

The background features a vibrant, multi-colored abstract design. On the left, there are overlapping, wavy, organic shapes in shades of red, orange, and yellow. On the right, a bright white light source emits a series of sharp, radiating lines in various colors, including blue, green, and yellow, creating a sunburst or starburst effect. The overall composition is dynamic and energetic.

cisco *Live!*

Let's go

#CiscoLive



The bridge to possible

# Implementing ThousandEyes for Success

## Lessons Learned From Complex Deployments

Collin Sullivan, Solutions Engineer @ ThousandEyes (part of Cisco)

<https://www.linkedin.com/in/collin-sullivan-185067184/>

[collsull@cisco.com](mailto:collsull@cisco.com)

BRKAPP-2726

# Cisco Webex App

## Questions?

Use Cisco Webex App to chat with the speaker after the session

## How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 9, 2023.



<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKAPP-2726>

# Agenda

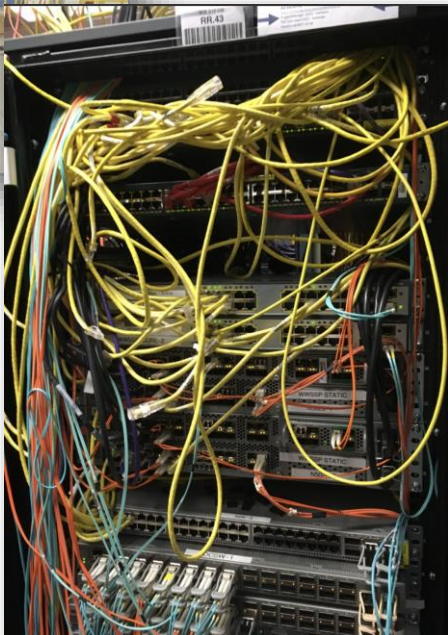
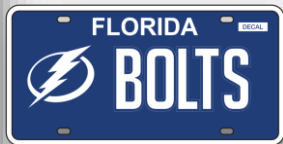
- Introduction
- ThousandEyes Recap
- Things to know prior to the deployment
- Technical lessons learned
- Best practices
- Q&A

# Introduction





# Introduction



# What this sessions is and is not about

- ThousandEyes 101
- ThousandEyes deep-dive
- Experience sharing
- Best practices



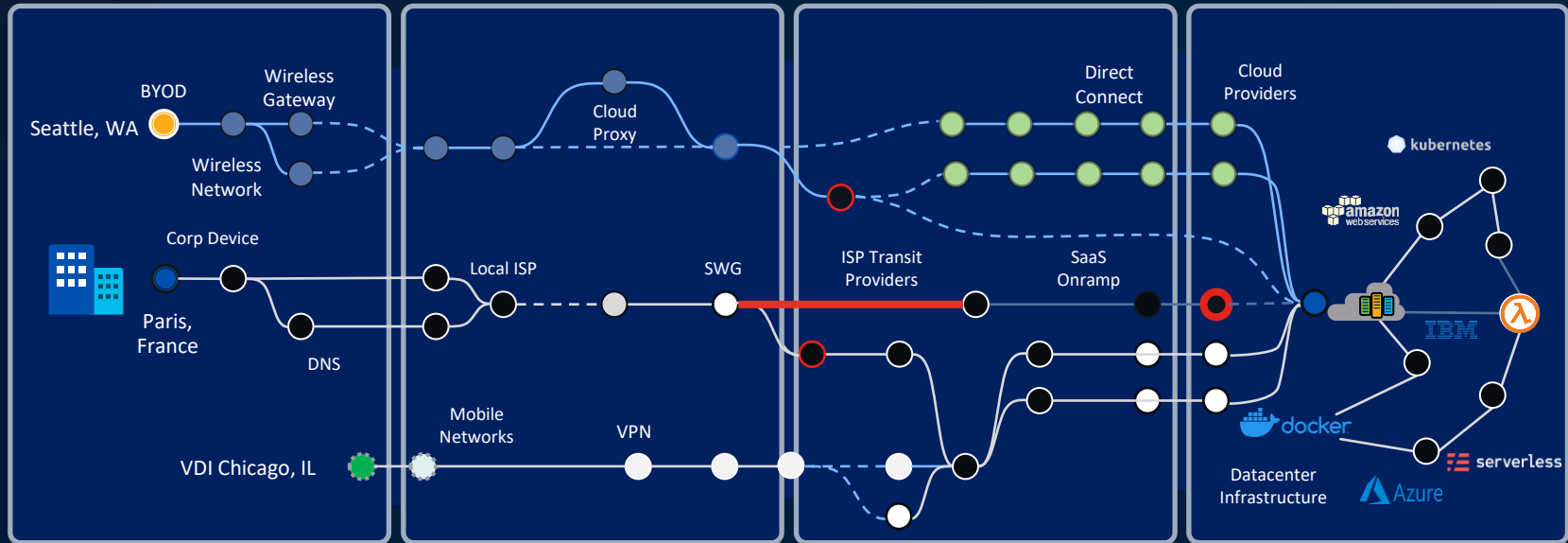
# New IT Stack Creates Massive Blind Spots

Hybrid Work Locations  
and Last Mile Network

CDN, Cloud Security  
and Secure Access

SD-WAN and Internet  
Peering and Transit

Hybrid Cloud and  
SaaS Infrastructure



Is it the user  
environment?

Is it the SECaaS?

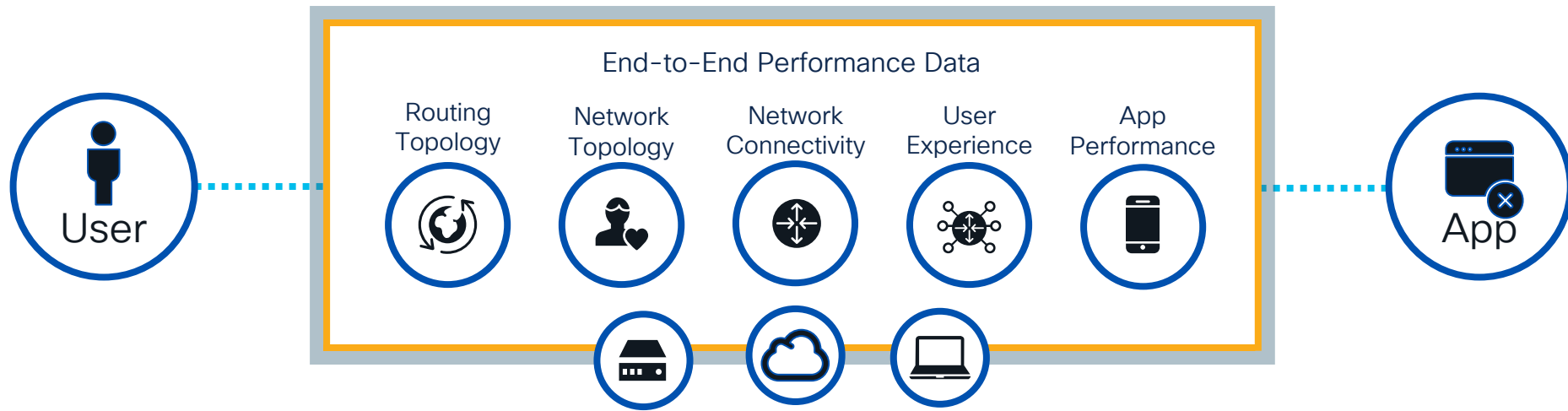
Is it the network?

Is it the application?



# ThousandEyes

## “A Unified View of Performance From User to App”



Enterprise, Cloud and Endpoint Agents

# Solution Components



1

## Agents

- Strategic vantage points
- Cloud, Enterprise, or Endpoint
- Outside-in/Inside-out View

2

## Tests

- Layer 3 – 7 tests available
- Lower layers “nested”
- Run at scheduled intervals

3

## Data

- Individual test result data
- Dashboards
- Alerts
- Shareable snapshots

# ThousandEyes Agents

## Enterprise Agent



- Inside-Out Monitoring
- Inside-Inside Monitoring  
(On-premises Deployment)
- Deployment Options



## Cloud Agent



- Outside-In Monitoring
- Outside-Outside Monitoring  
(ThousandEyes Managed)
- 600+ Agents in 400+ Locations



[www.thousandeyes.com/map](https://www.thousandeyes.com/map)

## Endpoint Agent

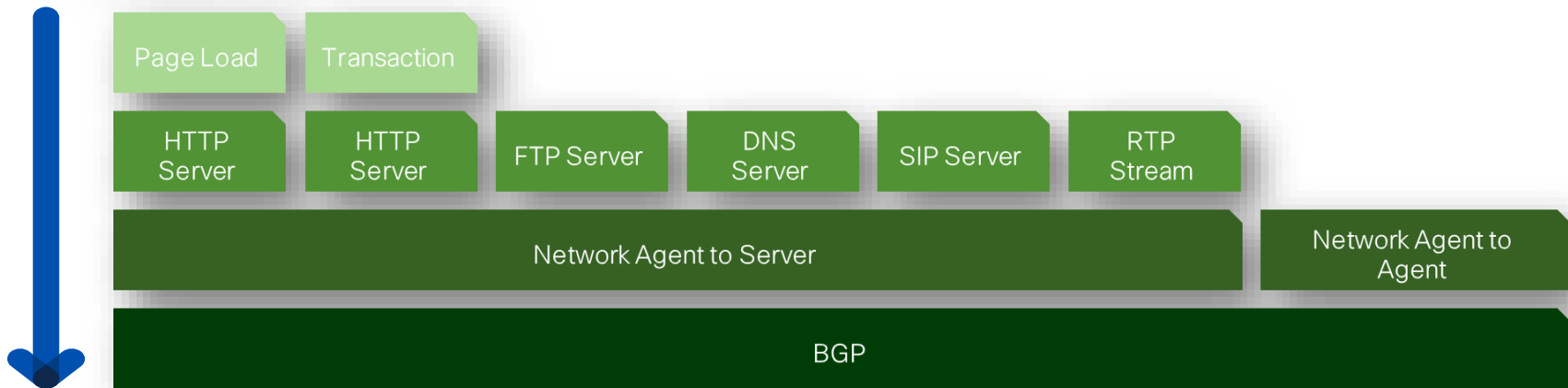


- Last-Mile Monitoring  
(On-premises Deployment)
- Extends network and service visibility to the user
- Deployment Options
  - Operating Systems

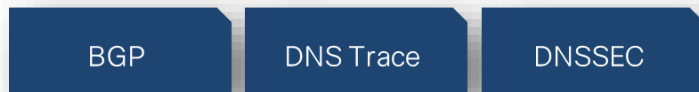


# ThousandEyes tests

## LAYERED TESTS

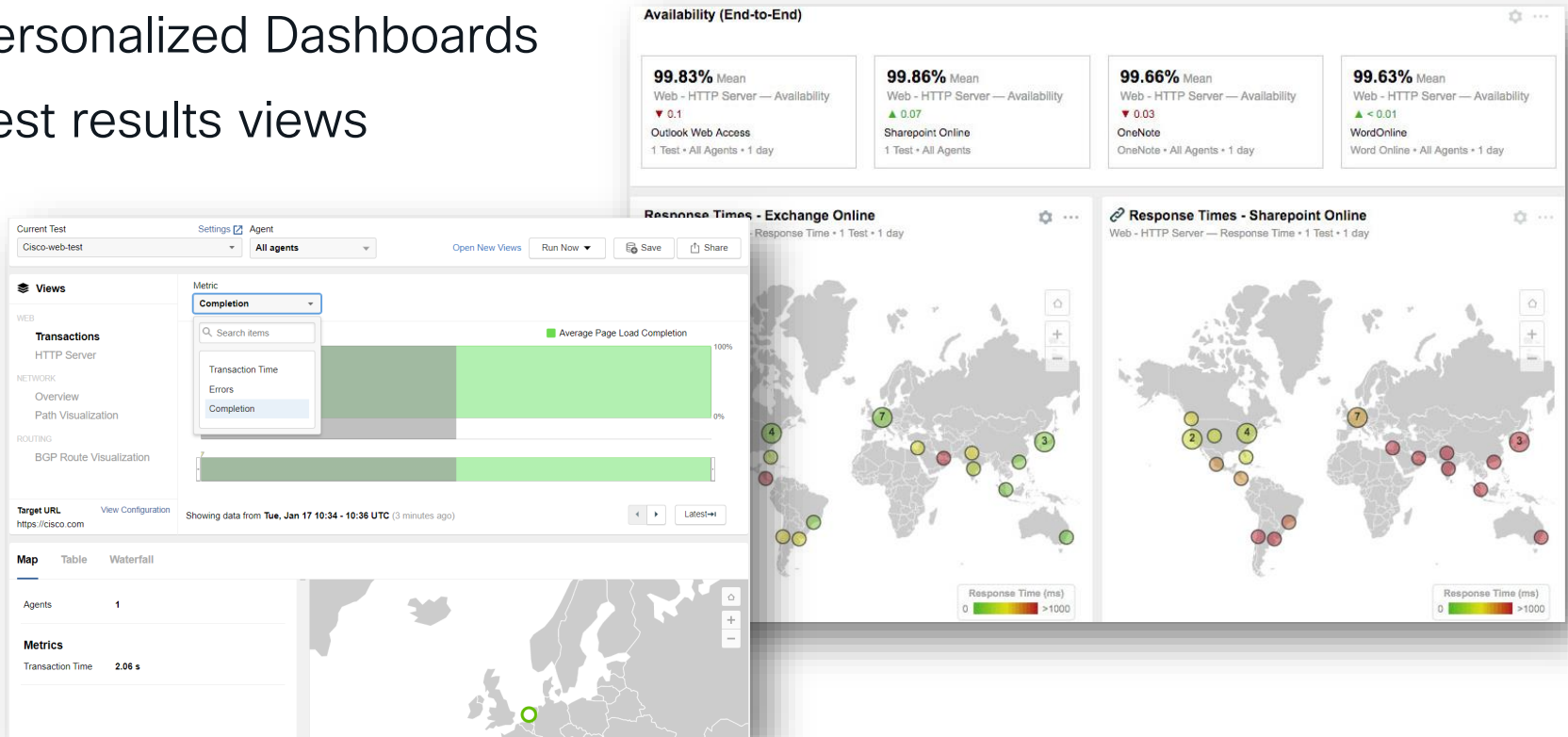


## STANDALONE TESTS



# Results

- Personalized Dashboards
- Test results views



# Things to know prior to deployment



# Before you get started

## Education


- Understanding ThousandEyes
  - ThousandEyes Webinars



**Upcoming Webinars**

**AMER WEBINAR**

**Microsoft Outage Analysis**





Presenter:  
**KEMAL SANJTA**  
*Principal Internet Analyst*

**January 27, 2023**  
10:00 AM - 11:00 AM (PST)  
[REGISTER NOW](#) ➔

**EMEA WEBINAR**

**New ThousandEyes Product Features and Release Highlights: February 2023**



Presenter:  
**BART JAN MENKVELD**  
*Technical Solutions Architect*

Presenter:  
**IAN WATERS**  
*Senior Director, EMEA Marketing*

**February 2, 2023**  
10:00 AM - 10:45 AM (GMT)  
[REGISTER NOW](#) ➔

# Before you get started

## Education

- Understanding ThousandEyes
  - Jumpstart sessions



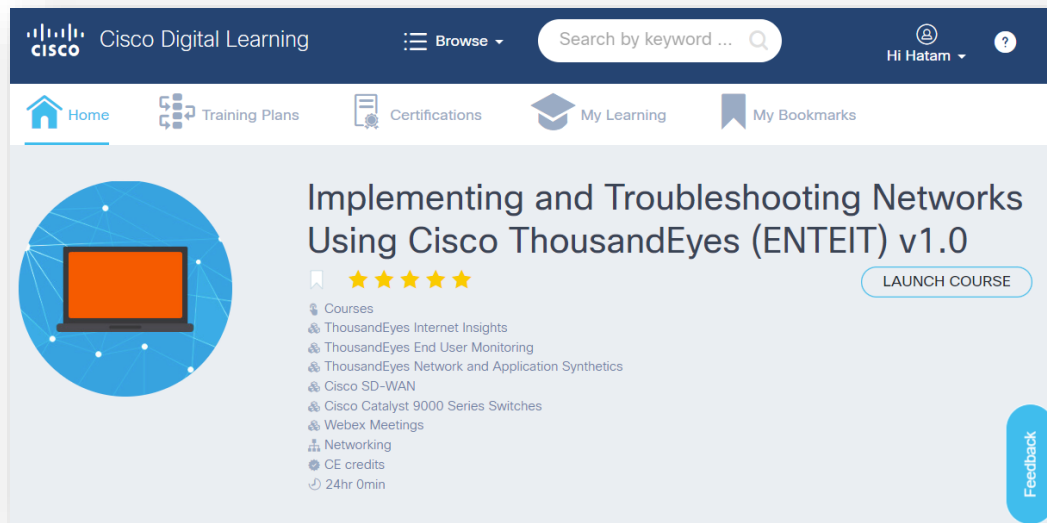
TOPIC	
TOPIC 1	Intro to the ThousandEyes Platform & Organizational Administration
TOPIC 2	Agents Instrumentation Cloud & Enterprise Agents & Endpoint Agents
TOPIC 3	Test Instrumentation and Event Analysis for Cloud & Enterprise Agents + Device Layer
TOPIC 4	Scheduled Test Instrumentation and Event Analysis for Endpoint Agents
TOPIC 5	Operationalize using Dashboards & Reports + Proactive Monitoring with Alerts
TOPIC 6	Internet Insights & Application Insights
TOPIC 7	Synthetics Monitoring & Best Practices
TOPIC 8	API / Integrations



# Before you get started

## Education

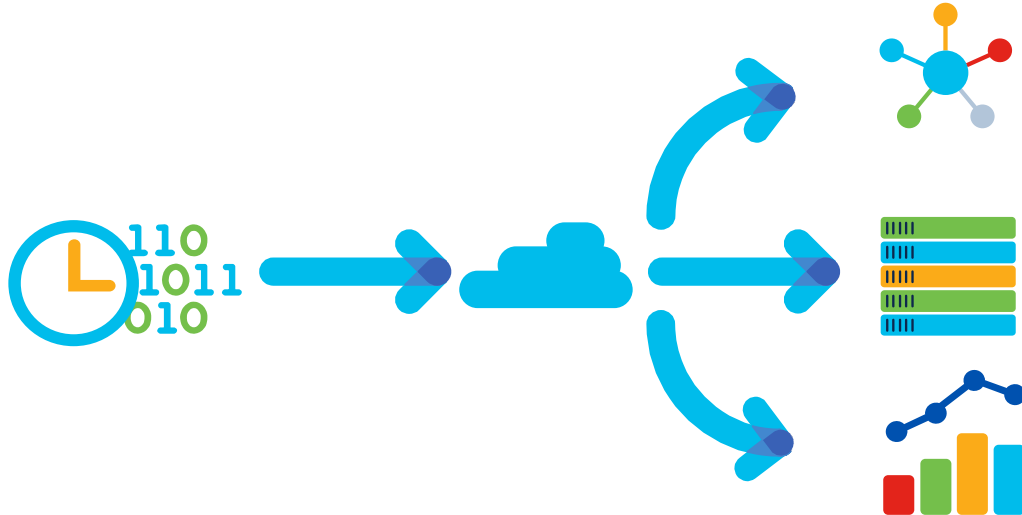
- Understanding ThousandEyes
  - Cisco Digital Learning library
  - Implementing and Troubleshooting Networks Using Cisco ThousandEyes (ENTEIT)



# Before you get started

## Collaboration

- Working with all stakeholders
- ThousandEyes owners vs ThousandEyes users/consumers
  - Network team, Application team, and Service Managers



# Technical Lessons Learned

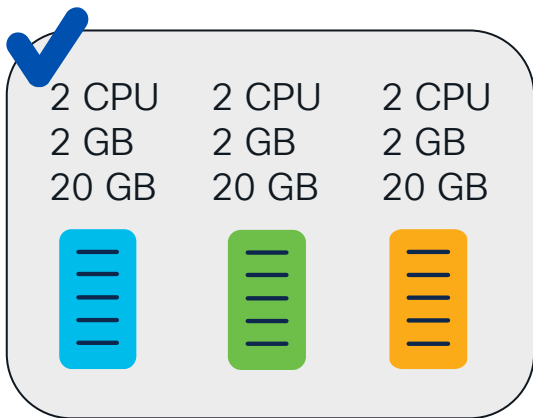
# Lesson 1: Plan your resources

Enterprise Agent deployment. Agent resources

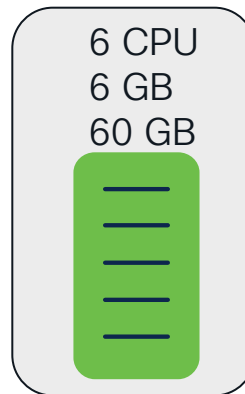


- Common hardware requirements:
  - More?

	With BrowserBot	Without BrowserBot
CPU Count	2	2
RAM	2 GB	1 GB
Hard Disk Space	20 GB	20 GB
Network Interface	Required	Required
Internet Connection	Required	Required



VS





# Lesson 1: Plan your resources

Enterprise Agent deployment. Agent resources

- Queues



Queue Name	Test Types Assigned to Queue
Browser	Page Load tests Transaction tests
General	All Network Layer tests All DNS Layer tests HTTP Server tests
Bandwidth	All tests with Bandwidth metrics All tests with Throughput metrics
Voice	All Voice Layer tests

# Recap

Why is it important?

- Resources = Money
- You don't want to allocate resources ineffectively
- Remember what the Enterprise Agent is used for
- Very common misconception in the real world



# Lesson 2: Plan your tests

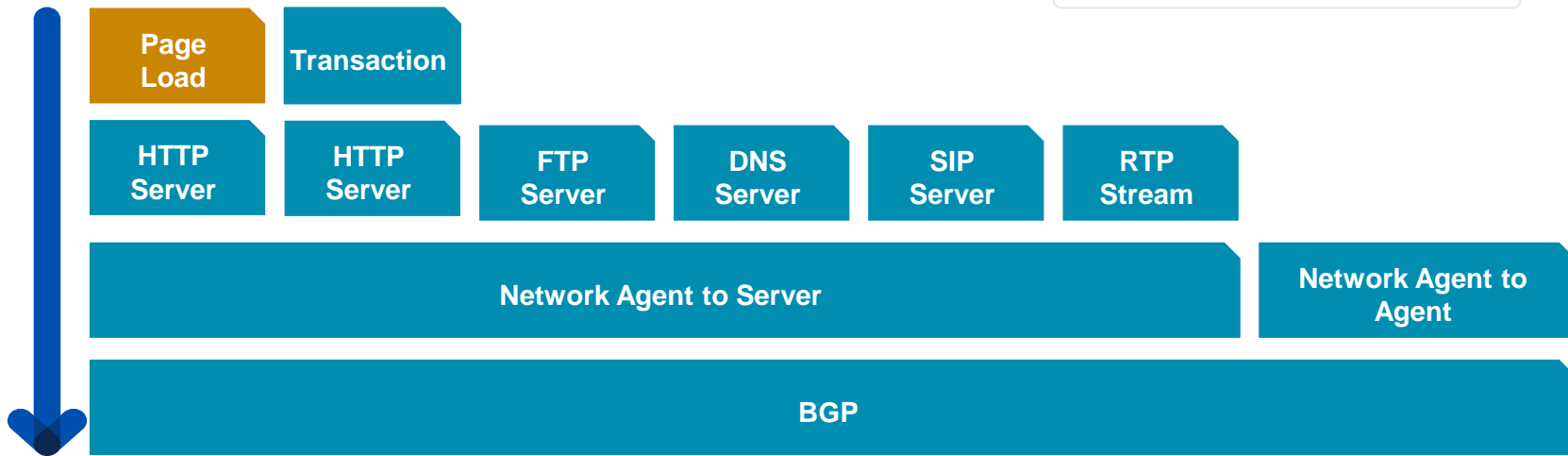
## Test layers

- Consider it during planning



### Views Enabled for This Test

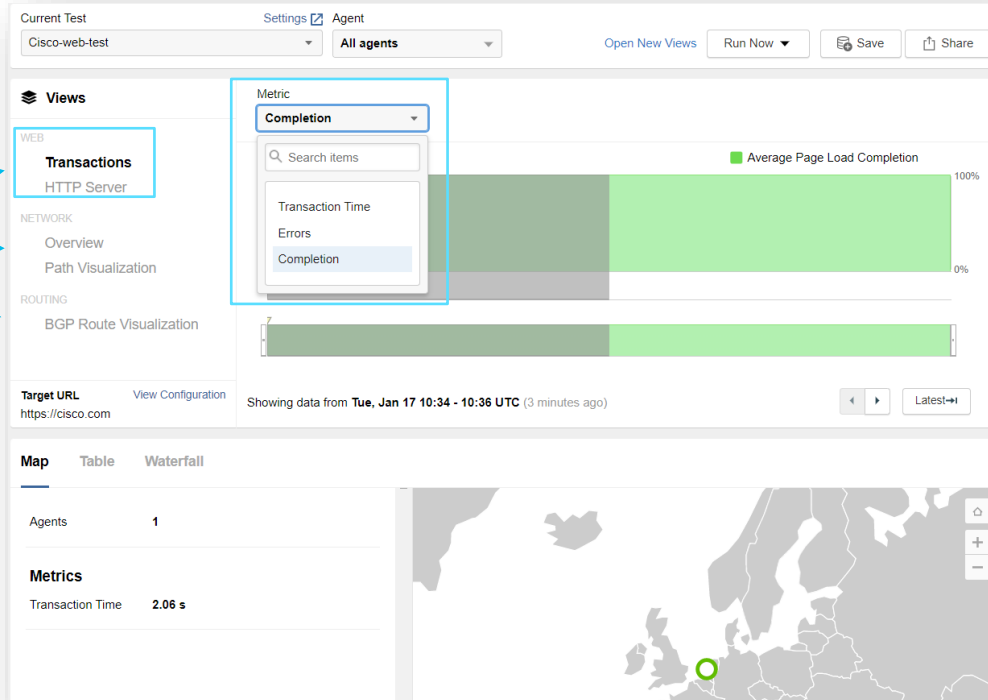
<b>Web</b>	Page Load HTTP Server
<b>Network</b>	Overview Path Visualization
<b>Routing</b>	BGP Route Visualization



# Lesson 2: Plan your tests

## Test layers

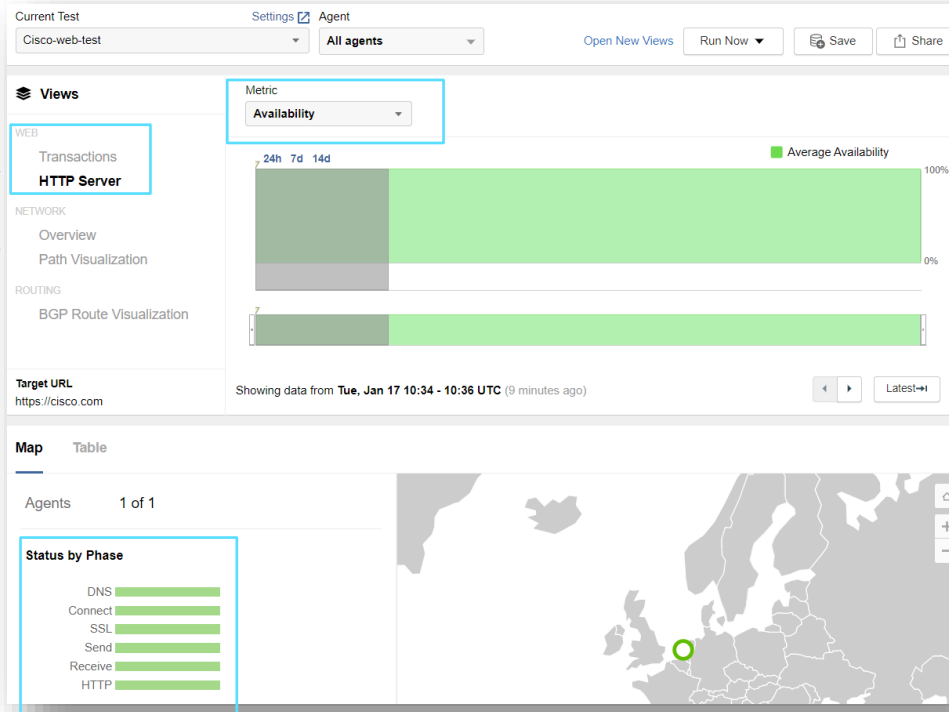
- Transaction test to load cisco.com and take a screenshot



# Lesson 2: Plan your tests

## Test layers

- Transaction test to load cisco.com and take a screenshot



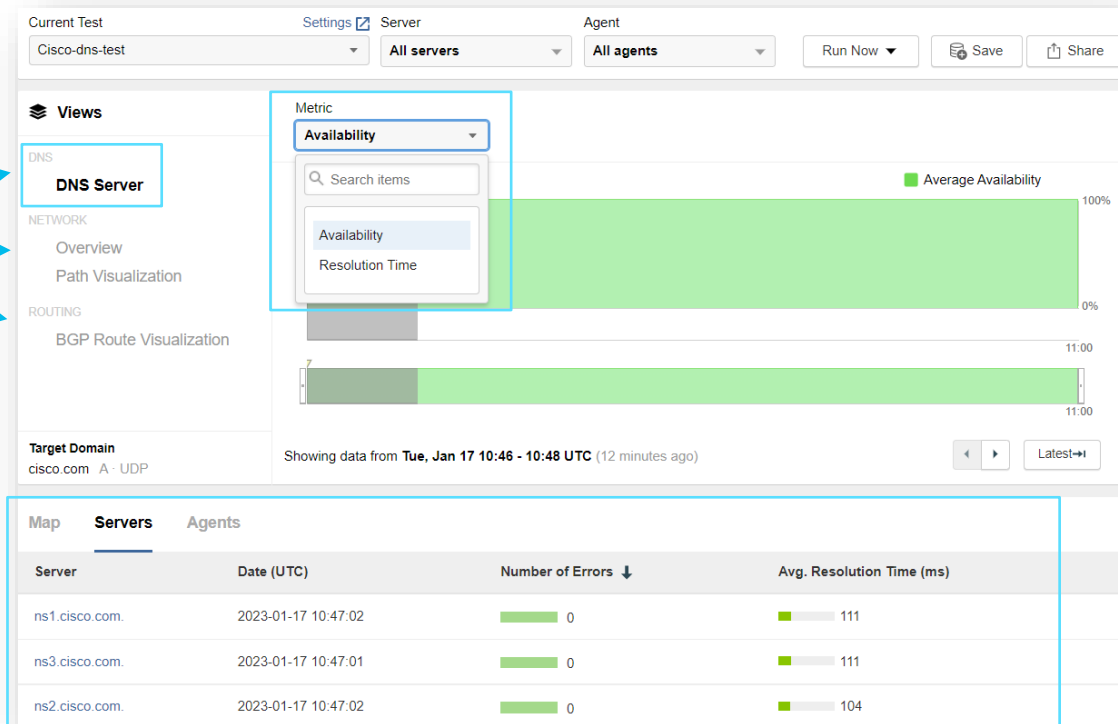
# Lesson 2: Plan your tests

## Test layers

- DNS test for cisco.com



Layered data





# Recap

Why is it important?

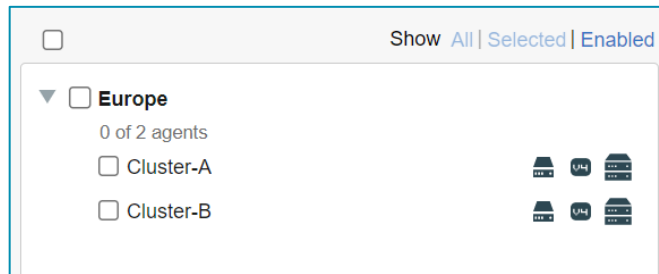


- Don't configure 2 tests when 1 test will do
- Tests = Units = Money
- Layered data doesn't cost additional units
- Using the data in the layered tests can help to save some ThousandEyes Units
- Requires planning and understanding of customer use cases

# Lesson 3: Know what to expect

Enterprise Agent deployment. Clustering

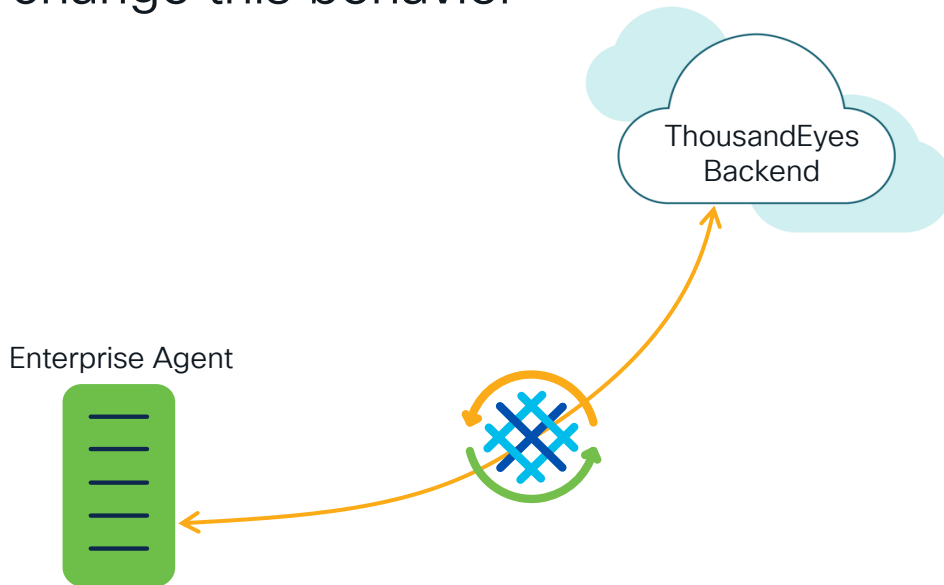
- Standalone vs Clustered Agent
- Load distribution vs High-availability



# Lesson 3: Know what to expect

Enterprise Agent deployment. Clustering

- The reason why it behaves this way
- There are plans to change this behavior



# Recap

Why is it important?

- Knowing this beforehand is very helpful
- Can be a reason for escalation or support cases
- When there is ~~a will~~ an API there is a way 😊



**ThousandEyes**  
DEVELOPER REFERENCE

Search

Overview  
Instant tests  
Tests  
Test Data  
Credentials  
Endpoint Agents  
Endpoint Data  
Endpoint Tests  
Endpoint Instant Tests  
Endpoint Test Data  
Snapshots  
Agents & Monitors

**AGENTS & MONITORS** Hide all Show all Print

- > Agent list GET /v6/agents
- > Agent detail GET /v6/agents/{agentId}
- > Updating an agent POST /v6/agents/{agentId}/update
- > Deleting an Agent POST /v6/agents/{agentId}/delete
- > Agent cluster - Creating POST /v6/agents/{agentId}/add-to-cluster
- > Agent cluster - Adding members POST /v6/agents/{agentId}/add-to-cluster
- > Agent cluster - Removing members POST /v6/agents/{agentId}/remove-from-cluster

# Lesson 4: Know what to expect (again)

## Throughput tests

- Only for Enterprise Agents
- TCP or UDP based



Agent 1



Agent 2



**Basic Configuration**   **Advanced Settings**

Target Agent: Cluster-A

Interval: 1 minute

Agents: 1 of 2 selected

Direction: Both Directions

Protocol: TCP

☒ Enable Throughput

Duration: 30 s

**Basic Configuration**   **Advanced Settings**

Target Agent: Cluster-A

Interval: 1 minute

Agents: 1 of 2 selected

Direction: Both Directions

Protocol: UDP

☒ Enable Throughput

Maximum Rate   Specific Rate

Rate: 64 kbps

Duration: 30 s

# Recap

Why is it important?



- We have seen customers cause network outages by enabling Throughput tests
- Start with a lab or a staging environment first
- Take it into your QoS design consideration



# Lesson 5: Know where to look at

## Network test results

- Is there a packet loss?



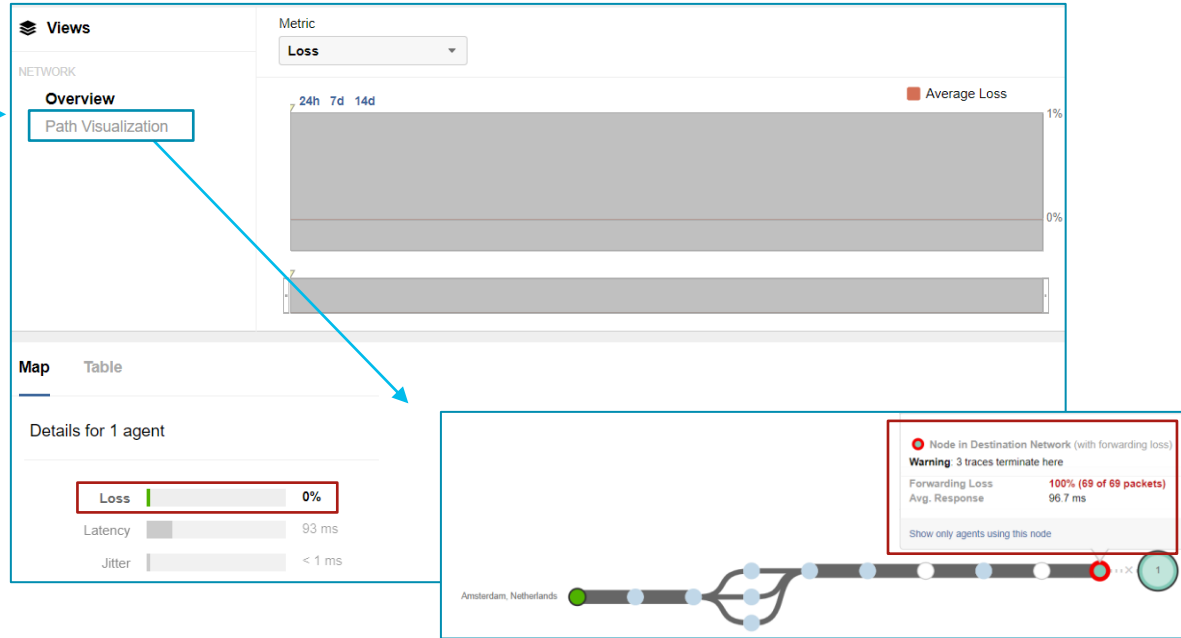
Loss value  
discrepancy

### Network Overview

50 TCP or ICMP  
Probes

### Path Visualization

TCP or ICMP  
traceroute



# Recap

Why is it important?

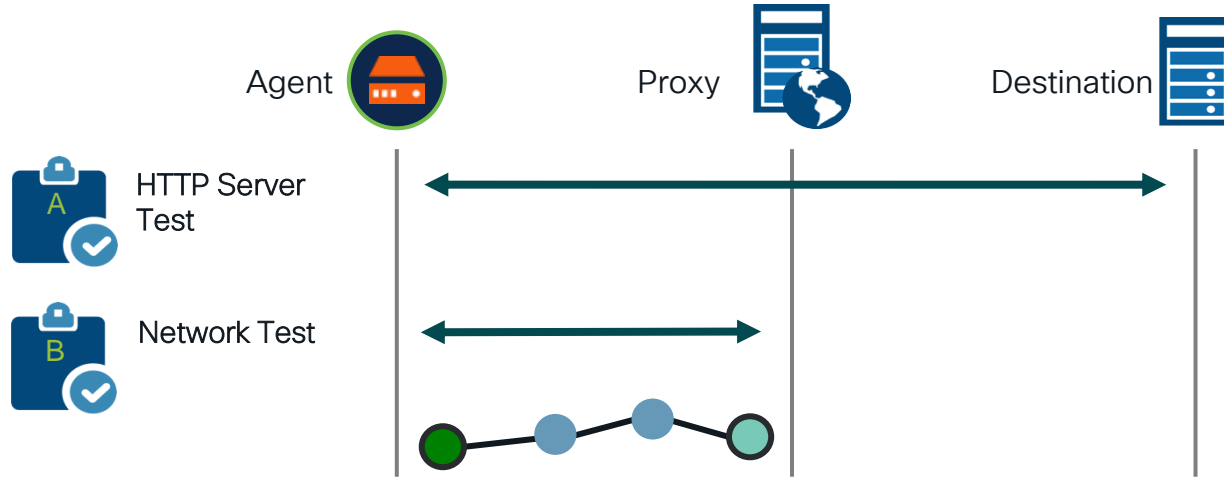
- Understanding the data presented is critical
- Network test has dual origin
- Knowing the underlying mechanisms of tests can help to avoid false alarms
- Sometimes discrepancy is a good thing



# Lesson 6: Don't forget about the Proxy

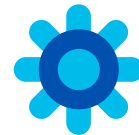
## Network test results

- What does a proxy change?



# Recap

Why is it important?



- Understand implications of having a proxy in the test path
- Network data collection to a proxy is not enabled by default
- If you have a proxy, then consider:
  - configure separate agent bypassing the proxy
  - install an enterprise agent in the proxy location

# Best Practices

# Plan Multi-Tenancy

## ACME Corporation organization

- Organization
- Account groups
- Quotas

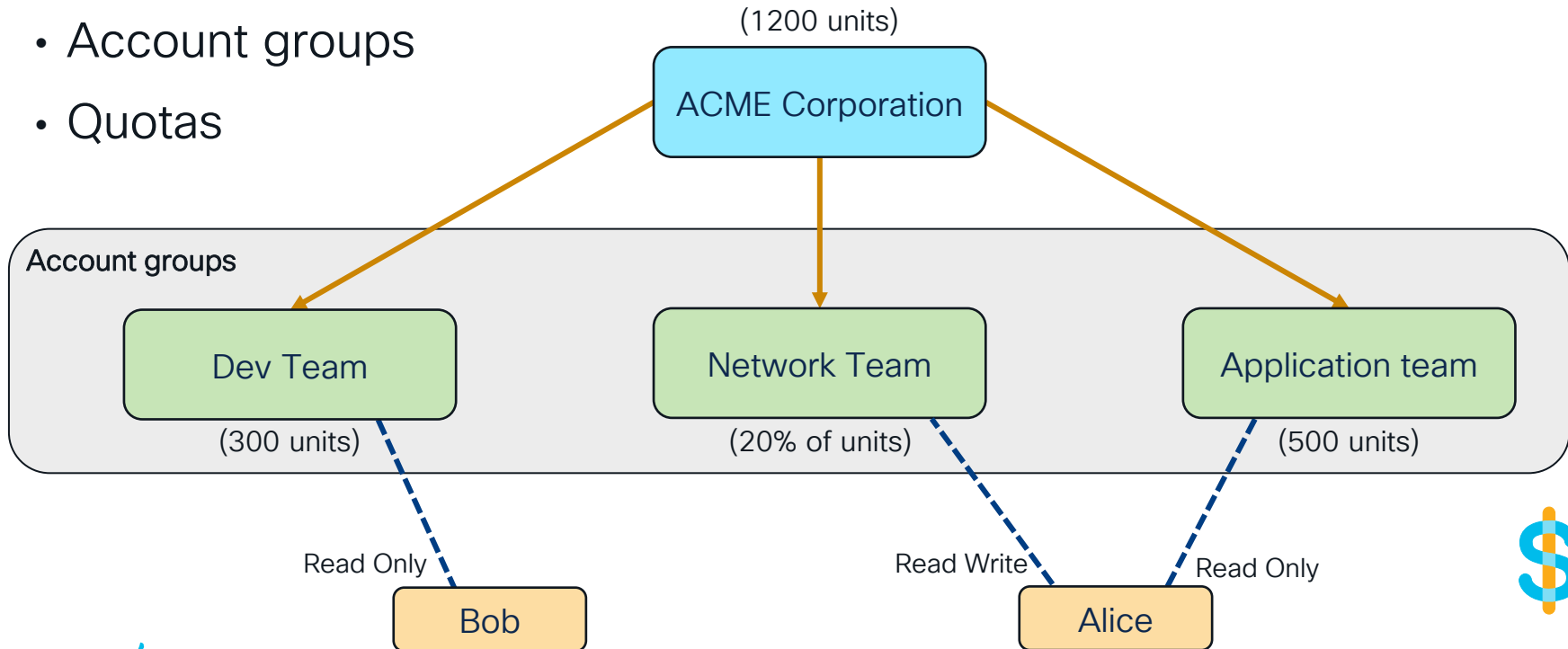
hshukur-BRKAPP-2726

0% of Plan  
0 Units



0

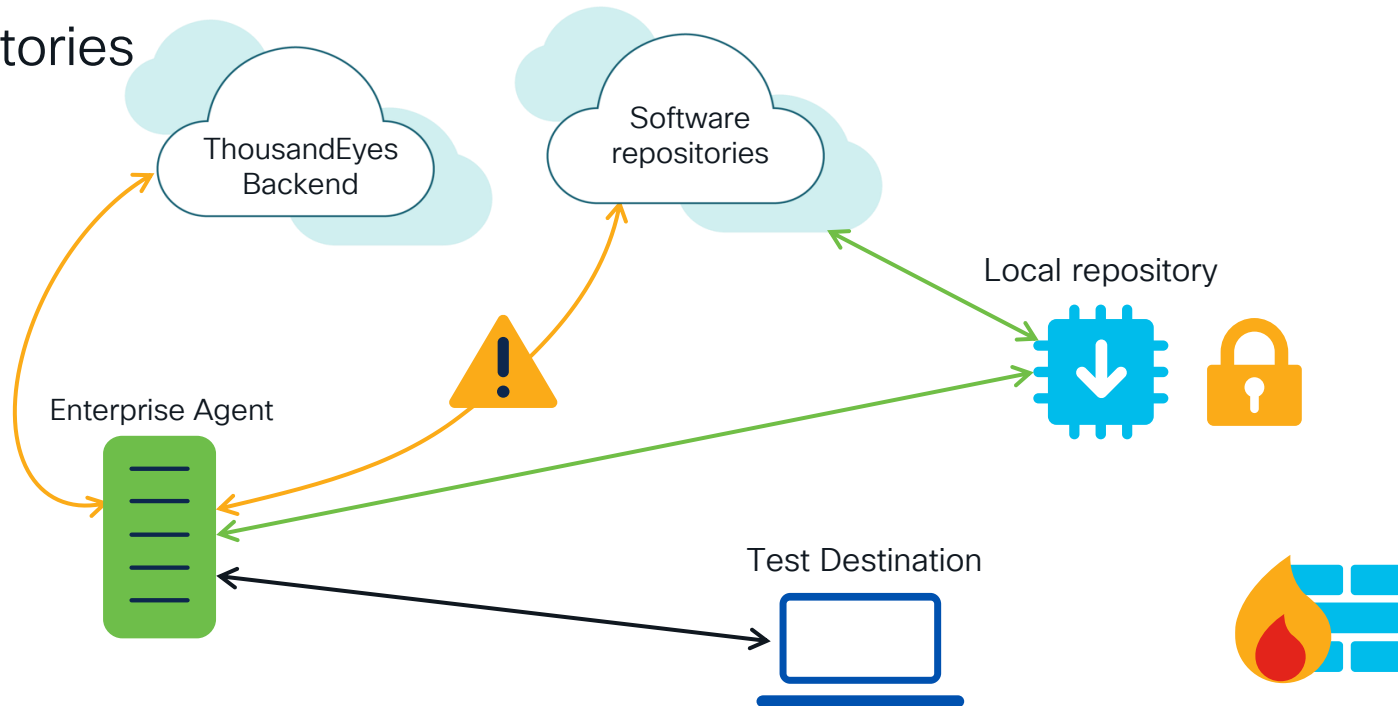
Units



# Meet Enterprise Agents Network Requirements

## Installation and Maintenance

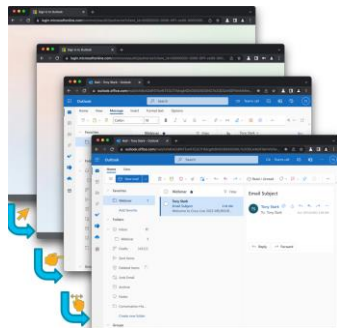
- Firewall requirements
- Local repositories



# Plan transaction test credentials

When you start scaling up...

- Robot/service accounts
- Identity Provider (SSO) issues



```
async function setUsernameAndPassword() {  
  const strAgentName = agent.getInfo().agentName;  
  switch (strAgentName.substring(strAgentName.length - 1)) {  
    case "1":  
      strUsername = credentials.get('ScriptUsername-DC1');  
      strPassword = credentials.get('ScriptPassword-DC1');  
      break;  
    case "2":  
      strUsername = credentials.get('ScriptUsername-DC2');  
      strPassword = credentials.get('ScriptPassword-DC2');  
      break;  
    case "3":  
      strUsername = credentials.get('ScriptUsername-DC3');  
      strPassword = credentials.get('ScriptPassword-DC3');  
      break;  
    default:  
      strUsername = credentials.get('DefaultUsername');  
      strPassword = credentials.get('DefaultPassword');  
      break;  
  }  
}
```





# Use Labels

Easy way to track tests, agents, dashboards

- Example



Tests   Test Labels   Credentials Repository				
<div>Add New Test</div> <div>Add a filter ▾</div> <div>🔍 Test name, description, type, target or label</div>				
Test Name ▾	Type	Alerts	Enabled	
▶ work in progress	Web - HTTP Server	✓	✓	...
▶ test-test-test	Web - HTTP Server	✓	✓	...
▶ qweqweqweq	Web - HTTP Server	✓	✓	...
▶ I can't make this test work :(	Web - HTTP Server	✓	✓	...
▶ David's app	Web - HTTP Server	✓	✓	...
▶ Application 2 Copy	Web - HTTP Server	✓	✓	...
▶ Application 2	Web - HTTP Server	✓	✓	...
▶ Application 1	Web - HTTP Server	✓	✓	...

Tests   Test Labels   Credentials Repository	
<div>Search label by name   3 labels   Add New Label</div> <div>Label Name ▲</div>	
▶ Cloud apps	2 ...
▶ Non-production	4 ...
▶ On-prem apps	2 ...

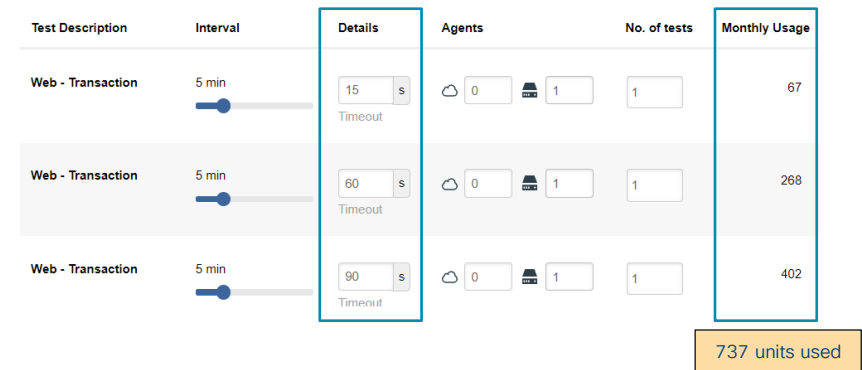
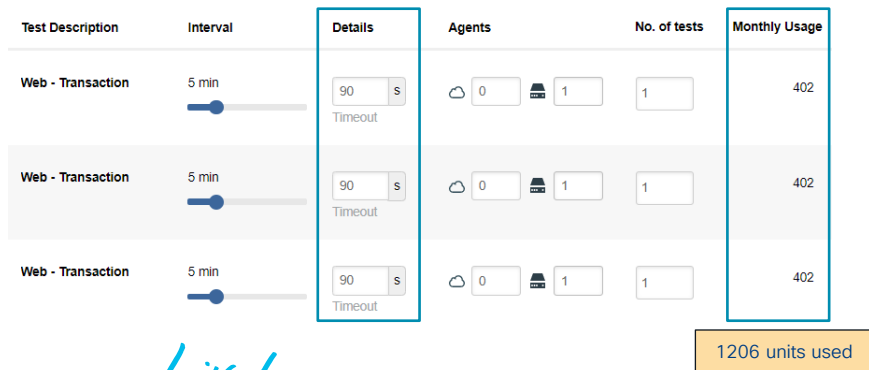
Tests   Test Labels   Credentials Repository				
<div>Add New Test</div> <div>Test Label Cloud apps ▾   Add a filter ▾</div> <div>🔍 Test name, description, type, target or label</div>				
Test Name ▲	Type	Alerts	Enabled	
▶ AWS-test	Web - HTTP Server	✓	✓	
▶ O365-test	Web - HTTP Server	✓	✓	



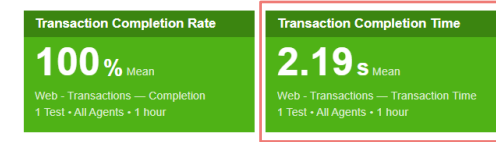
# Revise timeout values

One way to save units (money)

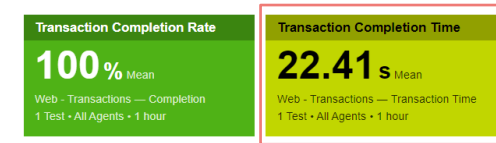
- Monitor test completion via dashboards
- Use statistical analysis to determine the optimal timeouts
- Not feasible to do during initial deployment
- Requires observation period



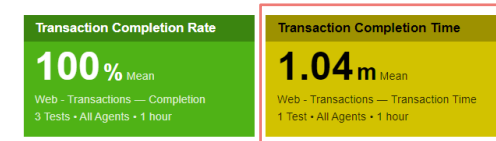
Web App 1



DMZ App 1



Dev App 1



# Reference Links

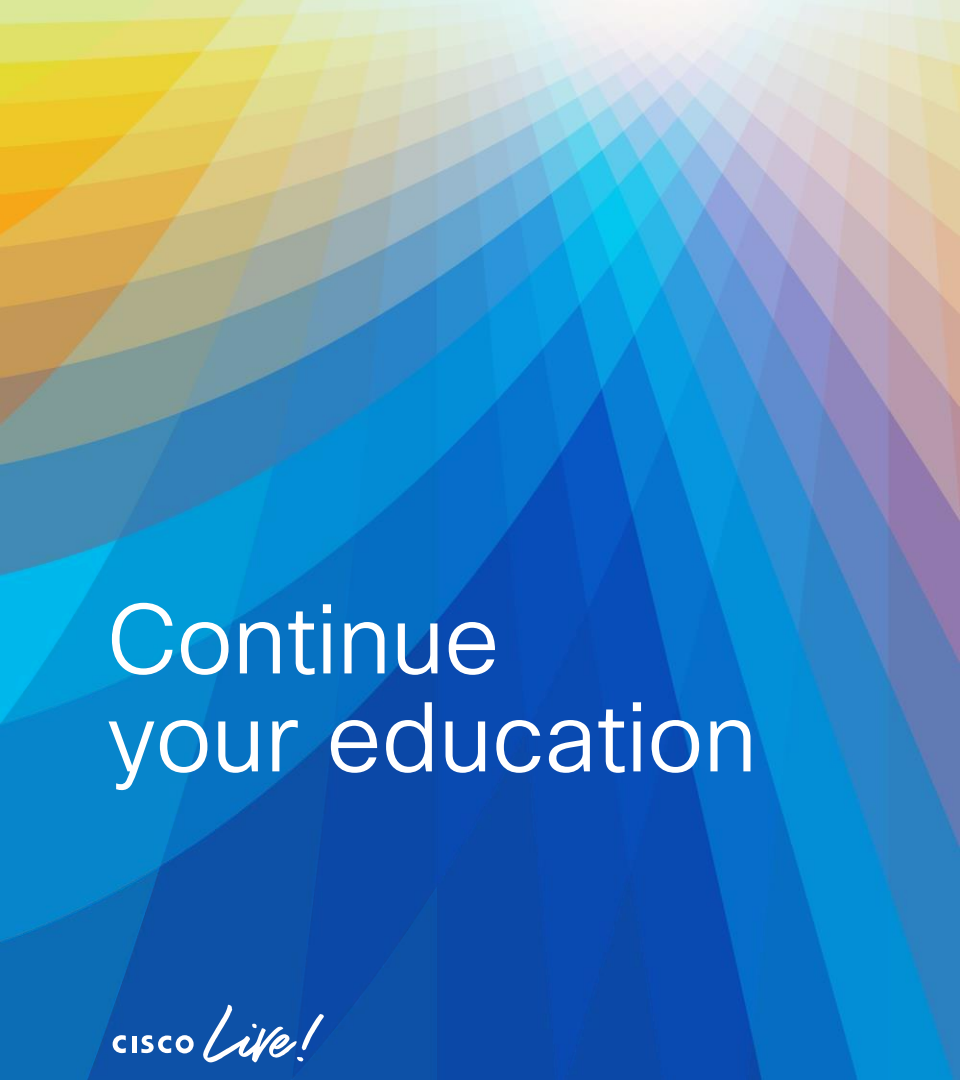


- [ThousandEyes Webinars](#)
- [Implementing and Troubleshooting Networks Using Cisco ThousandEyes \(ENTEIT\) v1.0](#)
- [Enterprise Agent System Requirements](#)
- [Test Type Layers and Units](#)
- [Working with Enterprise Agent Clusters](#)
- [Developer Reference. Agents & Monitors](#)
- [Unit Quotas Use Cases](#)
- [Firewall Configuration for Enterprise Agents](#)
- [Configuring a Local Mirror of the ThousandEyes Package Repository](#)
- [How Unit Consumption Works](#)

# Your main key takeaways



- Invest time into planning
- Collaborate with all stakeholders
- Use these lessons learned and best practices
- Hopefully, you are going to have less “If only I knew” moments 😊



# Continue your education



- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at [www.CiscoLive.com/on-demand](https://www.CiscoLive.com/on-demand)

# Fill out your session surveys!



Attendees who fill out a minimum of four session surveys and the overall event survey will get **Cisco Live-branded socks** (while supplies last)!



Attendees will also earn 100 points in the **Cisco Live Challenge** for every survey completed.



**These points** help you get on the leaderboard and increase your chances of winning daily and grand prizes



The bridge to possible

# Thank you

CISCO *Live!*

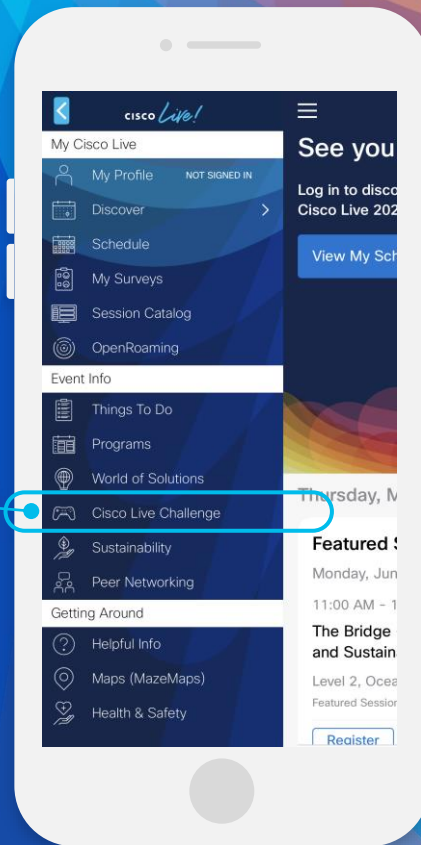
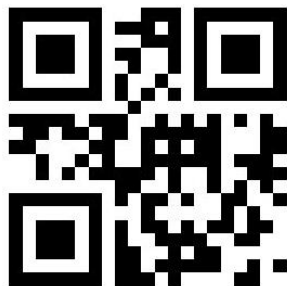
#CiscoLive

# Cisco Live Challenge

Gamify your Cisco Live experience!  
Get points for attending this session!

## How:

- 1 Open the Cisco Events App.
- 2 Click on 'Cisco Live Challenge' in the side menu.
- 3 Click on View Your Badges at the top.
- 4 Click the + at the bottom of the screen and scan the QR code:





The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are several large, semi-transparent, wavy shapes in similar color tones, giving the overall image a sense of motion and energy.

cisco *Live!*

Let's go

#CiscoLive