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The bridge to possible

Thousand Eyes from a Network Engineers Perspective.

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BRKXAR-2007



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Agenda

- The WW(What & Why) of ThousandEyes
- ThousandEyes Agents & Dashboard
- Use cases
- Key Takeaways
- Q & A
- Appendix

The WW(What & Why) of ThousandEyes



Session Objective :

This Session Focuses on :

- Brief Overview of Thousand Eyes platform.
- The Use cases cover some of the challenges faced by a Network Engineer & how Thousand Eyes could have helped in those situations.

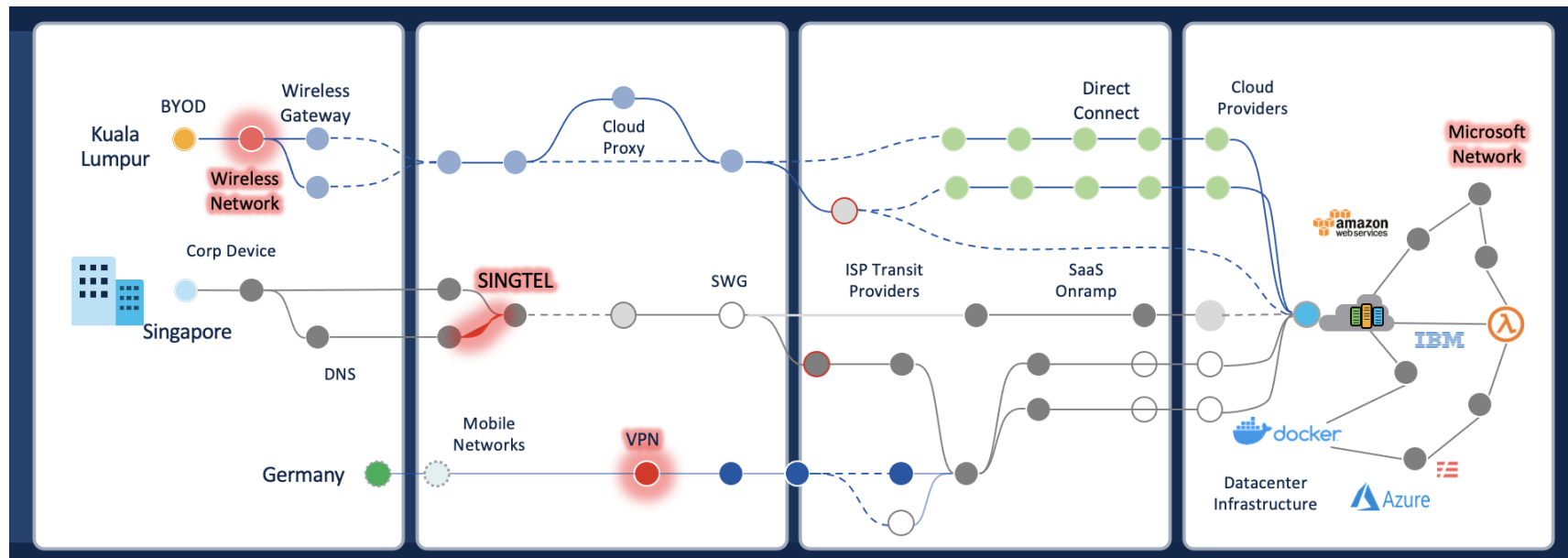
By the end, I hope everyone in this room gets a better understanding of the how we can use Thousand Eyes in our Troubleshooting approach to detect and resolve issues way faster than the traditional methods.

Session Non-Objective :

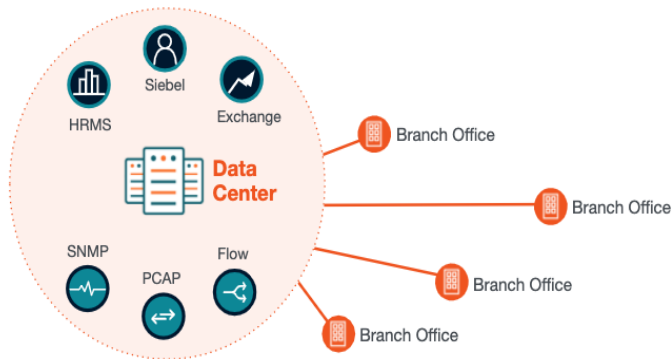
- We will not cover any ThousandEyes test configurations or deep dive on them.
- We will not focus on the Installation/Licensing of Thousand Eyes.

What Is ThousandEyes?

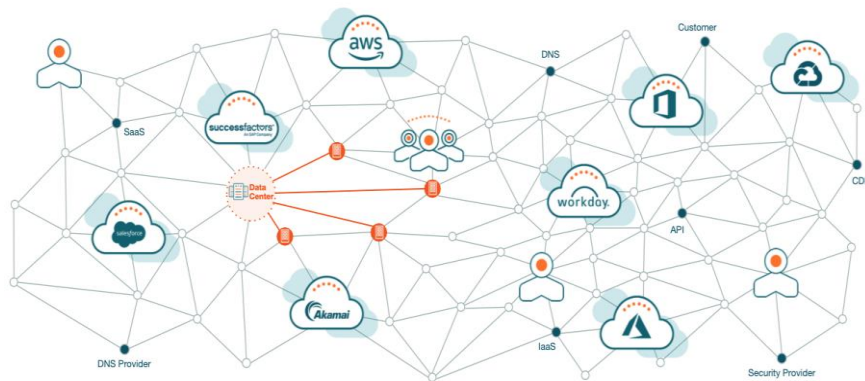
ThousandEyes allows you to visualize any network as if it was your own, quickly surface actionable insights, and collaborate and solve problems with your partners.



Why Does It Matter



THE WAY IT
WAS



THE WAY IT IS

CLOUD is the new
DataCenter

INTERNET is the
new Network

SaaS is the new
App Stack

Operations Processes Change

IT Assets You Control

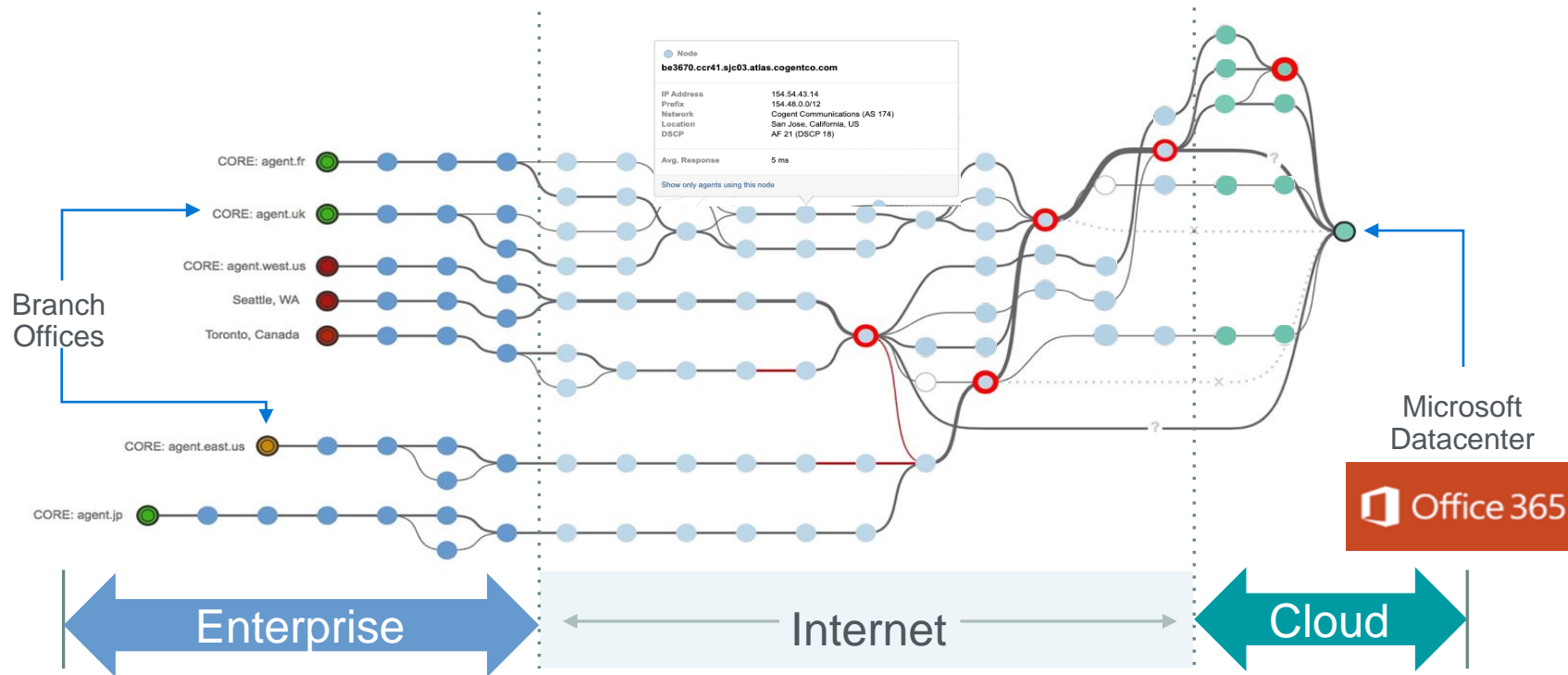


IT Assets You Don't Control



Correlated Visibility Into ALL Networks

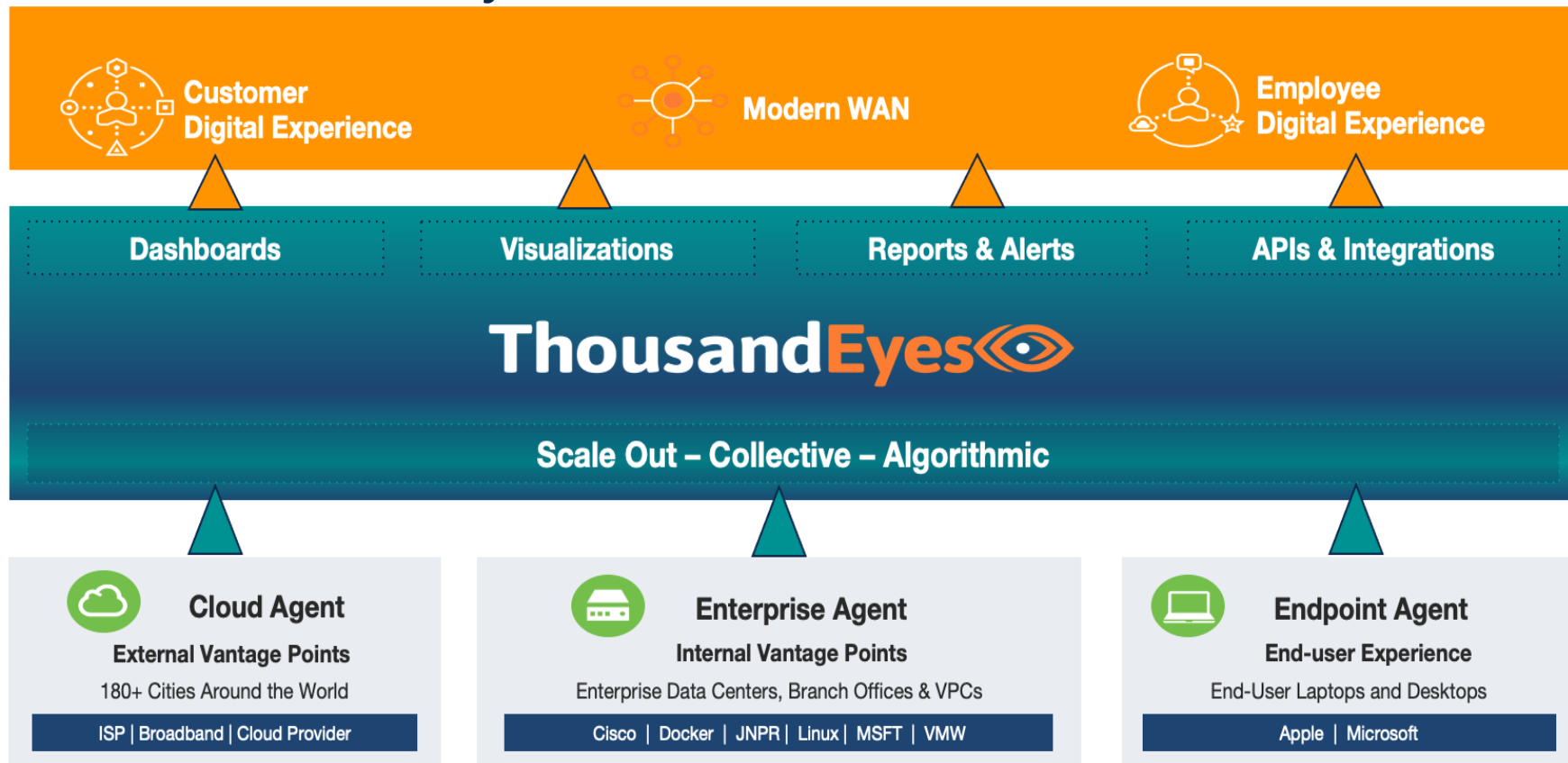
Availability, Performance and Change



ThousandEyes Agents & Dashboard



The ThousandEyes Platform



Cloud Agent

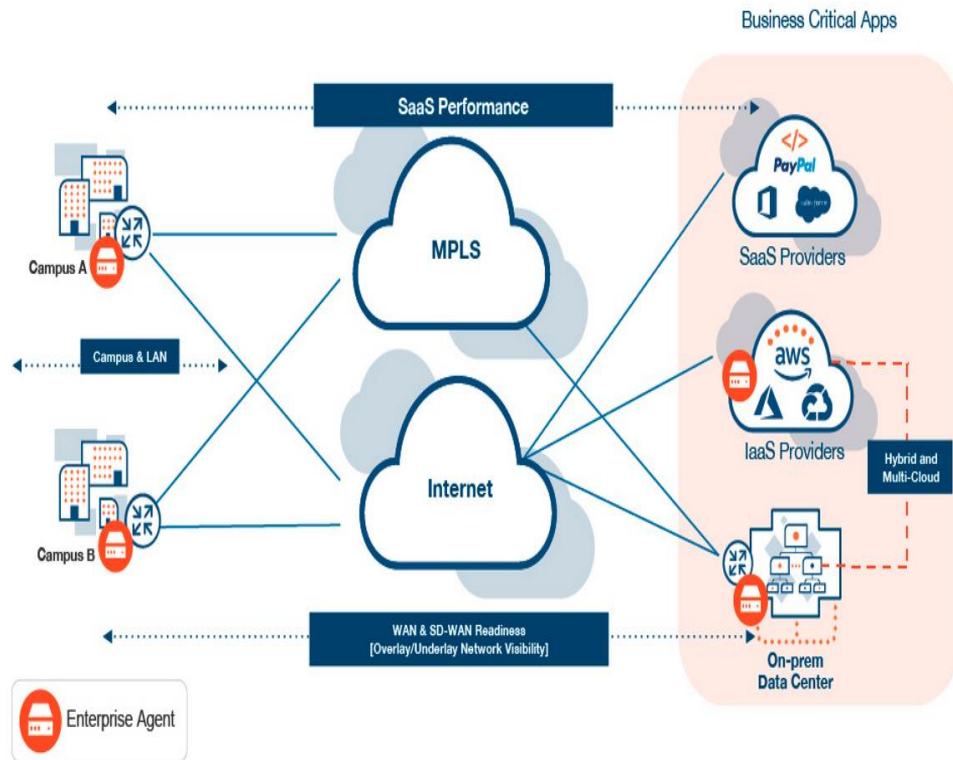
- Outside-In monitoring
- 370+ Locations
 - Tier 2 and 3 service providers, broadband, cloud
 - www.thousandeyes.com/map
- Commonly for customer/public facing applications
- The simplest way to see Global connectivity



Cloud Agents World Map

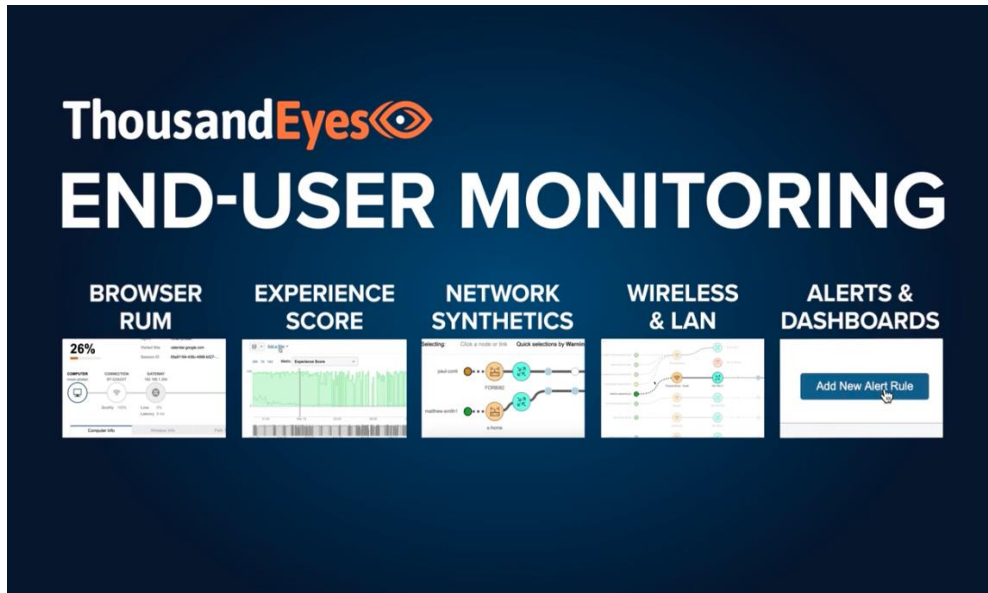
Enterprise Agent

- Inside-Out monitoring (on-prem)
- Deployment Options
 - OVA / Physical Appliance
 - vmware VirtualBox Microsoft Hyper-V
 - Linux Package/NUC/rPI
 - ubuntu® redhat. CentOS
 - Docker
 - Cisco ASR1k / ISR4k /CAT9K
- Commonly for internal applications, SaaS and Site-to-Site
- Get Visibility into all segments of your Enterprise Network.



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+
- Gain Visibility from any Employee to any Application over the network



The image shows a screenshot of the ThousandEyes END-USER MONITORING dashboard. The dashboard is dark-themed and features the ThousandEyes logo at the top. Below the logo, the text "END-USER MONITORING" is displayed in large, white, bold letters. The dashboard is divided into five main sections, each with a title and a corresponding visual representation of data:

- BROWSER RUM**: A section showing a "26%" metric and a line graph.
- EXPERIENCE SCORE**: A section showing a line graph with a green area under the curve.
- NETWORK SYNTHETICS**: A section showing a network diagram with nodes and connections.
- WIRELESS & LAN**: A section showing a network diagram with nodes and connections.
- ALERTS & DASHBOARDS**: A section showing a button labeled "Add New Alert Rule".

Dashboard

The Dashboard page is the starting point when we log in to the ThousandEyes Platform



Dashboard

Quick and easy customizable options provided to build your own Dashboard.



Use case #1

Application Issues
“Let’s Blame the Network
Engineer”

Introducing Mr. U

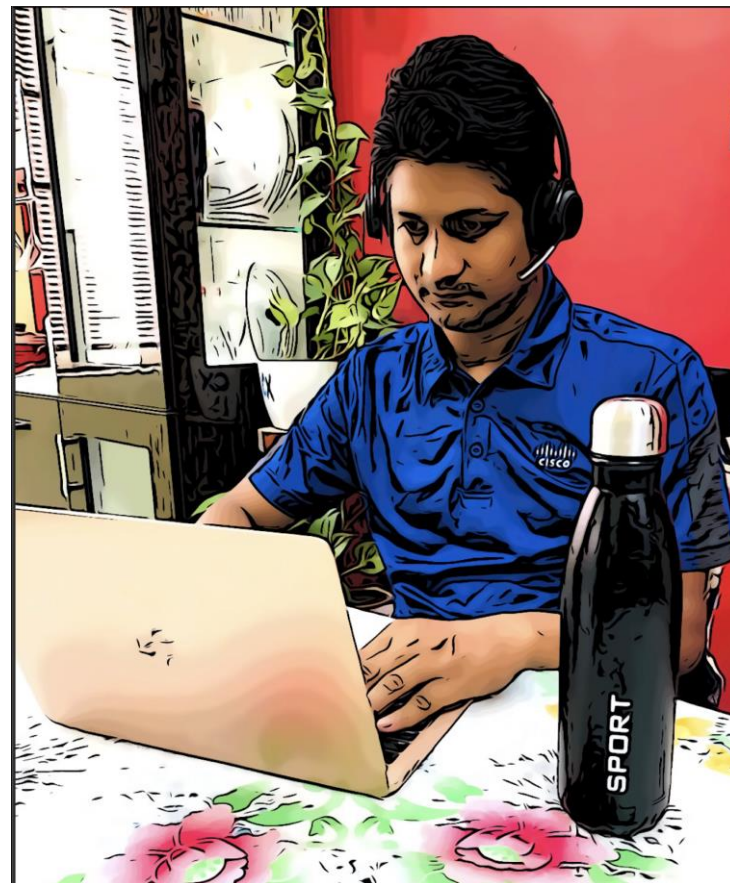
Mr. U is a Network Engineer in Cisco.

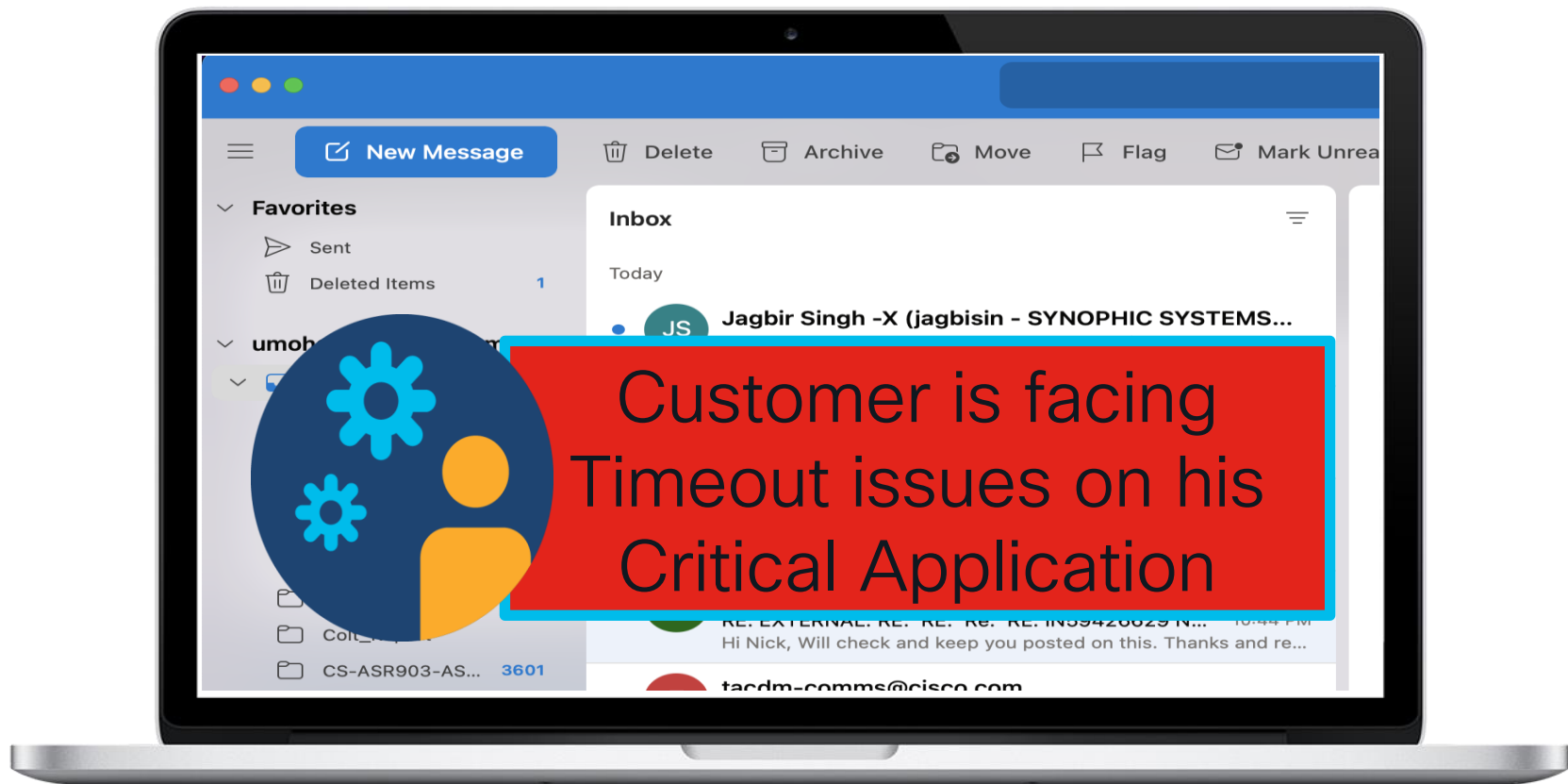


Troubleshooting & Fixing Issues



Escalations & Long Non-ending calls





Data Gathering :

- Application url – <https://login.microsoftonline.com>
- Criticality – Severe Impact
- Users Affected – All Users
- Site Location – Cincinnati Office
- Any recent changes in the Network – No
- Any other application in same site.. – No
- Any other Site having the same issue – No
- Engage with one of the User :
 - Exact Issue – Operation timed out !!
 - Past Performance – **Not Sure**
 - Issue Start time – ~10:40 AM

```

CAT9K-IOSXE#sh ver | in ios
System image file is "flash:cat9k_iosxe.17.03.04.SPA.bin"
CAT9K-IOSXE#sh plat
CAT9K-IOSXE#sh platform
Switch  Ports      Model              Serial No.    MAC address    Hw Ver.      Sw Ver.
-----  -
1        41      C9300-24P         FCW2419G02L  7061.7b50.0e00 V03          17.03.04
Switch/Stack Mac Address : 7061.7b50.0e00 - Local Mac Address
Mac persistency wait time: Indefinite

Switch#      Role      Priority    Current
State
-----
*1           Active      1          Ready

CAT9K-IOSXE#sh proc cpu sorted
CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
PID Runtime(ms)   Invoked    uSecs   5Sec   1Min   5Min  TTY Process
133    66204         1070599      61    0.07%  0.02%  0.00%  0 IOSXE-RP Punt Se
137   1937821       325021038     5    0.07%  0.03%  0.02%  0 L2 LISP Punt Pro
269    763301        52233719    14    0.07%  0.01%  0.00%  0 UDLD

CAT9K-IOSXE#sh proc mem sorted
Processor Pool Total: 1363180300 Used: 310029528 Free: 1053150772
reserve P Pool Total: 102404 Used: 88 Free: 102316
lsmpi_io Pool Total: 6295128 Used: 6294296 Free: 832

PID TTY Allocated Freed Holding Getbufs Retbufs Process
0 0 294146280 48269728 226132544 0 0 *Init*
4 0 22910312 441784 22307680 0 0 RF Slave Main Th

CAT9K-IOSXE#
CAT9K-IOSXE#sh plat reso
CAT9K-IOSXE#sh plat resources
**State Acronym: H - Healthy, W - Warning, C - Critical
Resource Usage Max Warning Critical State
-----
Control Processor 1.11% 100% 90% 95% H
DRAM 3572MB(47%) 7575MB 85% 90% H
TMPFS 997MB(13%) 7575MB 40% 50% H

```



Device
Healthy

Initial Triage :

- Edge Device on site is Healthy.
- No Drops or anomalies noticed on the device.
- Need to involve ISP
- Need to Involve Application Team(Microsoft)

Customer Sentiment :



- Customer getting Impatient
- Lot of time Elapsed but no clue on the Root Cause
- Involving ISP or Application Team will cause more delays



Mr.
ISP

Initial Triage Report :

- No Drops reported on the PE devices
- No Global outages
- No path changes observed
- Issue must be beyond the ISP boundary
 - Customer network
 - Application

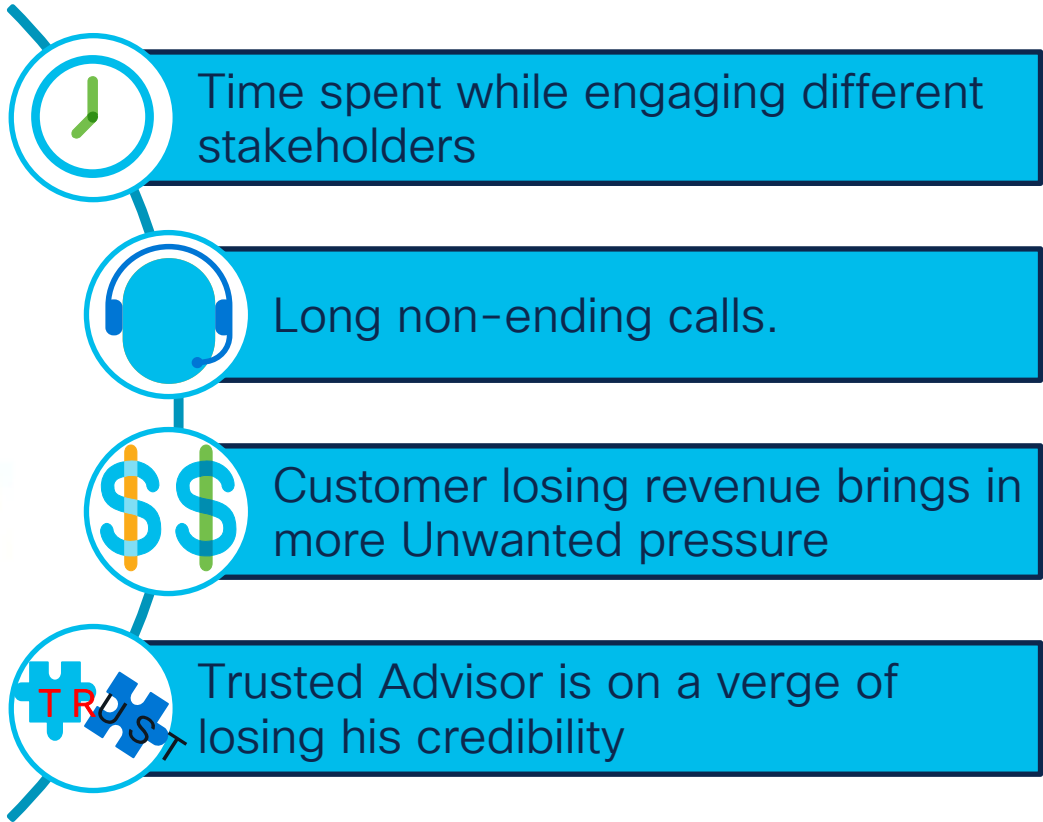
Customer Sentiments :

- Bad to Worse
- Loses trust in Mr. U
- Demands further escalation to Accounts/Sales
- Won't Involve Application team without further escalation

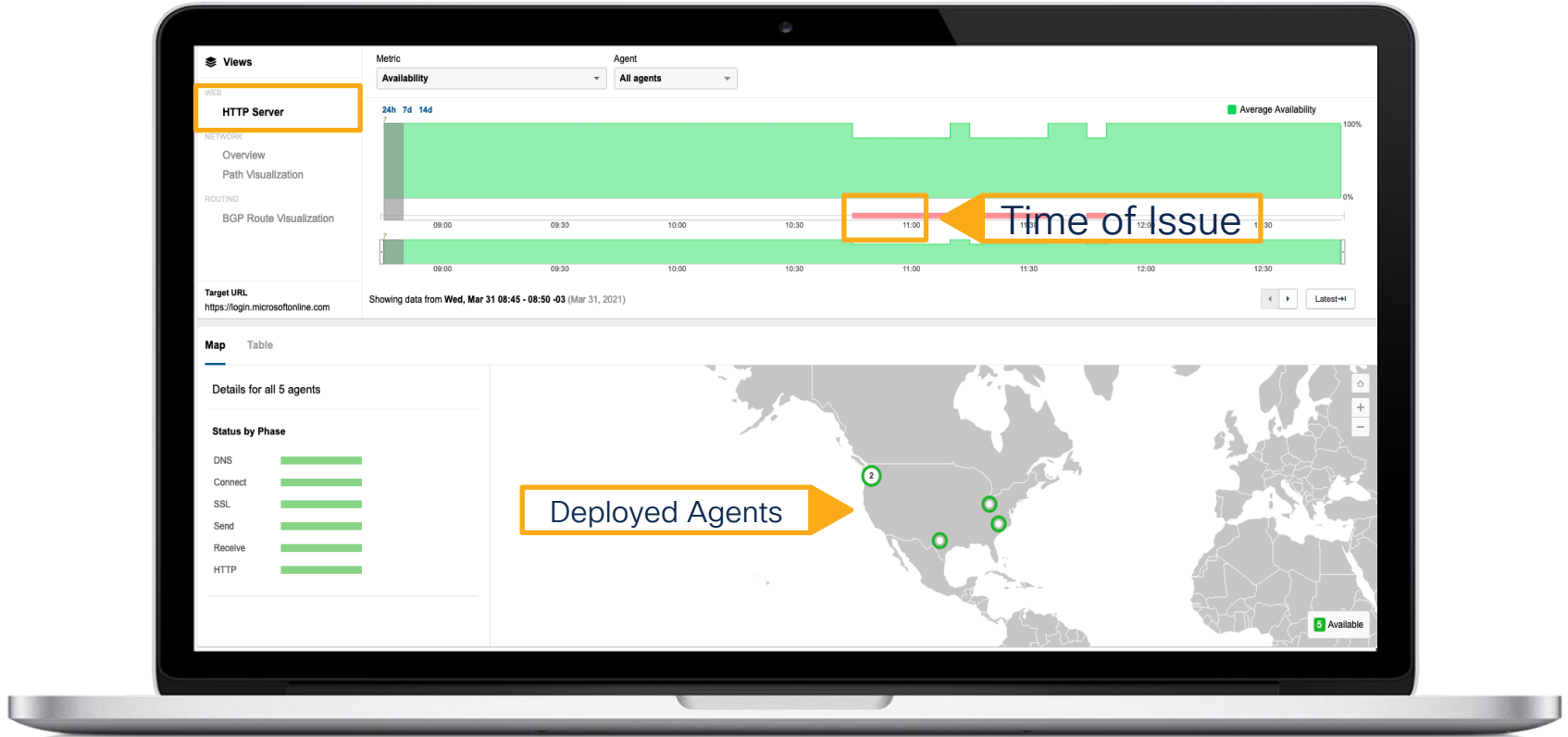
"Blame The Network Engineer"

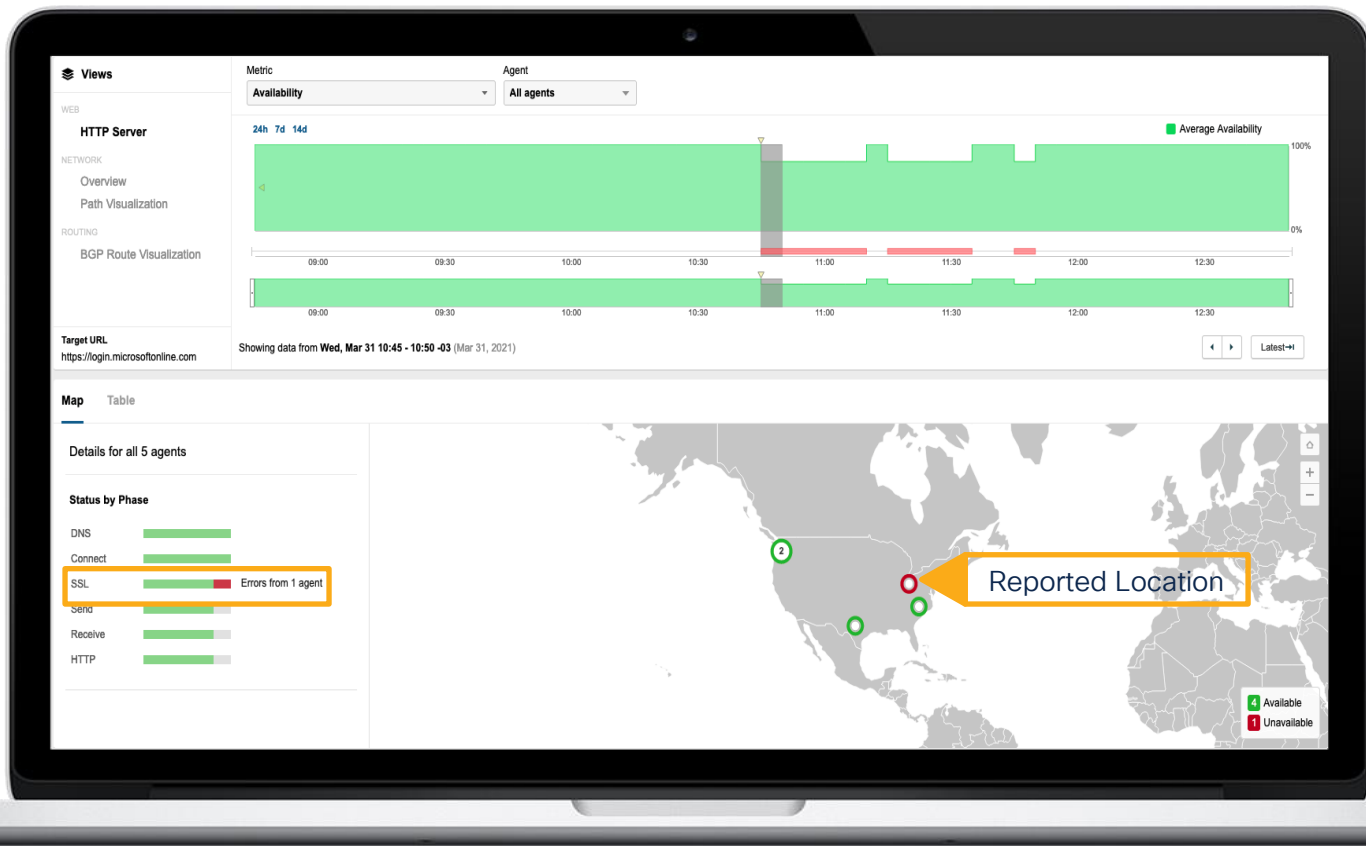


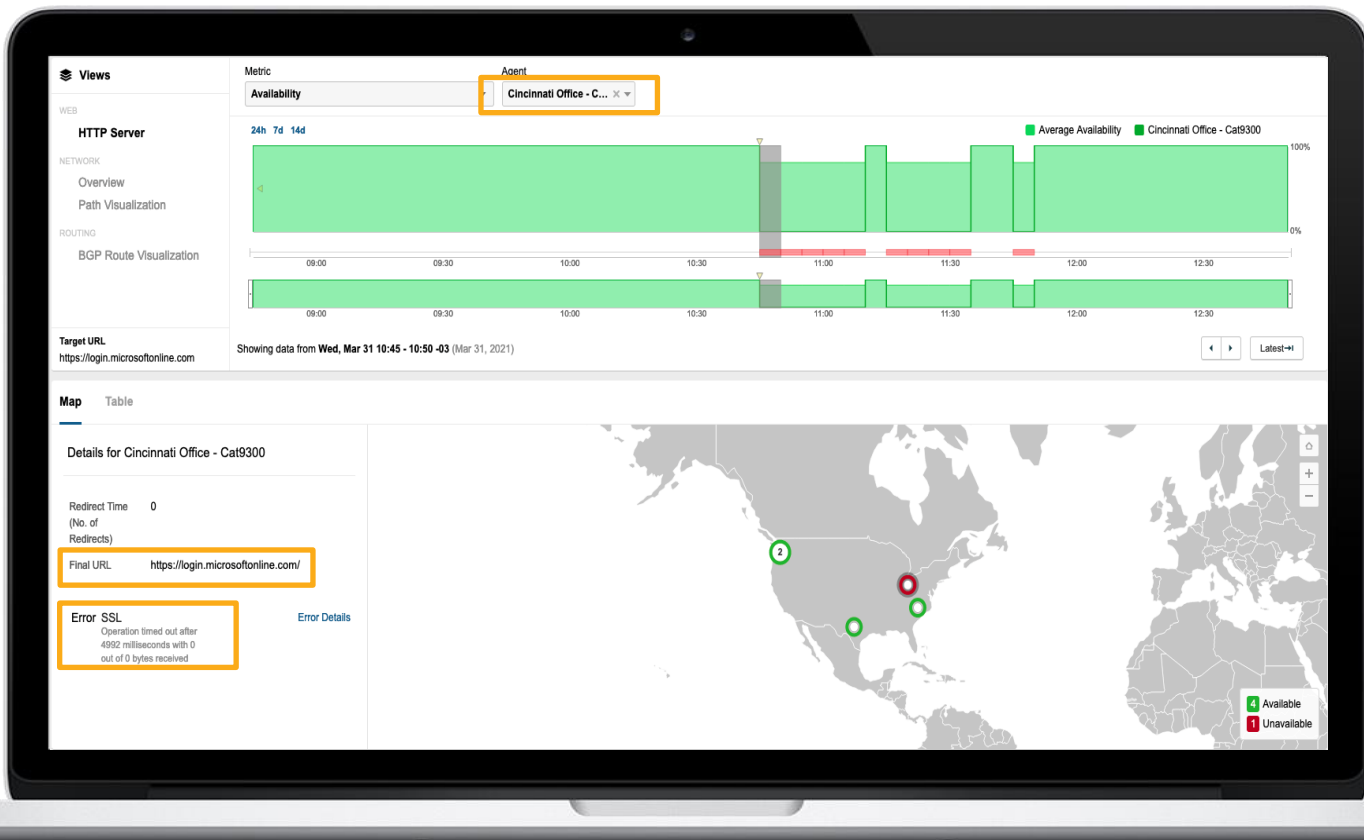
Courtesy : Google Images

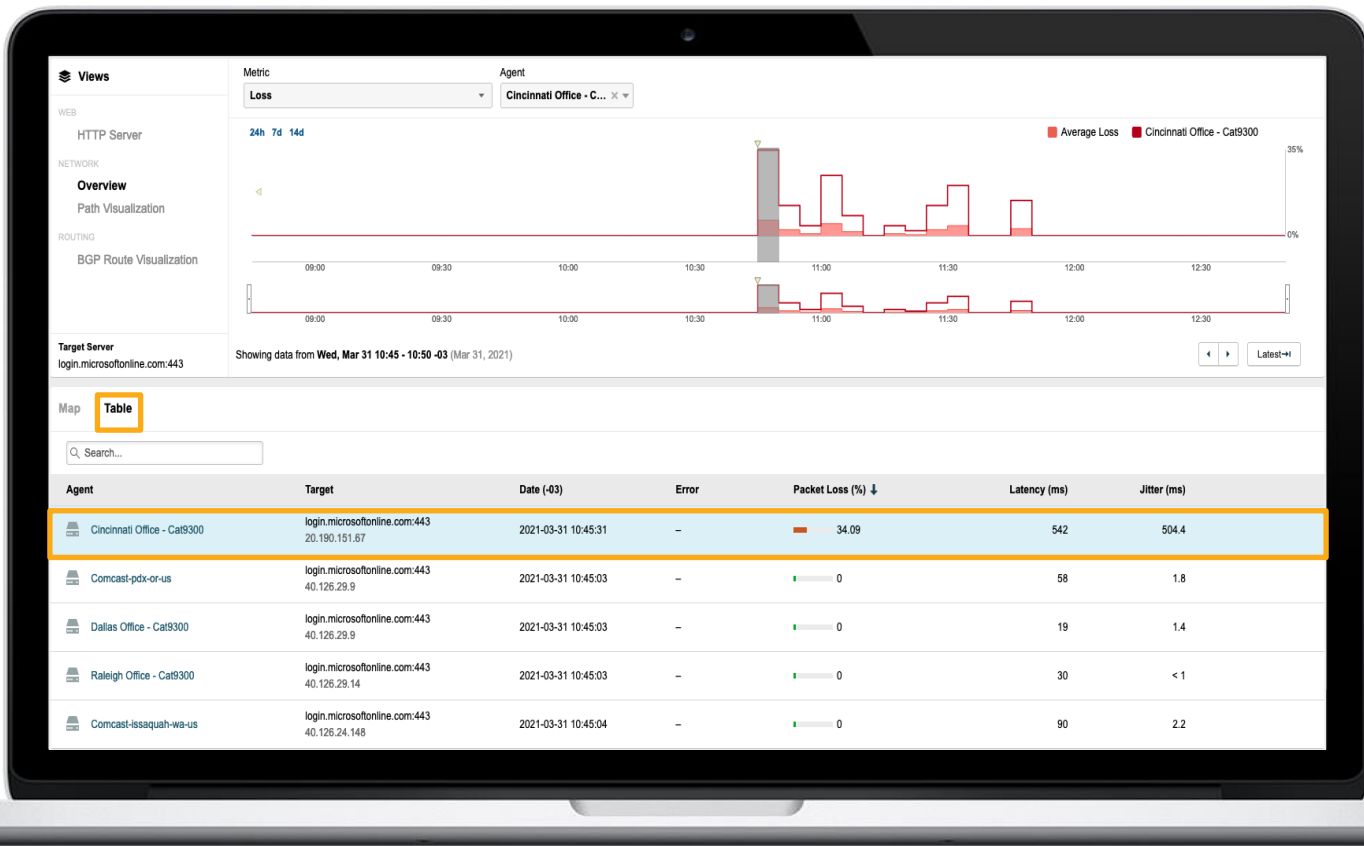


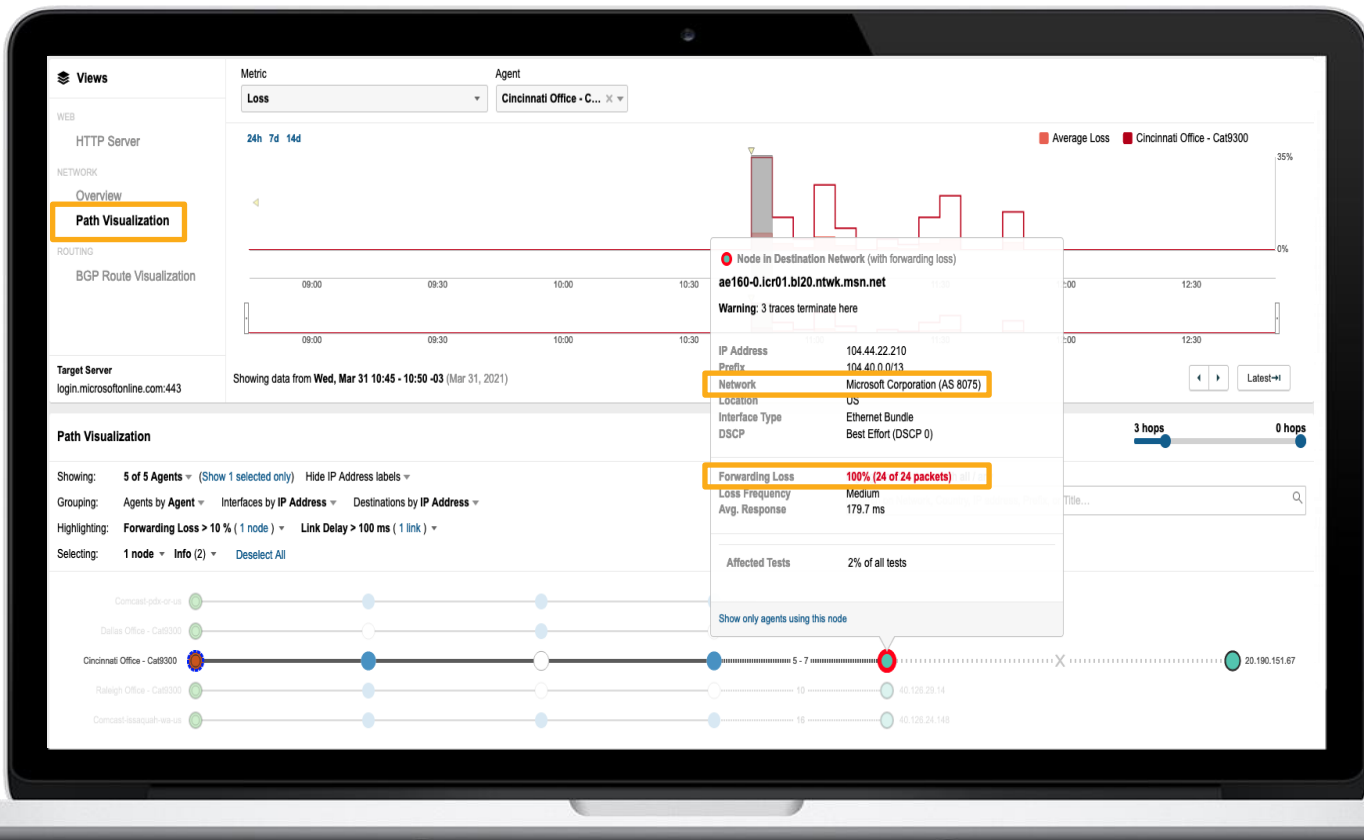
ThousandEyes Changes the Game !!!











Use Case #2

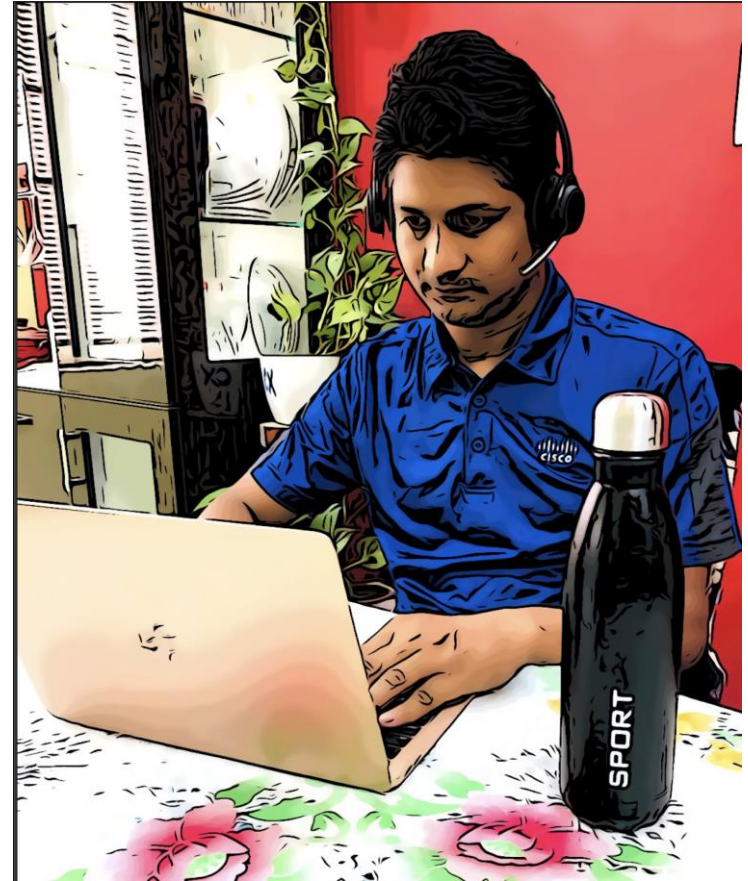
Asymmetric Routing

“Can we be a little Proactive !!”

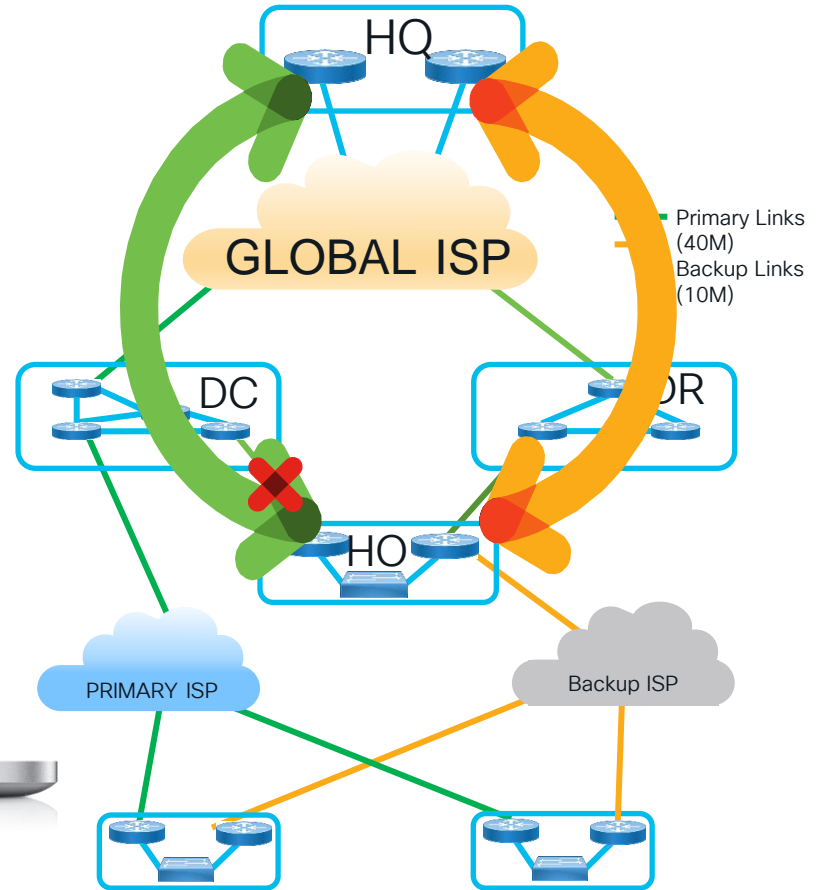
Mr. U – Working on a weekend

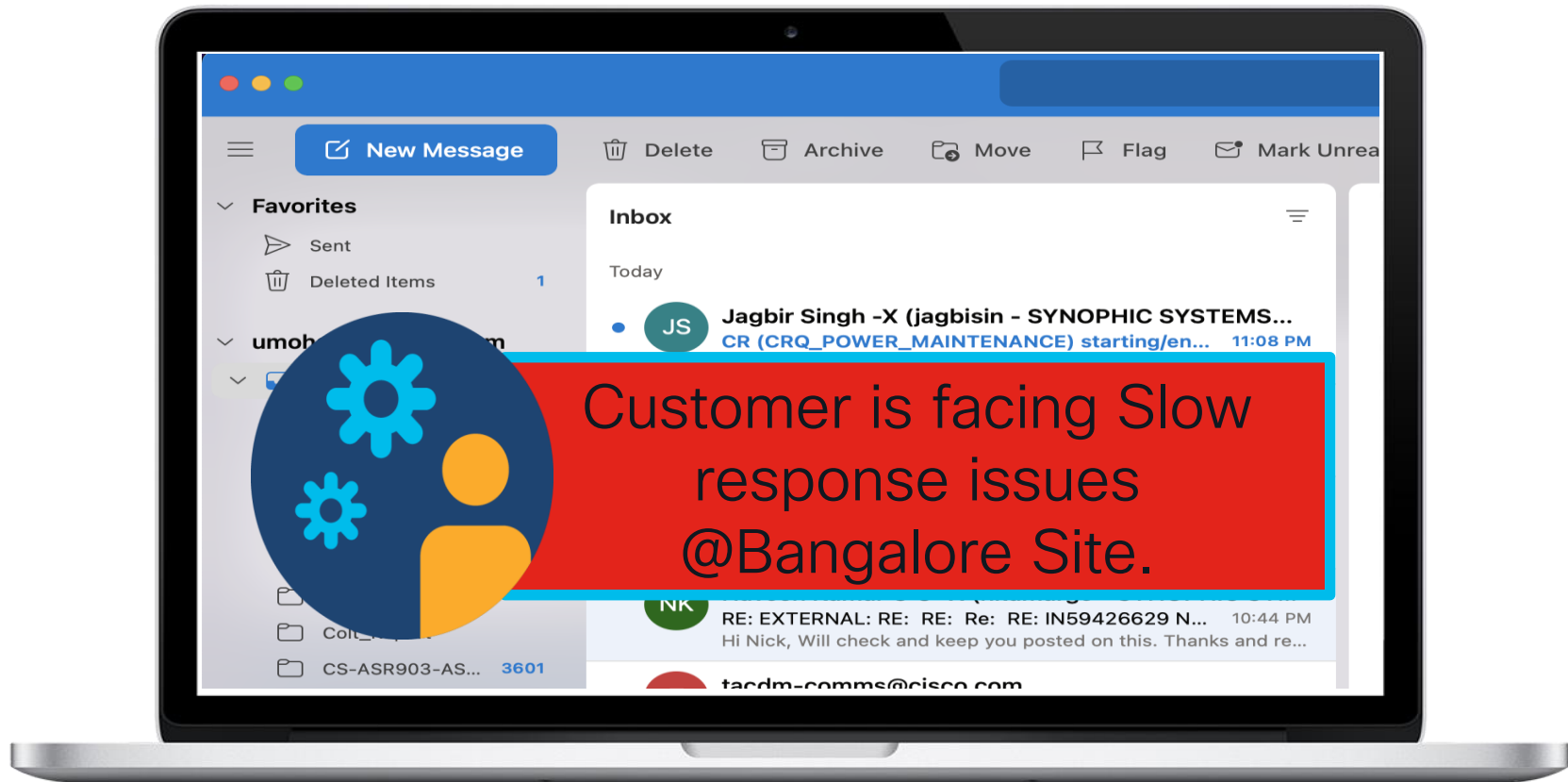
Proactive alert – EIGRP Down
between DC & Head Office site
(Bangalore)

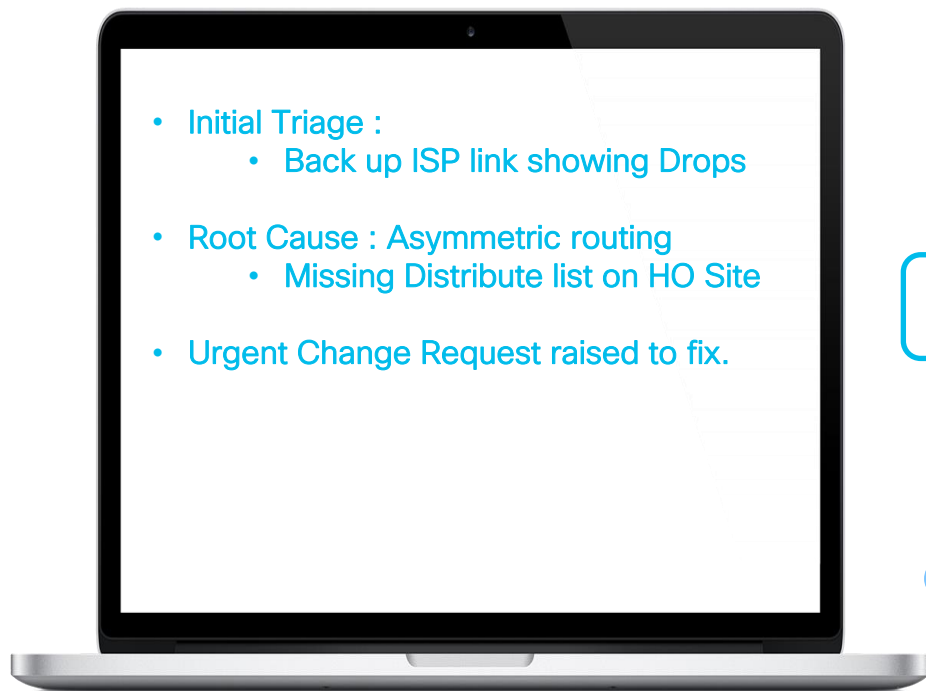
Root Cause – ISP link is down.



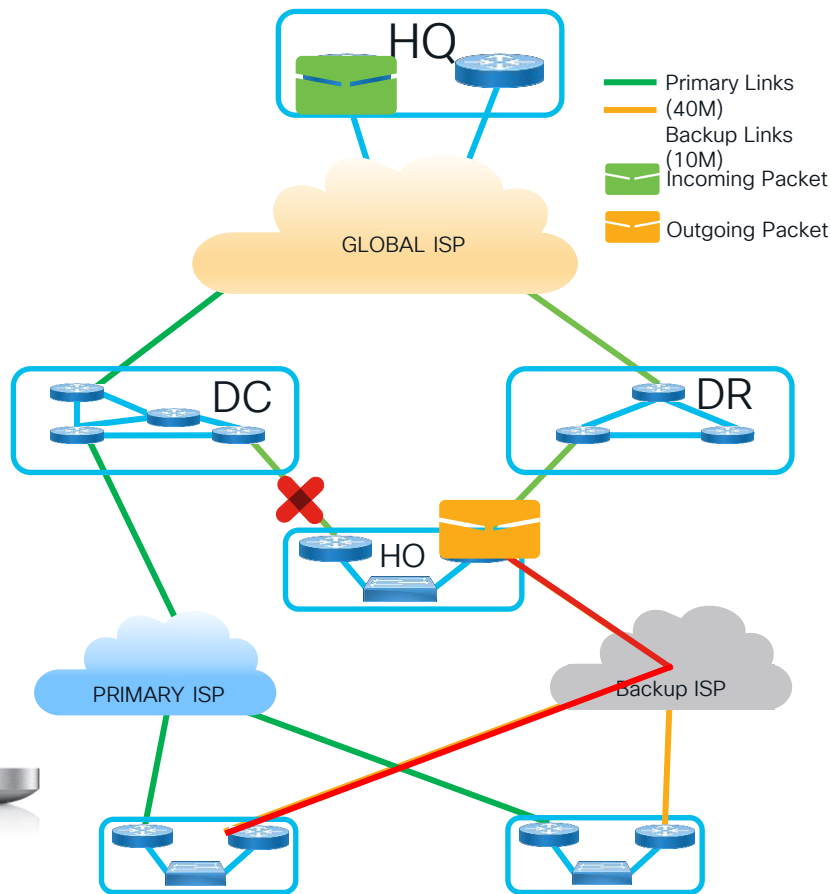
- HO Site reachable.
- Branch sites reachable.
- Situational Awareness sent to customer.







- Initial Triage :
 - Back up ISP link showing Drops
- Root Cause : Asymmetric routing
 - Missing Distribute list on HO Site
- Urgent Change Request raised to fix.





Courtesy : Google Images



Time spent since the Proactive alert was seen



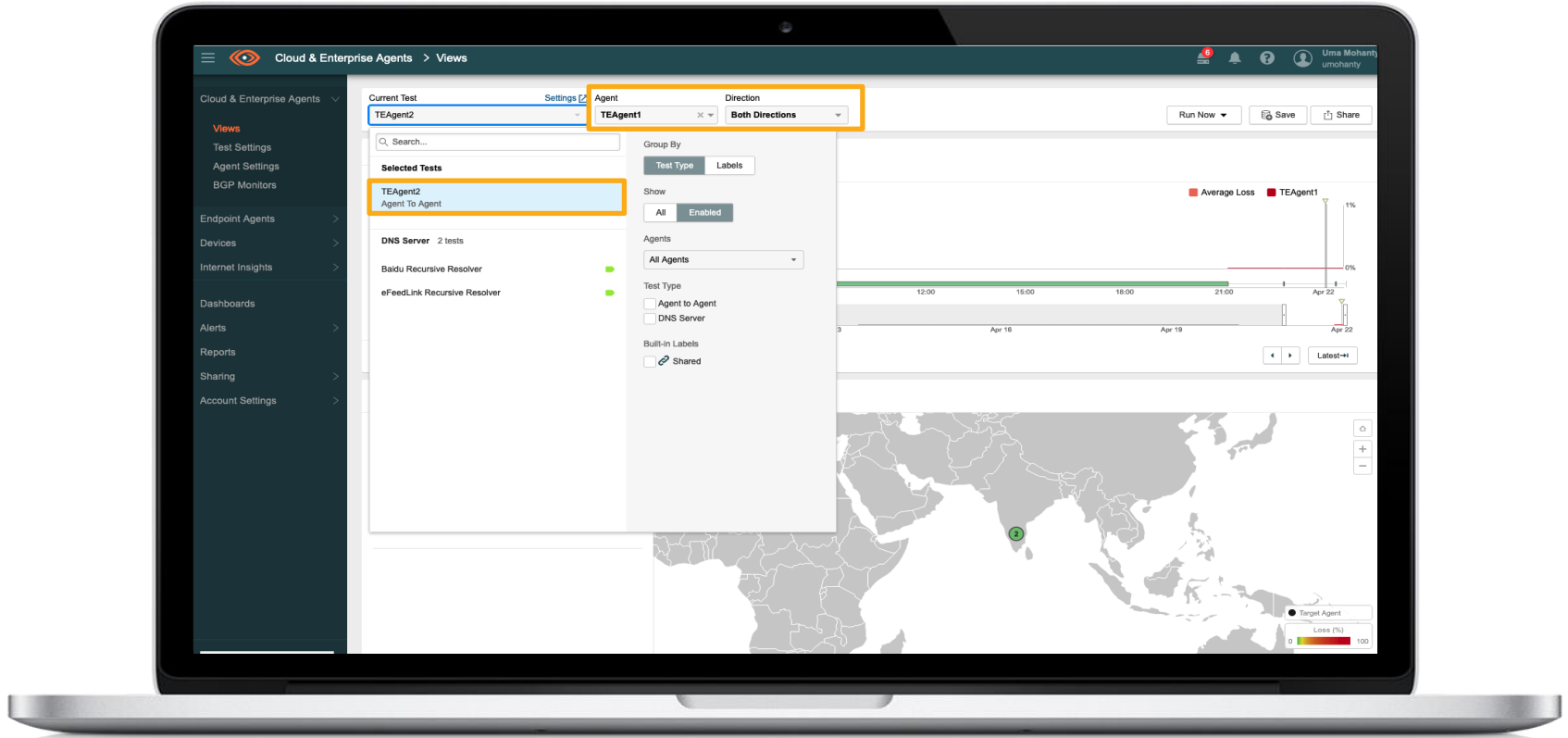
Customer losing revenue

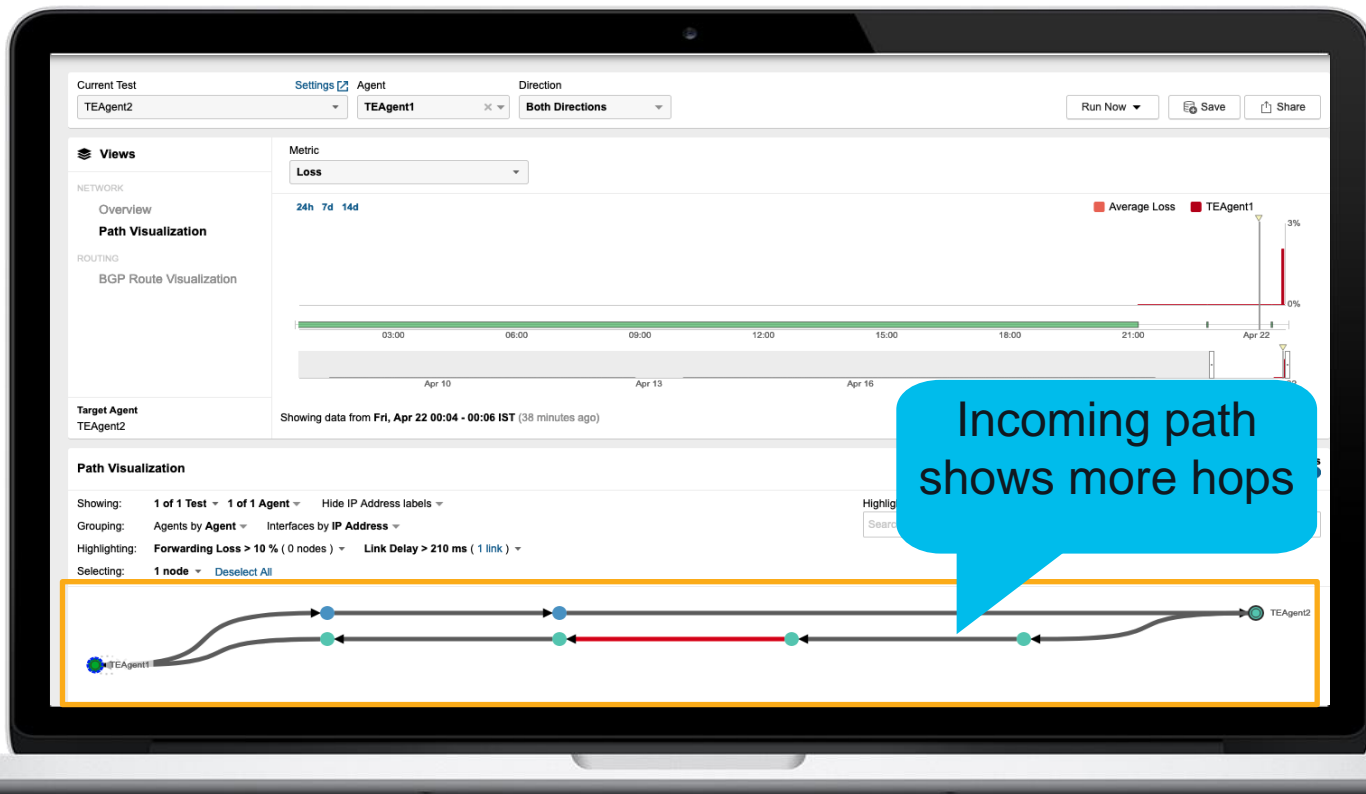


Waiting for Issue to Occur

"Can we be a little Proactive"

ThousandEyes Changes the Game !!!







Key Takeaways



Key Takeaways

- What is ThousandEyes ?
 - ThousandEyes allows you to visualize any network as if it was your own, helps to build an approach and solve network issues with ease.
- Why ThousandEyes ?
 - Correlated Visibility Into ALL Networks, Availability, Performance and Change.
- ThousandEyes Platform :
 - Cloud Agent
 - Enterprise Agent
 - End-Point Agent
- Dashboard :
 - Customizable Widgets to build your own dashboard.
- Use Cases :
 - Let's Blame the Network Engineer
 - Can we be a little Proactive



Q & A

Way more Info ...

- <https://docs.thousandeyes.com/>
- BRKENS-1095 : Service Assurance with ThousandEyes on Catalyst 9000
- BRKENT-2126 : Three Steps to Gain Actionable Visibility in the Cisco SD-WAN Using ThousandEyes
- LABENS-1455 : ThousandEyes Network Agent Deployment on Catalyst 9000 Series Through Cisco DNA Center

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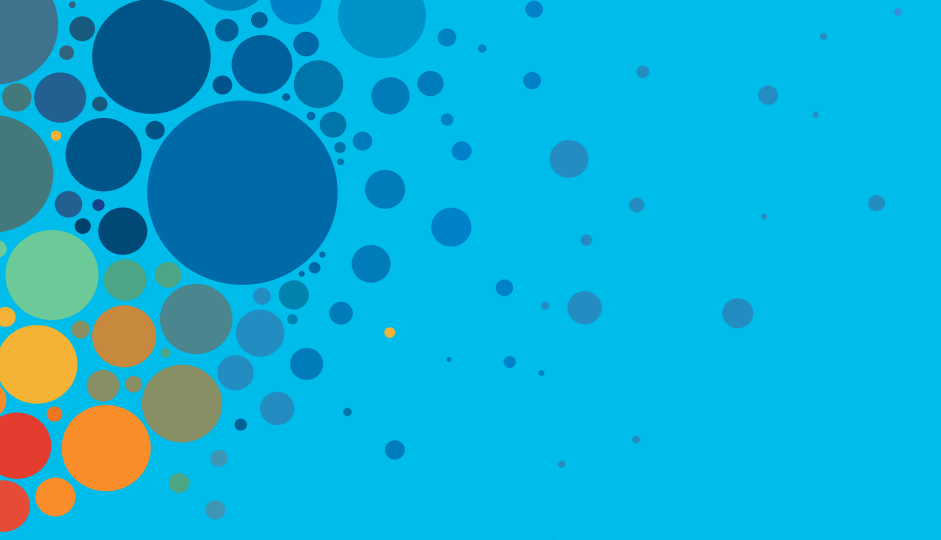
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