



Acelere seu Data Center através da infraestrutura como código

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“Automation is to modern infrastructure what blood is to the body. It is core, you cannot have modern infrastructure without it.”

Gartner

{{Agenda}}



- O que é infraestrutura como código
- Componentes e ferramentas
- Integrações disponíveis no portfólio
- Demonstrações



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Infrastructure as Code (IaC)

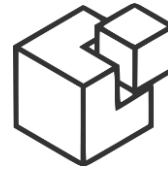
- Automatizar o provisionamento e gerenciamento do “stack” de tecnologias
- Traduzir tarefas manuais em códigos reutilizáveis, robustos e colaborativos
- Adotar melhores práticas de desenvolvimento de softwares, utilizadas há anos para implementar novos serviços. (Version Control, Testes, Release tagging, continuous Delivery, etc)
- Benefícios:
 - Padronização das configurações
 - Velocidade na entrega de serviços
 - Aumento da confiabilidade

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Landascape de ferramentas (Infraestrutura)



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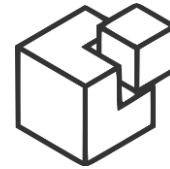
Ansible



Git



Puppet



SaltStack



Kubernetes



Jenkins



Docker



Chef



Terraform



Postman



CloudFormation



GitLab



ARM

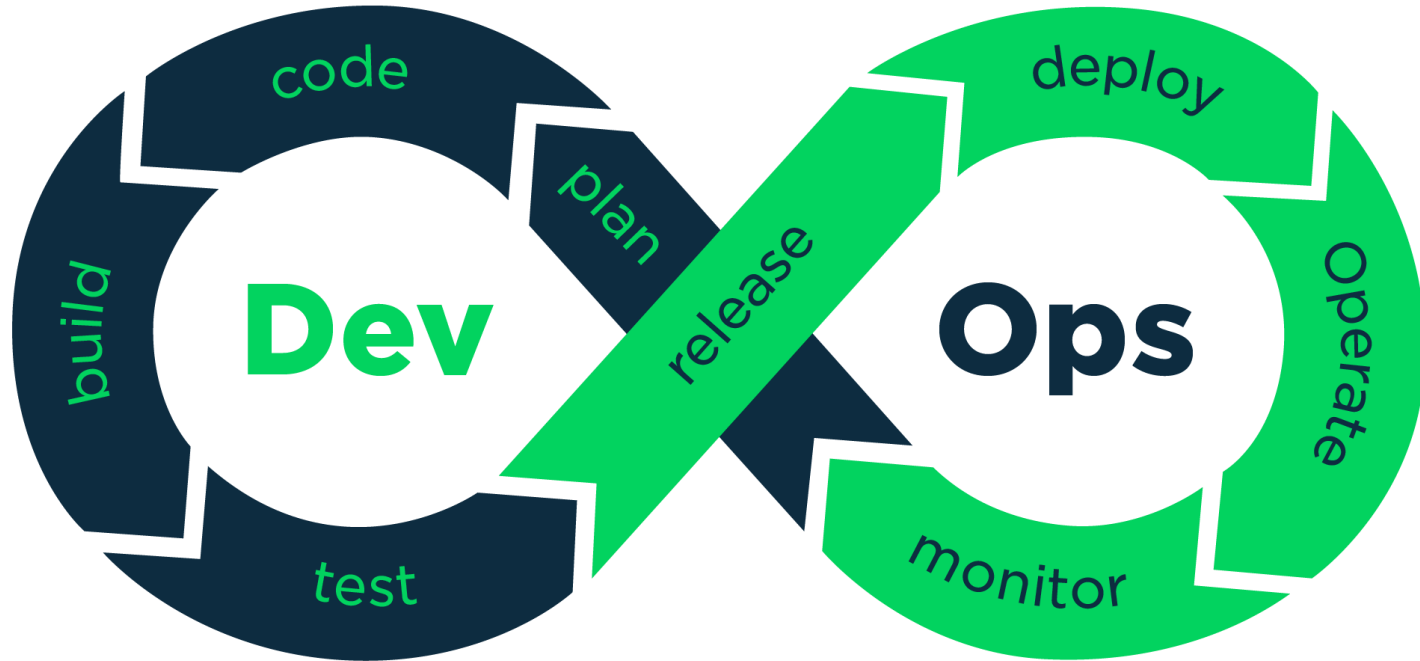


Powershell



Cloud Composer

Metodologia DevOps



What is Ansible?



ANSIBLE

- Open-source Configuration Management Tool
- Commercial support from RedHat
- Declarative (when possible) and idempotent
- Can manage a wide range of systems:
VMs, network devices, cloud instances, etc.
- Agentless
- Python server-side dependencies

Cisco Collections



ANSIBLE

Cisco NXOS



80+ modules

Data Center
Network Manager



5+ modules

ACI
Cloud / Onprem



80+ modules

Multi Site
Orchestrator



45+ modules

Network
Assurance
Engine



6+ modules

Intersight



8+ modules

UCS
Manager



29+ modules

DNA Center



100+ modules

Cisco IOS



34+ modules

What is Terraform?



- Open-source Infrastructure Provisioning Tool
- Commercial support from HashiCorp
- Declarative and idempotent
- Immutable infrastructure concept
- Can manage a wide range of systems:
VMs, network devices, cloud instances, etc.
- Agentless, single binary file
- Zero server-side dependencies

Cisco Providers



ACI
Cloud / Onprem



Multi Site
Orchestrator



Data Center
Network
Manager



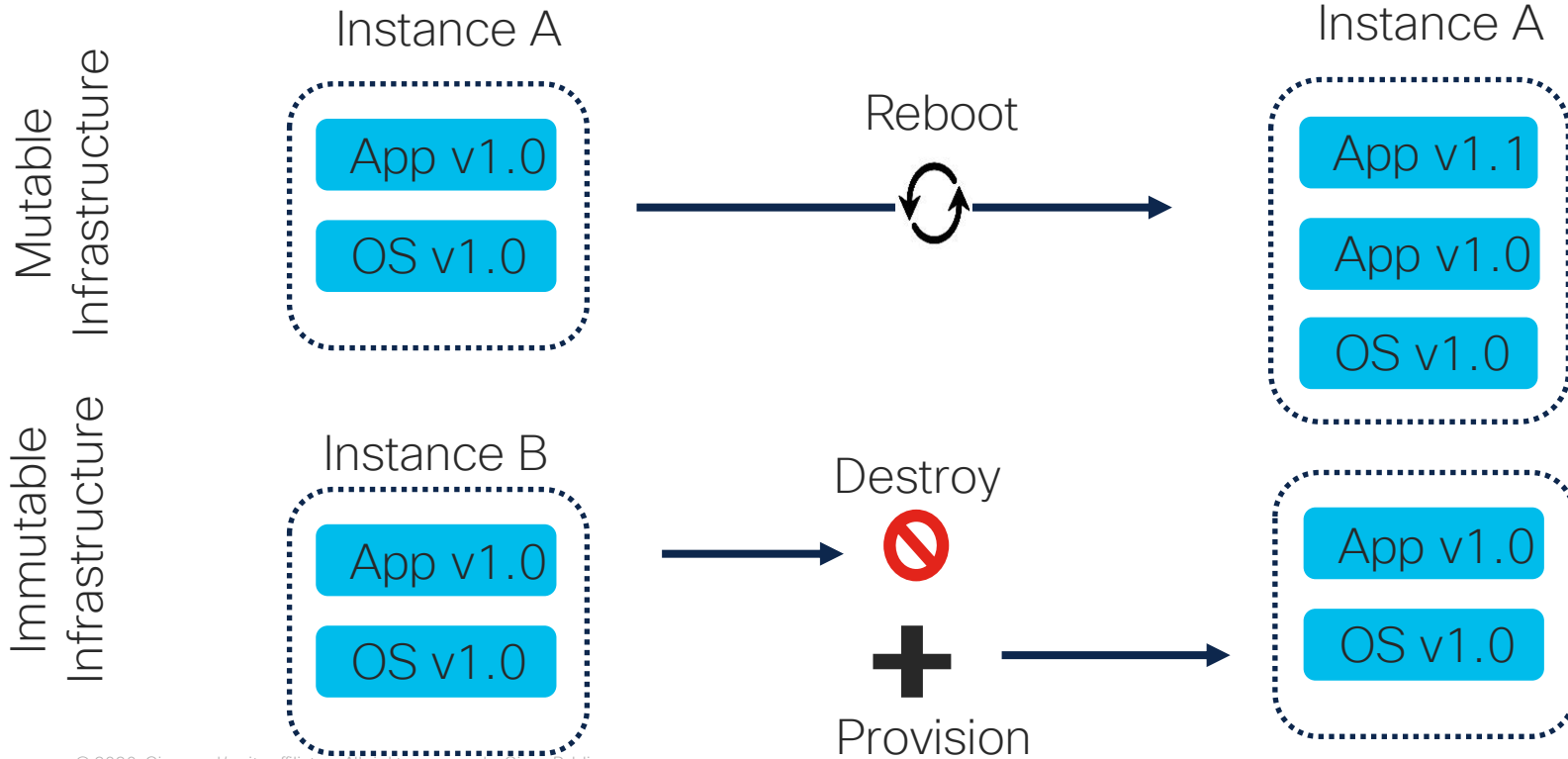
DNA Center



Intersight



Mutable vs. Immutable Infrastructure



Ansible ou Terraform?

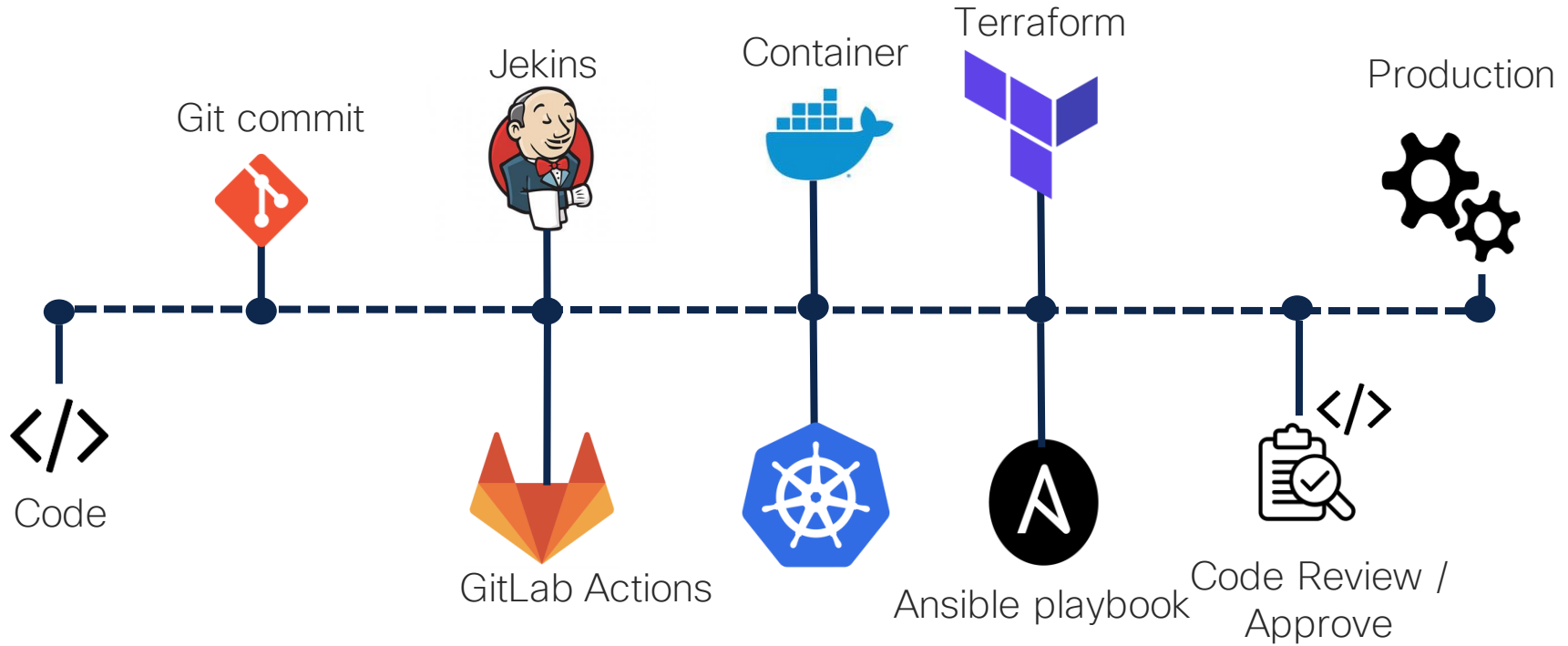
- Ambos podem coexistir
 - Não é um ou outro
 - Terraform pode chamar playbooks Ansible após a criação do recurso
- Terraform mantém o “estado” da infra em um backend
 - Conhecido como “estado desejado” versus “estado configurado”
 - Automaticamente remove/recria os recursos
- Ansible infraestrutura mutável
 - Necessidade de reexecutar tudo
 - Controle avançado para evitar longos tempos de execução para scripts maiores

O que é GitOps?

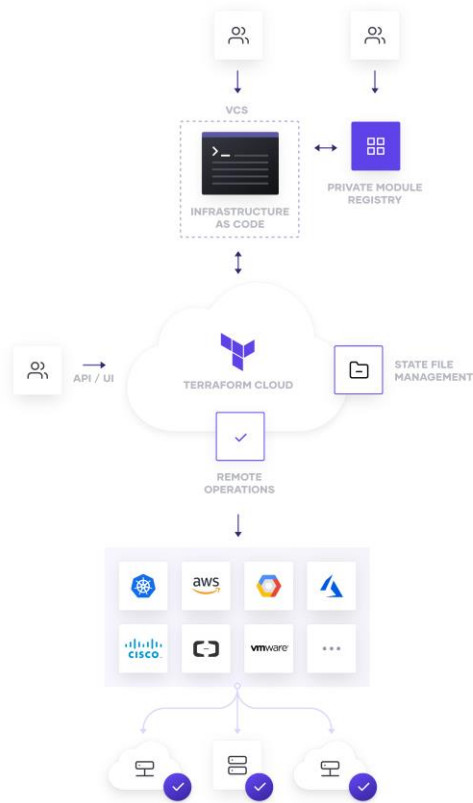


- Prática DevOps
- Aplicar os conceitos de infraestrutura como código
- Git como uma única fonte da verdade (single source of truth)
- Atualizar a infraestrutura utiliza-se “Reconciliation Loops”
- Princípios do Kubernetes
- Componentes:
 - Git, CI/CD ferramentas, webhooks, e K8S operações

DevOps – Infra as Code



What is Terraform Cloud?



- HashiCorp Infrastructure as Code Cloud Service
- Can trigger plan, apply and destroy any Terraform plan.
- Can be triggered by a source control hook
A commit / PR to a repository can be used as a hook
- Provides Enterprise level features:
 - State File Management and Sharing
 - Private Module Registry
 - Config Compliance Checks (Sentinel)

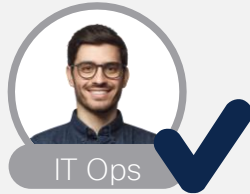
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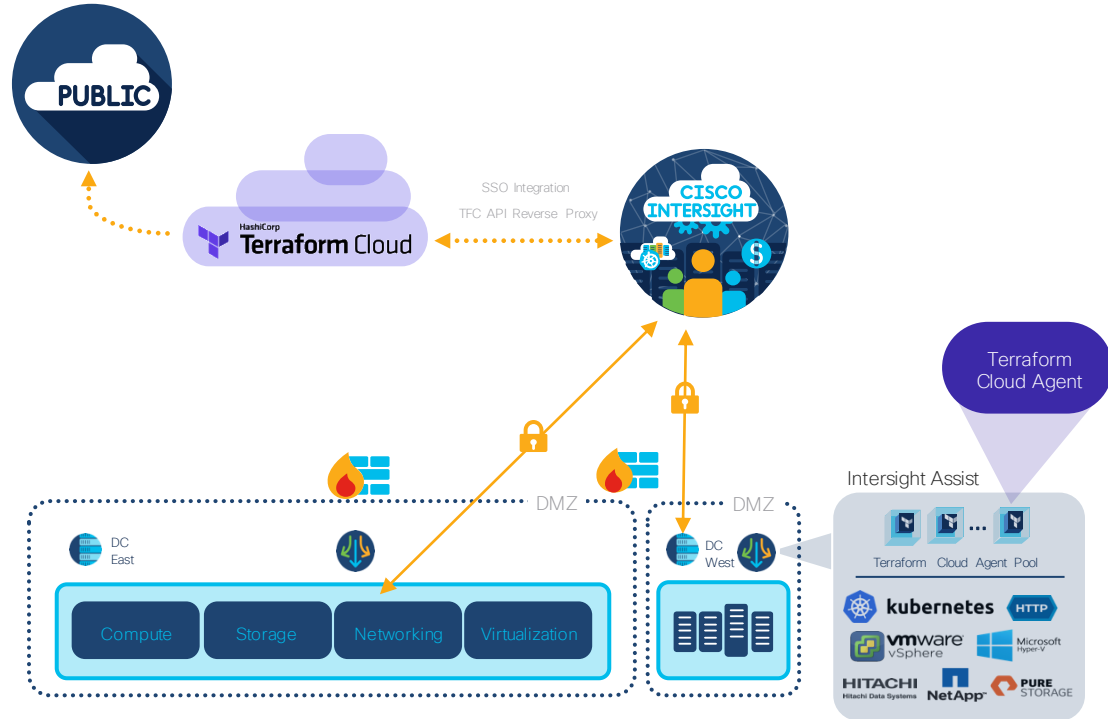
Integrating on-prem IaC with Intersight

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

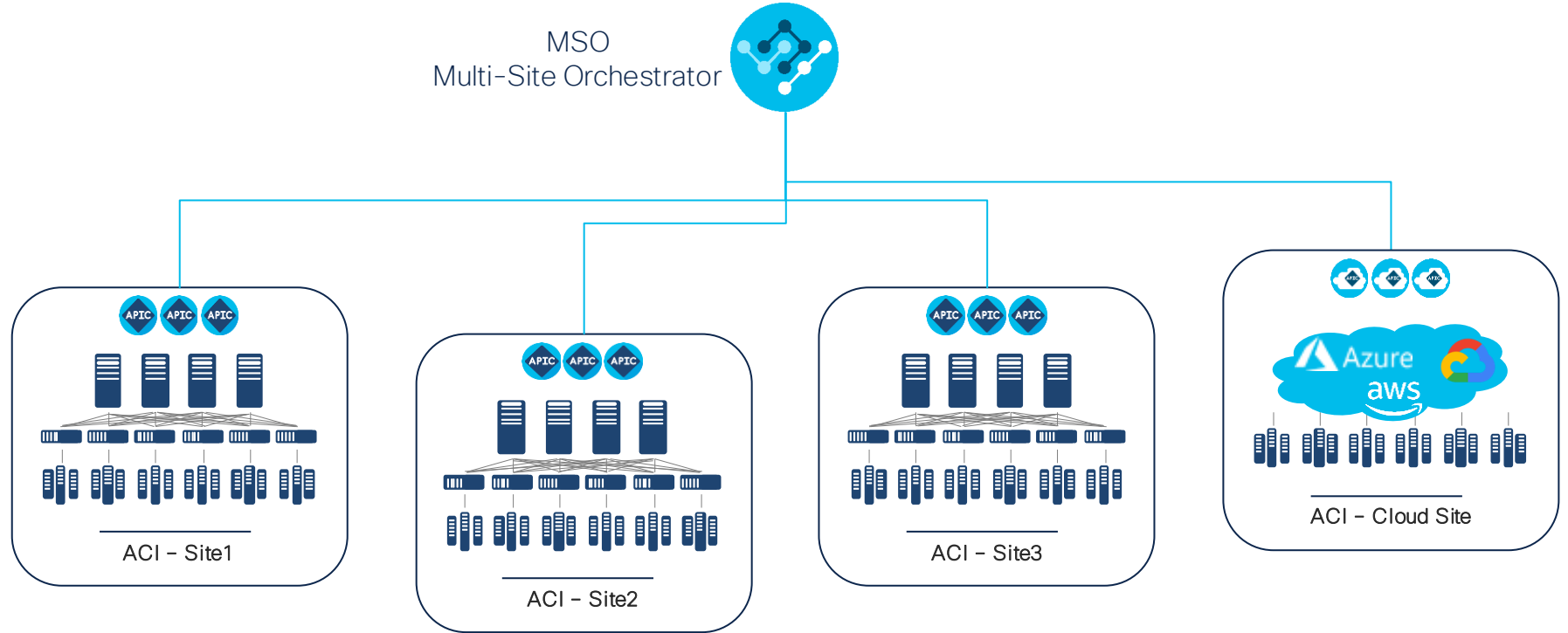


Intersight securely extends the ability to manage, automate and orchestrate on-prem infrastructure and software.

- **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



Cisco Nexus Dashboard Orchestrator – Multi-Site Orchestrator (MSO)



Policy
Consistency

Single Point Of
Orchestration

Availability
Fault Isolation

Scale

New DevNet Resources available!

New MSO Sandbox
and Learning Labs



New Terraform Learning Labs



[More Info on DevNet: https://developer.cisco.com/nexusapi/](https://developer.cisco.com/nexusapi/)

Resources

Get started with Infrastructure as Code

Cisco helps you embrace DevOps, APIs, and Automation to manage networks efficiently, control risk, and optimize for growth and innovation.

NEW

Cisco and HashiCorp announce collaboration

Cisco will sell HashiCorp Terraform Cloud Business alongside Cisco Intersight. The solution delivers hybrid cloud automation, in which Terraform can provision and manage equipment inside private datacenters running Cisco Intersight.

[Read about Cisco and HashiCorp](#)

[Read HashiCorp's announcement](#)



CISCO

+



HashiCorp

GitHub

- lemoraes : <https://gitlab.com/leandro2m/gitops-terraform-aci>
- ACI Ansible: <https://github.com/CiscoDevNet/ansible-aci>
- MSO Ansible: <https://github.com/CiscoDevNet/ansible-mso>
- NAE Ansible: <https://github.com/CiscoDevNet/ansible-nae>
- DCNM Ansible: <https://github.com/CiscoDevNet/ansible-dcnm>
- NXOS Ansible: <https://github.com/ansible-collections/cisco.nxos>
- DCNM Ansible: <https://github.com/CiscoDevNet/ansible-nd>
- ACI Terraform: <https://github.com/CiscoDevNet/terraform-provider-aci>
- MSO Terraform: <https://github.com/CiscoDevNet/terraform-provider-mso>
- DCNM Terraform: <https://github.com/CiscoDevNet/terraform-provider-mso>

- Pull requests are welcome! They will be reviewed and then introduced into the code base.

Conclusão



- IaC é uma jornada não um destino final
- Ansible and Terraform podem trabalhar em conjunto
- Portfolio Cisco esta preparado para IaC

Referências

- ACI Ansible Modules Documentation Guide
https://docs.ansible.com/ansible/latest/scenario_guides/guide_aci.html
 - Cisco DevNet Learning Labs
<https://developer.cisco.com/learning/modules/ansible-aci-intro>
<https://developer.cisco.com/learning/modules/terraform-aci-intro>
<https://developer.cisco.com/learning/modules/ansible-mso-intro>
<https://developer.cisco.com/learning/modules/terraform-mso-intro>
 - Cisco DCN Collection / Providers GitHub Repos
<https://github.com/CiscoDevNet/ansible-aci>
<https://github.com/CiscoDevNet/ansible-mso>
<https://github.com/CiscoDevNet/ansible-nae>
<https://github.com/CiscoDevNet/ansible-dcnm>
<https://github.com/CiscoDevNet/terraform-provider-aci>
<https://github.com/CiscoDevNet/terraform-provider-mso>
 - Cisco Collections on Ansible Galaxy
<https://galaxy.ansible.com/cisco>
- Cisco Providers on Terraform
<https://www.terraform.io/docs/providers/aci/>
<https://www.terraform.io/docs/providers/mso/>
- Demo Code GitHub Repository
<https://github.com/lhercot/ansible-aci-webinar>
<https://github.com/ciscoecosystem/terraform-aci-community-samples>

Referências (continuação)

- Demo Videos
 - All things Ansible for ACI
<https://www.youtube.com/watch?v=XQtawZfiBMg>
 - Composable Infrastructure with ACI and Terraform
<https://youtu.be/5OJN4sOAO2g>
 - Deconstructing DCN CI/CD Pipelines
https://youtu.be/_-Fe9_0nE6s
 - Ansible for ACI and NAE in a pipeline
<https://www.ciscolive.com/global/on-demand-library.html?search=camillo#/session/1564528256105001e9zi>
 - Making you network cloud native with Cisco ACI and GitOps
<https://youtu.be/VzYXCC4ExWE>
 - Codify Security in K8s w/ Terraform, GitOps & ACI
<https://www.youtube.com/watch?v=VH1QWP1oxYg>
 - In-Fabric Auto-Scaling with Consul and Cisco ACI
<https://www.youtube.com/watch?v=htNWDChIXk>
 - Mind the Gap, Bridging Cloud and On-Prem Infrastructures
<https://www.youtube.com/watch?v=r2GhTKAHWCw>
 - Enabling Hybrid Network-as-Code with Cisco ACI and HashiCorp Terraform
<https://www.youtube.com/watch?v=f8VBVp7LKSww>

Referências

(continuação)

- What's new and exciting on Cisco ACI with Red Hat Ansible Collections
<https://blogs.cisco.com/datacenter/whats-new-and-exciting-on-cisco-aci-with-red-hat-ansible-collections>
- Why Cisco ACI with HashiCorp Terraform really matters
<https://blogs.cisco.com/datacenter/why-cisco-aci-with-hashicorp-terraform-really-matters>
- Plenty of Cisco Live recorded sessions
- Webinars
 - [Building an automated hybrid multicloud with Cisco ACI and HashiCorp Terraform](#)
 - [Cisco ACI with HashiCorp Terraform](#)
 - [Introduction to Terraform and ACI](#)
 - [Redefining the Intelligent Network with Cisco ACI and HashiCorp Consul](#)

