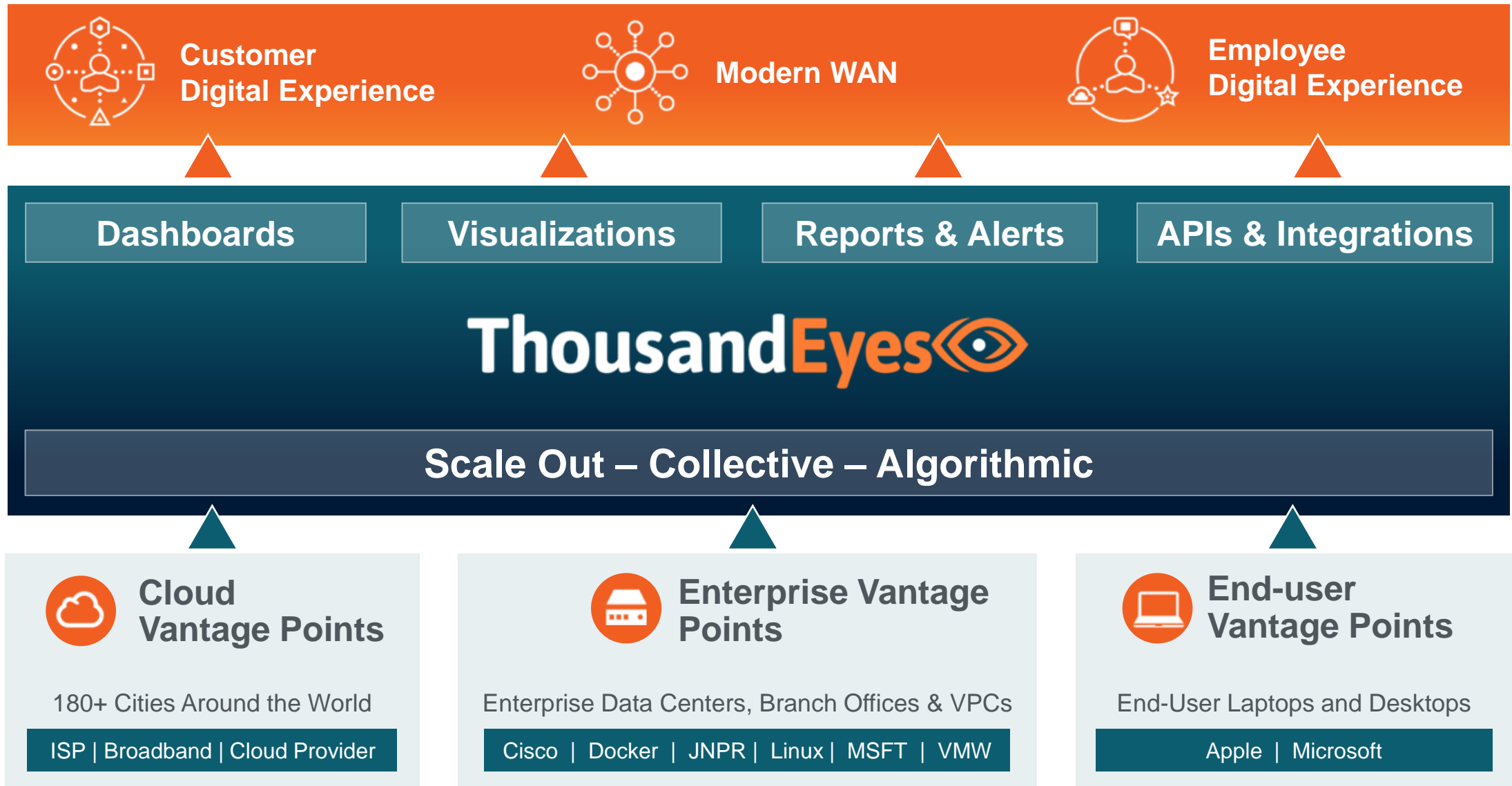
- Vendor agnostic
- Leverage ThousandEyes as a competitive differentiator
- Migration: Baseline and Comparison
- Performance Assurance
- Compare overlay with underlay



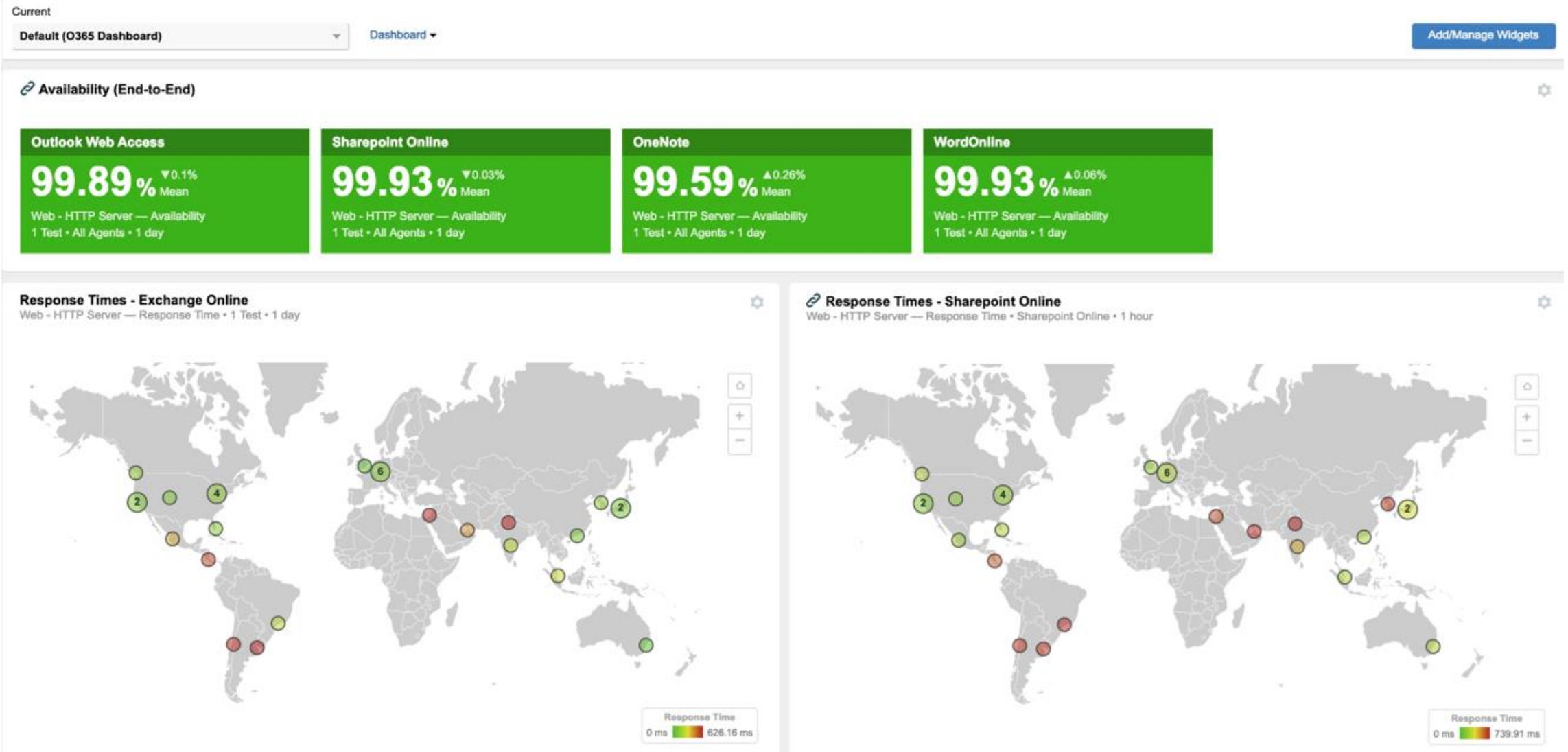
SD-WAN tunnel

Underlay

ThousandEyes Internet and Cloud Intelligence



Track Service Objectives with Dashboards

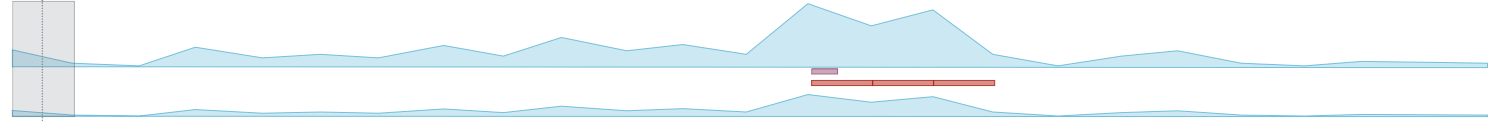


Most Correlated Visibility In One View

Time Correlated

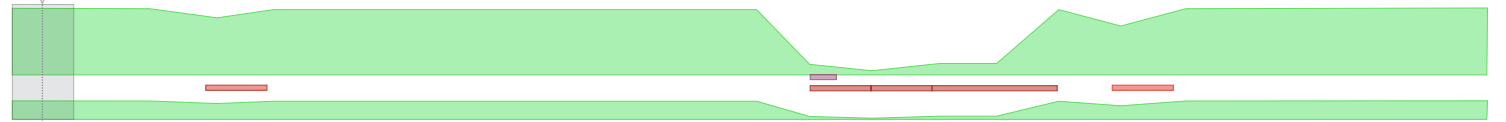
App Experience

- Transaction scripting, page load



HTTP/DNS/RTP Server

- HTTP Availability, response time, throughput



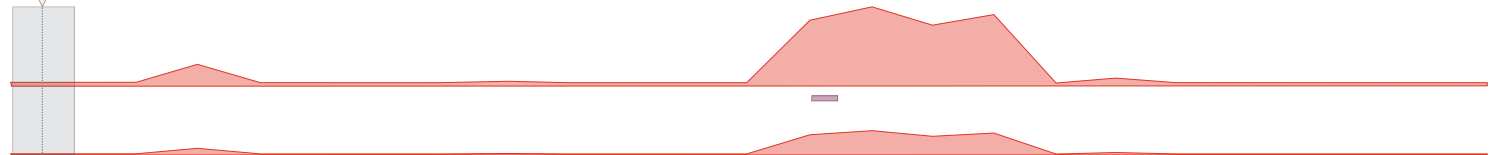
Scope and Domain

- Geo, HTTP phase, errors



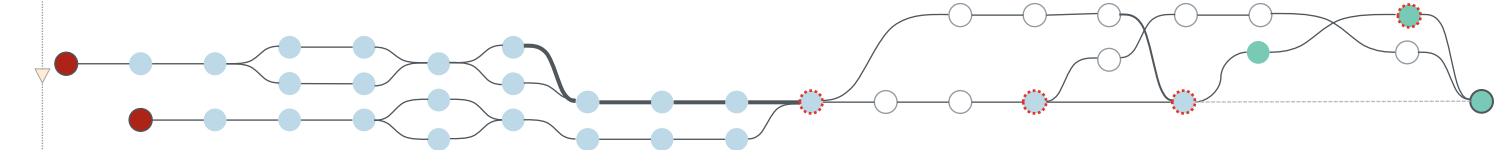
Network Metrics

- Packet loss, latency, jitter



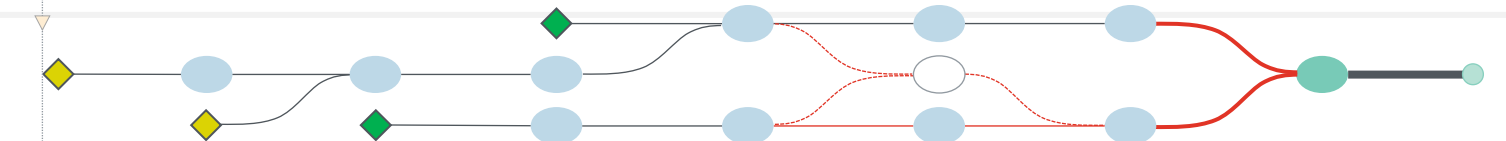
Path Visualization

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



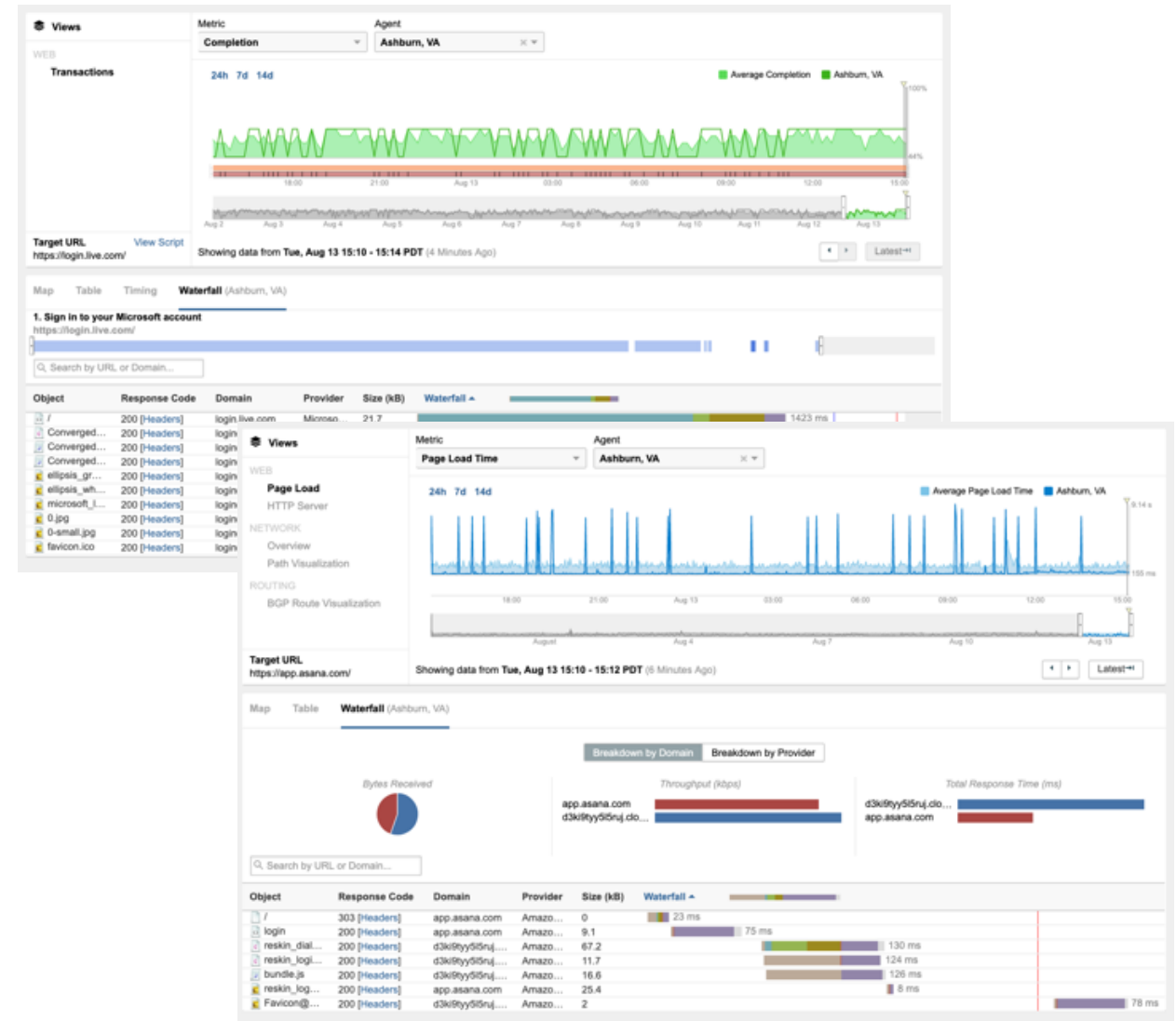
BGP Monitoring

- Reachability, path changes, updates



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



Unmatched Active Monitoring Vantage Points

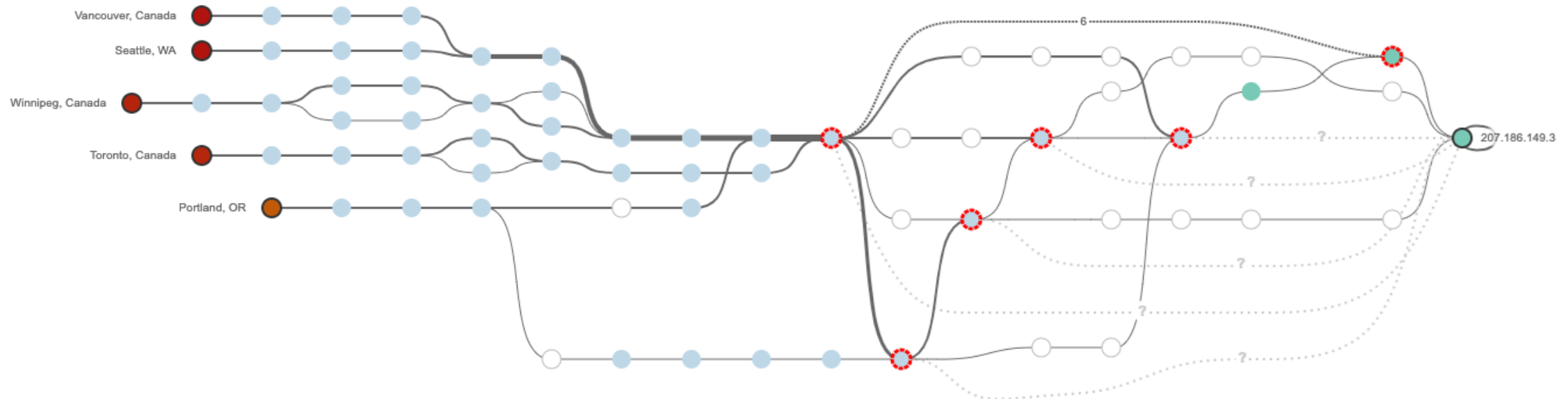
- Cloud Agents:
 - 187 cities
 - 58 countries
 - Tier 1, 2, 3 and broadband ISPs
 - AWS, Azure, GCP, Alibaba cloud regions
- Enterprise Agents
 - Cisco, Juniper, Microsoft, Linux, Vmware, Docker



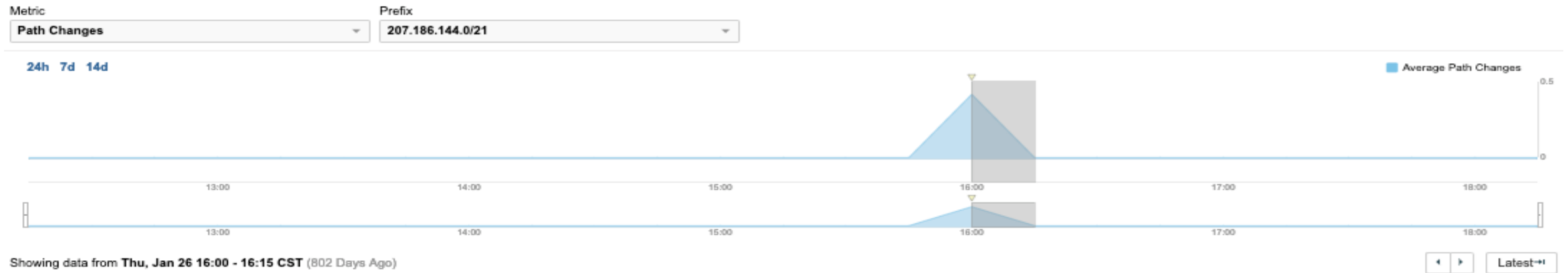
The Gold Standard for Path Visualization

- 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

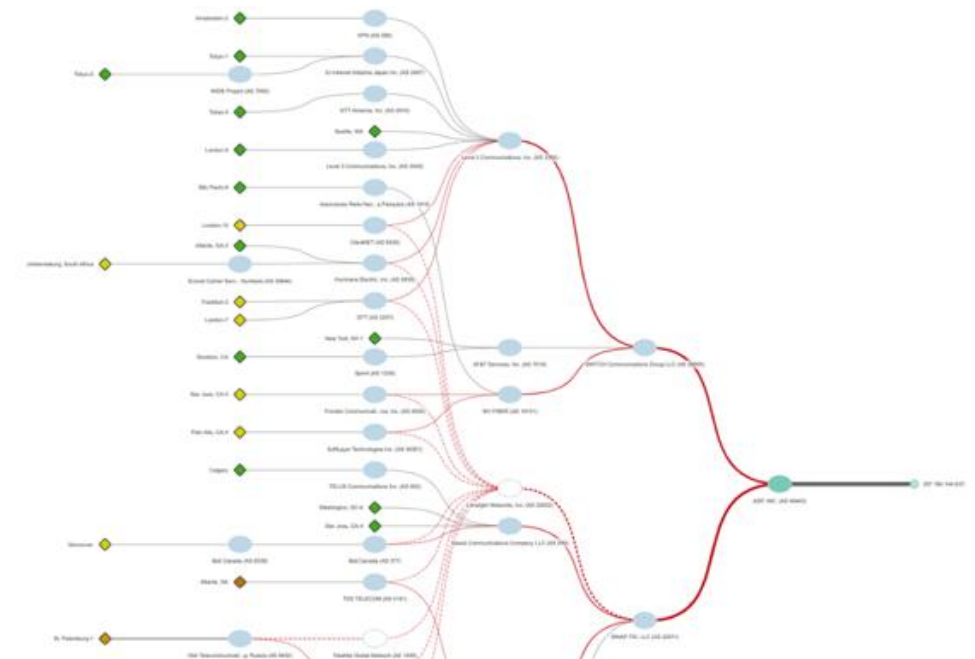
Outage Detected (1 node) ▾



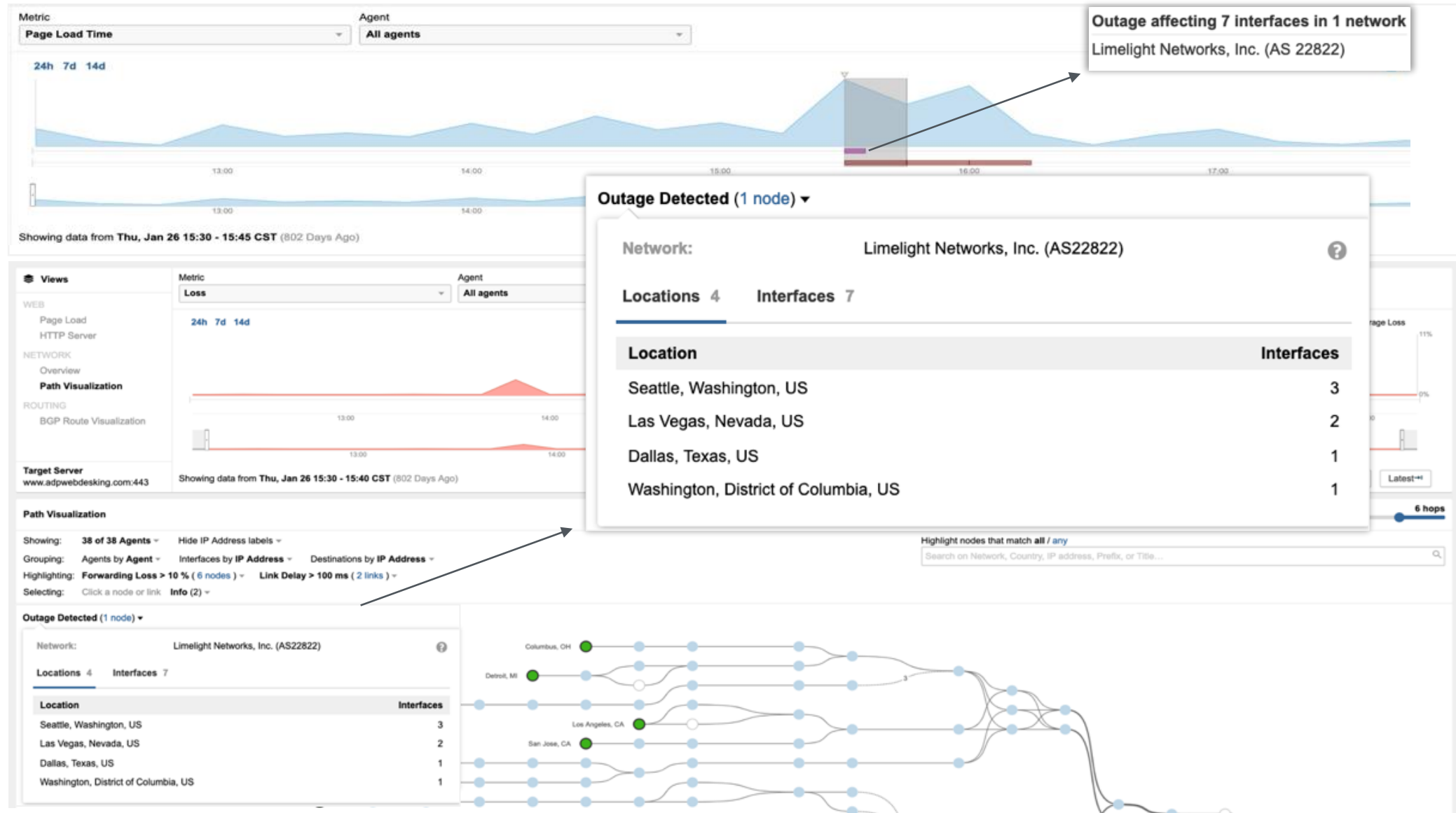
Industry's Leading BGP Monitoring



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

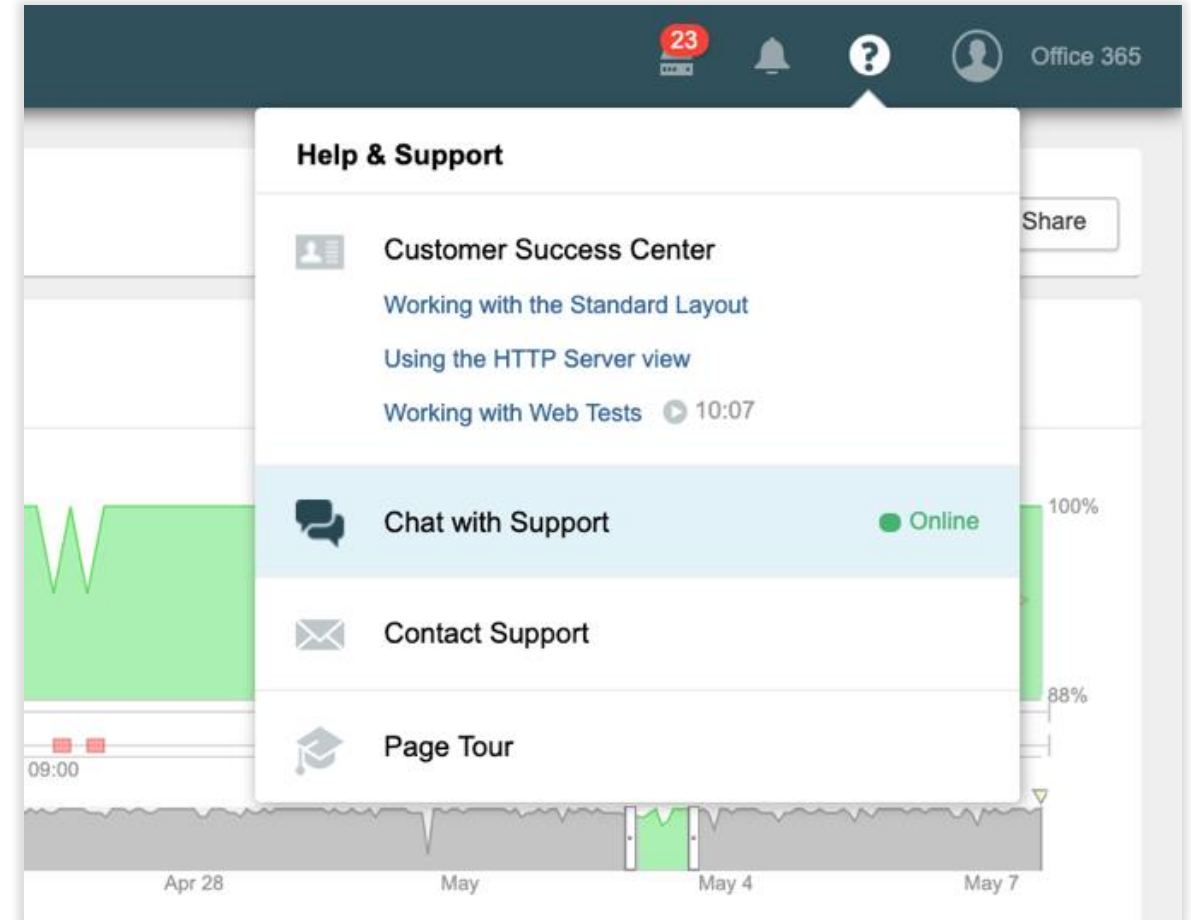


Collective Intelligence: Outage Detection



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



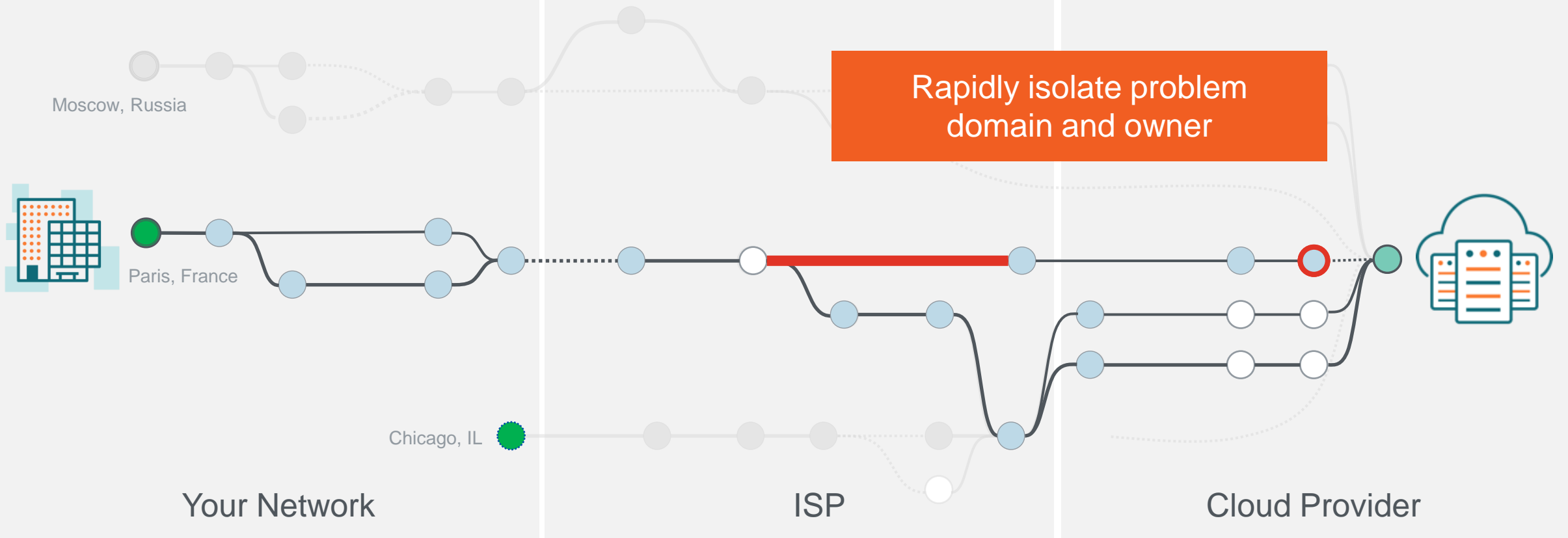
Automation and Integration

- 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

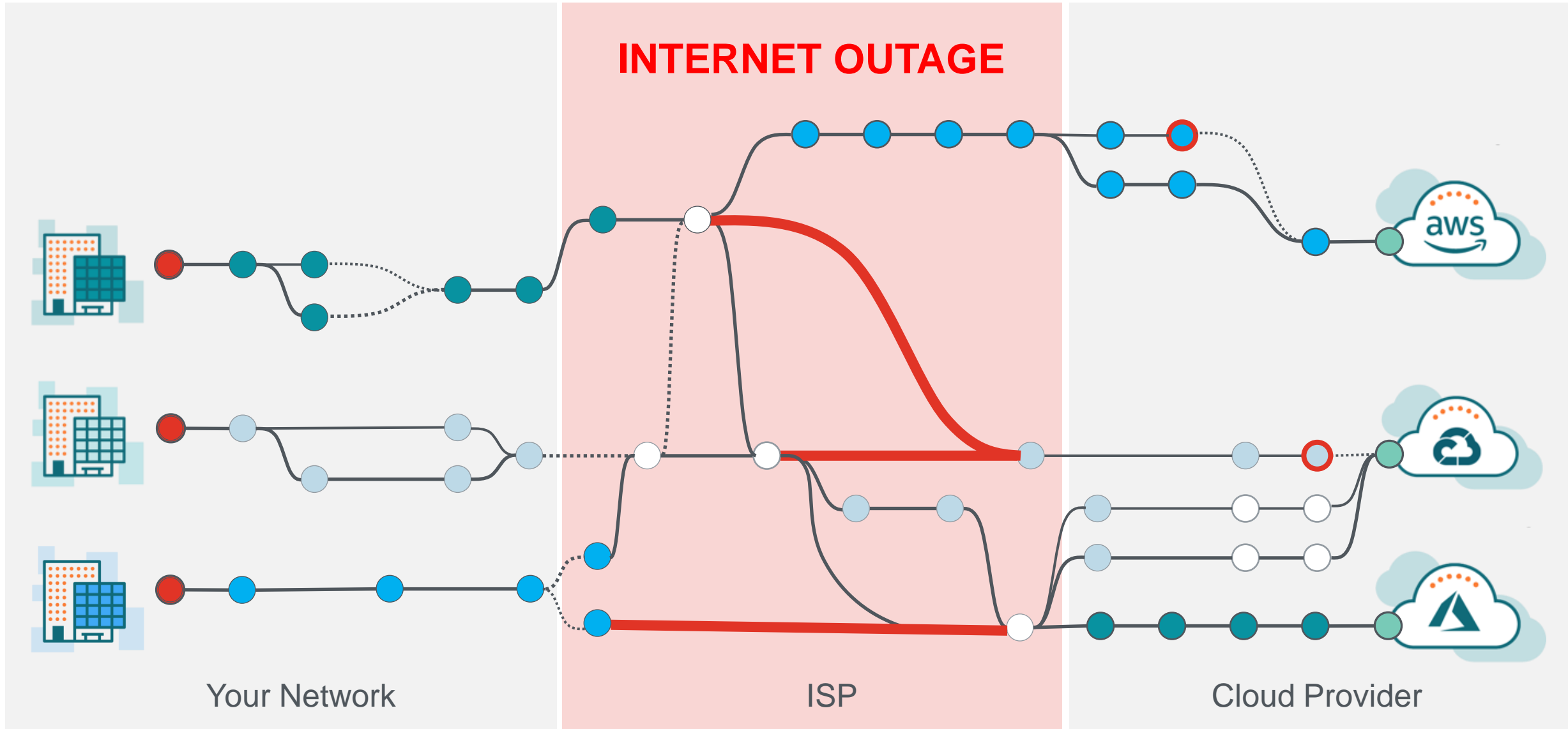


See the Internet Like It's Your Own Network

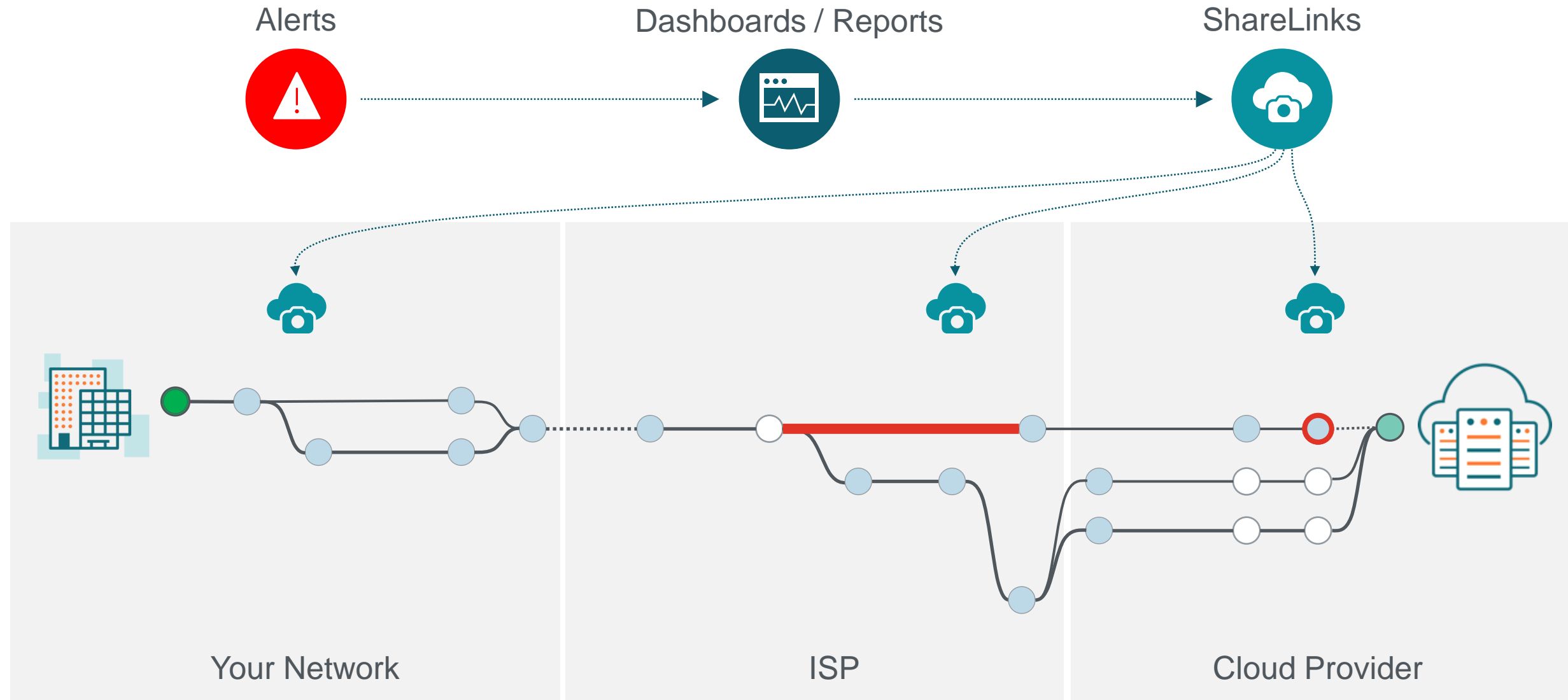
Visualize the link between network topologies and service delivery



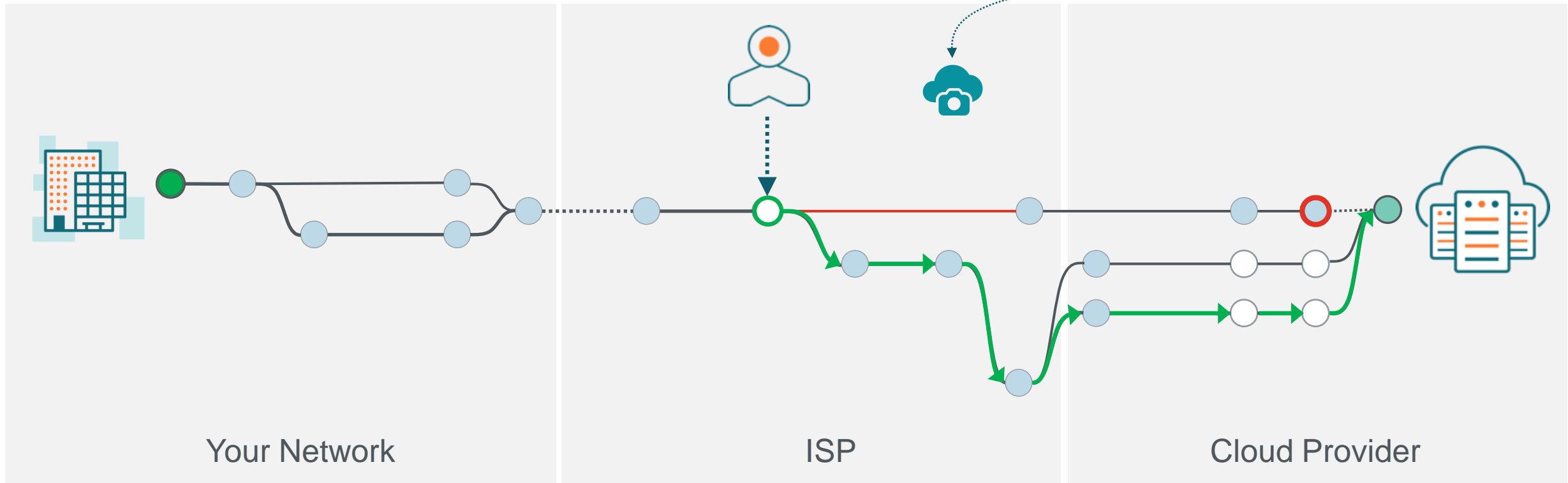
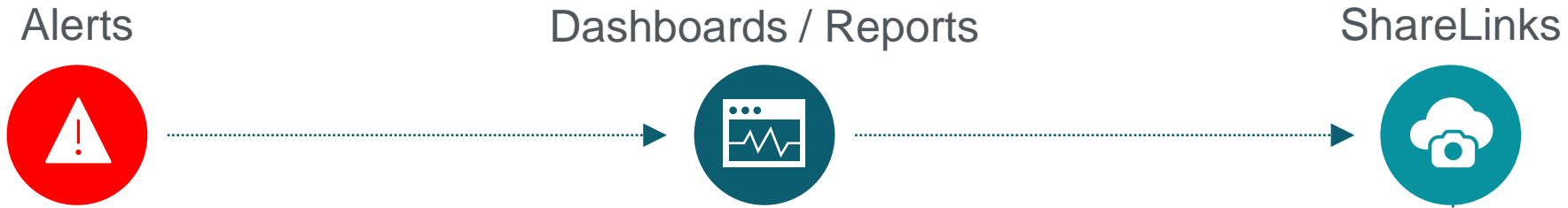
Gain Unique Insights from Collective Intelligence



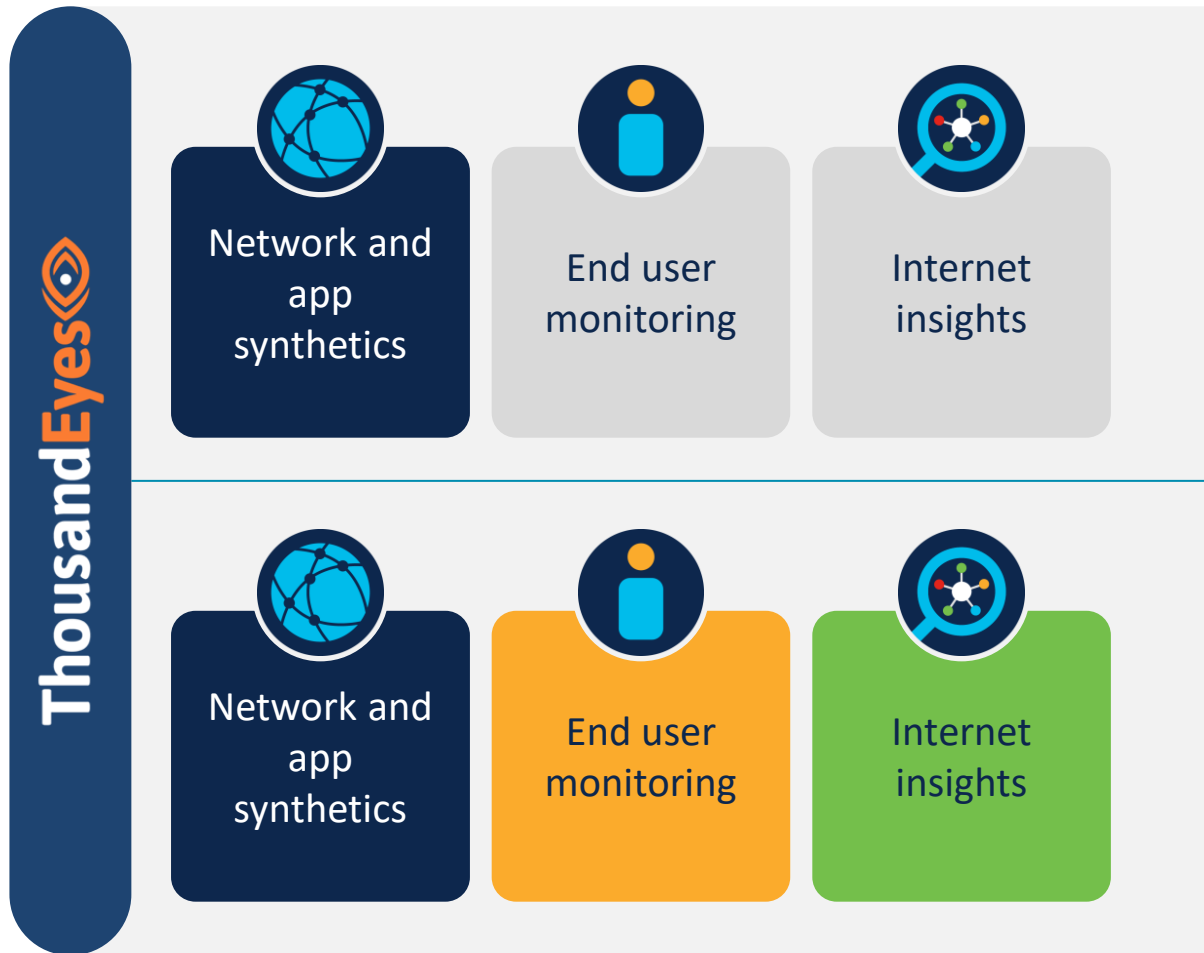
Collaborate More Effectively with Shared Data



Manage the Internet Through Your Providers



ThousandEyes offerings



ThousandEyes with Catalyst 9300/9400

- Requires Cisco DNA Advantage or Premier license
- One network/web test every 5 minutes, per switch
- Run tests from enterprise agents (no access to cloud agents)

ThousandEyes a la carte

- Add more Network and Application Synthetics for more visibility + cloud agents
- Gain visibility into remote workforce connectivity and app experience
- Understand impact of service provider outages – globally

Roadmap for Catalyst 9000 switches hosted agent

Catalyst 9300 Catalyst 9300L

Introduce ThousandEyes in the Cisco® Catalyst® ecosystem



Cisco IOS® XE 17.3.3
(Mar 2021)

Catalyst 9400

Scale ThousandEyes offerings to other switches



Cisco IOS XE 17.5.1
(Apr 2021)

Catalyst 9300X

Continue expanding ThousandEyes to the newest access platforms



Cisco IOS XE 17.6.1
(Jul 2021)

Catalyst 9500

Make ThousandEyes ubiquitous in the Catalyst ecosystem



Cisco IOS XE 17.6.1
or later

Catalyst 9000 DNA Licensing Tiers

Cisco DNA Essentials

Simplified management and base automation and monitoring for entry-level customers

Single SKU 3/5/7 Year Subscriptions

Centralized Management

Base Automation and Monitoring

▼

+

Network Essentials
(Layer 2 Routed Access)

Cisco DNA Advantage

SD-Access capable, with policy-based automation and assurance for small to midsize customers

Single SKU 3/5/7 Year Subscriptions

Flexible Network Segmentation

Service Assurance with ThousandEyes

Cisco Prime Infrastructure*

Cisco DNA Essentials

▼

+

Network Advantage
(Full Layer 3 Routing)

Cisco DNA Premier

SD-Access ready, with advanced security features bundled for midsize to large customers

Single SKU 3/5/7 Year Subscriptions

Stealthwatch

ISE Base + ISE Plus

Cisco DNA Advantage – now with ThousandEyes

Cisco DNA Essentials

▼

+

Network Advantage
(Full Layer 3 Routing)

ThousandEyes access is included with **Cisco DNA Advantage and Cisco DNA Premier**
sold with Cisco Catalyst 9300 and 9400 switches

ThousandEyes access for new Catalyst 9300/9400 Series switches



New 9300/9400 purchased with DNA-A or DNA-P on CCW



ThousandEyes agent Preloaded in flash by manufacturing



Account login received via email



Day 1 access to ThousandEyes account

ThousandEyes access for existing Catalyst 9300/9400 Series switches

1



Accept
ThousandEyes
entitlement in
CSSM

2



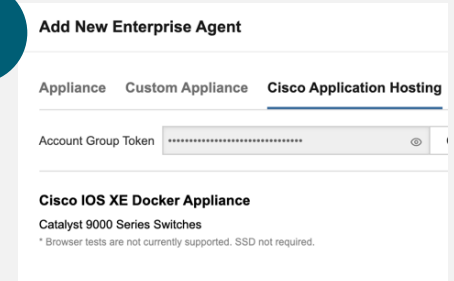
Account login
received
via email

3



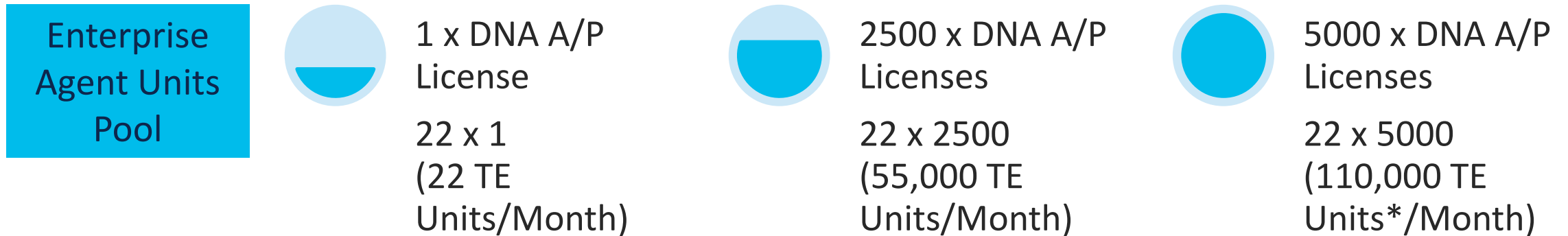
Upgrade IOSXE
on the switch
17.3.3 – 9300
17.5.1 - 9400

4



Download and
install enterprise
agent from the
TE portal

DNA Subscription Benefit




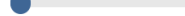







- Provide ThousandEyes Enterprise Agent units every month based on active DNA A/P license in CSSM
- Units will not rollover to next month.
- Not require to host TE Agents on every C9300/C9400.

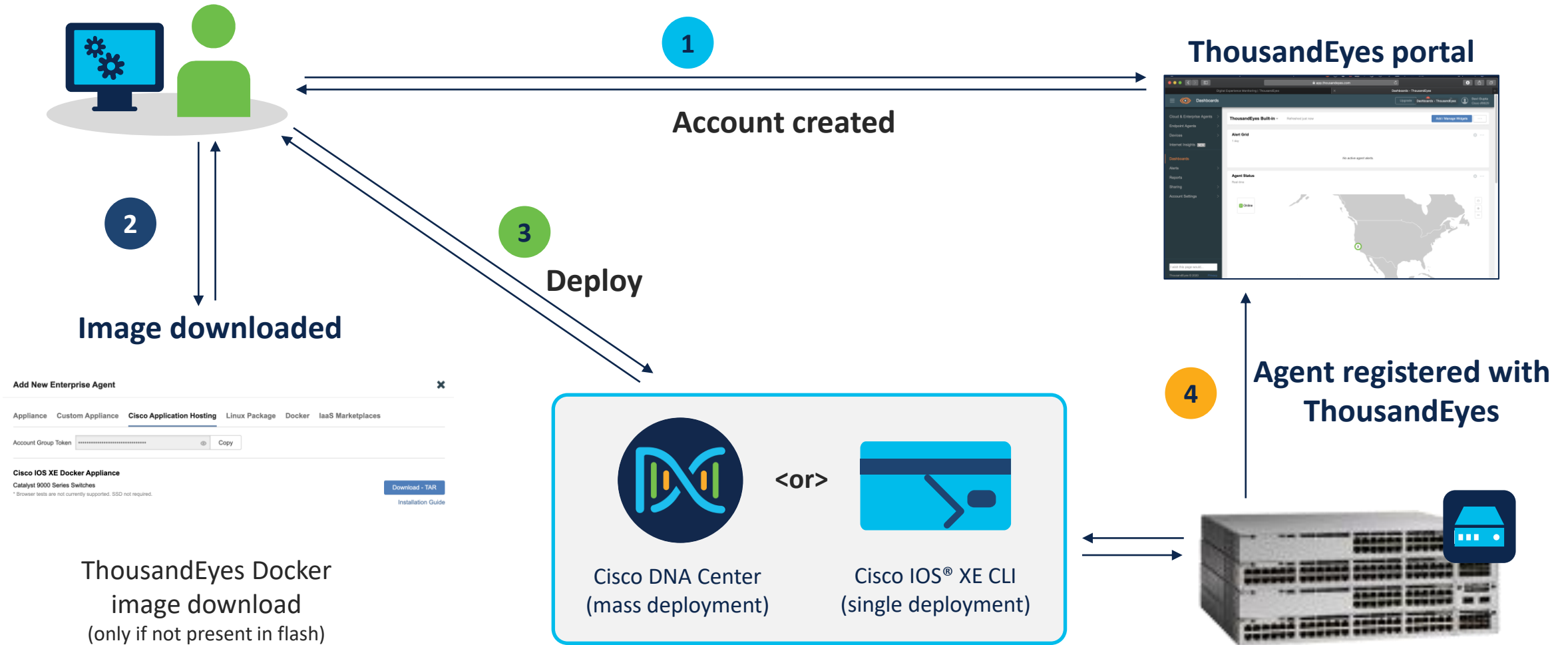
* Maximum TE Enterprise Agent units offer per customer. Can purchase extra TE units on Cisco GPL

Enterprise Agent Units Consumption

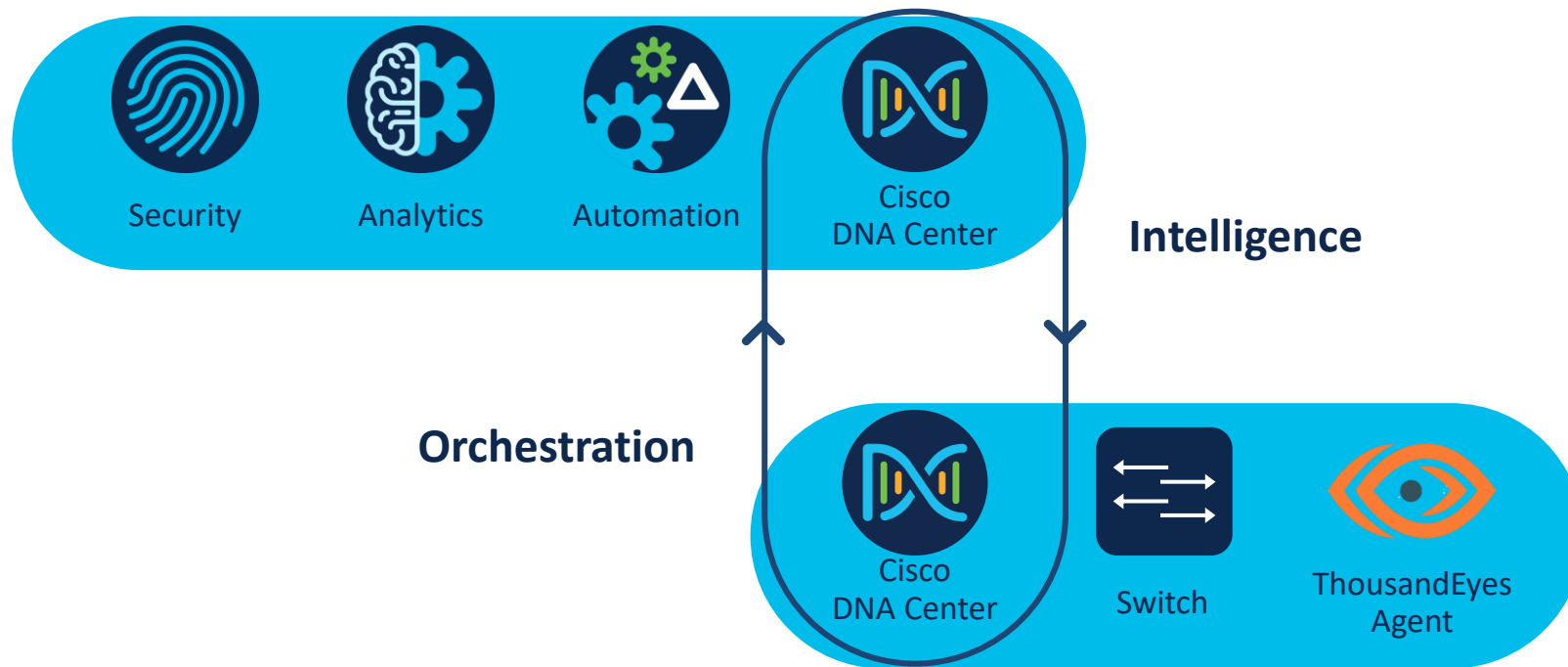
- Flexibility of choosing different test intervals
- Option to purchase more TE units on Cisco GPL
- ThousandEyes Units Calculator: <https://app.thousandeyes.com/calculator/>

Test Description	Interval	Details	Agents	No. of tests	Monthly Usage
Web - HTTP Server Demo Test	5 min 	5 s Timeout	 0  1	1	22
Web - HTTP Server Demo Test	1 min 	5 s Timeout	 0  1	1	112
Web - HTTP Server Demo Test	1 hour 	5 s Timeout	 0  1	1	2

ThousandEyes deployment workflow



Cisco DNA Center integration with ThousandEyes



Customers can use Cisco DNA Center to download, store, securely deploy, and maintain the ThousandEyes app across the entire Catalyst® 9000 portfolio

Network Hierarchy

Network Settings

Image

Search Hierarchy



Create Site

▼ Global

▶ ALL

▶ LATAM

▶ ANZ

▶ USA

▶ EMEA

▶ APJC



A12



Outage Events

Last 24 hours

Outages

26

My Affected Tests

0

Locations

18

My Alerts

0

VNPT Corp (AS 45899)

1 hour ago, affecting 1 location

Hurricane Electric, ... (AS 6939)

1 hour ago, affecting 2 locations

Level 3 Communicatio... (AS 3549)

1 hour ago, affecting 1 location

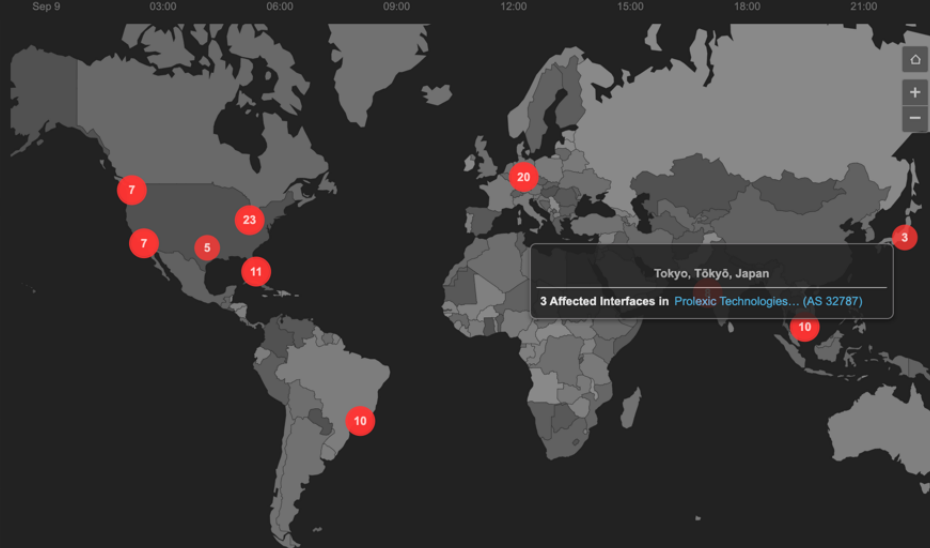
Level 3 Communicatio... (AS 3549)

1 hour ago, affecting 1 location

Level 3 Communicatio... (AS 3549)

2 hours ago, affecting 1 location

1-5 of 26



Search Buildings



Time For A Demo



The bridge to possible