

CISCO *Live!*



#CiscoLive



The bridge to possible

Real life deployment of Hybrid Cloud Infrastructure

using Cisco Intersight

Vlad Ungureanu – Technical Solutions Architect

BRKCLD-2807



#CiscoLive

Cisco Webex App

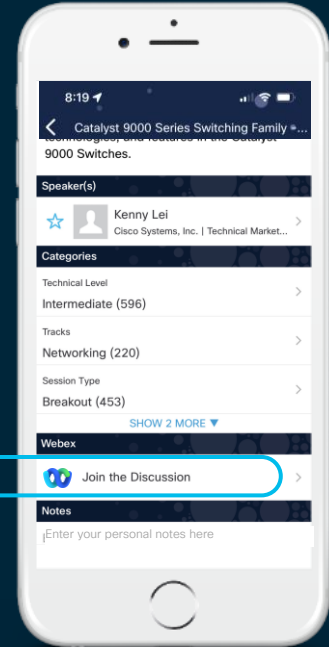
Questions?

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 17, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKCLD-2807>



Agenda

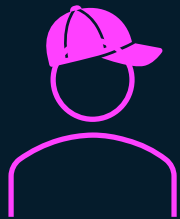
- Meet Company **ACME**
- Infrastructure as Code approach
- Application Modernization and Infra
- Demo
- Observability
- Summary

Meet Company ACME



Mr. X

Line of
Business



Alice

Development



Bob

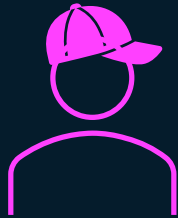
Infrastructure



WebShop App

ACME plans to go live with the new application

We need infrastructure delivered fast, secure and in a flexible way



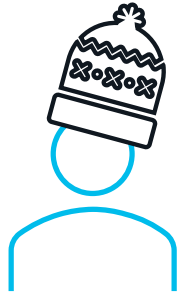
Alice
Dev

OK. Let me see what I can do...



Bob
Infra

Bob deploys Infrastructure for Alice's new app



Bob

- Required: Bare Metal and/or Virtual Machines with associated networking
- Bob decides to use an Infrastructure as Code approach with Terraform Cloud and Intersight
- Terraform Cloud and Intersight enable infrastructure automation without installing or managing any additional tools

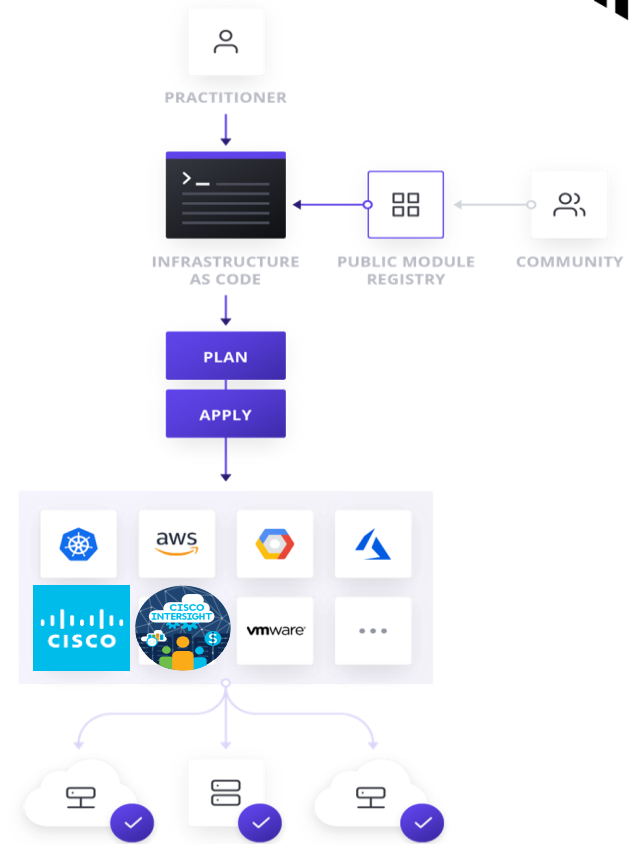


Guiding Principle: Infrastructure as Code

Using version control and automation to
reduce human error and failed builds

Leverage Terraform for Infrastructure as
Code and Policy as Code to automate
everything

Open source providers allow rapid
creation and support for any infrastructure



Infrastructure as Code approach



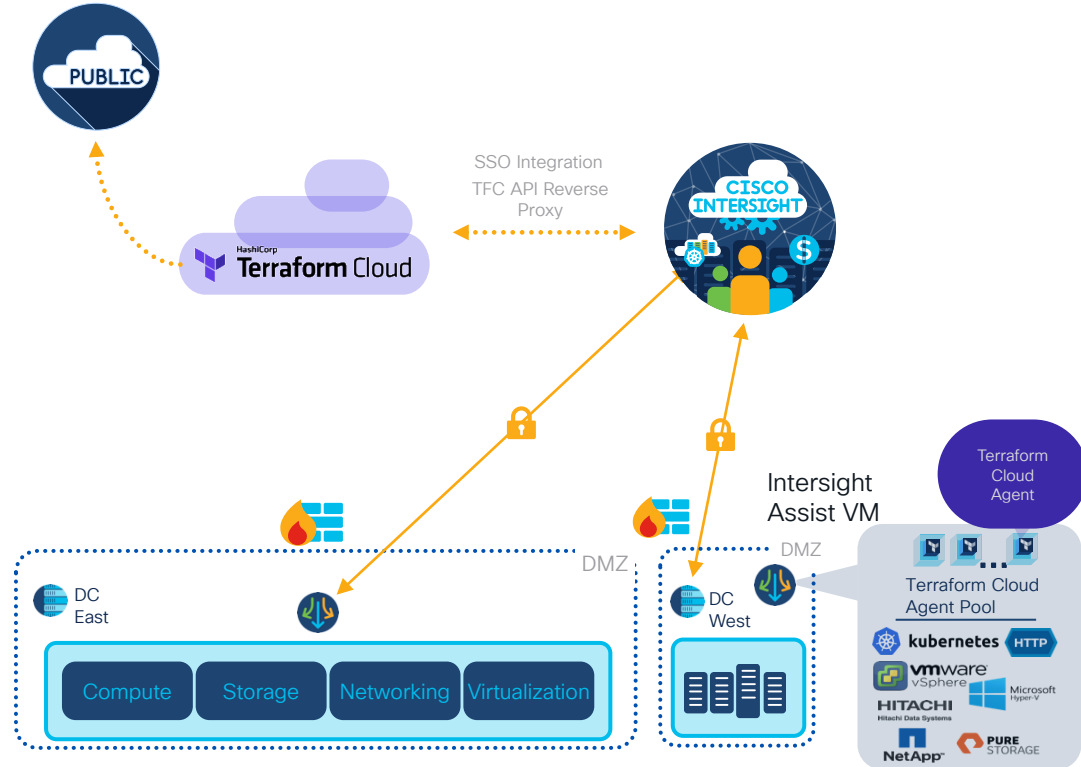
Integrating on-prem IaC with Intersight

TFCB delivered as a secure-SaaS with Intersight Service for HashiCorp Terraform

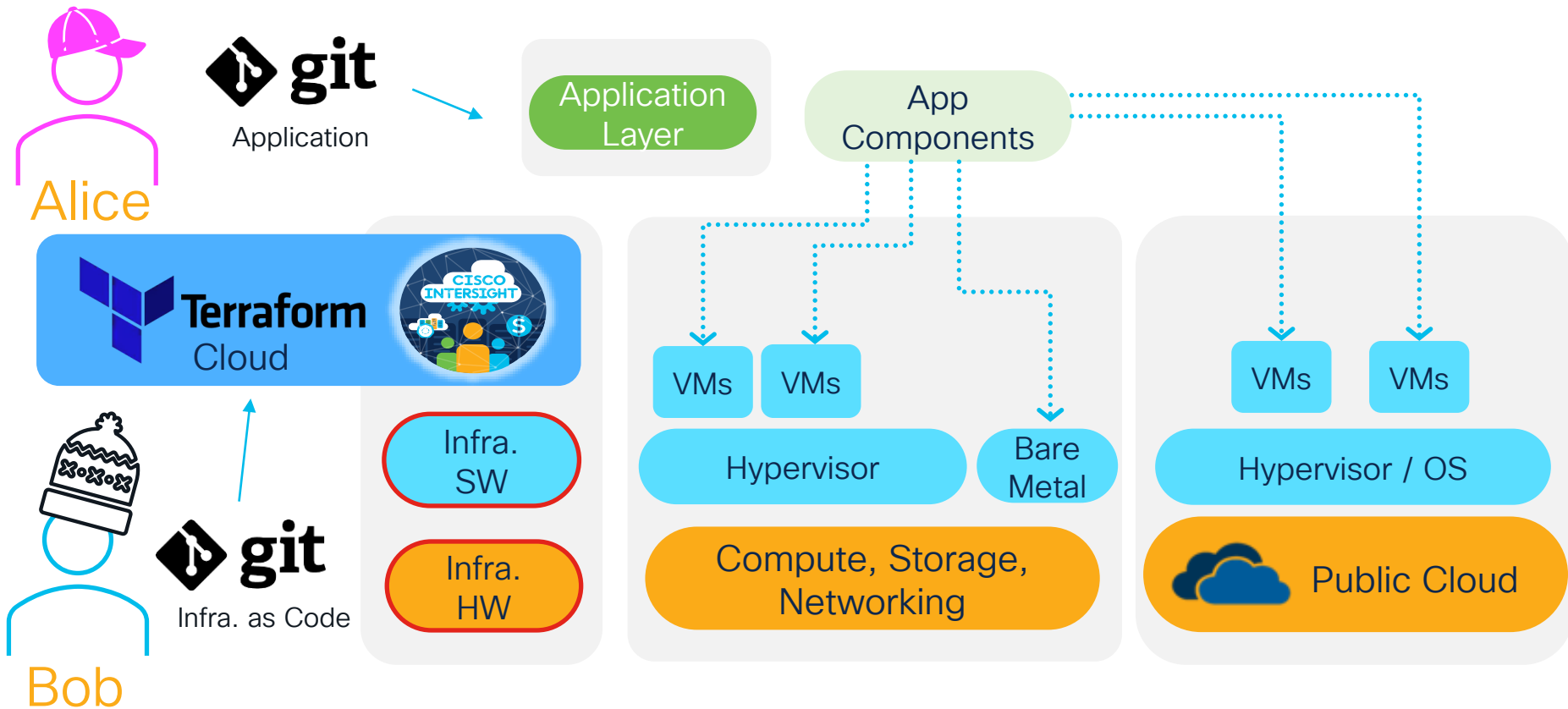


Intersight securely extends the ability to manage, automate and orchestrate on-prem infrastructure and software.

- **Simple:** Intersight manages the end-to-end lifecycle (deployments, upgrades, scaling, networking) of Terraform Agents
- **Integrated:** Reduces the operational overhead of connecting IaC pipelines with infrastructure domain management
- **Extensible:** Intersight Assist delivers a growing library of integrations with Terraform, Pure Storage, NetApp, Hitachi and VMware to help up-level IT operations



Bob and Alice bring the Application to PROD

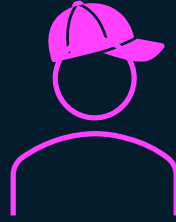


ACME is successful because of the application

The business is booming! New users are coming every day... We need more of that! Please increase scale!



Mr. X
LoB



Alice
Dev

We are not yet ready for that.
Our team and our application does not scale today...

I also need Bob's help for this!

Application Modernization – Split to gain value

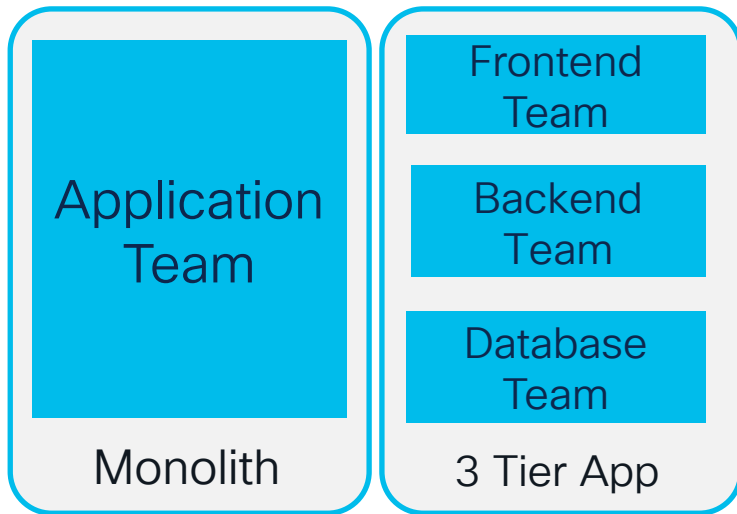


Traditional Apps

Presentation
(Frontend)

Business Logic
(Backend)

Persistence
(Databases)



Bare Metal or VMs
Vertical scaling (scale-up)

Application Modernization – Split to gain value



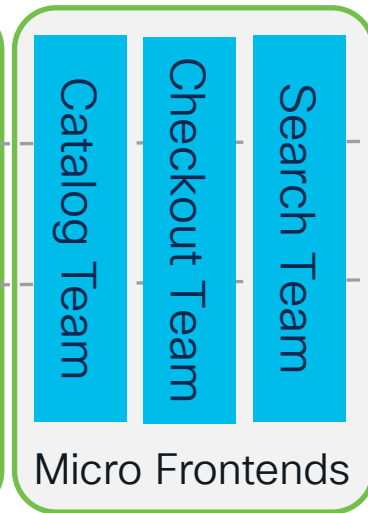
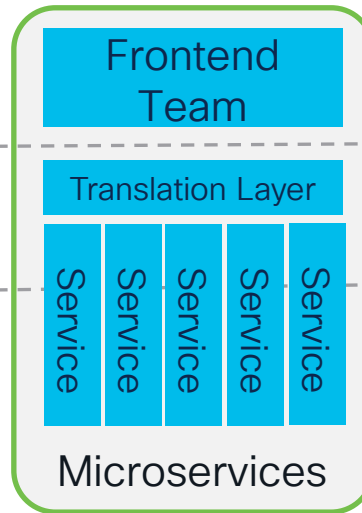
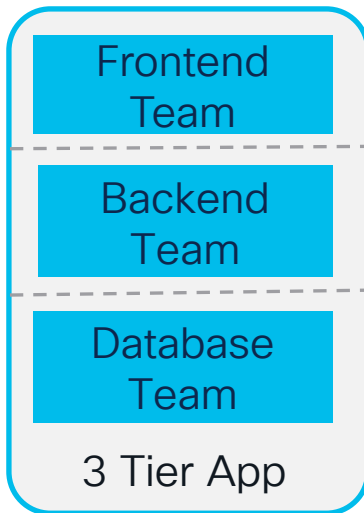
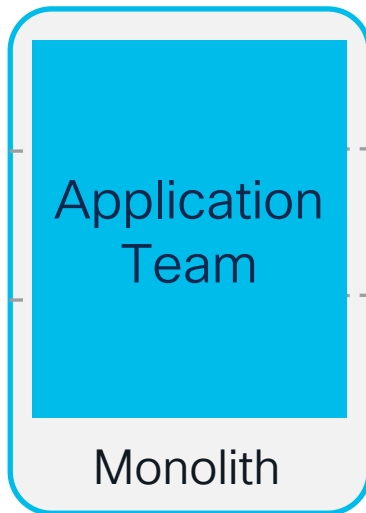
Traditional Apps

Modern Apps

Presentation
(Frontend)

Business Logic
(Backend)

Persistence
(Databases)

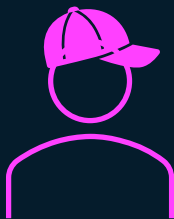


Bare Metal or VMs
Vertical scaling (scale-up)

Containers and Kubernetes
Horizontal scaling (scale-out)

Alice goes back to Bob...

We started to modernize the application. We need additionally Kubernetes Clusters for DEV and PROD environments...



Alice



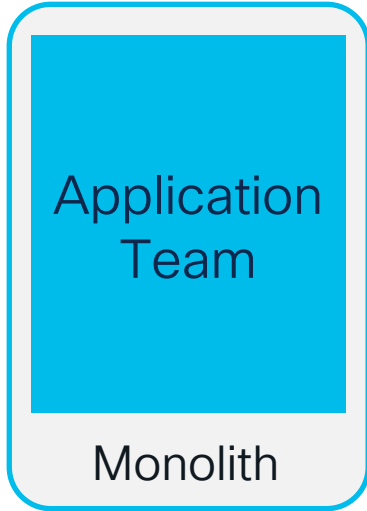
Bob

cube what?

Application Modernization – Infrastructure evolution



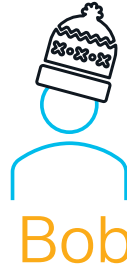
Traditional App



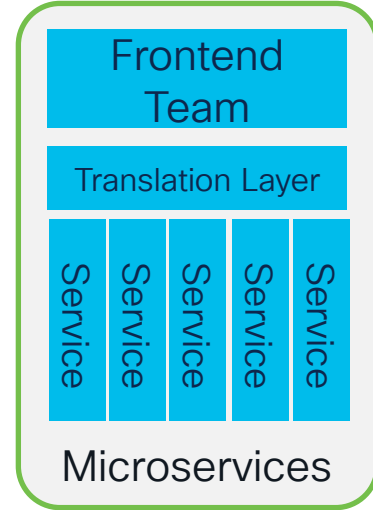
Bare Metal or VMs

Bob has essentially two tasks that he needs to solve now:

1. Provide production ready Kubernetes (K8s) clusters to Alice's Team
2. Implement the supporting networking model for K8s and containers



Modern App



Containers and Kubernetes

add

Intersight Kubernetes Service (IKS)

Secure



Cloud-Managed



Enterprise-Ready



Deploy

enterprise-ready
Kubernetes clusters from
the cloud in minutes

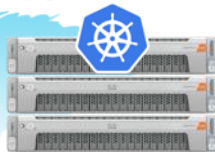


Manage

the life-cycle of Kubernetes
clusters across the globe from
a single cloud portal



Cisco UCS
w/ ESXi



HX w/ ESXi



HX /IWE



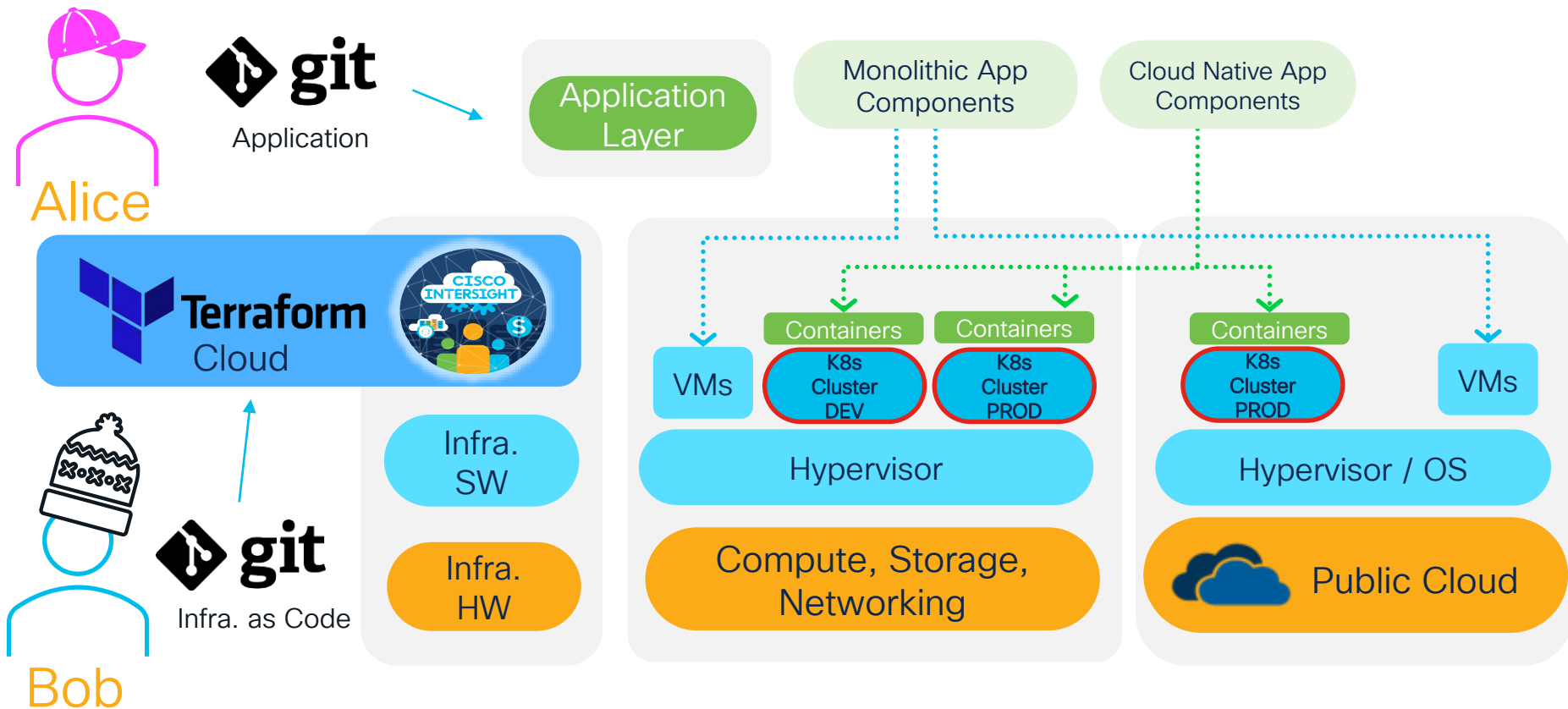
HX Edge
w/ESXi/IWE



3rd party servers w/
ESXi/IWE
[Future]

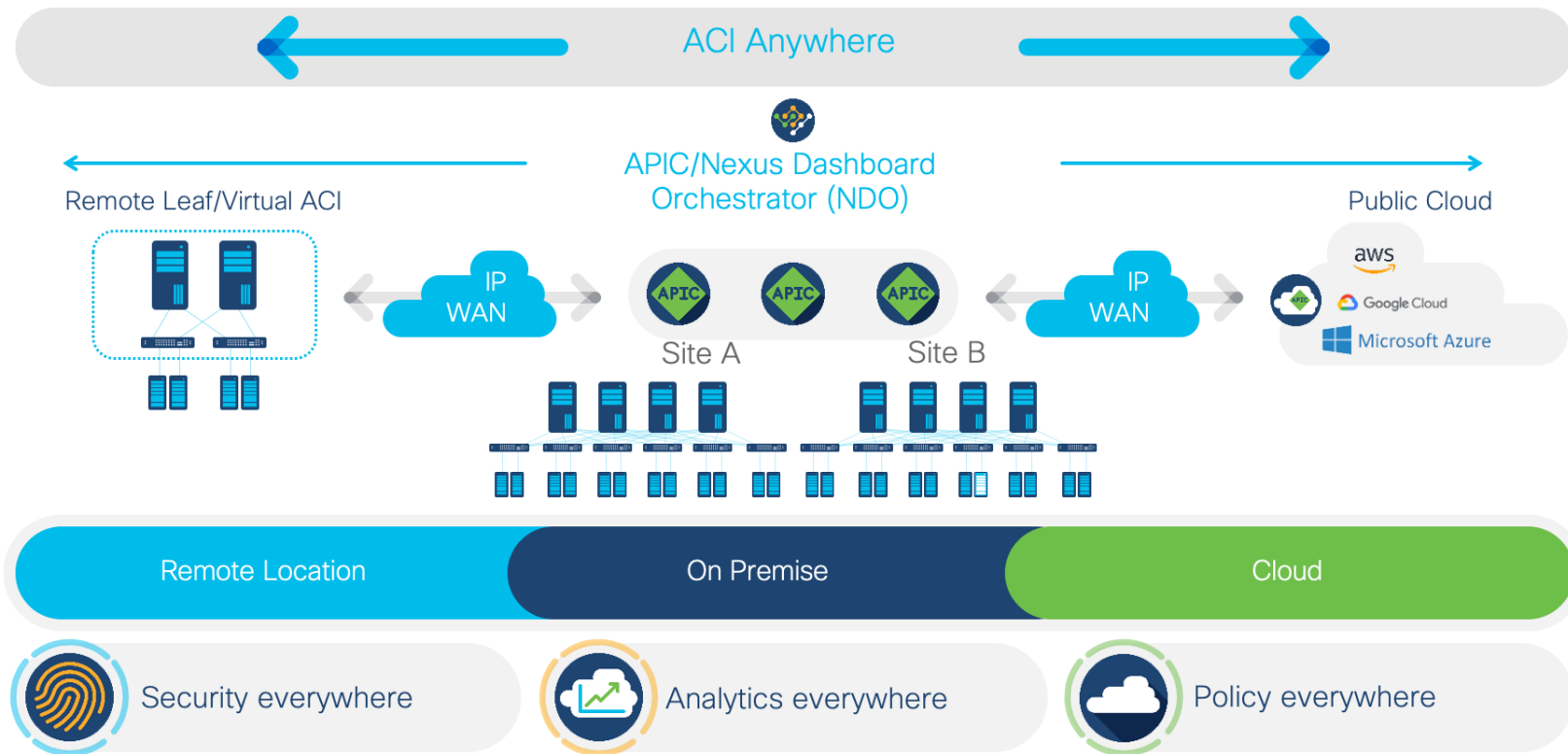


Bob deploys K8s clusters for Alice's teams

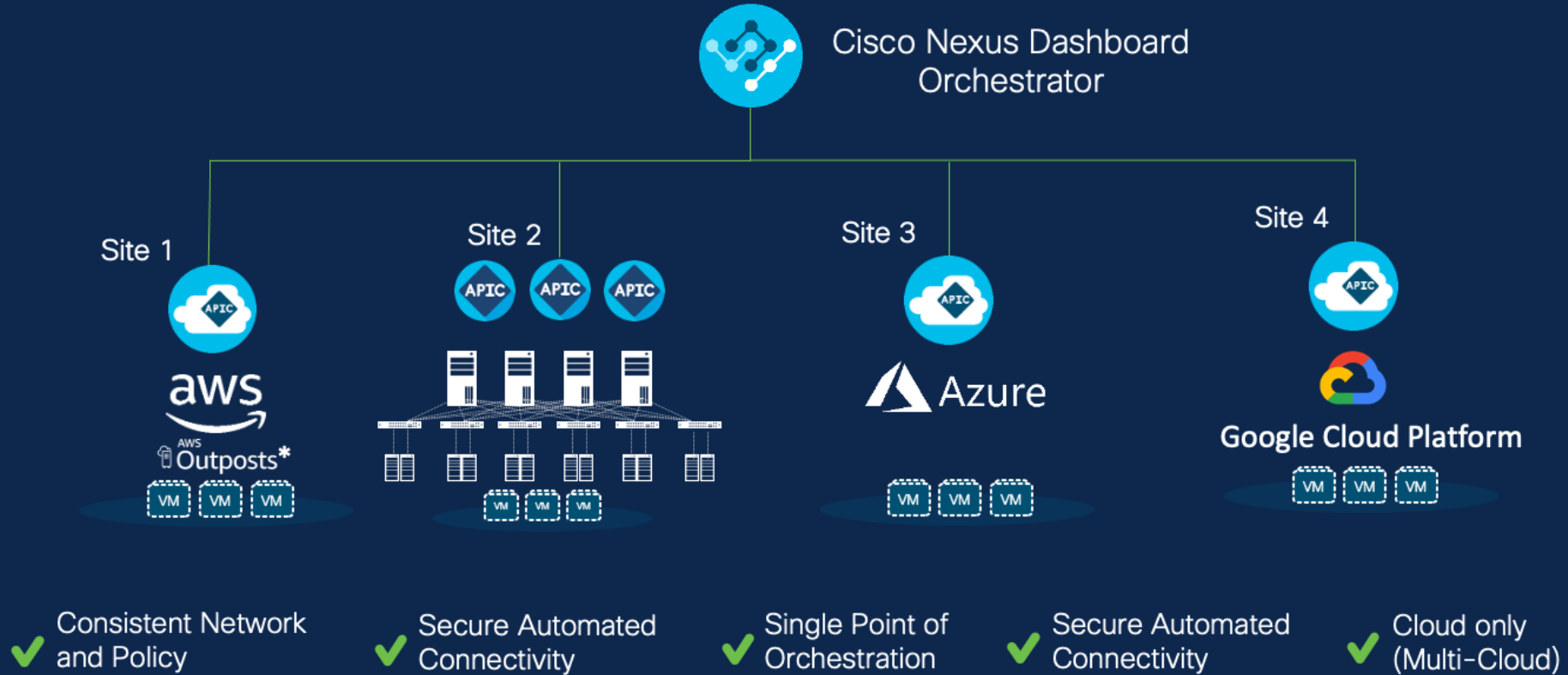


Cisco ACI Anywhere

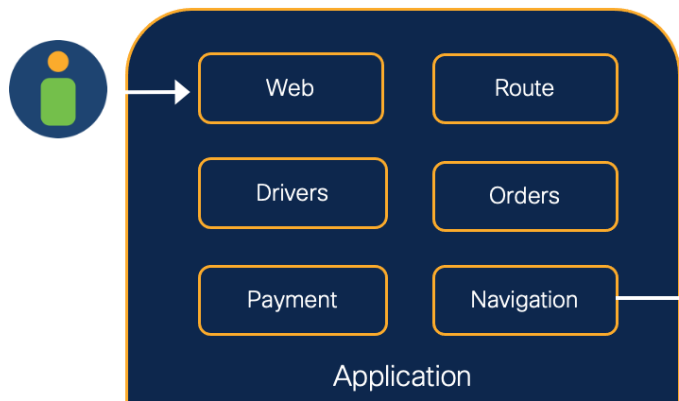
Any Workload, Any Location, Any Cloud



ACI Extensions to Multi-Cloud

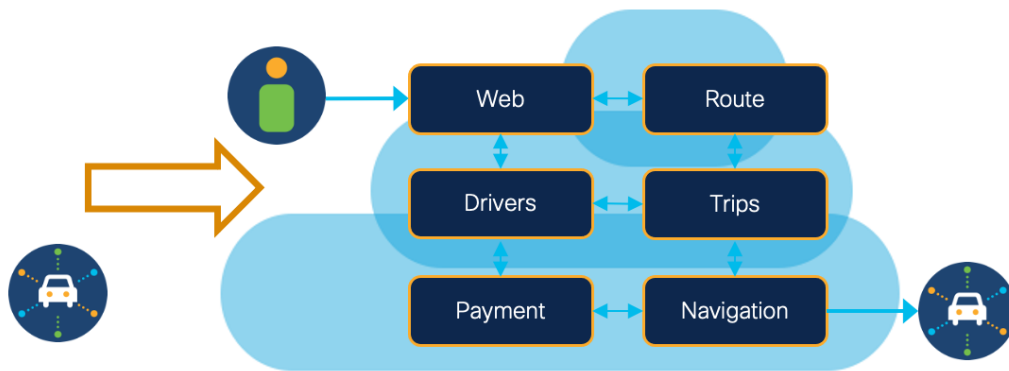


Monolithic App



- ✓ Reliable RPC between processes
- ✓ Secure in-host connectivity
- ✓ Predictable latency
- ✓ SDK debugging

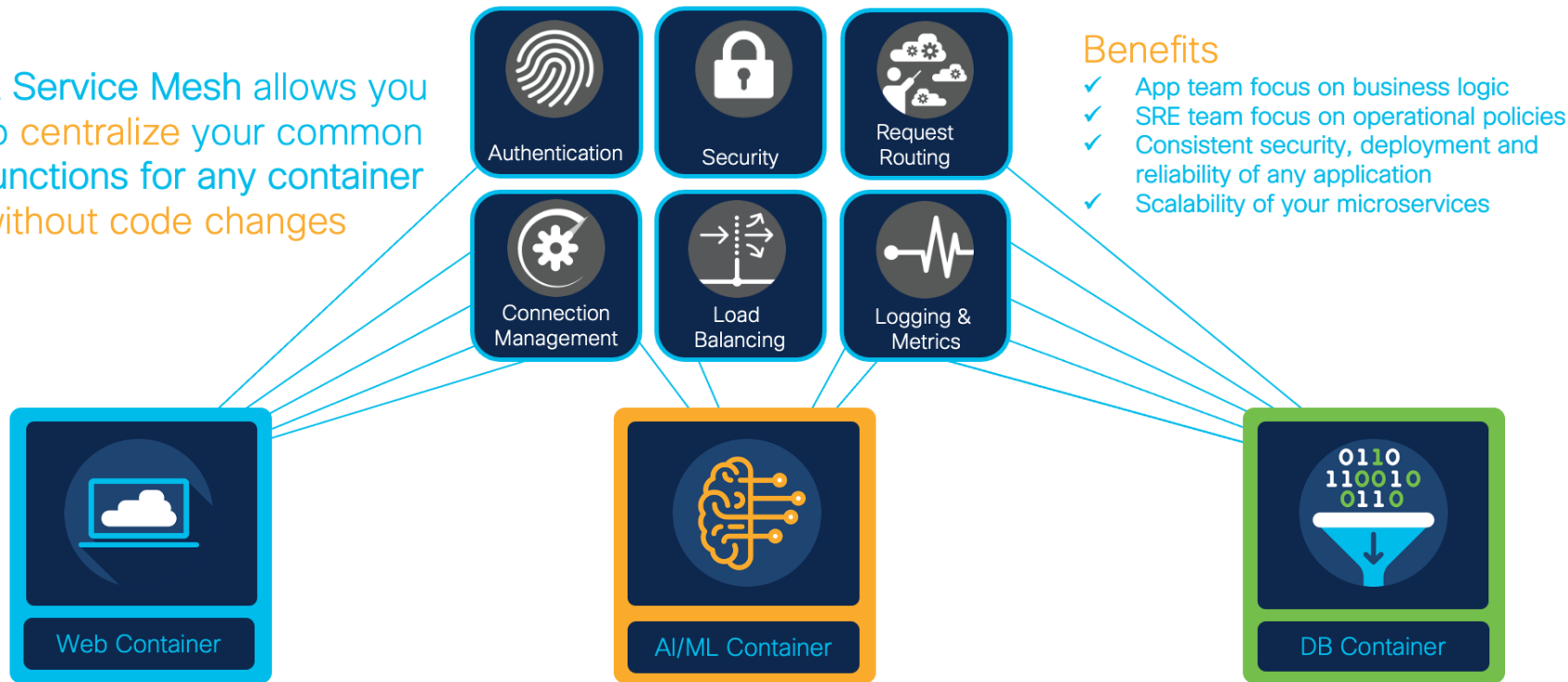
Cloud Native App



- ! Unreliable REST API calls
- ! Unsecured network traffic
- ! Unpredictable latency
- ! More places to troubleshoot

Cisco Service Mesh for Kubernetes

A Service Mesh allows you to **centralize** your common functions for any container **without code changes**



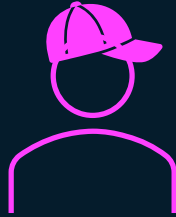
Benefits

- ✓ App team focus on business logic
- ✓ SRE team focus on operational policies
- ✓ Consistent security, deployment and reliability of any application
- ✓ Scalability of your microservices

Alice and Bob have now an environment where they can work better together...

I am

happy!



Alice

Dev

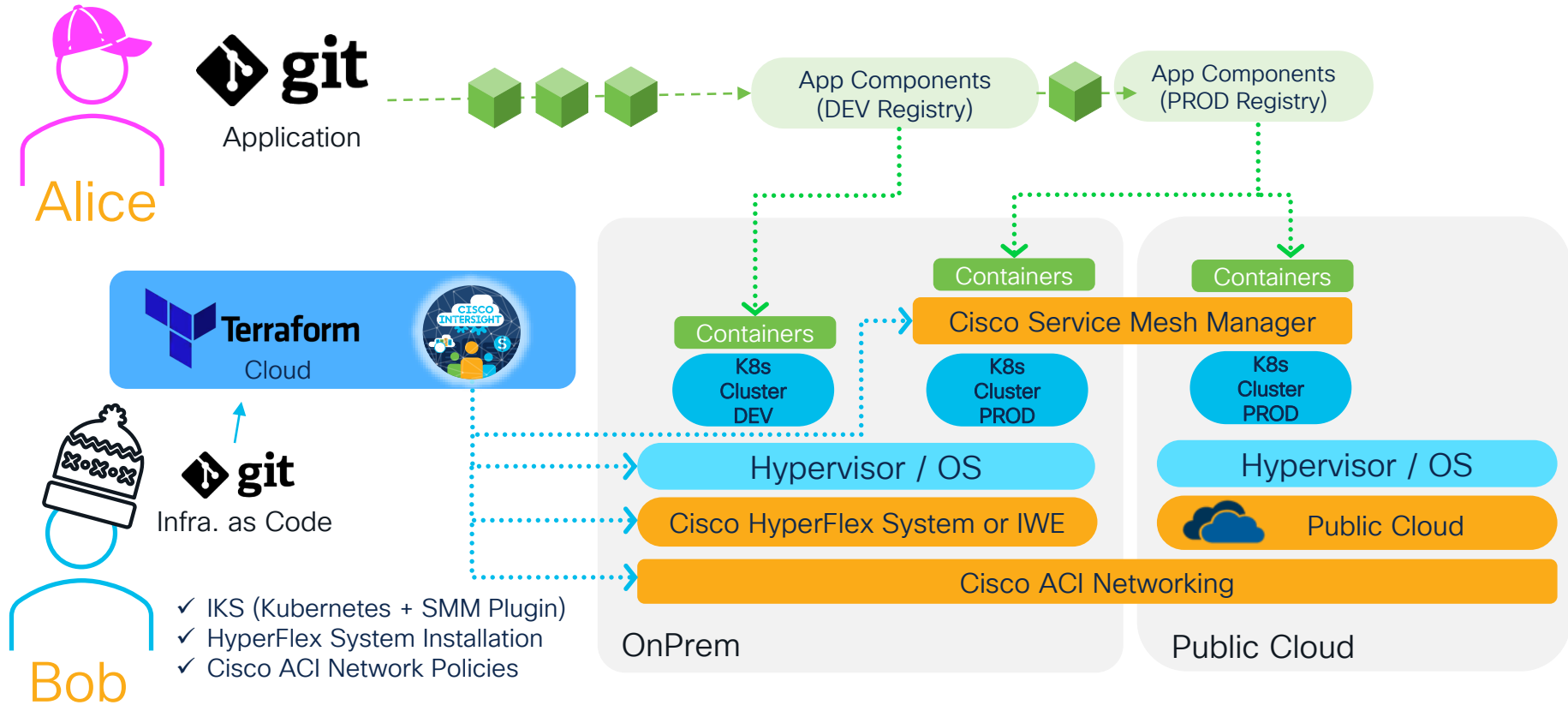


Bob

Infra.

I am happy!

Overall architecture of the environment



Demo

FOLDERS

- BRKCLD-2807
 - infra
 - aci
 - hx
 - iks
 - .terraform
 - /* .terraform.lock.hcl
 - /* main.tf
 - /* variables.tf
 - /* versions.tf
 - modules
 - intersight_hx_install
 - intersight_iks_cluster
 - .gitignore
 - LICENSE.md
 - README.md

```

1 # Copyright (c) 2021 Cisco and/or its affiliates.
2
3 # This software is licensed to you under the terms of the Cisco Sample
4 # Code License, Version 1.1 (the "License"). You may obtain a copy of the
5 # License at
6
7 #      https://developer.cisco.com/docs/licenses
8
9 # All use of the material herein must be in accordance with the terms of
10 # the License. All rights not expressly granted by the License are
11 # reserved. Unless required by applicable law or agreed to separately in
12 # writing, software distributed under the License is distributed on an "AS
13 # IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express
14 # or implied.
15
16
17 # Declare required provider
18 provider "intersight" {
19     apikey      = var.apikey
20     secretkey   = var.secretkey
21     endpoint    = "intersight.com"
22 }
23
24 # Use the kubernetes_profile module to deploy a HyperFlex cluster
25 module "kubernetes_profile" {
26     # Using kubernetes_profile module
27     source      = "github.com/cisco-terraform-modules/kubernetes-profile"

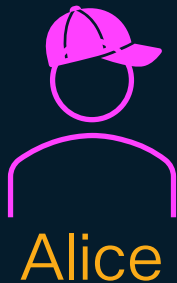
```

What further improvements can we make for operations?

“this setup has more components than before...”

- *what if something goes wrong?*
- *can we optimize resource consumption?*
- *what about performance/cost/compliance?*

How about FSO?

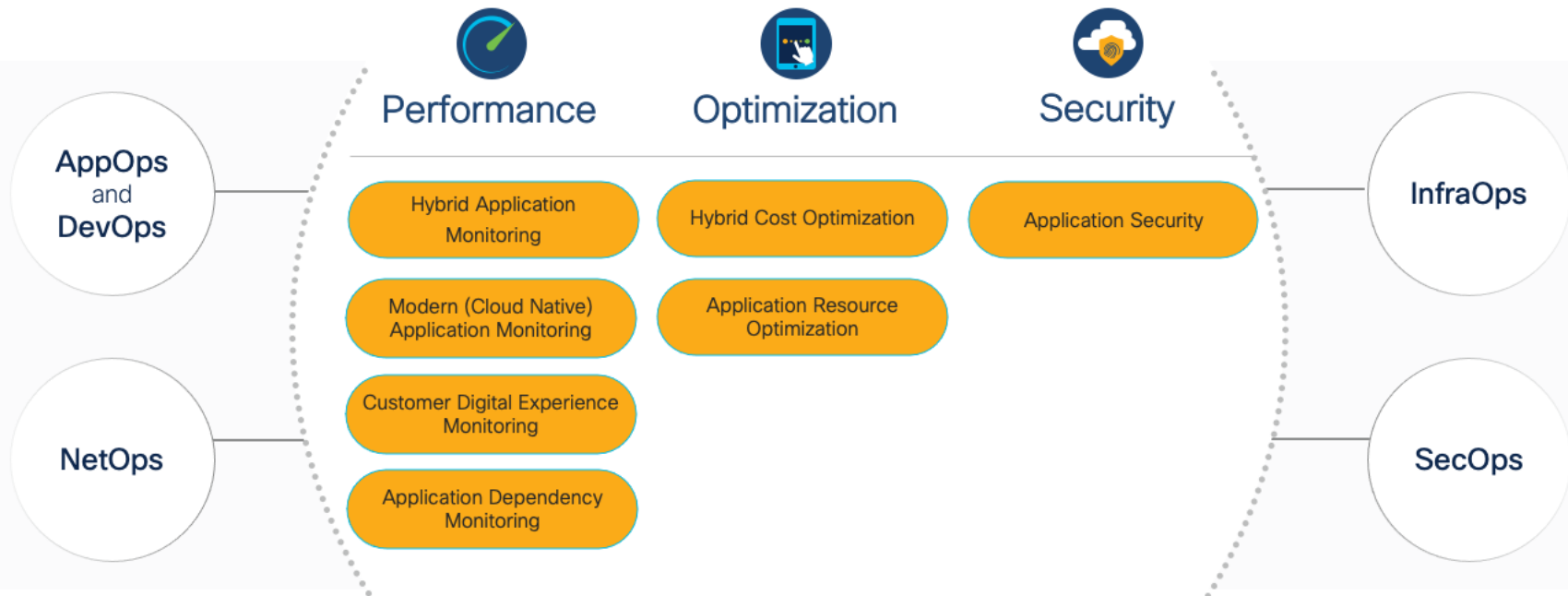


What is FSO?

Cisco's foundation for Full-Stack Observability



Full-Stack Observability – Use Cases



[full-stack-observability-demo](#)

Hybrid Cloud Infrastructure – Key Takeaways

1. Use Infrastructure as Code approach to ensure flexibility and enforce processes
2. Application modernization requires support from the underlying infrastructure components
3. Implement Full-Stack Observability to gain visibility into Hybrid Environments



Code Repository



<https://github.com/CHMultiCloudLab/BRKCLD-2807>

Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



Cisco Learning and Certifications

From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. www.cisco.com/go/certs

Pay for Learning with Cisco Learning Credits

(CLCs) are prepaid training vouchers redeemed directly with Cisco.



Learn

Cisco U.

IT learning hub that guides teams and learners toward their goals

Cisco Digital Learning

Subscription-based product, technology, and certification training

Cisco Modeling Labs

Network simulation platform for design, testing, and troubleshooting

Cisco Learning Network

Resource community portal for certifications and learning



Train

Cisco Training Bootcamps

Intensive team & individual automation and technology training programs

Cisco Learning Partner Program

Authorized training partners supporting Cisco technology and career certifications

Cisco Instructor-led and Virtual Instructor-led training

Accelerated curriculum of product, technology, and certification courses



Certify

Cisco Certifications and Specialist Certifications

Award-winning certification program empowers students and IT Professionals to advance their technical careers

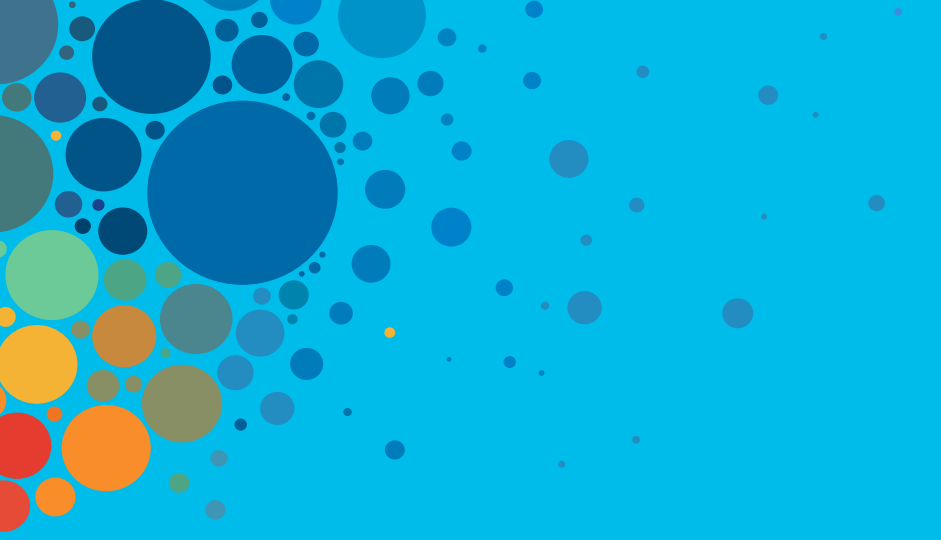
Cisco Guided Study Groups

180-day certification prep program with learning and support

Cisco Continuing Education Program

Recertification training options for Cisco certified individuals

Here at the event? Visit us at **The Learning and Certifications lounge at the World of Solutions**



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



The bridge to possible

Thank you

CISCO *Live!*

#CiscoLive

CISCO *Live!*



#CiscoLive