

CISCO *Live!*



#CiscoLiveAPJC



The bridge to possible

Unlocking the Possibilities of Hybrid Cloud

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DEVNET-1420



#CiscoLiveAPJC

Cisco Webex App

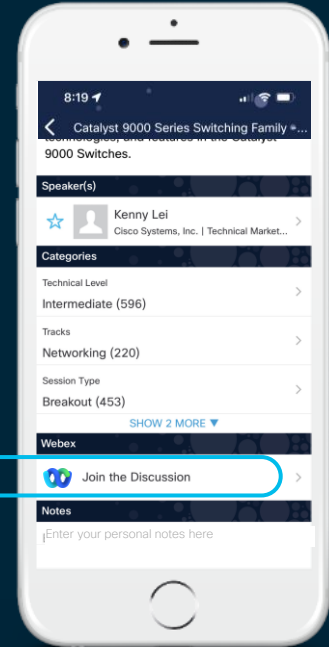
Questions?

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 Thursday 22 December, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#DEVNET-1420>



Thomas Scheibe

- Customer trends
- Cisco cloud networking strategy & innovations

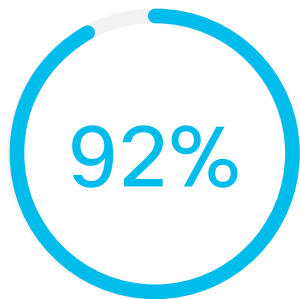
Yousuf Khan

- NEW: Global Networking Trends Report
- Cisco networking & ecosystem vision
- Solutions: Terraform, Ansible, Nexus-as-code
- Solution demos
- Wrap



Thomas Scheibe
VP, Product Management
Cisco Networking

Increasing Complexity



organizations now use multiple public cloud providers to achieve their objectives

Increasing Pace



are moving workloads between on and off-prem environments weekly

Customer Top of Mind

How will my network keep up with these growing AI/ML clusters?



Hyperscalers
Enterprises

Are the users happy with their application experiences?



All Customers

How do we save money and go green?



CXO Finance

Cisco Cloud Networking Strategy



Unified Architecture

Nexus Switching & SAN



Network Operations

Nexus Dashboard & Nexus Cloud* (aaS)



Multi-Cloud Networking

Multi-cloud connectivity and visibility



Cloud Infrastructure Networking

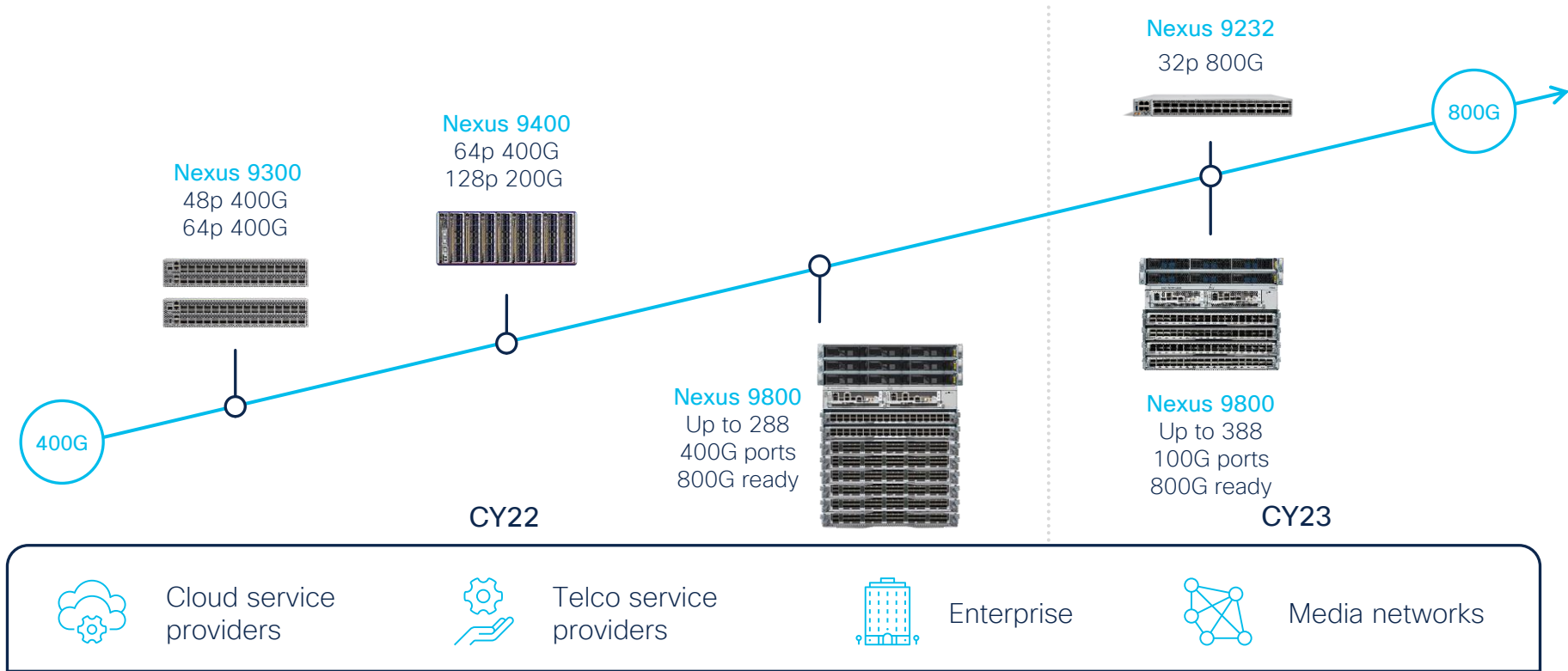
Networking value within cloud building blocks



Sustainable Networking

Sustainable Data Center

Nexus 9000 400/800G portfolio evolution



Nexus Dashboard & Nexus Cloud

Your Nexus license just became more valuable

Use Case/Customer Need

Fabric/Site Support

Buy as a Product



Nexus Dashboard

- Air Gap/Control
- Sovereign cloud
- Rich features



ACI



NX-OS



Multi-fabric
Multi-cloud

Consume as a Service



Nexus Cloud

- Turn on in minutes
- No upfront cost



ACI



NX-OS

2HFY23

Multi-fabric
Multi-cloud



Single point of control



Federated mode



Optimized operations workflows

Multi-Cloud Networking

Towards a Cloud Service



Connectivity



Zero Trust and Security



Visibility

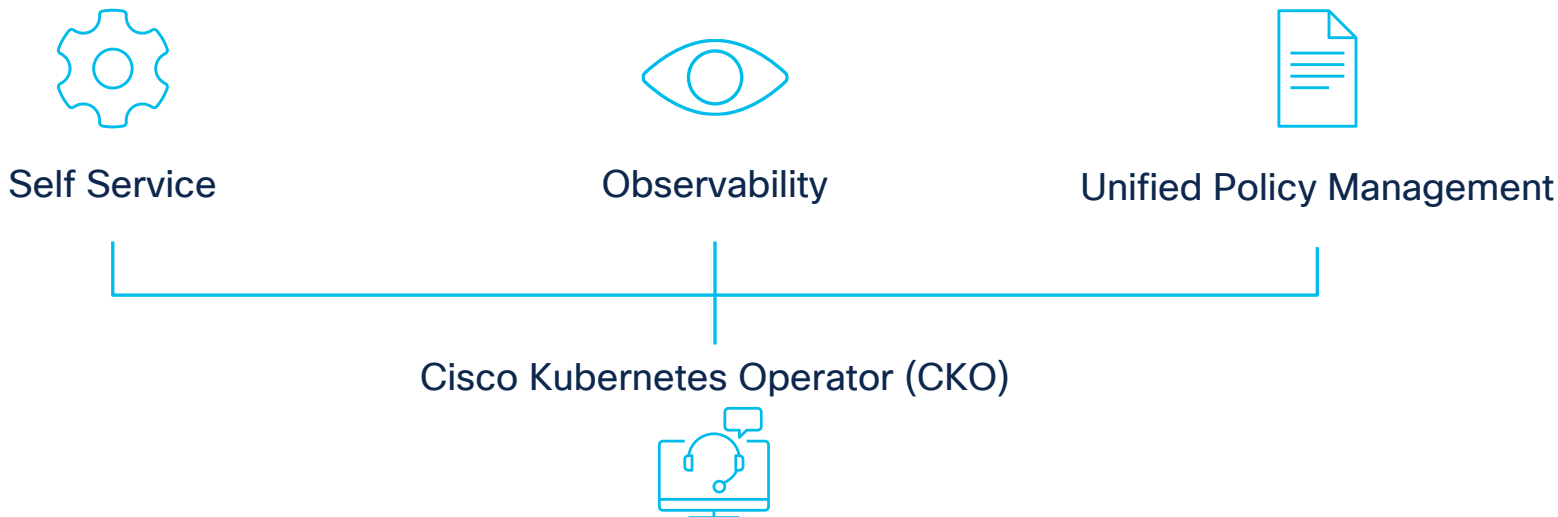


Application Networking

Unified Experience Across Heterogenous Cloud Environments

Cloud Native Networking

Cisco Kubernetes Operator (CKO)



Enabling customer choice in an expanding cloud-native component ecosystem

Bridging the impedance mismatch between network and modern container orchestration

Empowering network engineers to evolve and become an integral part of a DevSecOps and SRE teams

Sustainability by Design



Visibility

Gain visibility into network energy consumption and cost



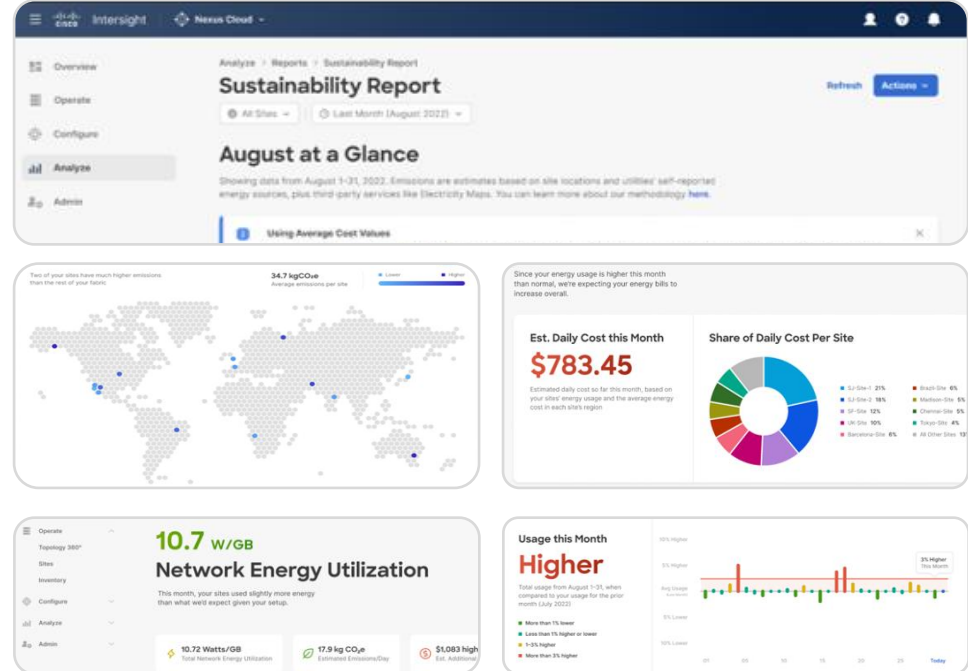
Carbon footprint

Understand greenhouse gases (GHG) of managed devices



Key sustainability metrics

Total Power Utilization Effectiveness (PUE)*—future release





Yousuf Khan
VP, Technical Marketing
Cisco Networking

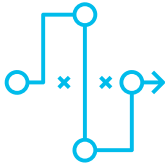
“Automation is to modern infrastructure what blood is to the body. It is core, you cannot have modern infrastructure without it.”



Dennis Smith
VP Analyst
Gartner



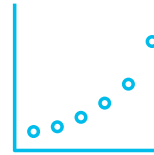
Automation: Key customer careabouts



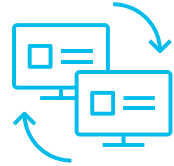
Reduce
manual errors



Lower cost
and improved
productivity

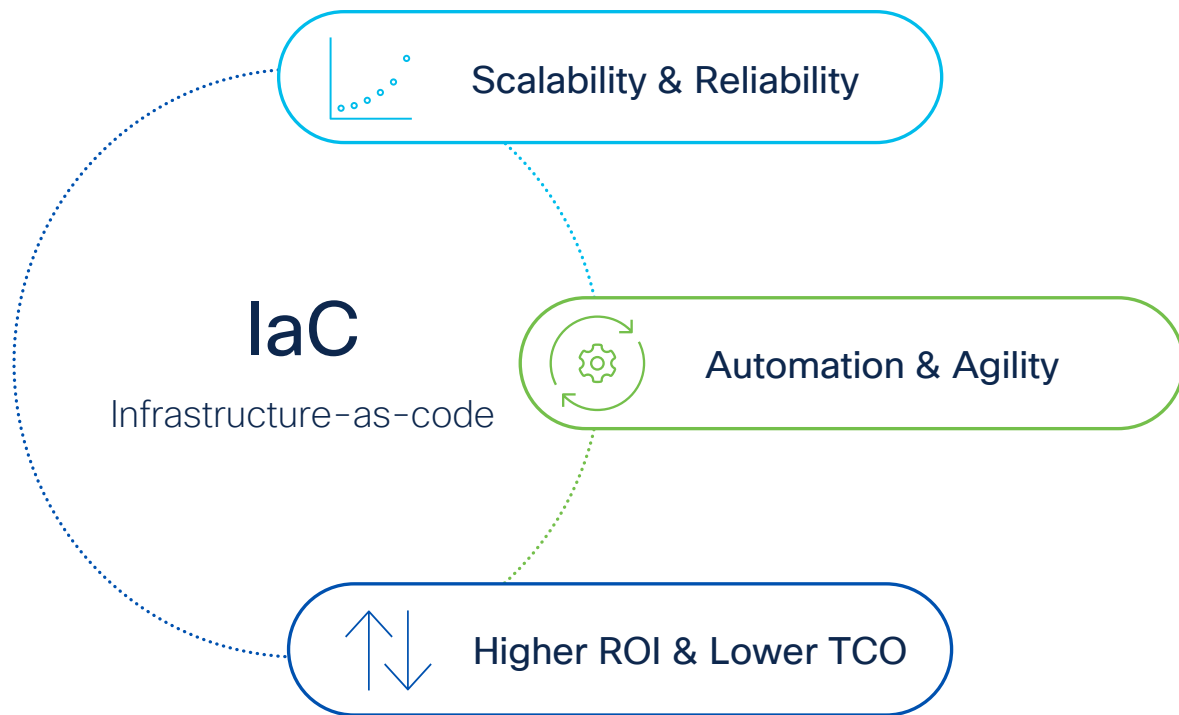


Higher quality,
faster changes

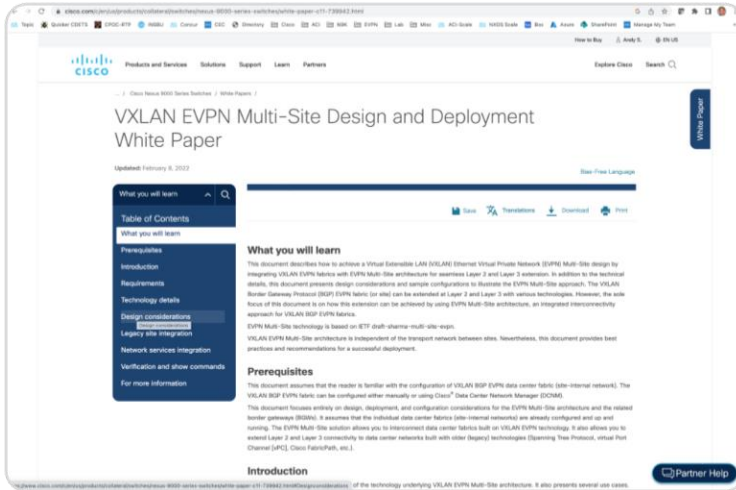


Better
manageability

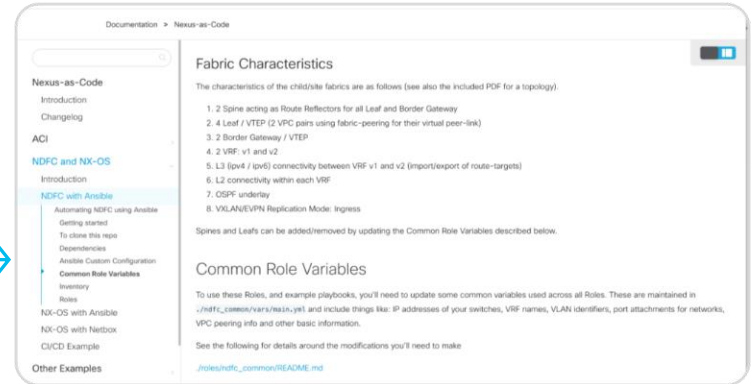
Why Infrastructure-as-Code (IaC)?



eCVD Examples

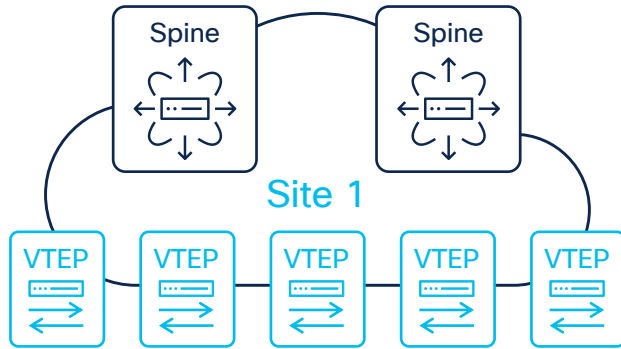


Turning
Cisco's Best
Practices into
Ansible Roles

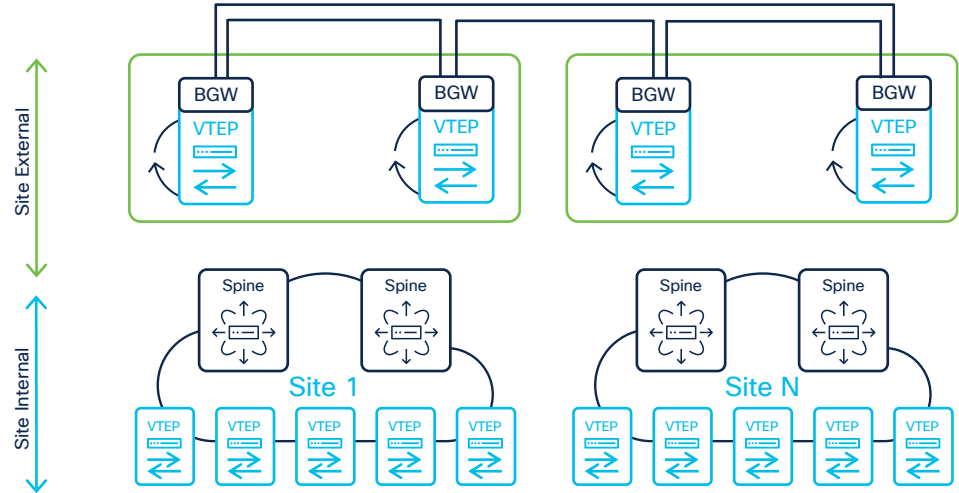


eCVD Example Topologies

Cisco Validated Design VXLAN EVPN topologies addressed in our Ansible Role examples



VXLAN EVPN Site with vPC



Multi-Site VXLAN EVPN with Back-to-Back Border Gateway Connectivity Model

Cisco's IaC strategy

Providing choice to customers

Toolsets



ANSIBLE



Products

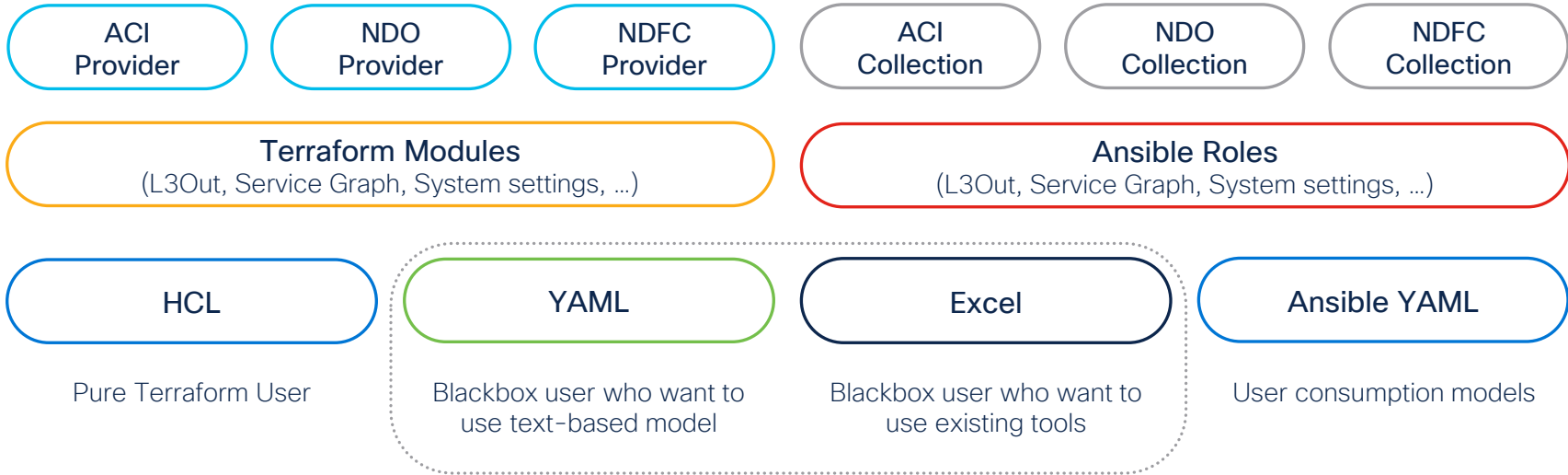


Nexus
Dashboard



Cisco
Intersight

New IaC development strategy



Introducing: Nexus as Code

Nexus-as-Code open-source project

The screenshot shows the Cisco Nexus-as-Code project page on the DevNet website. The page has a dark header with the DevNet logo and navigation links: Discover, Technologies, Community, and Events. A search bar and 'SIGN UP FREE' button are on the right. Below the header, the breadcrumb 'Documentation > Nexus-as-Code' is visible. On the left, a sidebar contains a search bar and a list of links: Nexus-as-Code (highlighted), Introduction, Changelog, ACI, Other Examples, Data Model, and Community and Support. The main content area is titled 'Cisco Nexus-as-Code' and contains two paragraphs of introductory text. Below the text are four rounded rectangular buttons with icons and labels: 'Nexus-as-Code Data Model' (network icon), 'Nexus-as-Code Terraform Modules' (Terraform icon), 'Verified Terraform Providers' (gear icon), and a row of three buttons: 'NDFC' (NDFC icon), 'ACI' (ACI icon), and 'Nexus Cloud' (cloud icon). At the bottom, a paragraph explains that Nexus-as-Code allows for complete separation of data from logic, enabling users to instantiate network fabrics quickly.

DEVNET Discover Technologies Community Events

Documentation > Nexus-as-Code

Nexus-as-Code

- Introduction
- Changelog
- ACI
- Other Examples
- Data Model
- Community and Support

Cisco Nexus-as-Code

Welcome to the Nexus-as-Code (NAC) project page. Our modern cloud networking products and controllers have been designed with automation being top of mind. Extensive documentation and a plethora of detailed examples can be found everywhere. The goal of this project is to have existing code meet with best-practices, expressed through an easy to use, opinionated data model. Nexus-as-Code is aimed at users with limited experience with Ansible and or Terraform, or those that prefer automating through an inventory driven approach.

The majority of this project is aimed at leveraging this data model driven approach through Hashicorp Terraform. Terraform is commonly used to define cloud and on-prem resources in human-readable configuration, that you can version, reuse and share. This page also includes a few additional examples in the Other Examples section, using Ansible and Terraform to automate Application Centric Infrastructure (ACI), Nexus Dashboard Fabric Controller (NDFC) and NX-OS standalone based networks. These examples do not adhere to the same data model driven approach, but offer valuable resources for more experienced users.

Nexus-as-Code Data Model

Nexus-as-Code Terraform Modules

Verified Terraform Providers

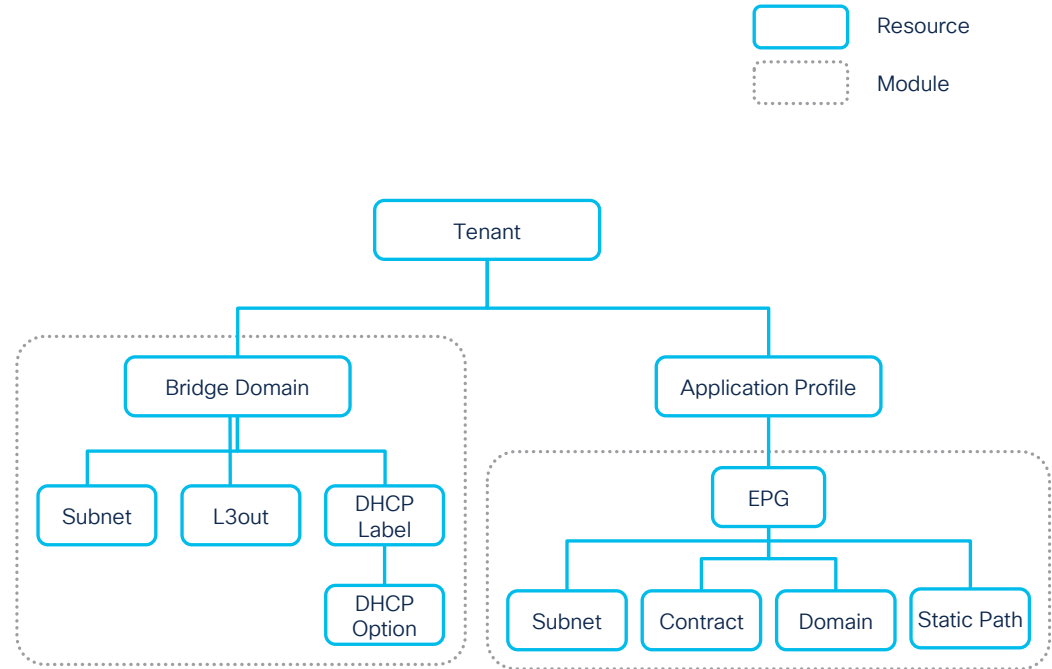
NDFC ACI Nexus Cloud

Nexus-as-Code allows for complete separation of data (defining variables) from logic (infrastructure declaration). With little to no experience with automation, users can instantiate network fabrics in minutes. The model is structured in such a way that it logically represents the GUI. It also takes

Nexus-as-Code Demo

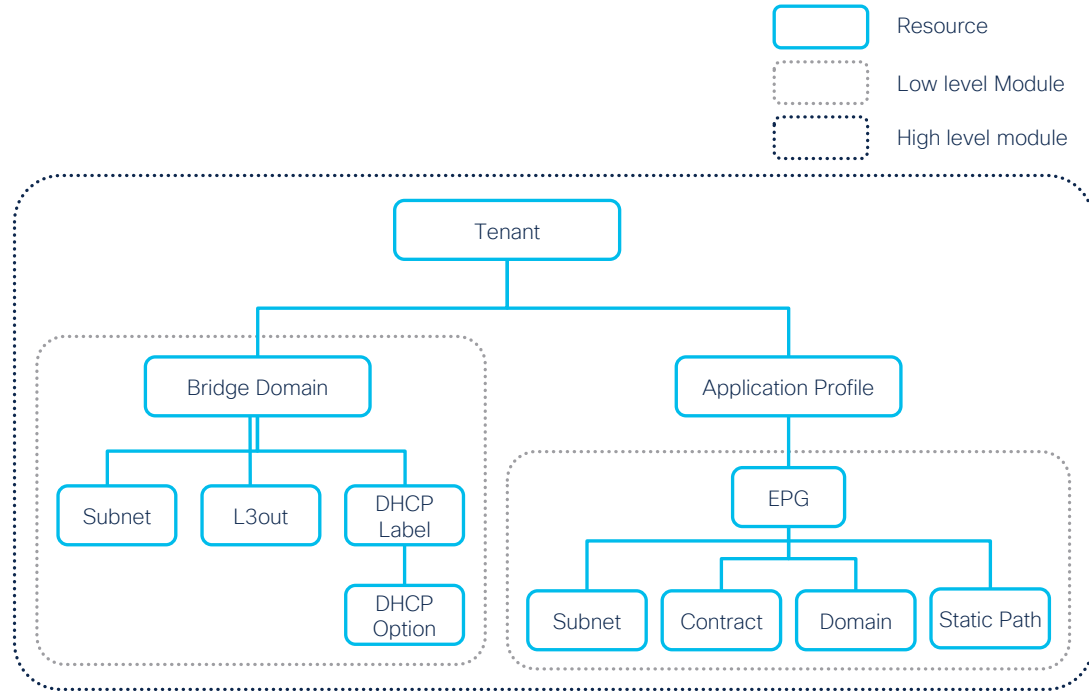
Low-level modules

- Introduce a layer of abstraction
- Terraform **resources** represent a single MO in the MIT
- Terraform **modules** represent a branch in the MIT
- 100+ reusable modules covering most common configuration
- All modules are published in the Terraform registry



High-level modules

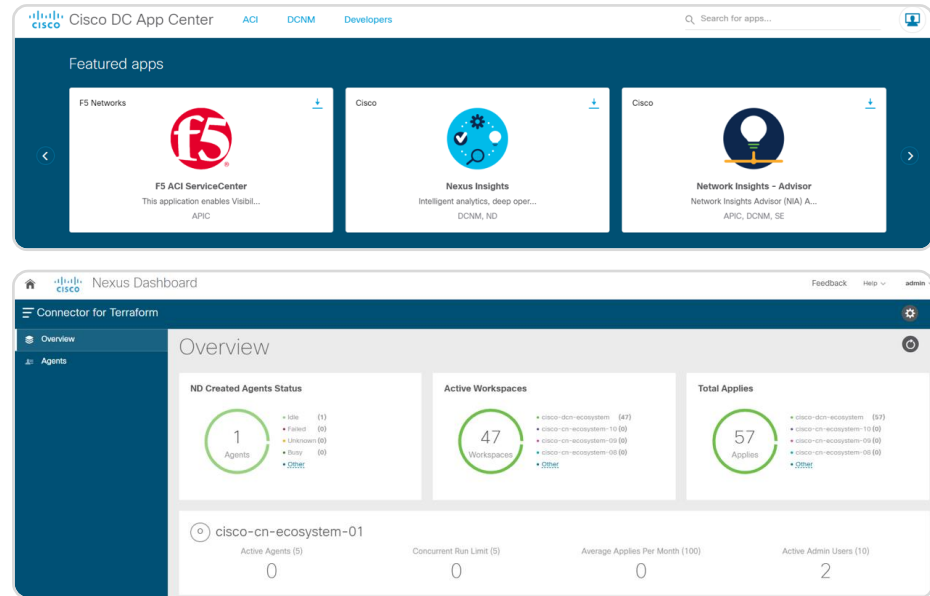
- fabric_policies: Configurations applied at the fabric level (e.g., fabric BGP route reflectors)
- access_policies: Configurations applied to external facing (downlink) interfaces (e.g., VLAN pools)
- pod_policies: Configurations applied at the pod level (e.g., TEP pool addresses)
- node_policies: Configurations applied at the node level (e.g., OOB node management address)
- interface_policies: Configurations applied at the interface level (e.g., assigning interface policy groups to physical ports)
- tenants: Configurations applied at the tenant level (e.g., VRFs and Bridge Domains)



Introducing: Nexus Dashboard Connector for Terraform Cloud for Business

What is the Nexus Dashboard Connector for HashiCorp Terraform?

- A Third-Party Connector running on the Nexus Dashboard
- Available as a free download from the DC App Center
- Acts as a hosting spot and life cycle manager for the Terraform Cloud Agent




Which Cisco customers might benefit from the Nexus Dashboard Connector for HashiCorp Terraform?



Best
Opportunity

- Customers who have already purchased Terraform Cloud for Business or Terraform Enterprise and Nexus Dashboard; the Nexus Dashboard Connector for HashiCorp Terraform creates an easy landing spot for the Terraform Cloud Agent
- Customers who have already purchased Nexus 9000 and Terraform Cloud for Business or Terraform Enterprise and are considering an investment in Nexus Dashboard
- Customers who have already purchased Nexus Dashboard and are using any flavor of Terraform
- Customers who are currently using any flavor of Terraform or who are considering using any flavor of Terraform as a pillar of their network automation journey; this is an opportunity to position Nexus Dashboard and associated network fabrics based on NX-OS or ACI

- Why Terraform Cloud for Business?

| Feature | | | |
|-----------------------|---|--|--|
| |  Open source | Enterprise | Cloud for business |
| Collaboration | No | Yes | Yes |
| Security | No | Yes | Yes |
| Compliance | No | Yes | Yes |
| Governance | No | Yes | Yes |
| Management | Customer, node-by-node | Customer, centralized | HashiCorp, centralized |
| Hashi Support | No | Yes | Yes |
| Terraform Cloud Agent | No | Yes, optional for on-prem automation targets | Yes, required for on-prem automation targets |



Running Terraform OSS is insecure and non-collaborative, if your customer has >1 engineers running Terraform OSS, perfect upsell opportunity on Security, Compliance, Governance, and Management story.

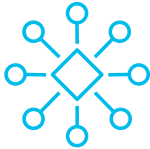
Application Derivative Change

Cisco Cloud Networking Terraform Providers

All Cisco providers can be found here:

ACI

Cloud/On-prem



CiscoDevNet/aci

Nexus Dashboard Fabric Controller



CiscoDevNet/mso

Nexus Dashboard Orchestrator

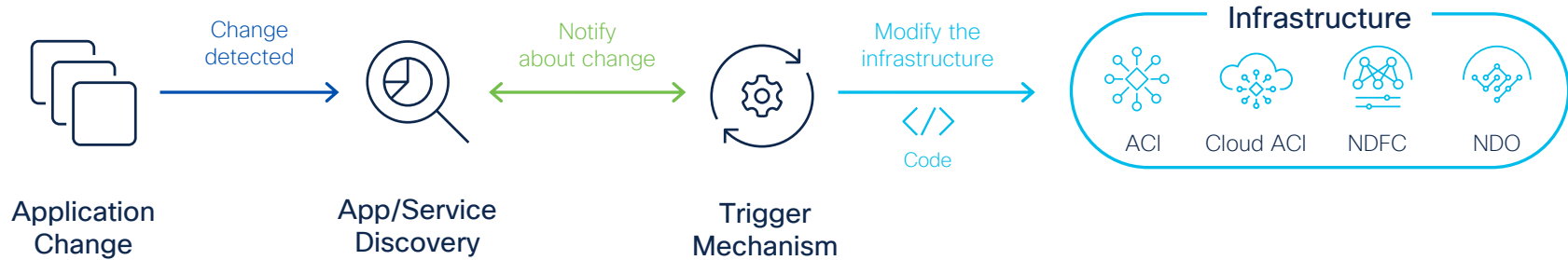


CiscoDevNet/dcnm

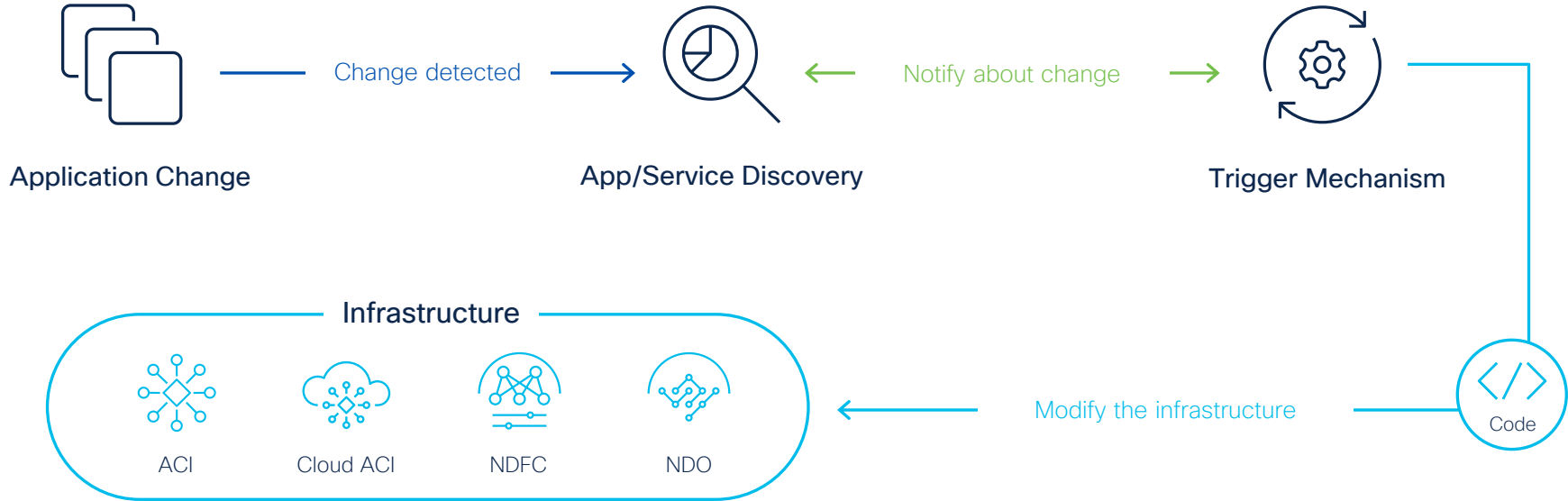
All Cisco providers can be found [here](#).



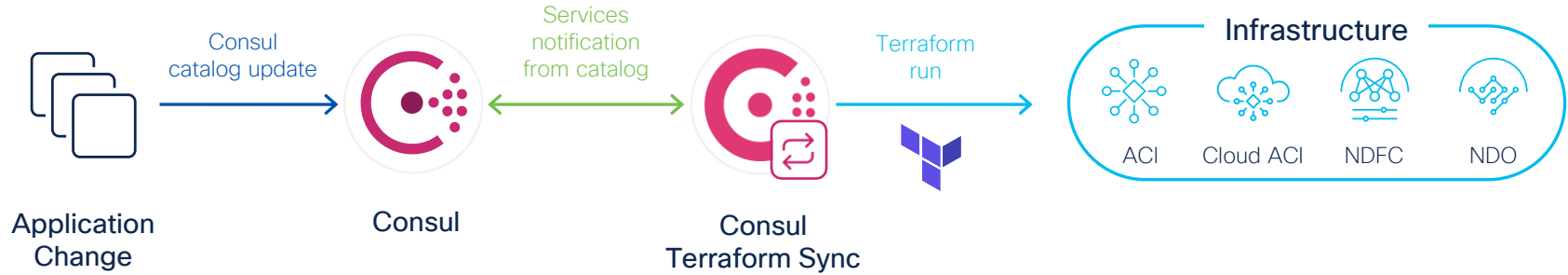
Application Derivative Change overview



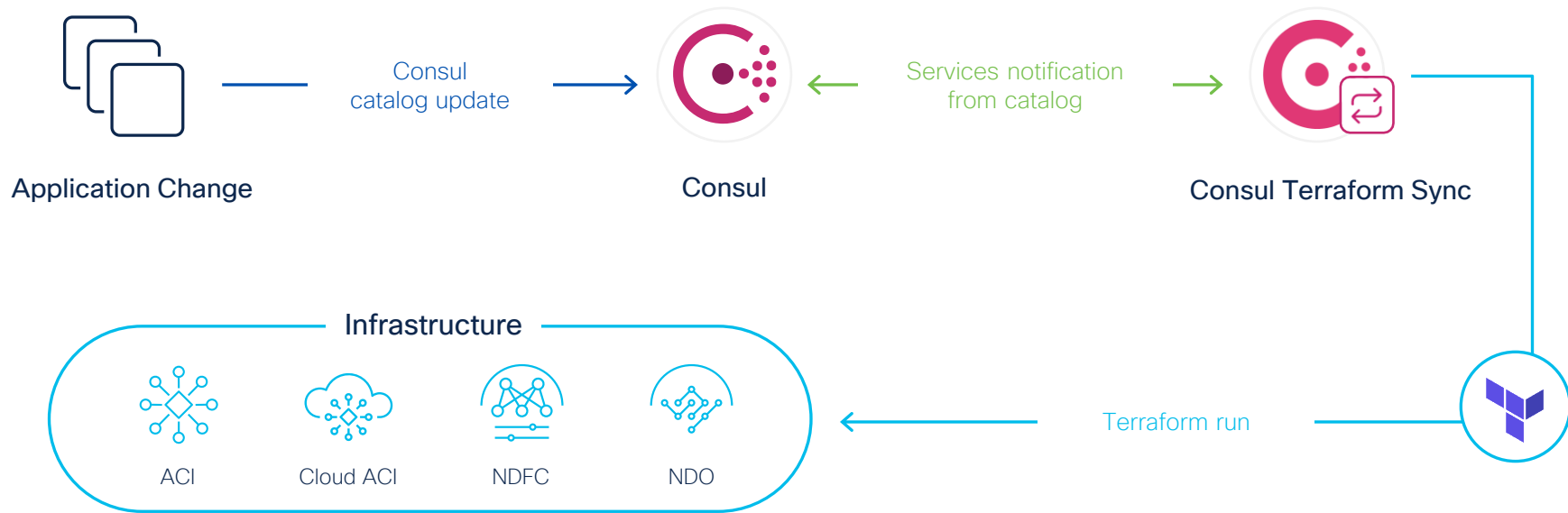
Application Derivative Change overview



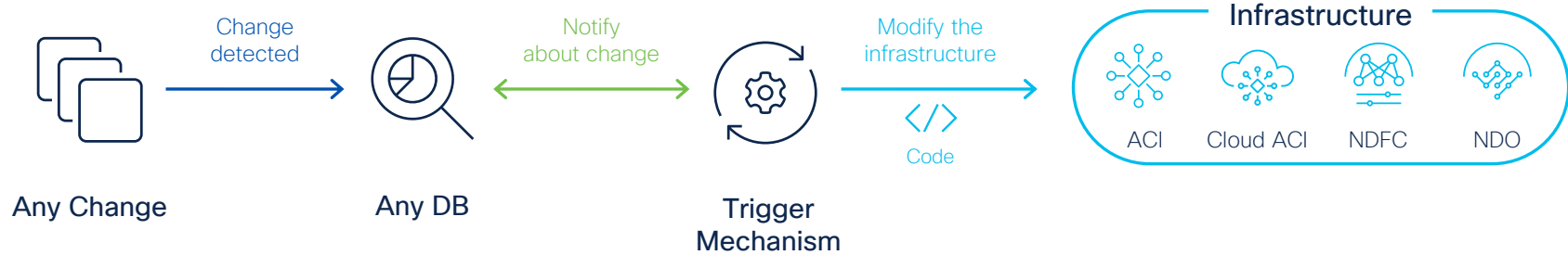
Application Derivative Change overview



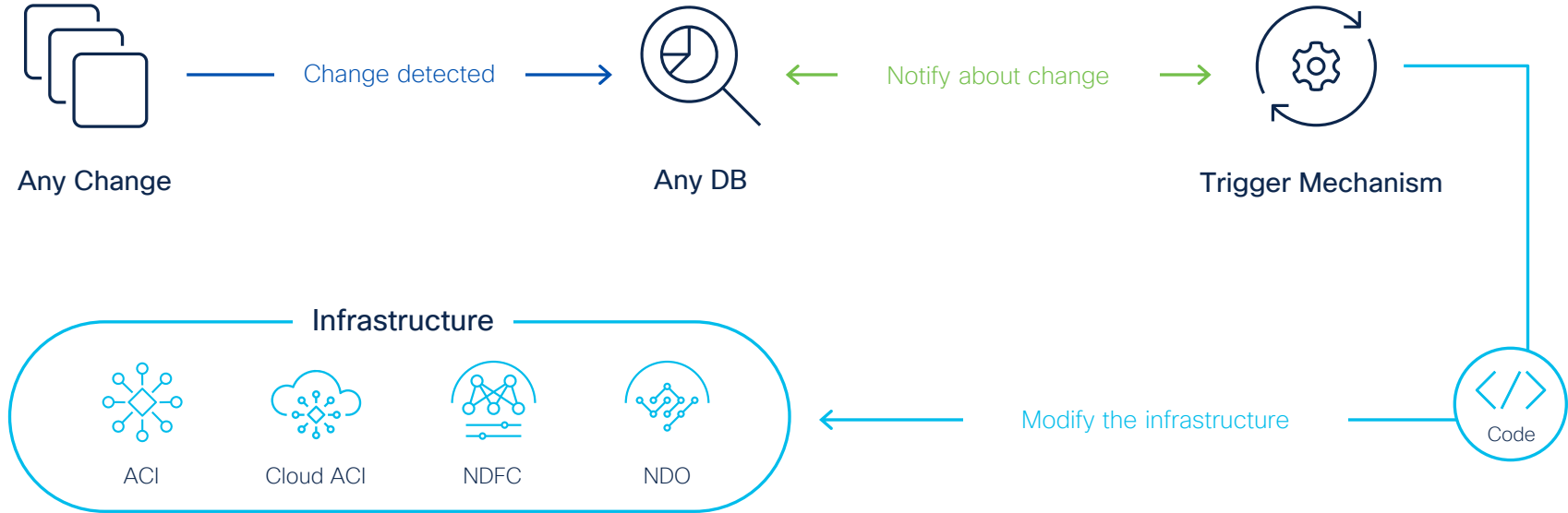
Consul Network Infrastructure Automation



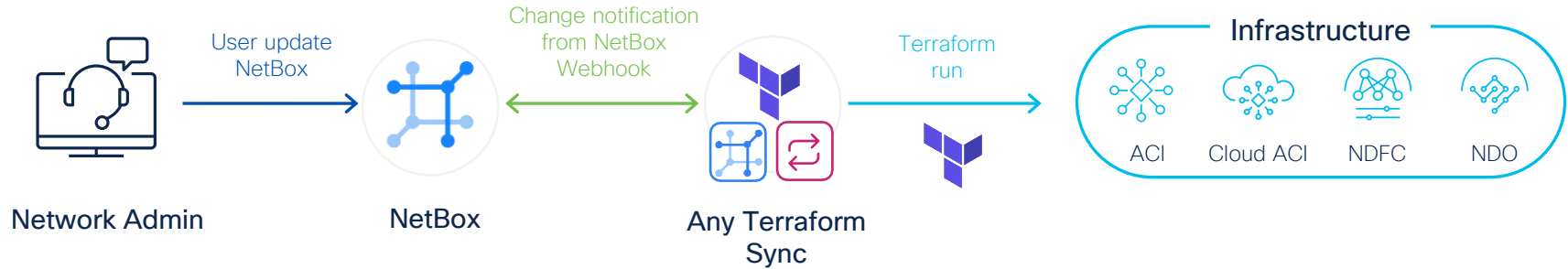
Application Derivative Change overview



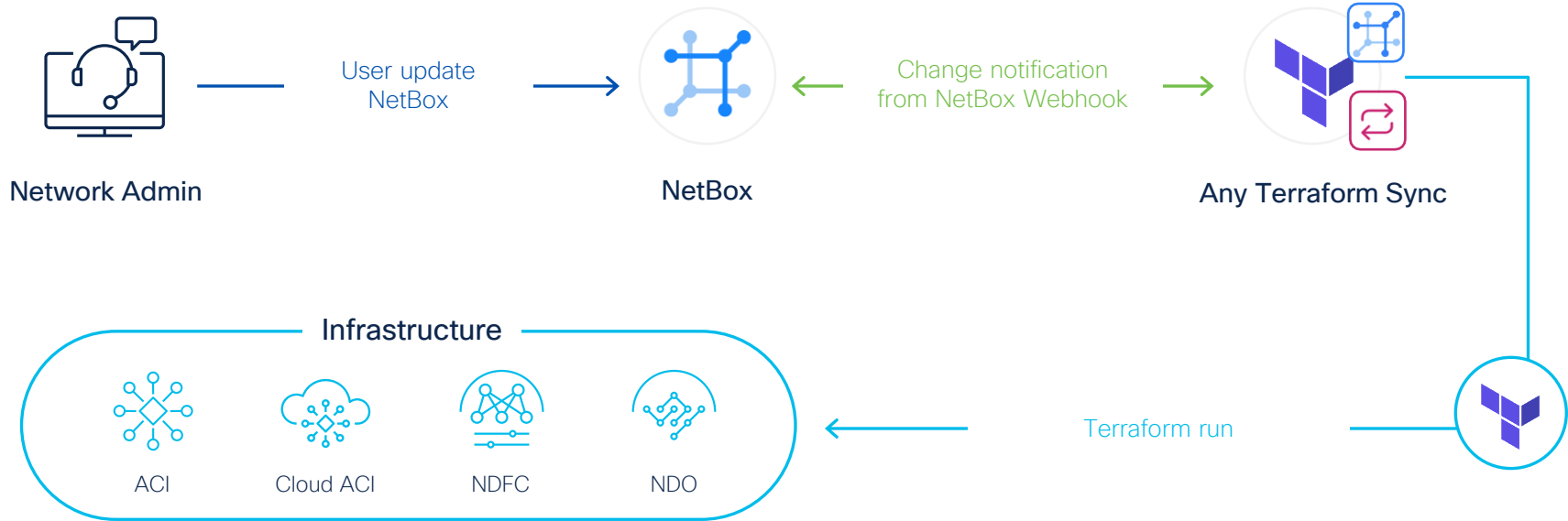
Application Derivative Change



Application Derivative Change overview



NetBox-Driven Networking



ACI-NetBox Video Demo Demo



Automating NXOS based networks with NetBox and Ansible Tower Step By Step Example on DevNet

NX-OS with Netbox

Automating NXOS based networks with Netbox and Ansible Tower

Adding devices and tags to Netbox

Set up a repository

Populating the repository

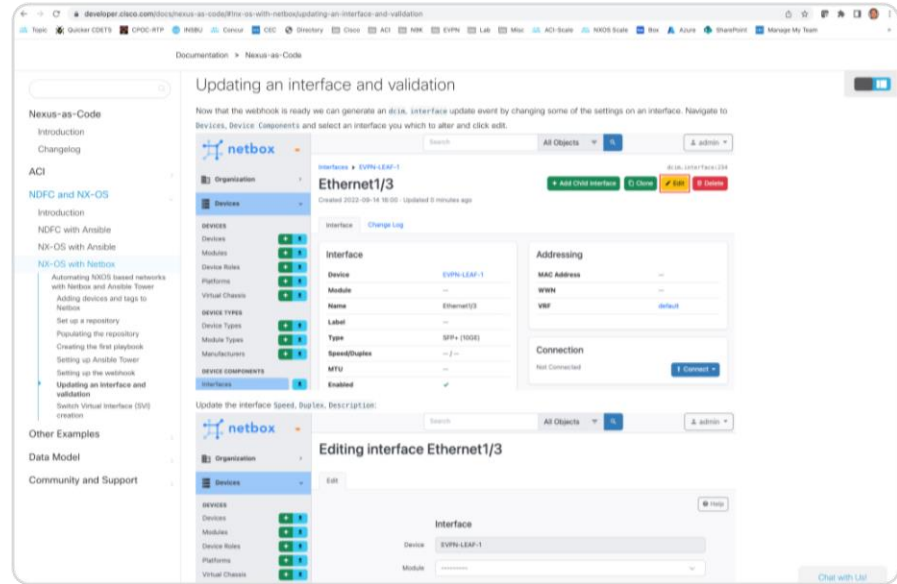
Creating the first playbook

Setting up Ansible Tower

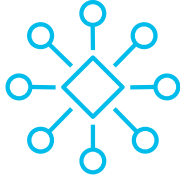
Setting up the webhook

Updating an interface and validation

Switch Virtual Interface (SVI) creation



Use DevNet to Terraform Labs to start



ACI



[Intro Learning Lab](#)



[CTS Learning Lab](#)



NDO



[Intro Learning Lab](#)

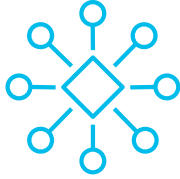


NDFC



[Intro Learning Lab](#)

Use DevNet Learning Labs to start your journey!



ACI



NDO



NDFC



ANSIBLE

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ANSIBLE

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ANSIBLE

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[CTS Learning Lab](#)



Key Takeaways

- ✓ IaC is a journey not a destination
- ✓ Cloud Networking products are designed to be automated
- ✓ Application Derivative Change reduces the amount of manual code changes needed
- ✓ Go learn with our DEVNET learning labs

Session Surveys

We would love to know your feedback on this session!

- Complete the session surveys in the Cisco Events mobile app. You'll earn some points in the Cisco Live Game and potentially win a prize.
- Complete a minimum of four session and the overall event surveys to claim a Cisco Live cable bag.

Continue your education



Visit the Cisco Showcase for related demos



Book your one-on-one Meet the Expert 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

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Learn

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IT learning hub that guides teams and learners toward their goals

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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



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