The bridge to possible

Short & Sweet into ThousandEyes API Suite

Yazan Albikawi, Implementation Engineer

cisco Live!

BRKOPS-2825

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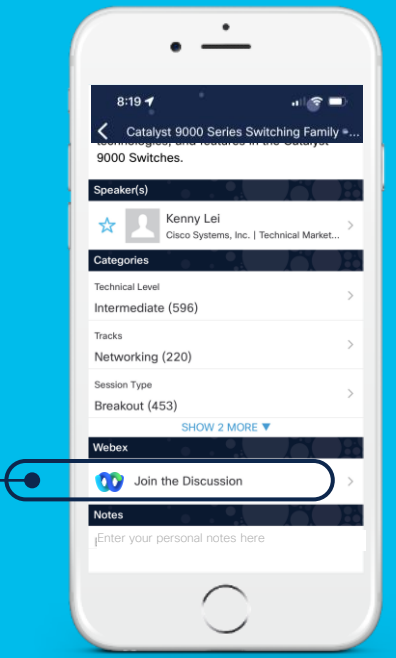

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Kremer Prize

- Reward centered on Human-Powered aircraft, Created in 1959
- Idea is to fly a figure eight around two markers one half mile apart
- Dozens of teams, for 17 years no one won....

Define The problem

In 1977 Dr.Paul MacCready Team made the first sustainable and controlled Human powered aircraft called Gossamer Condor

- Goal is to make a human-powered aircraft ✗
- Goal is to speed up the Design-Build-Test cycle ✓
- Speed up iteration → speed up learning

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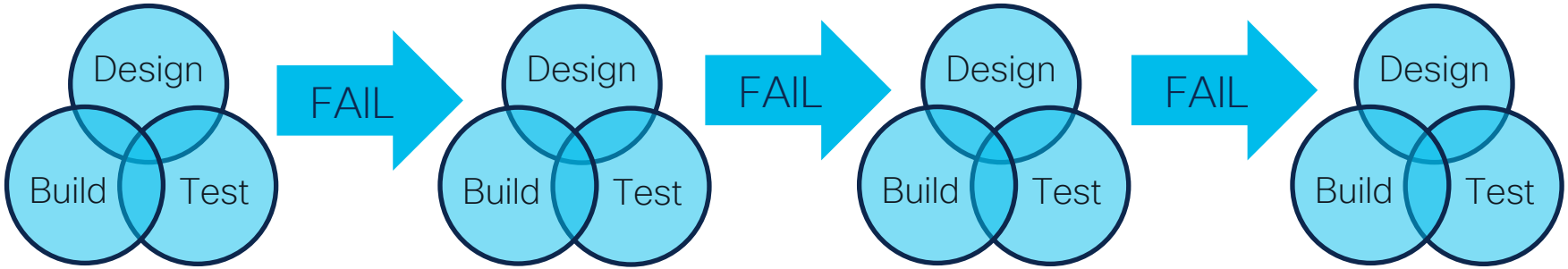
Iteration

FAIL FAST , FAIL OFTEN



Repeating a set of design, development and test operation cumulatively until the desired outcome is achieved.

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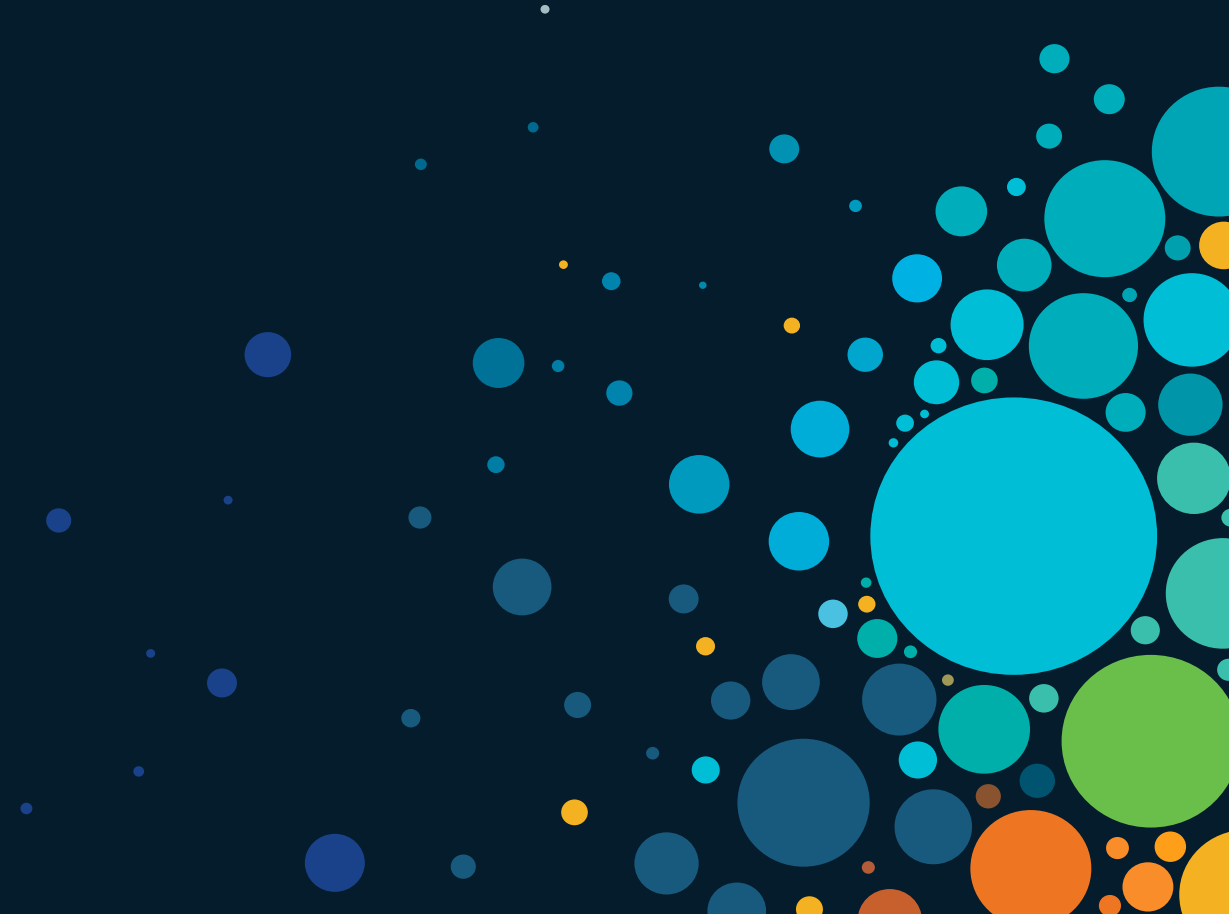
Session Objective



Session Objective

Your main key takeaways

- Streamline network tests onboarding into ThousandEyes
- Grow the skillset needed for Thousandeyes Automation
- Discover the available options and “How to ” modules
- Facilitate sharing data and events from ThousandEyes

“In protocol design, perfection has been reached not when there is nothing left to add, but when there is nothing left to take away”
Rule 12, RFC1925

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Agenda

- Introduction
- ThousandEyes API toolkit
- The Story: Clark & The Automation Harmony
  - The vision in a golden plate
  - Measure twice
- Customer success story
- Conclusion

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About your speaker

Yazan Albikawi

- Focus areas: Network and Solution Design, Implementation, Consultation
- Technology Area: Security, Network observability and Design
- ThousandEyes EMEA Professional Services

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Introduction

Expectation Check

The session will cover

- ThousanEyes API toolkit
- Examples and Use cases
- Getting started with Thousandeyes automation
- Use python and terraform in automation examples

The session will Not cover

- Details in multiple programming languages and code structure
- Deep dive into orchestration or automation tool

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ThousandEyes API toolkit

ThousandEyes API

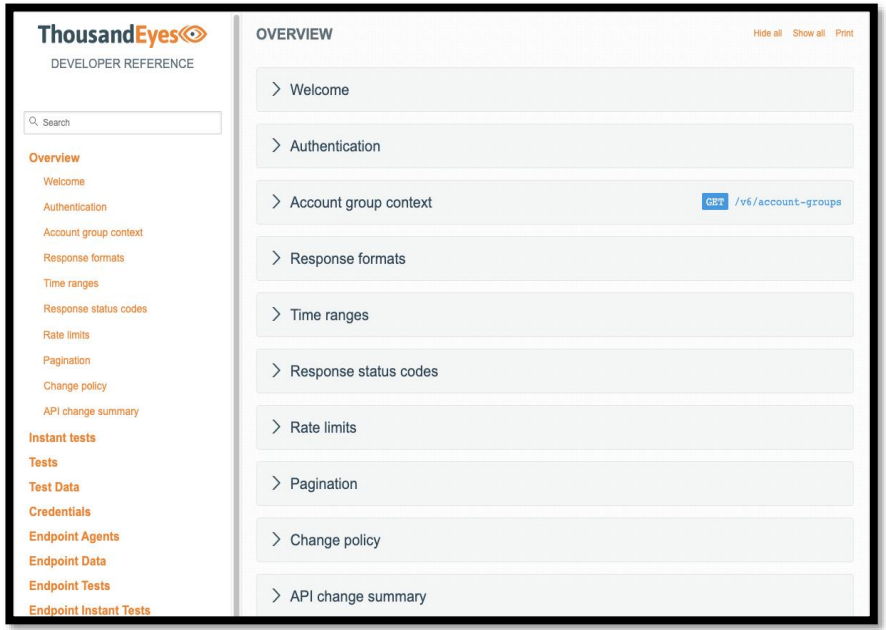
Developer reference

https://developer.thousandeyes.com

- Authentication
  - Basic
  - Bearer token
- Response format: XML/JSON
- Rate Limits

  240 request per minute

	x-organization-rate-limit-limit	240
	x-organization-rate-limit-remaining	236
	x-organization-rate-limit-reset	1667571120



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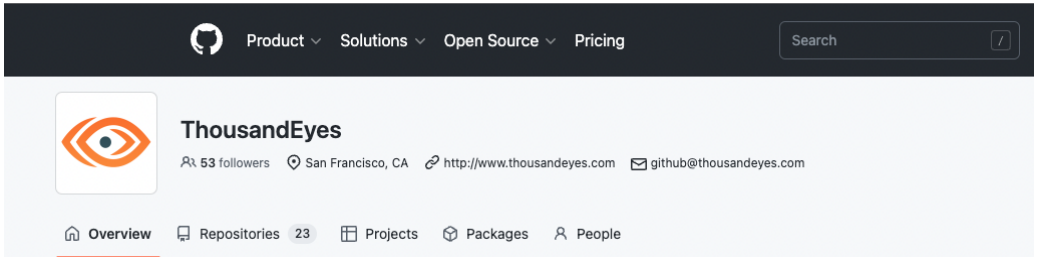
ThousandEyes API

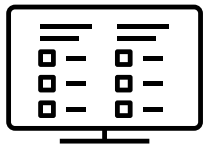
Developer reference

API version

- APIv6 the current release
- APIv7 preview, some API calls like create Dashboard

ThousandEyes- GitHub





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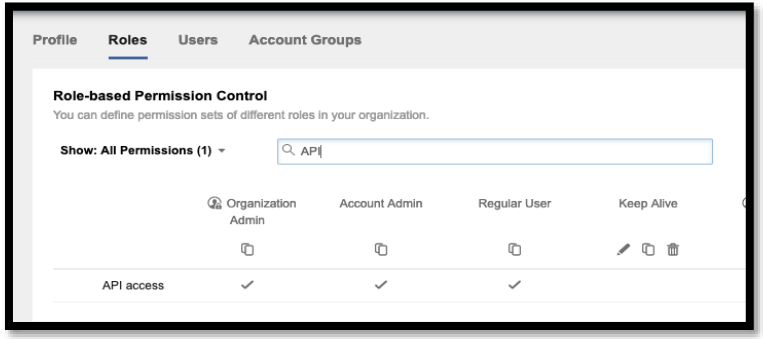
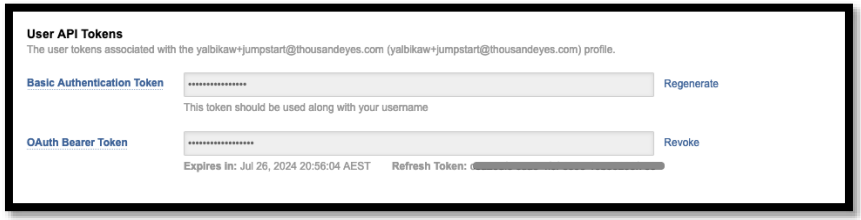
ThousandEyes API

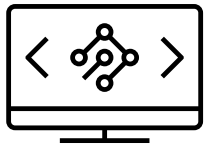
Getting started

- ThousandEyes side
  1. Account with API permission
  2. Account RBAC privilege
  3. API Token

- Client Side
  - Any IDE with API library
  - Any API Platform







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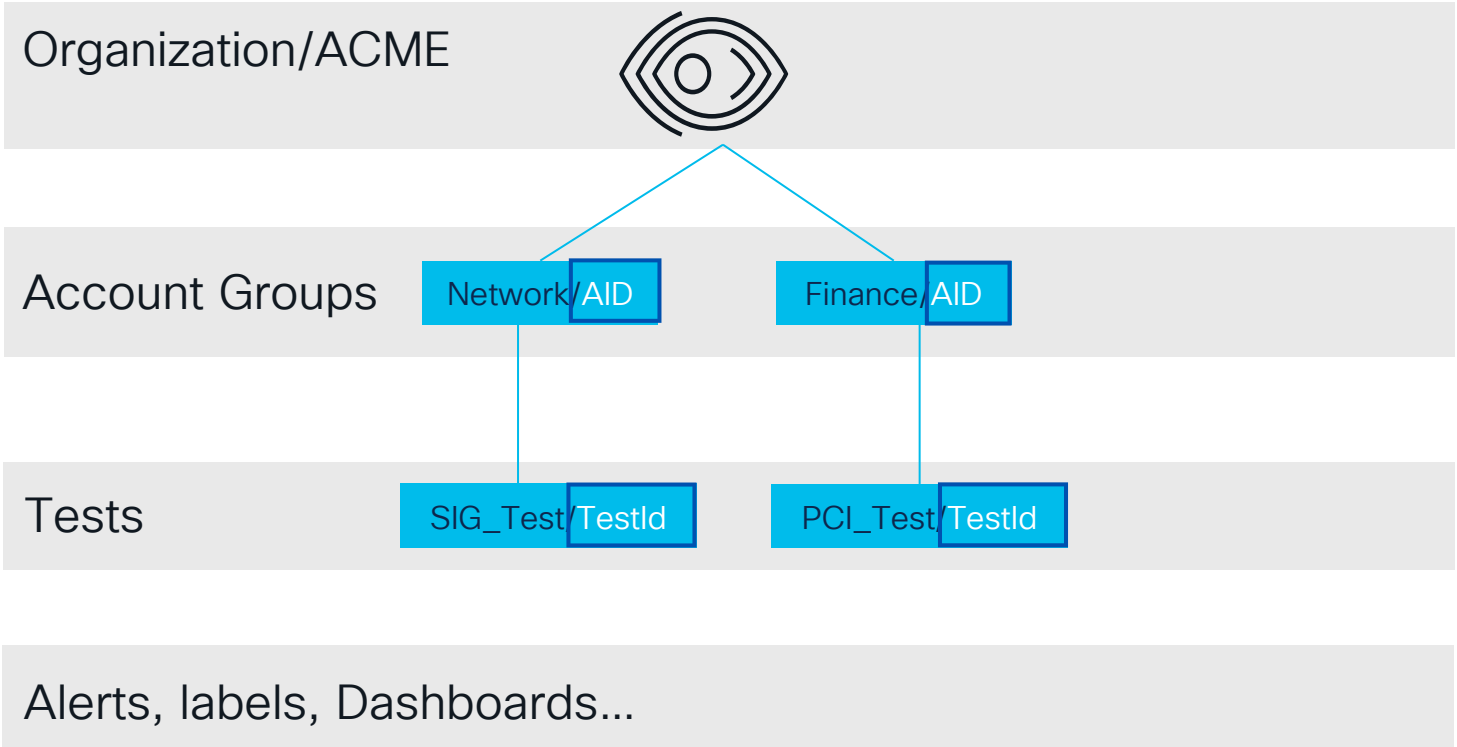
ThousandEyes API

Resource ID



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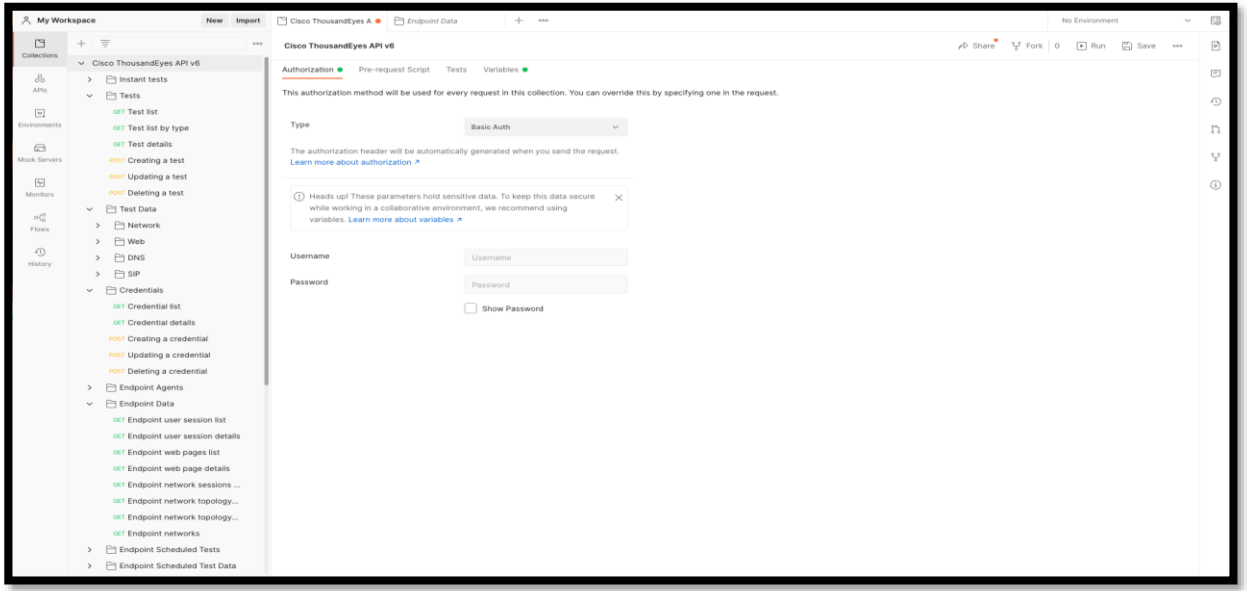
ThousandEyes API

Postman API Platform

- Install Postman
- Download Cisco ThousandEyes API v6 collection



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Demo
Postman-
Thousandeyes API

Summary To Run First API Call in Postman

- Update Base_URL Variable with thousandeyes endpoint
  - Variable in postman → {{Variable_name}}
  - ThousandEyes API Target url: https://api.thousandeyes.com
- Get Account Group ID
- Get Test list
- Get Test Details

Name	URL
Account group ID	https://{{base_url}}/v6/account-groups.json
Test List	https://{{base_url}}/v6/tests.json
Test Details	https://{{base_url}}/v6/tests/Testid.json

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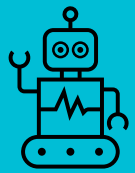
The Story: Clark and The Automation Harmony



Introduction to Central Science

Central Science is a fictitious company focused on research and development sector for water and climate

- In the past year they have onboarded Thousandeyes
- The testing portfolio skyrocket after seeing the benefits of Network Observability
- More teams adopted the FSO idea and currently a lot of application owners are using ThousandEyes

ThousandEyes maintenance becoming a burden, The technical board are having a meeting to discuss this.

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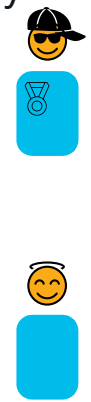
Introduction to central science IT staff

Main Characters of the day

- Clark the network admin
  - One of the top talents, he always try to work proactively, owner of many initiatives and he loves ThousandEyes
- Lobo from the dev team
  - He is a dedicated developer, hard working and always willing to provide help in coding and development



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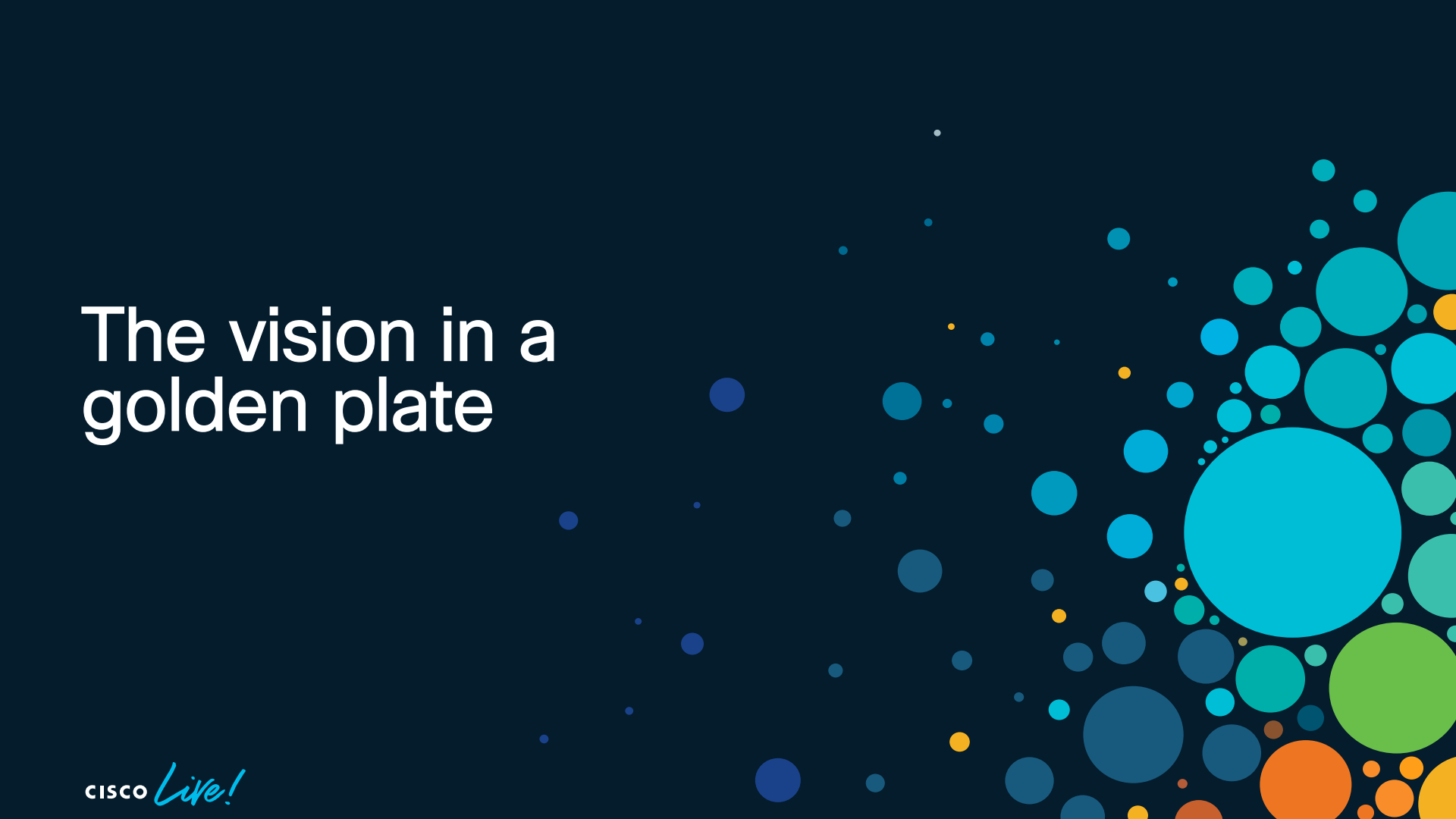
The vision in a golden plate



Leaders Meeting Minutes

Hello Team,

Please find below the agreed goals from the board:

- Cleanup the inactive tests in the platform
- Utilize Splunk for Alerts and base it for further tasks
- Kick off ThousandEyes with Netops team, and make sure they maintain the state of their configuration

Complete these Goals assigning them priority over other tasks, we want best use of Thousandeyes.

Diana
VP of network and services strategy

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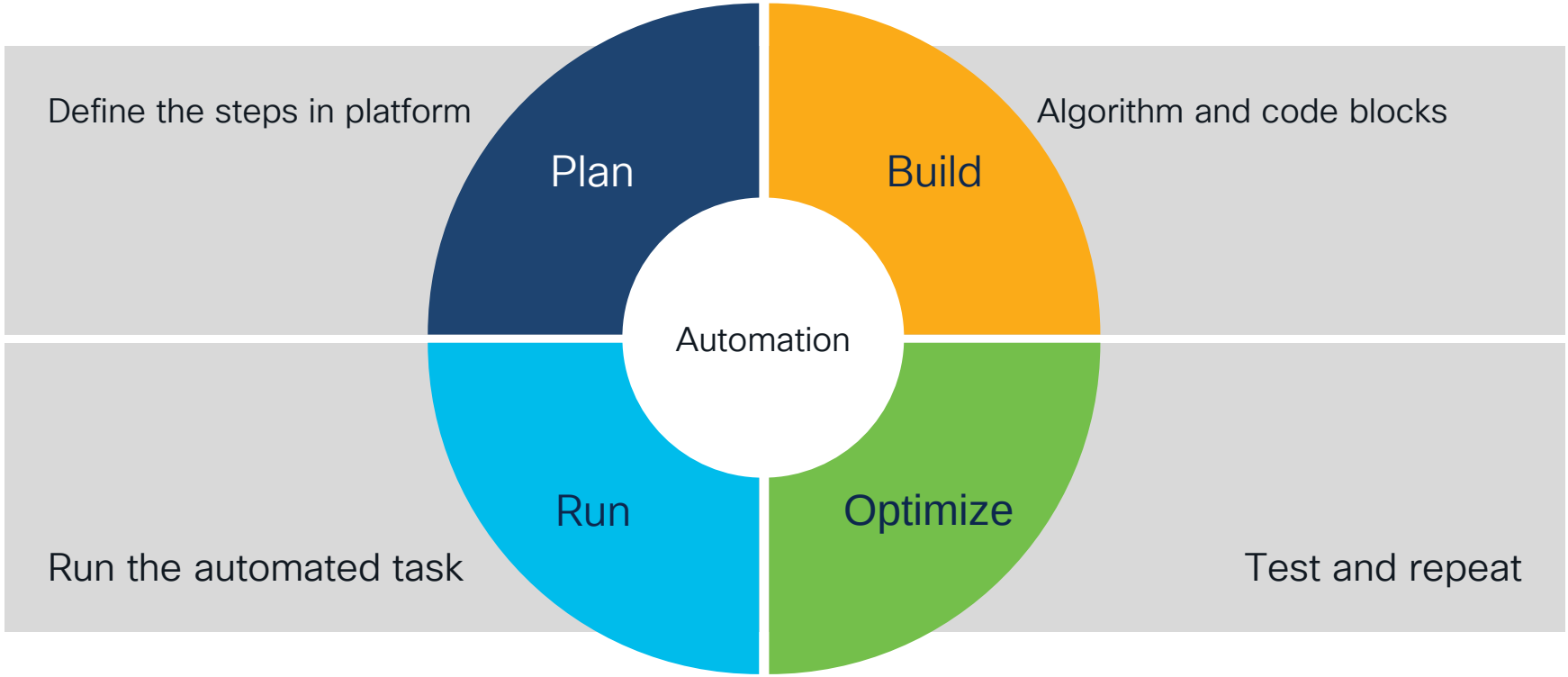
Measure twice

Measure Twice Strategy



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Measure Twice Key Overview

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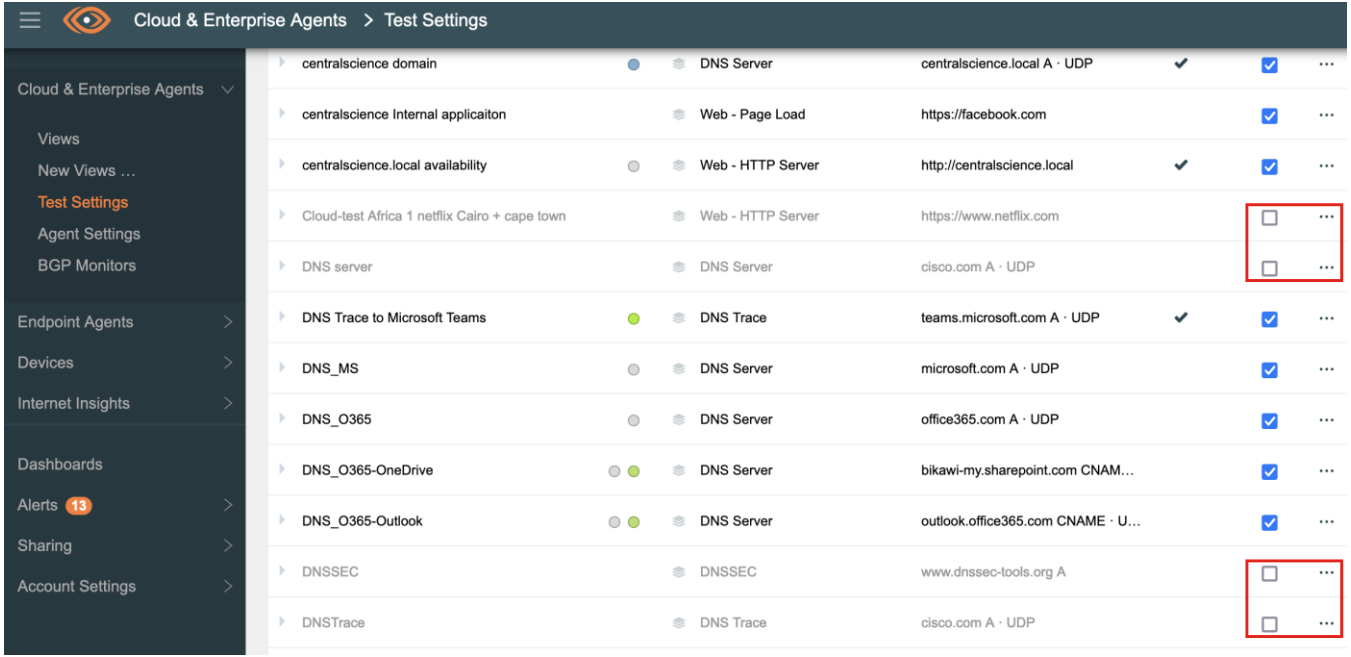
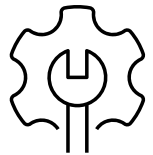
Measure Twice

First Goal

Plan Build Run

Cleanup inactive tests





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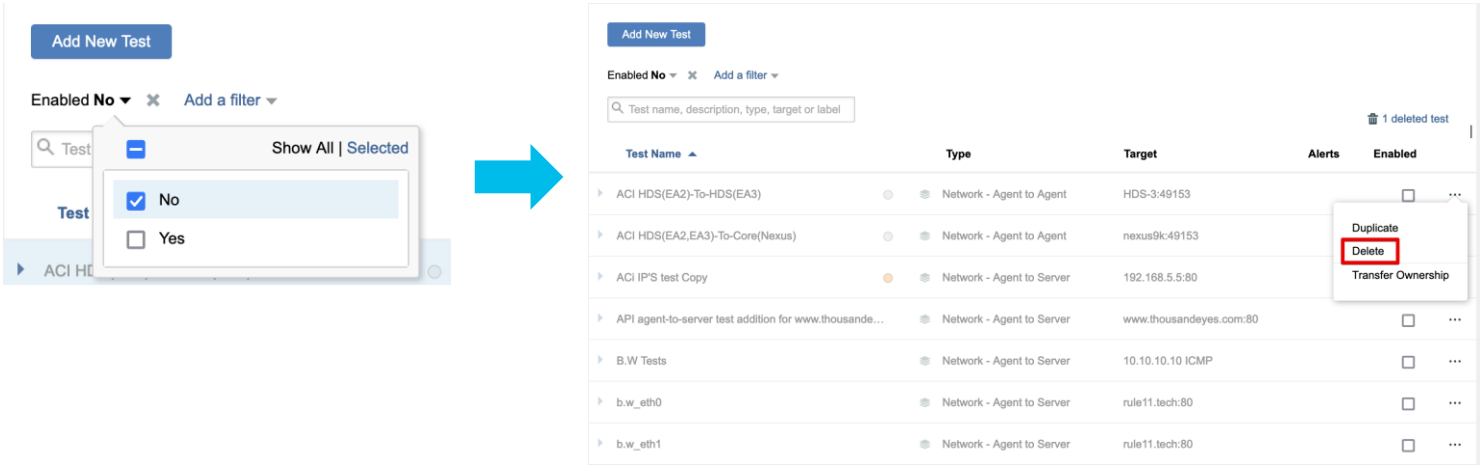
Cleanup Inactive Tests

Plan Build Run

Define the steps that needs to be automated.

- To delete tests, we need to filter the flag enabled = no
- Then click on each test and delete it.



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Cleanup Inactive Tests

Using postman get list of disabled tests

Plan Build Run

Get https://api.thousandeyes.com/v6/tests.json

Delete

Post https://api.thousandeyes.com/v6/tests/{{testType}}/{{testId}}/delete.json

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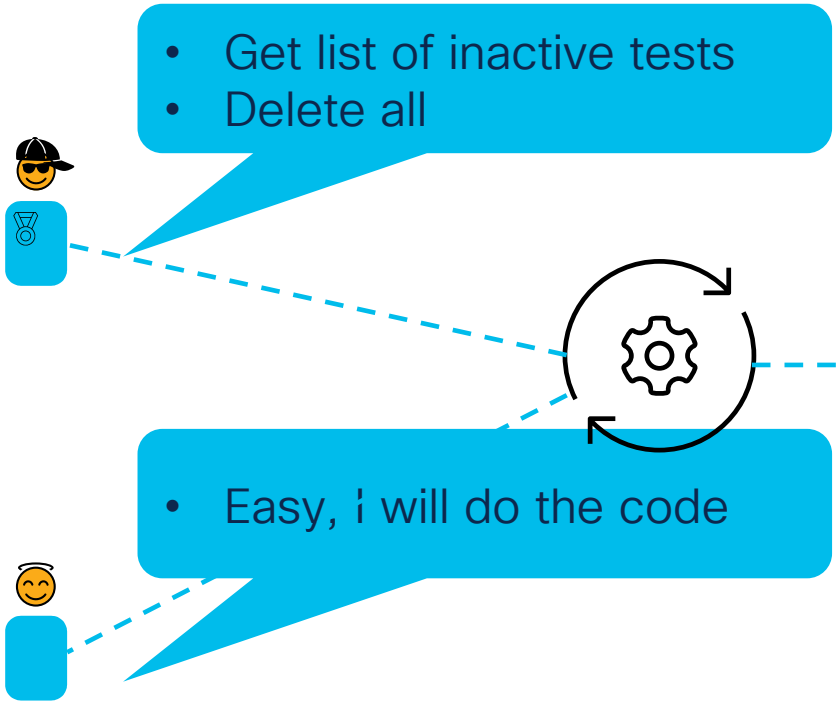
Cleanup Inactive Tests

Plan | Build | Run



parse_config()
(credentials and account group)

get_aid()
(getting the account id)

get_testlist
(get all the tests that are inactive)

delete_inactive_tests
(delete all the tests inside the inactive_testlist)

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Delete Inactive Tests, Demo

Summary Steps For The First Goal

Cleanup Inactive Tests using Python Script

Plan	Build	Run
• Define the steps in Thousandeyes • Verify if it can be automated	• Test sample outcome with API using postman • Build the logic to automate the task • Create the script	• Run the code • Verify the outcome in platform

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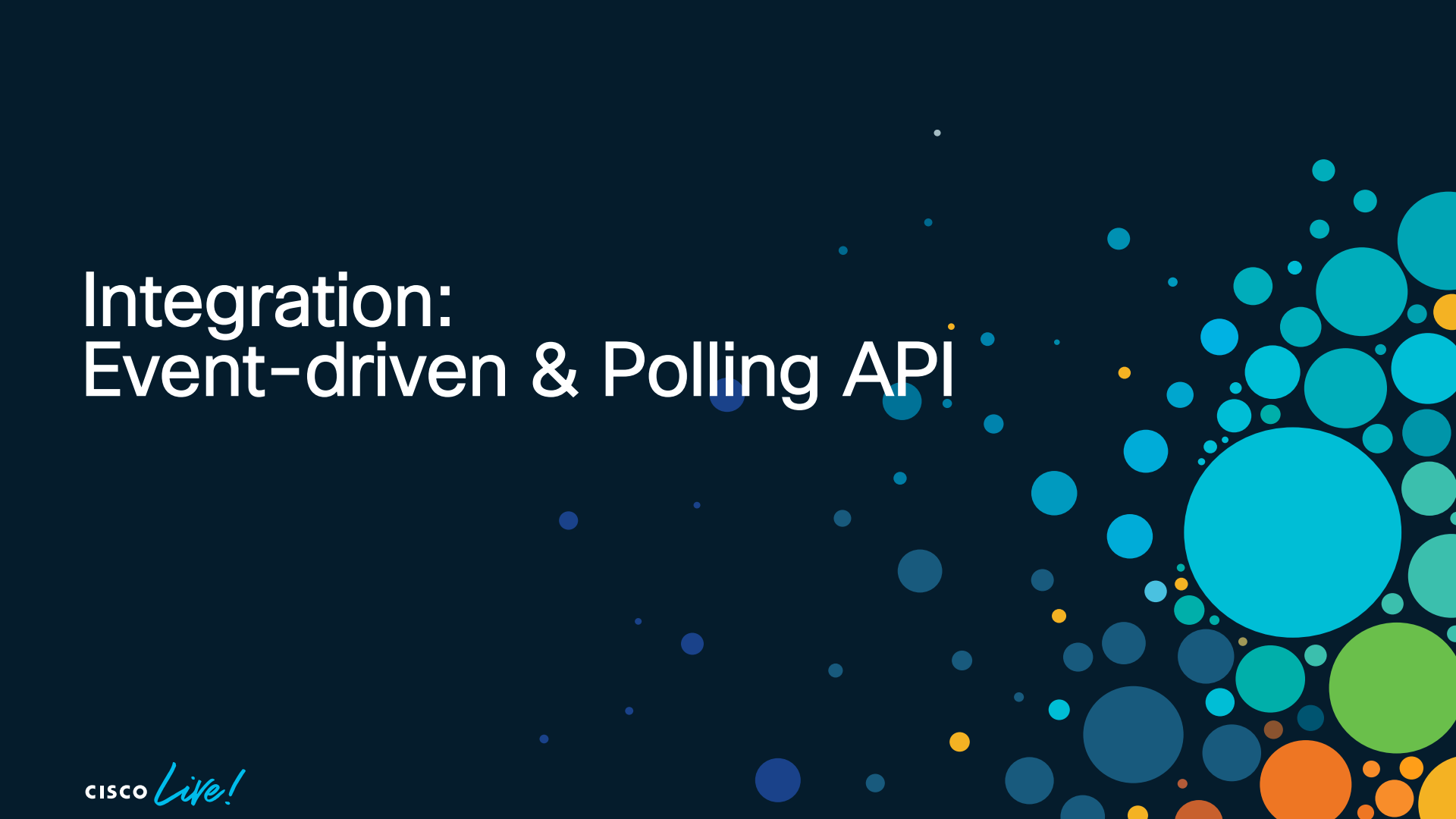
Integration:
Event-driven & Polling API



ThousandEyes Integration

Event-Driven

Webhooks

Webhooks are simple lightweight method of sending Alerts between applications.

- Classic webhooks
- Custom Webhooks

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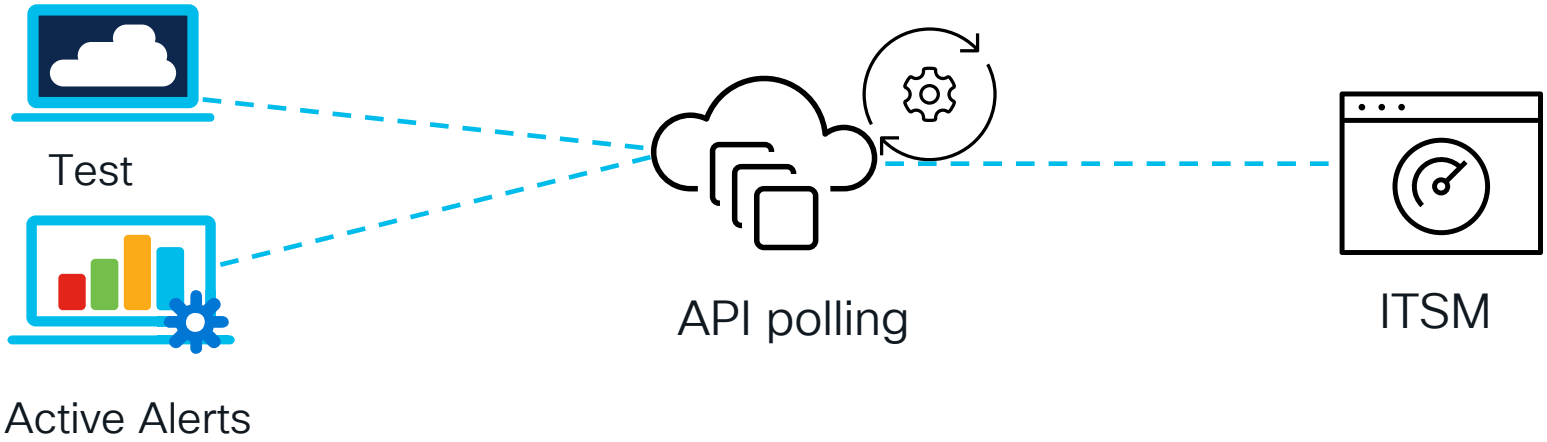
ThousandEyes Integration

API Poll

Polling mode

Periodically sending API request to check data

- Test metrics, active alerts
- Dashboards and other services



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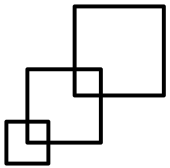
Integration Demo
Webhooks

Summary on Integration using custom webhooks

Webex Notification

- ThousandEyes
  - Configure custom webhook
  - Use Preset Configuration template for Webex
  - Customize the body to include roomId
  - Add/remove variables, https://docs.thousandeyes.com/product-documentation/alerts/integrations/webhooks/webhook-vars
- Webex
  - Token
  - RoomID



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Integration with Splunk

Integration with Splunk

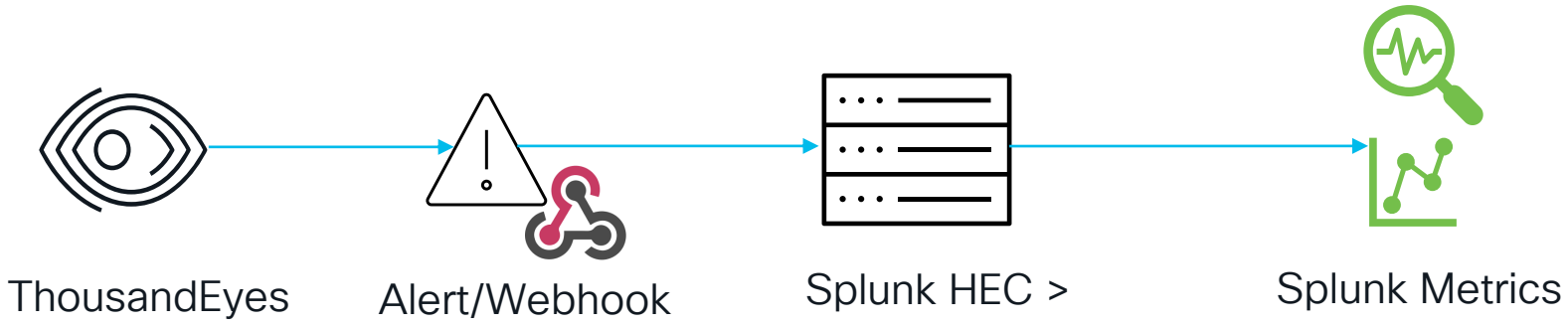
Second Goal

Plan | Build | Run

Utilize Splunk for Alerts and base it for further tasks

This task will be based on webhooks

- Splunk Http event collector HEC
- ThousandEyes custom Webhooks



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Integration with Splunk

Splunk HEC configuration

- Select data input
- Turn on HTTP event collector
- Generate an HEC token
- Make sure HEC is enabled in Global settings

Notes

Send data to HTTP Event Collector on Splunk Cloud Platform

```
<protocol>://http-inputs-<host>.splunkcloud.com:<port>/<endpoint>
```

Send data to HTTP Event Collector on Splunk Enterprise

```
<protocol>://<host>:<port>/<endpoint>
```

Endpoint -> /services/collector/event

Splunk >

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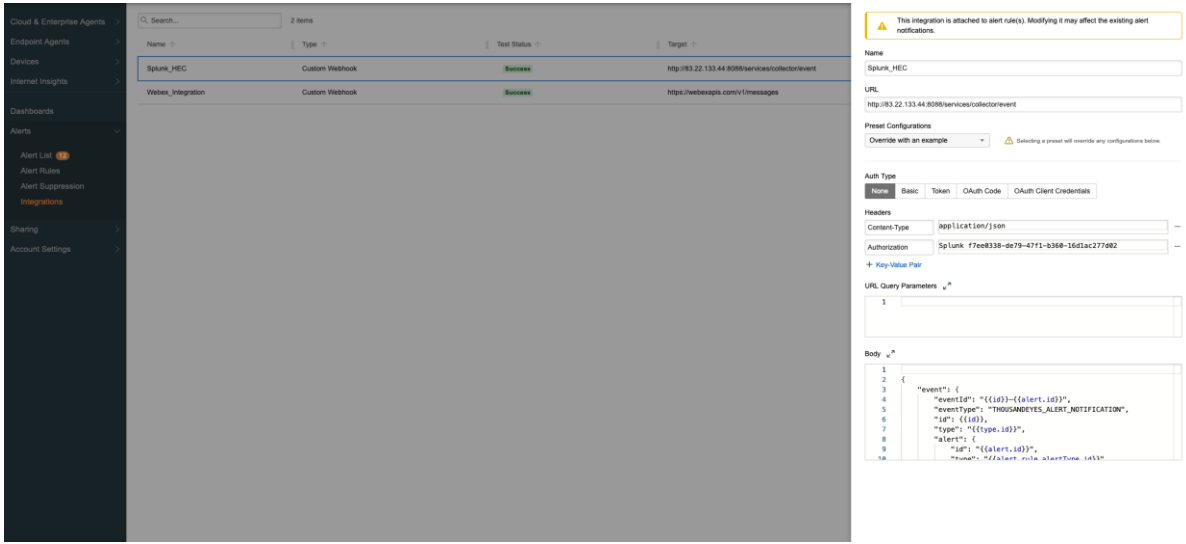
Integration with Splunk

Plan Build Run

ThousandEyes configuration

- Custom Webhook
- Use Splunk pre-defined template
- Test the integration
- Add Alerts to the webhook



ThousandEyes

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Splunk Integration Demo

Summary Steps For The Second Goal

Integration With Splunk

Plan	Build	Run
• Define the integration type which is webhooks • Understand the Splunk HEC requirement	• Configure HEC on Splunk • Configure Custom webhook on Thousandeyes • Verify the connectivity	• Configure the alert rules with integration • Verify Splunk once the alert is triggered

Notes: Always use HTTPS in production and never share tokens

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Onboard ThousandEyes with Netops team

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Measure Twice

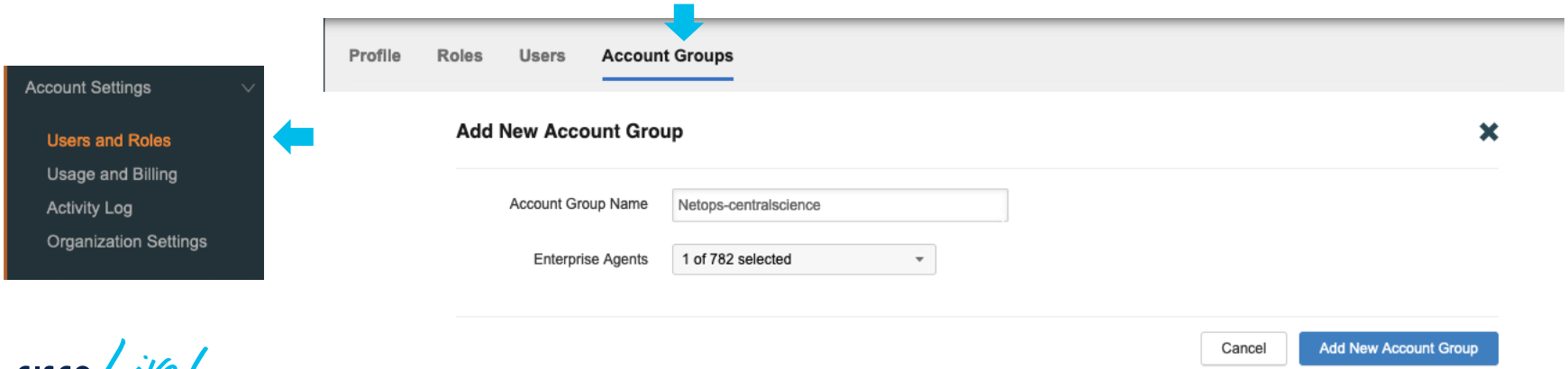
Last Goal

Plan → Build → Run

To introduce thousandeyes configuration for netops we need the following

- Account group for the team
- Use some tool to maintain the state of configuration
- Use MS Teams as monitoring pilot for their test configurations and alerts

Create account group



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Terraform

Last Goal

What is Terraform

Terraform is well-adopted open-source IaC tool, developed by HashiCorp

- Declarative
- Agentless
- Cloud-agnostic can be used with different cloud providers
- Easy to be added with Netops team pipeline process
- Maintain state configuration file

The features available match the requirements

HashiCorp Terraform

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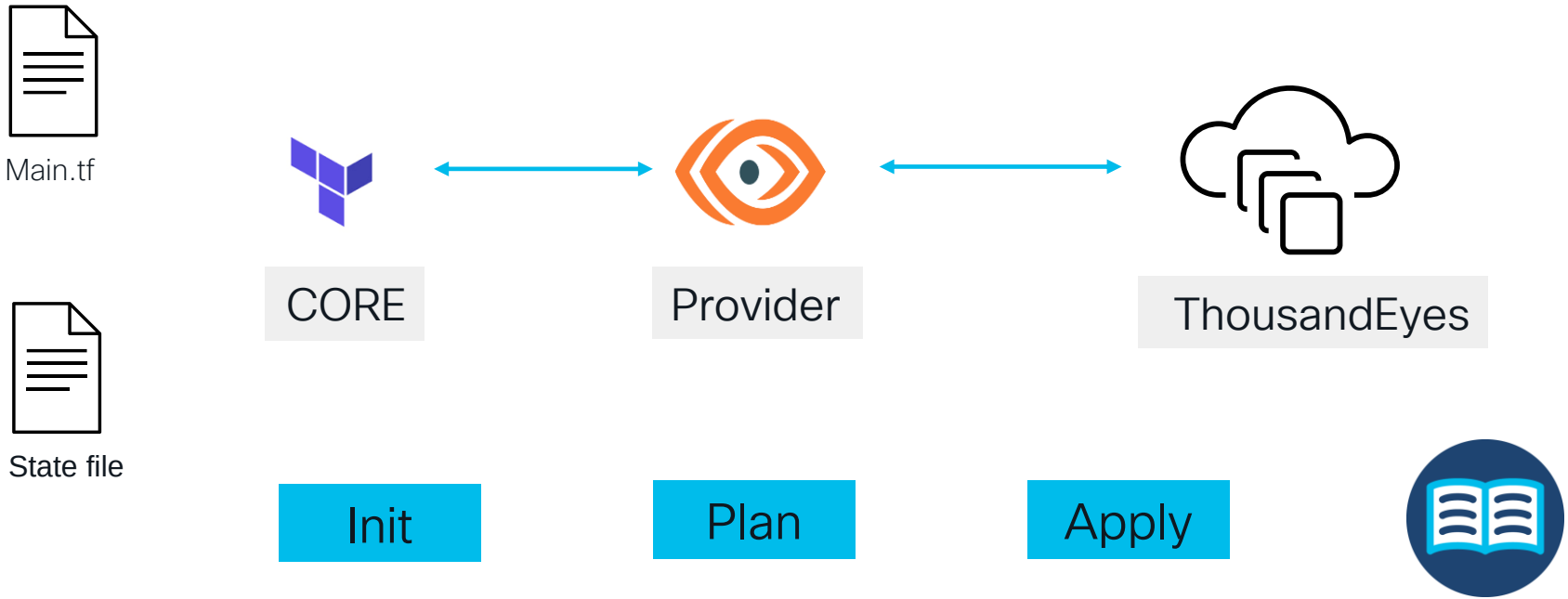
Terraform

Last Goal

Plan Build Run

Architecture components & workflow



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Terraform

Getting started with ThousandEyes Provider

The plugin can be found in Terraform registry

https://registry.terraform.io/providers/thousandeyes/thousandeyes/1.3.1

Requirements

- Terraform
- Go

Main code blocks

- Provider
- Data
- Resource

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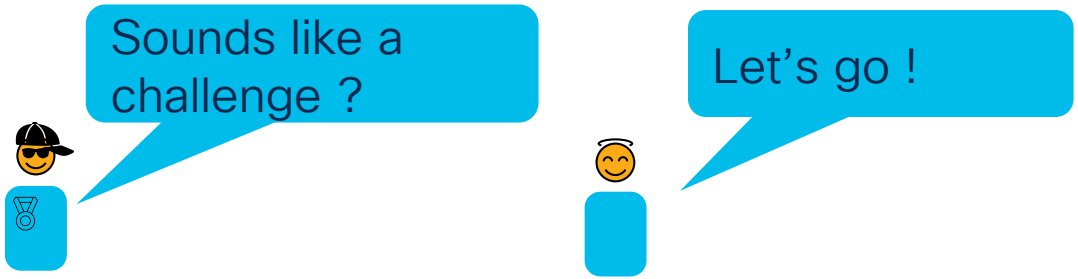
MS Teams Monitoring

Prepare the configuration blocks

Plan Build Run

Requirements

- Use the assigned enterprise agent under Netops account group
- Configure tests to monitor MS Teams url
- Create alert rule and assign to the tests



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Terraform Demo

Summary Steps For The Third Goal

Configure ThousandEyes Resources using Terraform

Plan	Build	Run
• Verify the requirements • Install the Thousandeyes provider	• Build the configuration file • Add all the resources (tests and alerts) • Plan the deployment and verify the outcome	• Apply the configuration • Check the state file and verify the configuration on Thousandeyes platform

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Goals are Achieved !

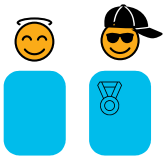
Hello Team,

Below the board agreed Goals for you,

- Cleanup the inactive tests
- Utilize Splunk for Alerts and base it for further tasks
- Kick off ThousandEyes with Netops team, and make sure they maintain the state of their configuration

Complete these Goals assigning them priority over other tasks, we want best utilization and use of Thousandeyes.

Diana
VP of network and services strategy



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Honeywell

Success story
Honeywell

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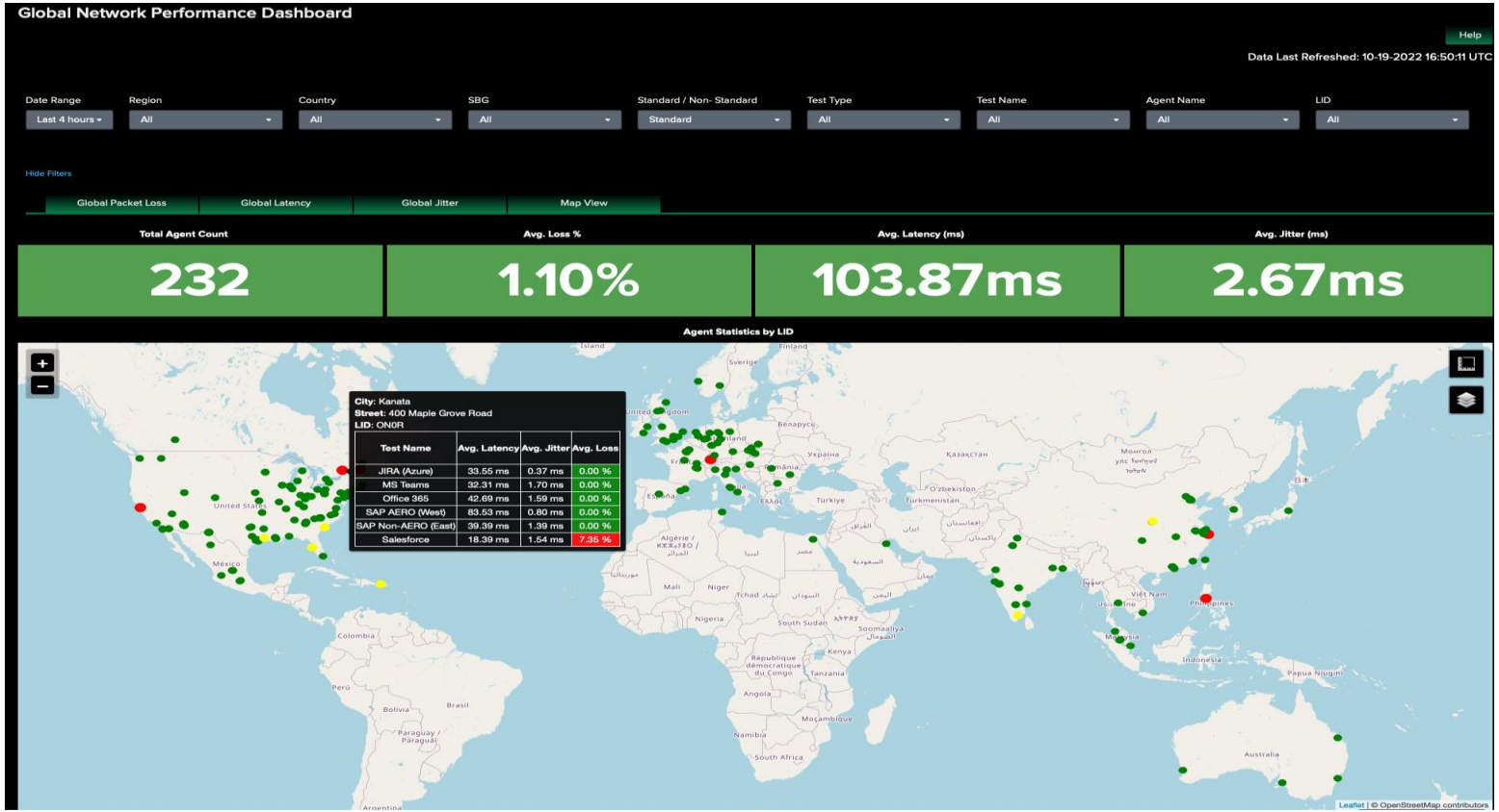
Honeywell

Mean Time Of Innocence



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Get ThousandEyes Test Metrics

- Test Data API covers

  Network, Web, DNS, Voice

Example for Data Metrics API

https://developer.thousandeyes.com/v6/test_data/

Metric	URL
HTTP Metrics	https://{{base_url}}/v6/web/http-server/testid.json
Network Metrics	https://{{base_url}}/v6/net/metrics/testid.json

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Integration and automation made possible

Thousandeyes API toolkit allows you to automate and integrate solutions, facilitate the deployment and collaboration between teams and products .

Automate tests

Integration

Stay updated

Simplify

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The bridge to possible

Thank you

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ALL IN