



TURN IT UP

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The bridge to possible

Modernize Infrastructure Using Intersight and Infrastructure as Code

Justin Barksdale
Technical Marketing Engineer
Compute Systems Product Group
BRKCLD-1282



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Agenda

- What is Infrastructure as Code (IaC)?
- Intersight and IaC
- DEMO - Intersight Service for Hashicorp Terraform & Intersight Kubernetes Service

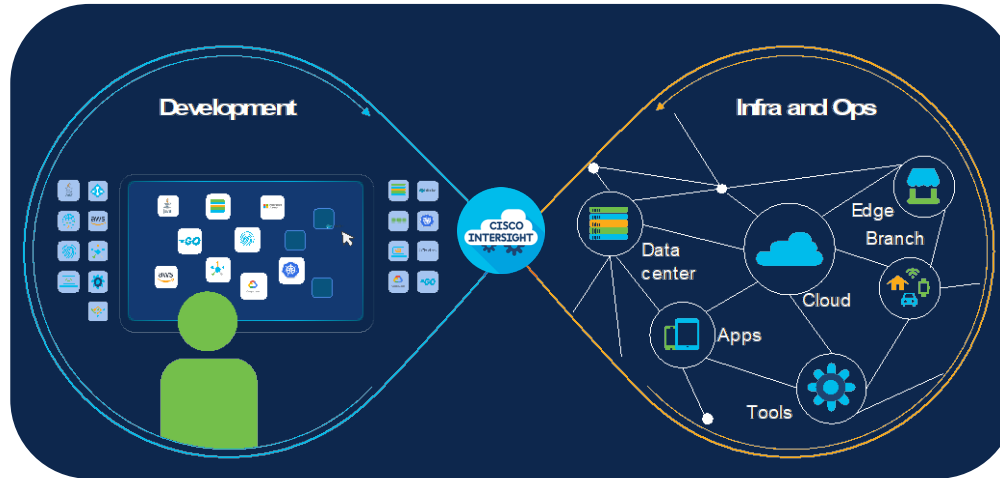
What is Infrastructure as Code?



Cloud Operations

Where Development meets IT Operations

- Developers want to develop, test and deploy code as quickly as possible
- Developers are passionate about their processes, platforms and toolchains
- Developers often view the IT organization – and their policies – as an obstacle to success
- Developers are inclined to circumvent the IT organization in order to reach velocity



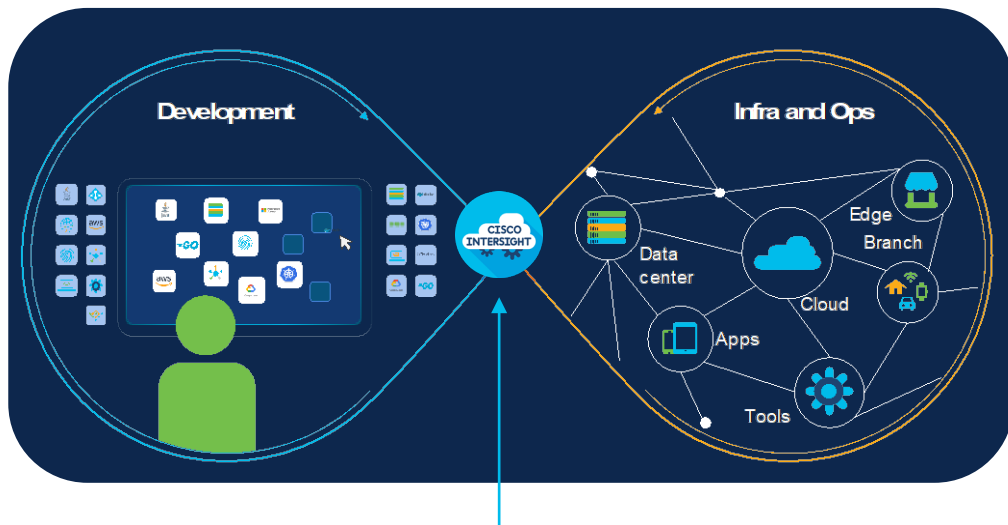
- IT wants to run, manage and provide access to a highly-available, resilient and flexible infrastructure
- IT is passionate about their environment and are often chartered with defining the organizations overall IT strategy, including security
- IT is being increasingly asked to manage access to Public Cloud resources
- Either by design, or because of operational or knowledge gaps, IT is often challenged to adopt new technologies

Cloud Operations

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DevOps

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Infrastructure Automation

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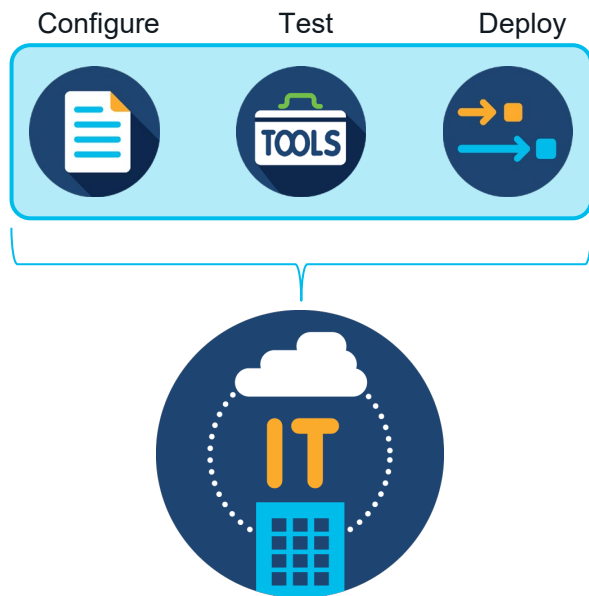
InterSight is *the* **IT Cloud Operating Platform**

Resource Management

Cloud Native Services
(K8s, Serverless)

Cloud Orchestration
(Ansible, Terraform, Helm)

What is Infrastructure-as-Code (IaC)?



- IaC evolved to solve the problem of environment drift in the release pipeline.
- Management of infrastructure in a **declarative model**, using versioning for source code. **Git is the “Single Source of Truth”**
- CI/CD toolchains automatically **test, deploy and track** pull requests and configuration changes to your infrastructure
- Deployments should always set the target environment to the **same configuration**, regardless of the environment’s starting state.
- Enables users to transition from **mutable workloads to immutable workloads**

What is the problem?

And what is the answer?



- Inconsistency among environments creates snowflakes, which leads to issues during deployments.
- Administration and maintenance of infrastructure involves manual, hard to track processes which contribute to errors and reduced productivity.



Repeatable

Changes should always be applied the same way, every time

Accessible

Anyone with the appropriate permissions should be able to make a change

Predictable

Results should be "expected" and consistent

Trackable

What changes were made, and by whom?

Implementing Infrastructure-as-Code

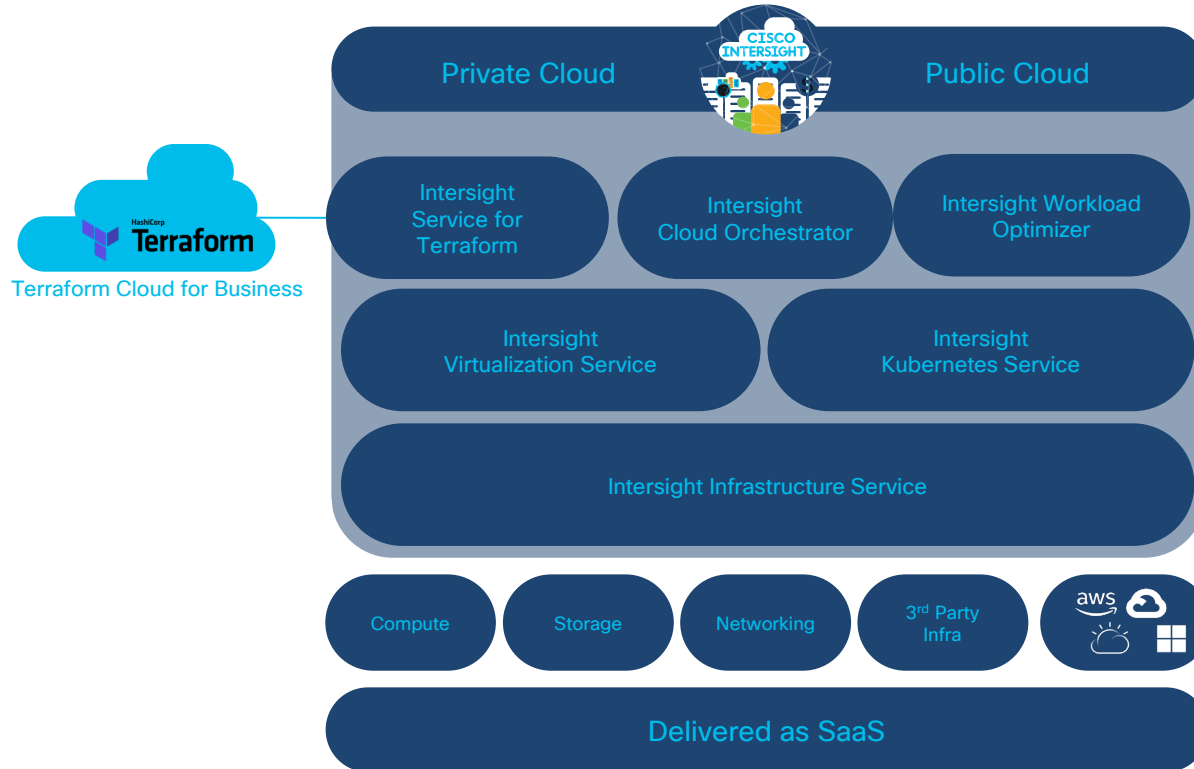


Intersight and laC

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Intersight Service for Hashicorp Terraform

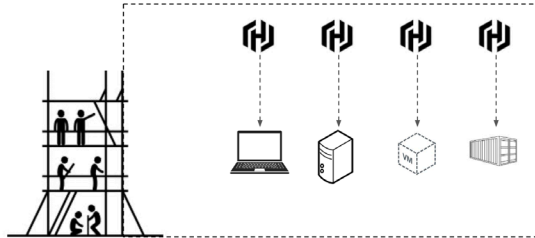


Why Terraform Cloud?

Customer Journey to TFC

Terraform OSS vs Terraform Enterprise

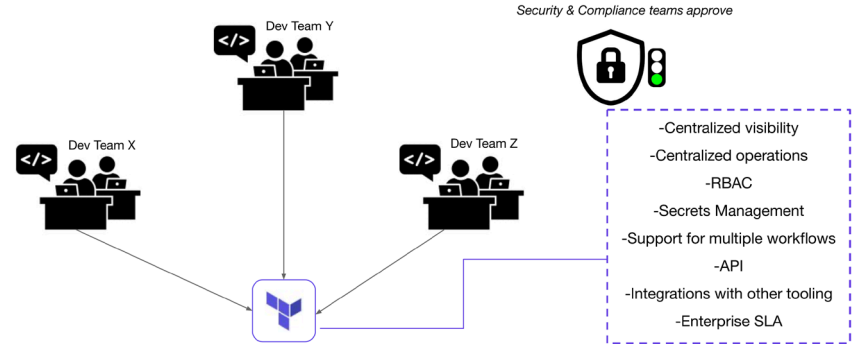
Scaffolding: When a customer attempts to extend the capabilities of a HashiCorp OSS solution



OSS does not provide

- Disaster Recovery
- Team collaboration
- Multi-tenancy
- Centralized controls
- Multi-region multi-cloud
- Data sovereignty
- Performance tuning
- Enhanced features
- Enterprise SLAs
- ...

Terraform Enterprise vs Terraform Cloud



- Centralized visibility
- Centralized operations
- RBAC
- Secrets Management
- Support for multiple workflows
- API
- Integrations with other tooling
- Enterprise SLA

Challenges with On-Prem IaC Integration

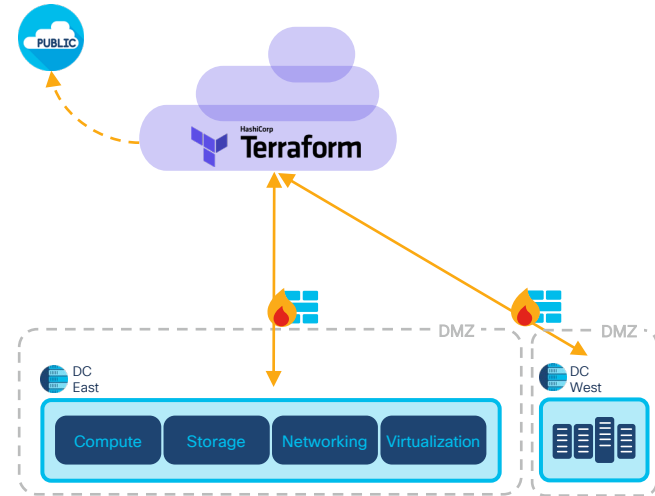
DIY – Manual Integration



Through a combination of FW rules, proxies and NATs, on-prem resources directly communicate over the Internet with Terraform Cloud Business.

But it can be:

- **Messy** – Prone to configuration and communication errors as the integrations grow
- **Uncomfortable** – Exposes on-prem infrastructure directly to external automation and orchestration platforms
- **Inflexible** – Challenging to maintain and reproduce as orchestration and automation requirements change and grow across data center environments



Challenges with On-Prem IaC Integration

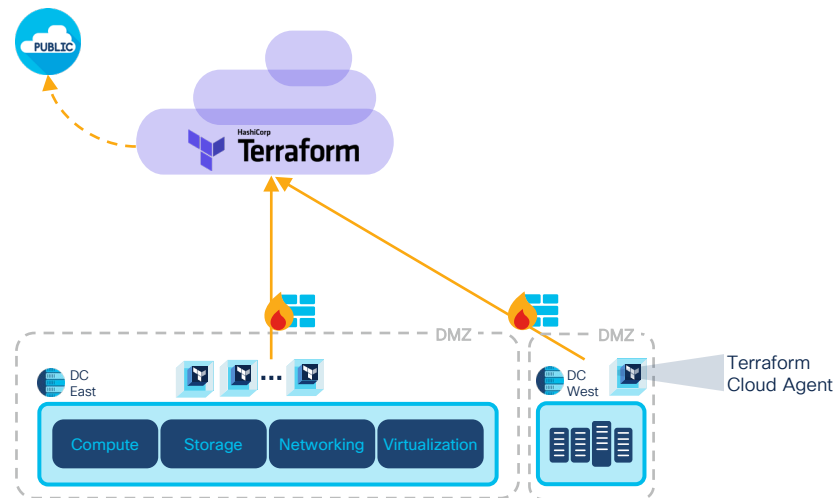
DIY - Managing Terraform Agents



Terraform Agents are docker images that establish a simple connection between your on-prem resources and Terraform Cloud Business, enabling provisioning and management

But manually maintaining agents on-prem can be:

- **Complex** – Users must manage the end-to-end lifecycle (deployments, upgrades, scaling, networking) of Terraform Agents
- **Limited** – Communication proxy is restricted to infrastructure that is compatible with Terraform and the broader IaC pipeline
- **Inflexible** – Challenging to maintain and reproduce as orchestration and automation requirements change and grow



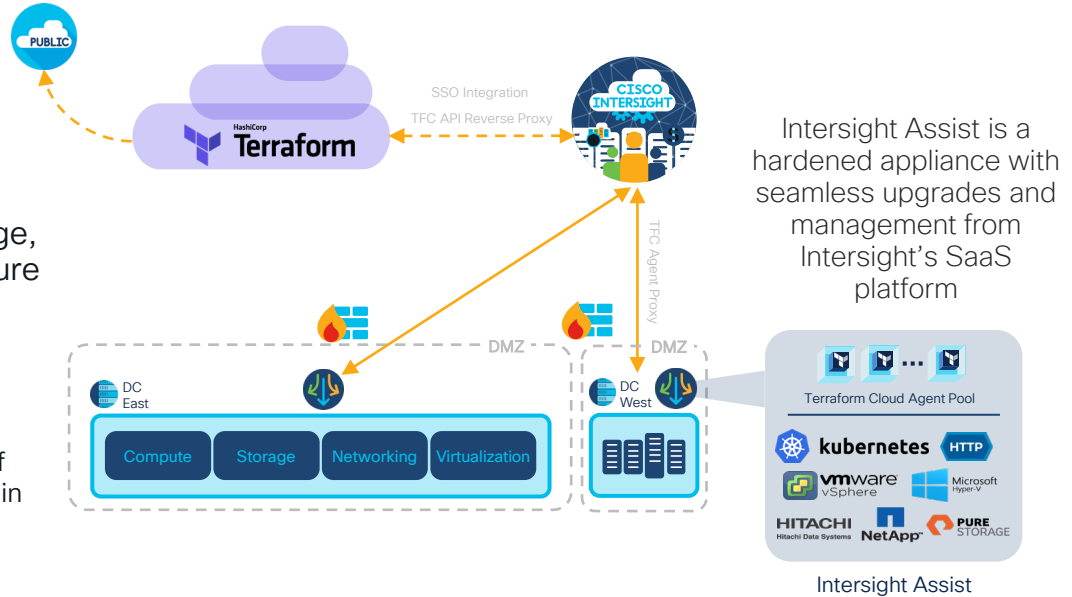
Securely Integrating On-Prem

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



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

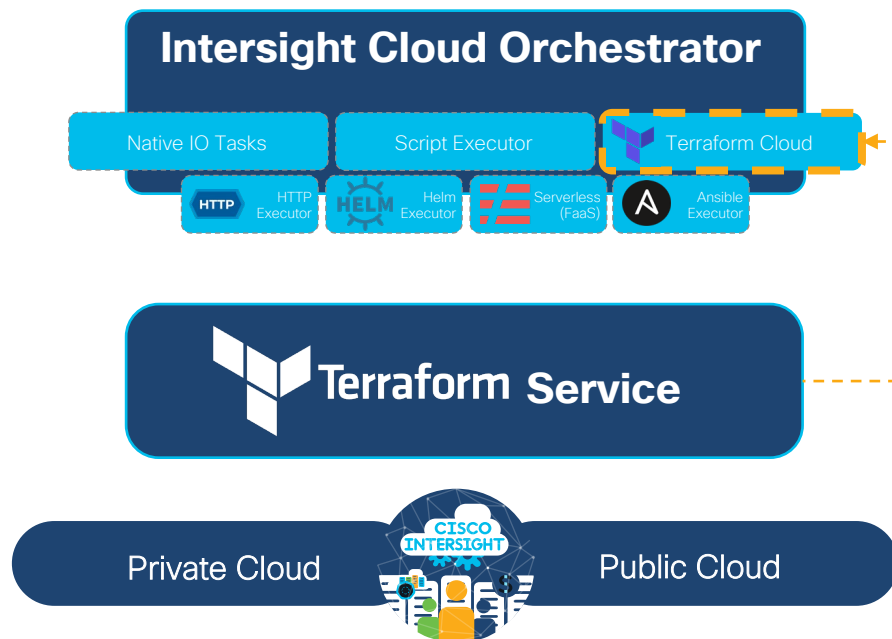
- **Simple** – Intersight manages the end-to-end lifecycle (deployments, upgrades, scaling, networking) of Terraform Agents
- **Integrated** – Reduces the operational overhead of connecting IaC pipelines with infrastructure domain management
- **Extensible** – Growing library of integrations with Terraform, Pure Storage, NetApp, Hitachi and VMware are just the beginning



Phased Evolution to Workflow Automation

- 2** Powerful workflow orchestrator to allow customers to simplify tool sprawl. Customers still write their own TF plans, Ansible playbooks, but Intersight Cloud Orchestrator stitches them together

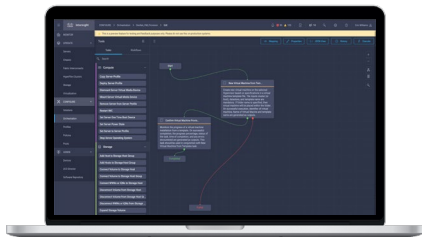
- 1** For customers who want to write their own Terraform plans and use Intersight Assist for secure execution in private cloud environments



Terraform Integration

1

Create "Drag-&-Drop" workflows in Intersight Cloud Orchestrator to apply Terraform Plans



Manage, monitor and orchestrate
"Intersight-Connected" Private
and Public Cloud Infrastructure



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Simplified & Consistent Operations for
Multicloud Environments

PRIVATE

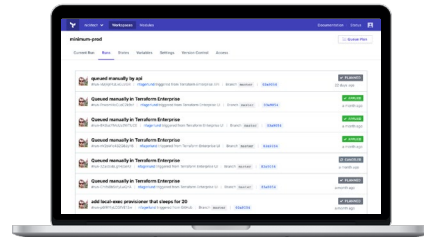
PUBLIC



HashiCorp

Terraform Cloud

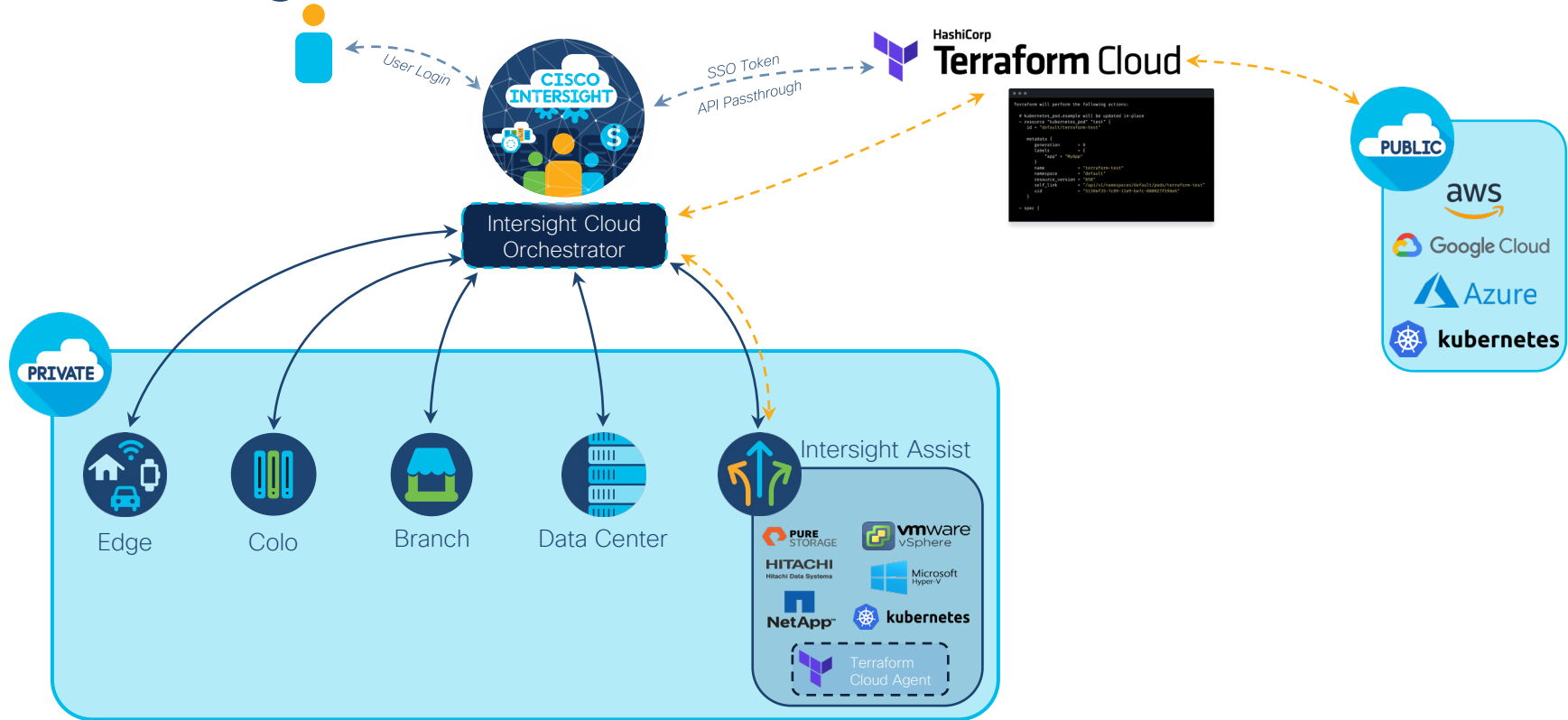
Utilize hundreds of *Terraform
Providers* to manage targets,
resources & cloud platforms



2

Terraform Cloud Integration extends Terraform
Cloud securely to on-premise & edge targets

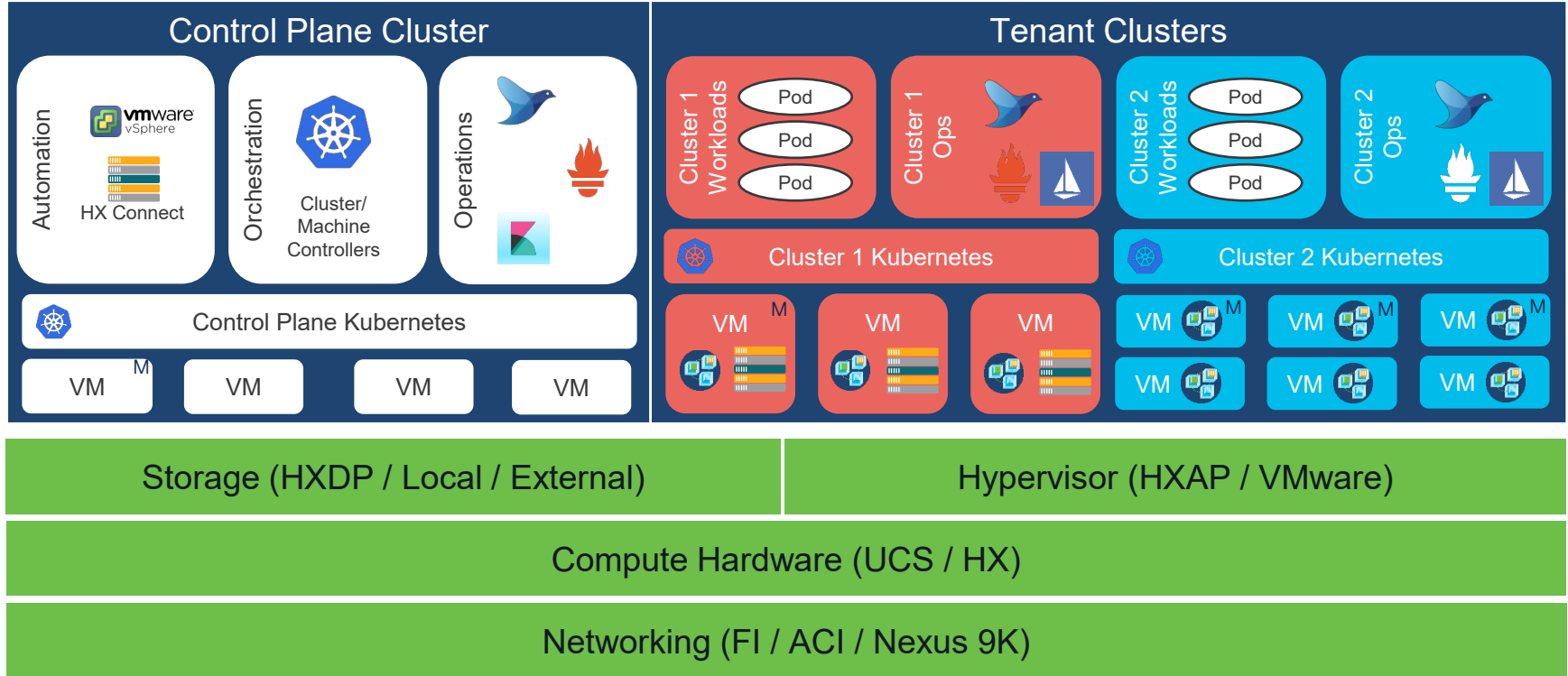
Intersight Terraform Service



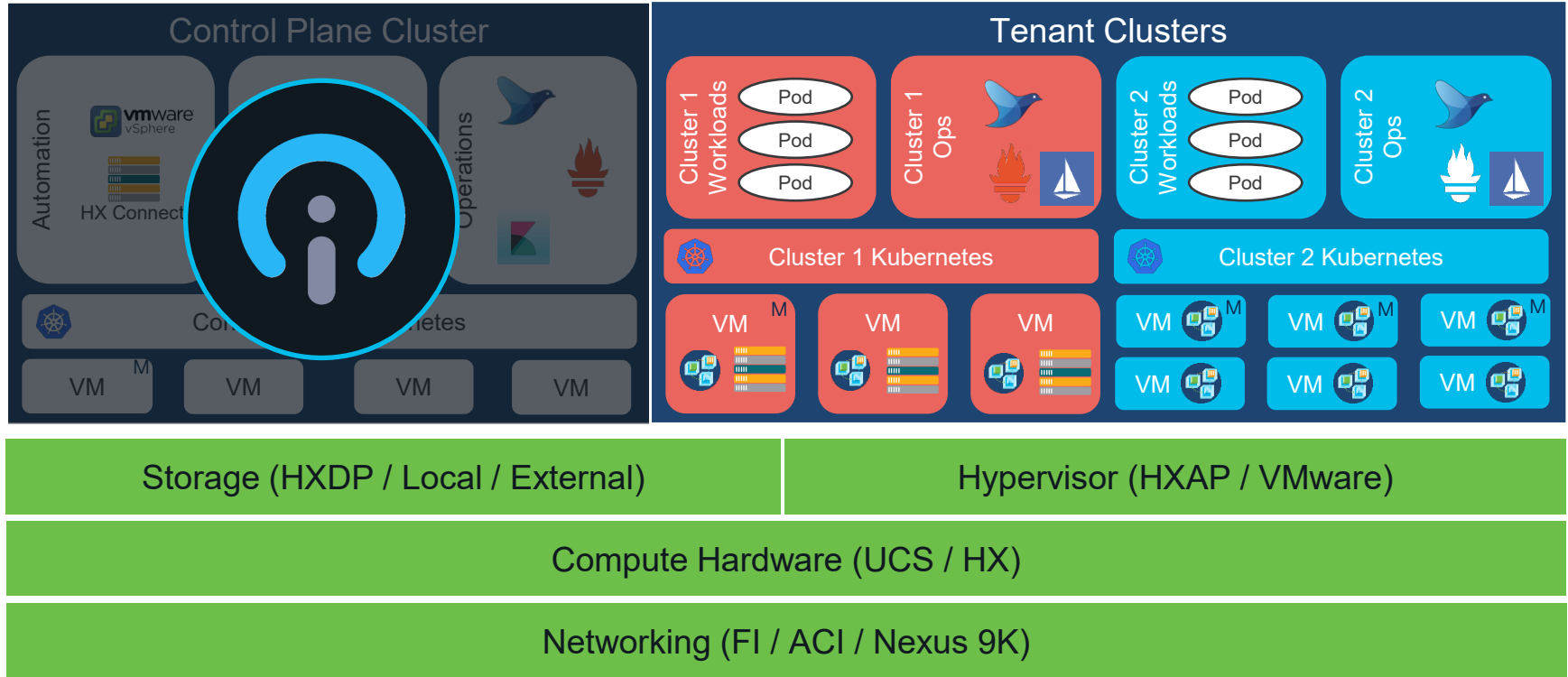
Intersight Service for Hashicorp Terraform & Intersight Kubernetes Service

DEMO

CCP Cluster – Multi-master architecture



IKS Cluster – Multi-master architecture





The bridge to possible

Thank you

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