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The bridge to possible

Ansible and NDFC!

Parity in Function and Value to Operate Your Fabric

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BRKDCN-2716

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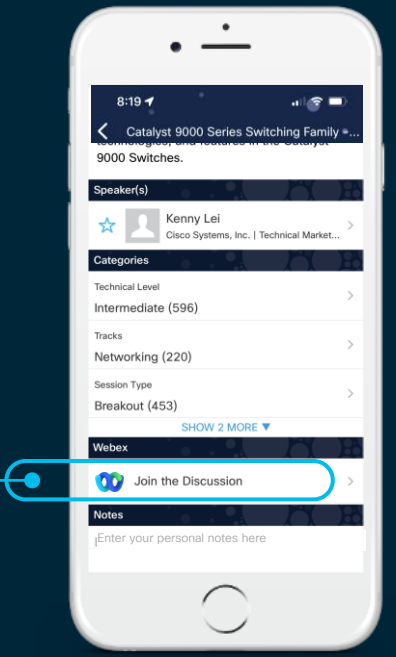


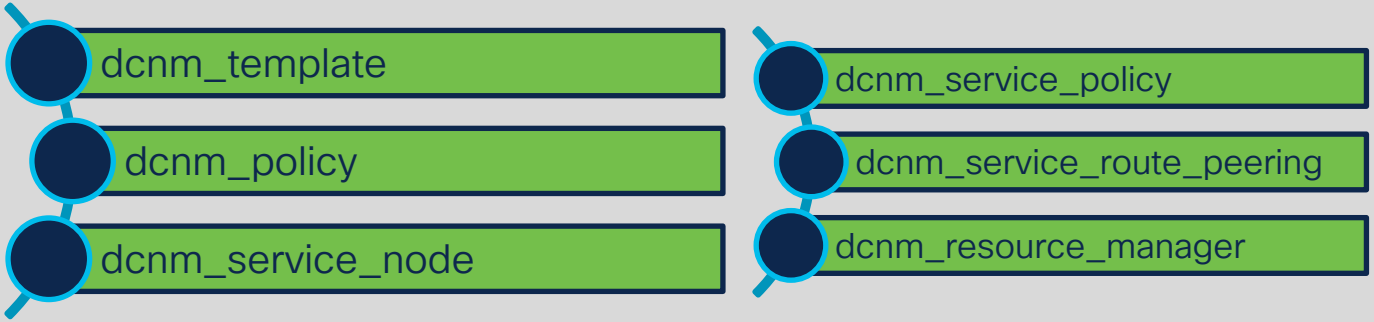
https://ciscolive.ciscoevents.com/ciscolivebot/#BRKXXX-xxxx

Agenda

- Introduction
- Getting Started: Ansible NDFC collection
- Automating workflows with the collection
- CI/CD Pipleline Integration
- Collection Roadmap
- Conclusion

What's New in the Ansible NDFC collection?

- NDFC Support (More on this later)
- Performance Enhancements / Extensions (VRF-Lite, Multisite)
- New Modules (6)



Existing Modules in the collection

Modules (5)

- dcnm_rest
- dcnm_inventory
- dcnm_vrf
- dcnm_network
- dcnm_interface

Overall Total: 11 Modules

Previous CL Session: https://www.ciscolive.com/on-demand/on-demand-library.html?search=wiebe#/session/16360602395320017YeX

So...

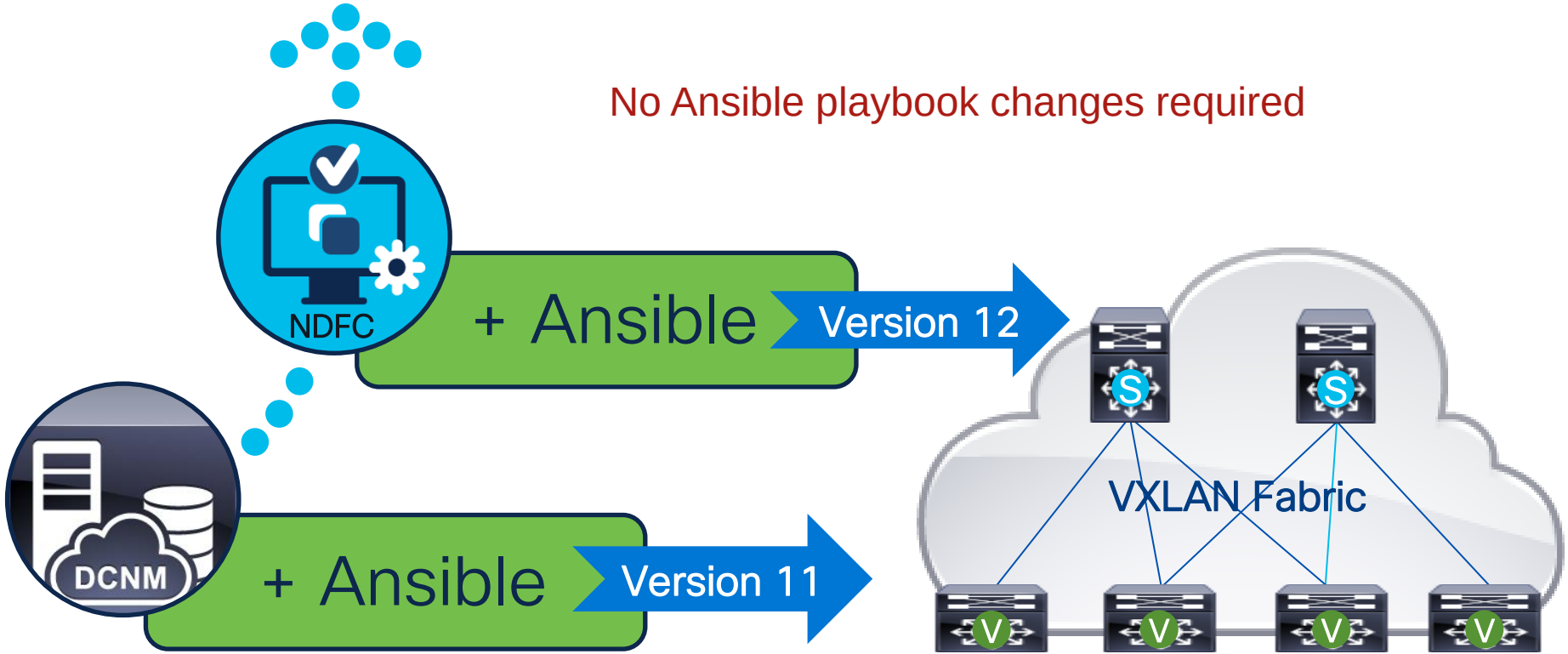
What about NDFC?

Nexus Dashboard Fabric Controller

Formerly DCNM (Data Center Network Controller)

- Application on Cisco Nexus Dashboard
- New Streamlined User Interface
- Kubernetes Microservices

Transparent NDFC/DCNM Controller Support



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Getting started

- Ansible Collection Installation

Collection Location: https://galaxy.ansible.com/cisco/dcnm

Install Command:

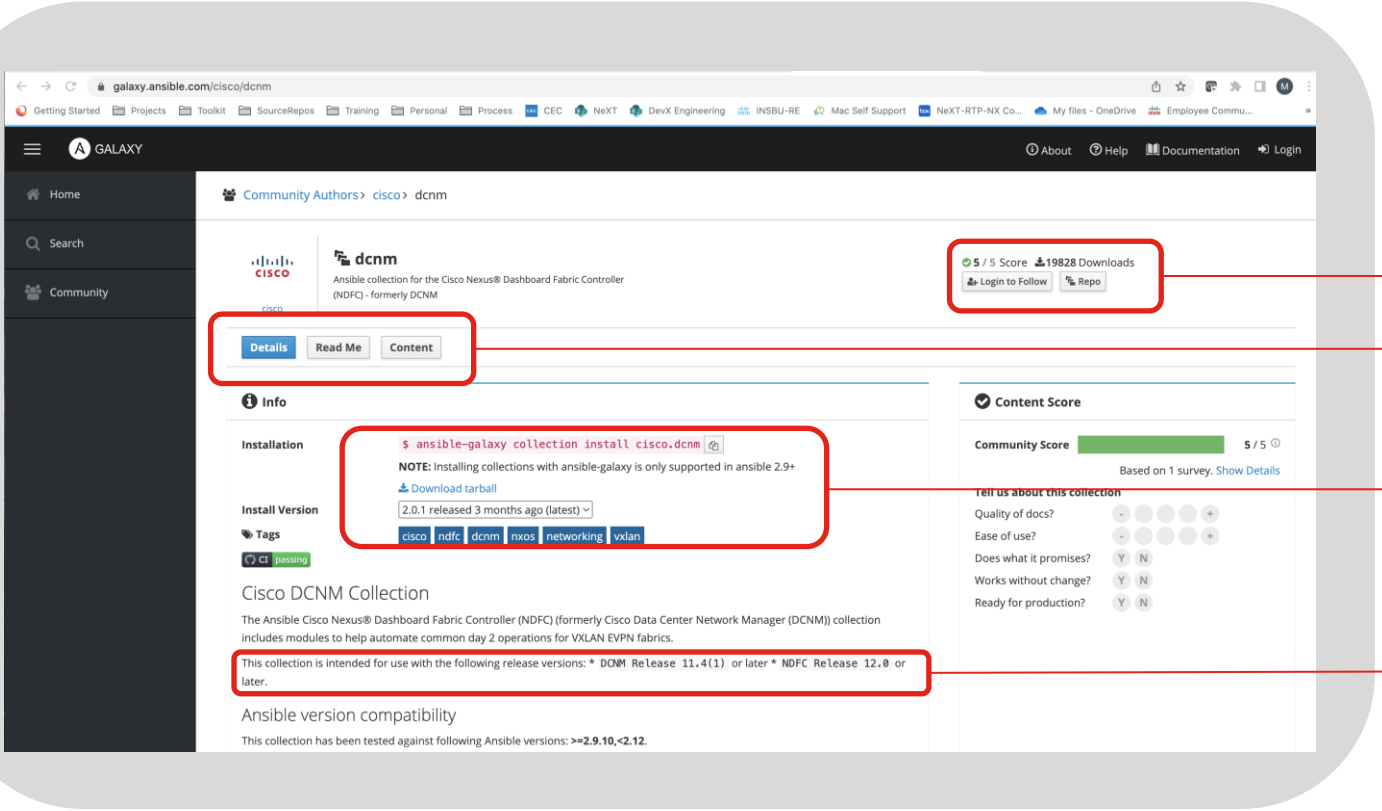
```
* pip install ansible
* ansible-galaxy collection install cisco.dcnm
```

Ansible uses the Fully Qualified Collection Name (FQCN)

Namespace: cisco

Collection Name: dcnm

NDFC Ansible Galaxy Collection Site



Link to repo

Read Me

Collection Version & Install Command

NDFC Version

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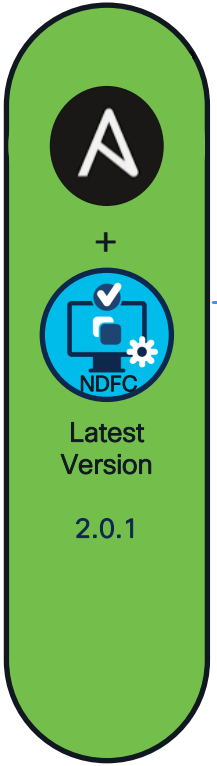
NDFC Template Module

https://github.com/CiscoDevNet/ansible-dcnm/blob/main/docs/cisco.dcnm.dcnm_template_module.rst

dcnm_template

- **Purpose:** Create, Delete and Modify Templates
- **States:** Merged, Deleted, Query
- **Notes:** Used in combination with the dcnm_policy module

NDFC Template Module




```
content: |
     telemetry
       certificate /bootflash/telegraf.crt telegraf
       destination-profile
         use-vrf management
       destination-group 101
         ip address 10.195.225.176 port 57101 protocol gRPC…
       sensor-group 101
         data-source DME
         path sys/ch depth unbounded
       subscription 101
         dst-grp 101 snsr-grp 101 sample-interval 10101
```

```
content: | (config content follows)
```

NDFC Policy Module

https://github.com/CiscoDevNet/ansible-dcnm/blob/main/docs/cisco.dcnm.dcnm_policy_module.rst

dcnm_policy

- **Purpose:** Create, Delete and Modify Policies
- **States:** Merged, Deleted, Query
- **Notes:**
  - Used in combination with the dcnm_template module
  - Flag to control policy creation if one already exists

NDFC Policy Module – Static Config

dcnm_policy

```
- name: Manage policies
  cisco.dcnm.dcnm_policy:
    fabric: "{{ ndfc_fabric_name }}"
    state: merged | deleted | query
    deploy: true
    config:
      - name: template_telemetry
        create_additional_policy: false
        priority: 101
      - switch:
        - ip: "{{ device_leaf1}}"
```

Demo

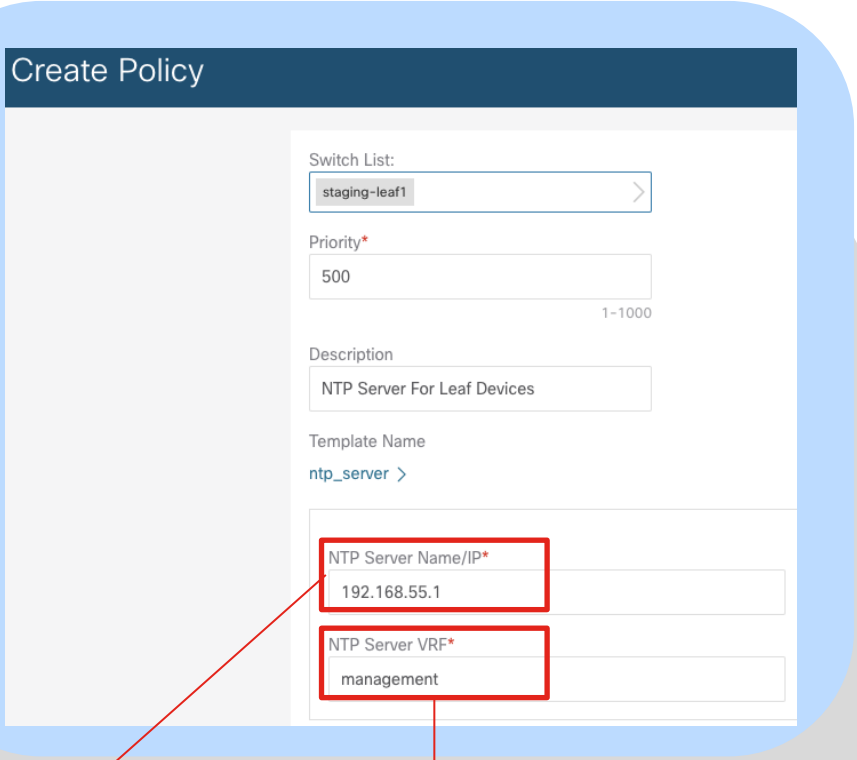
Template + Policy Modules

Part 1

NDFC Policy Module – V

dcnm_policy

```
- name: Manage poli
  cisco.dcnm.dcnm_p
    {…}
    config:
     - name: ntp_se
       {…}
       policy_vars:
         NTP_SERVER: 192.168.55.1
         NTP_SERVER_VRF: management
```

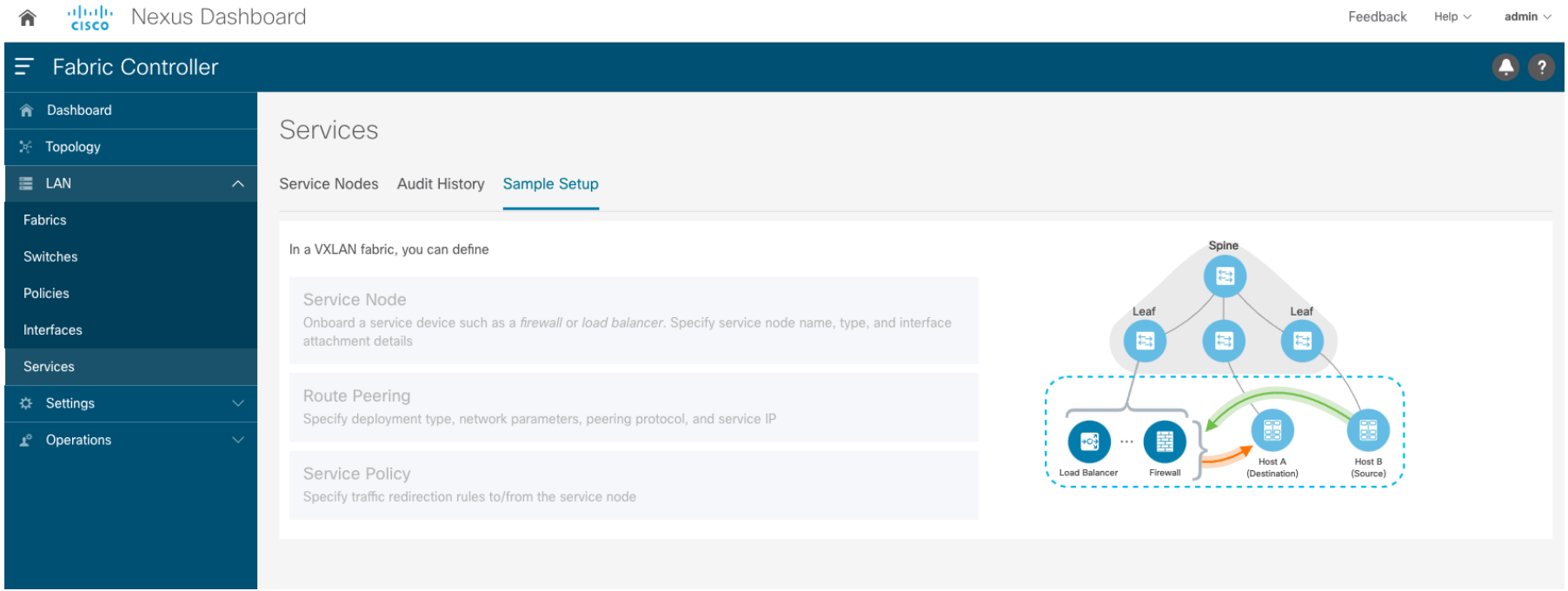


Demo

Template + Policy Modules

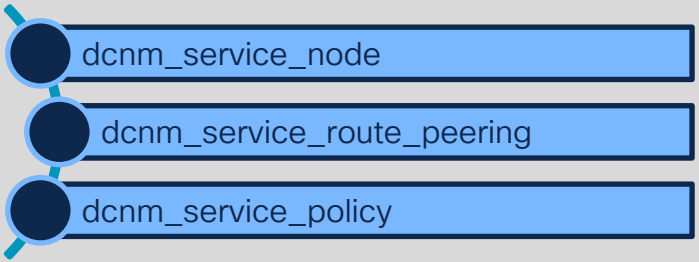
Part 2

NDFC L4-L7 Service Insertion



NDFC Service Node Module

https://github.com/CiscoDevNet/ansible-dcnm/blob/main/docs/cisco.dcnm.dcnm_service_[node|route_peering|policy]_module.rst



Purpose: Create, Modify, Delete Service Node (Layer 4 – 7 services)

States: Merged, Replaced, Overridden, Deleted, Query

Notes:

- Service Node Resides in the External Fabric
- Route Peerings are created under the service node
- Each Route Peering can have multiple service policies

NDFC Service Node Module – Task Example

dcnm_service_node

```
- name: Create FireWall Service Node
  cisco.dcnm.dcnm_service_node:
    fabric: cl-fabric
    service_fabric: service-fabric
    state: merged | replaced | overridden | deleted | query
    config:
    - name: Firewall-CL
      type: firewall
      form_factor: virtual
      svc_int_name: svc1
      attach_interface: Ethernet1/15
      switches:
        - "{{ leaf1_device}}"
```

NDFC Service Route Peering Module – Task (Firewall)

dcnm_service_route_peering

```
- name: Create FireWall Service Network
  cisco.dcnm.dcnm_service_route_peering:
    state: merged
    fabric: cl-fabric
    service_fabric: service-fabric
    attach: true
    deploy: true
    config:
      - name: FireWall-CL-RP
        node_name: Firewall-SN
        deploy_mode: intra_tenant_fw
        next_hop: 192.161.1.100
        reverse_next_hop: 192.161.2.100
```

NDFC Service Route Peering Module – Task (inside ntwk)

dcnm_service_route_peering

```
- name: Manage service route peerings
  cisco.dcnm.dcnm_service_route_peering:
    state: merged
    {...}
    config:
        {...}
        inside_network:
          vrf: vrf_app1
          name: rp1-fw-inside-net
          vlan_id: 101
          profile:
            ipv4_gw: 192.161.1.1/24
            ipv6_gw: 2001:db01::1/64
            vlan_name: rp1-fw-inside
            int_descr: "RP1 FW inside interface"
            tag: 11111
```

NDFC Service Route Peering Module – Task (outside ntwk)

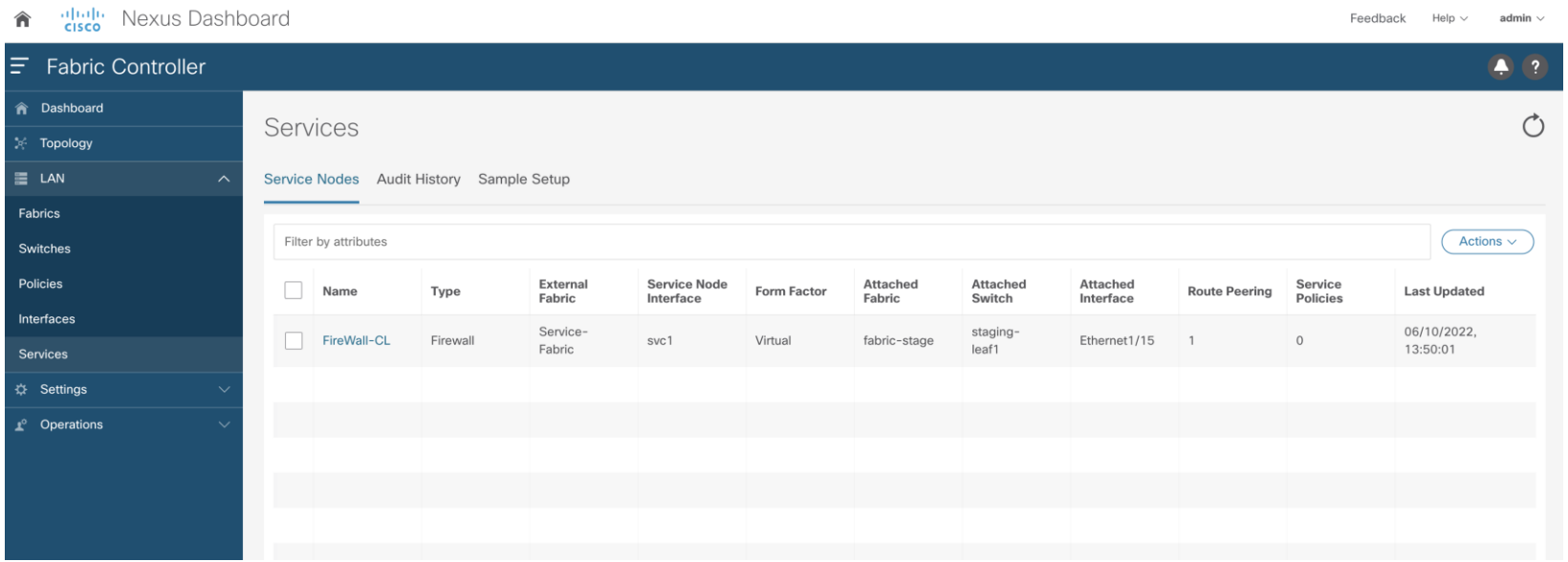
dcnm_service_route_peering

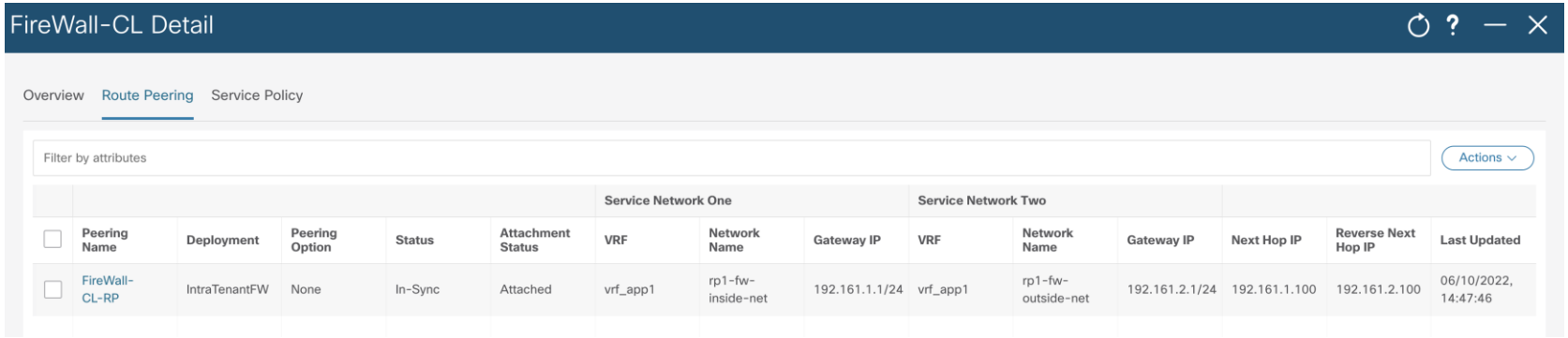
```
- name: Manage service route peerings
  cisco.dcnm.dcnm_service_route_peering:
    state: merged
    {...}
    config:
        {...}
        outside_network:
          vrf: vrf_app1
          name: rp1-fw-outside-net
          vlan_id: 102
          profile:
            ipv4_gw: 192.161.2.1/24
            ipv6_gw: 2001:db02::1/64
            vlan_name: rp1-fw-outside
            int_descr: "RP1 FW outside interface"
            tag: 11112
```

NDFC Service Policy Module

dcnm_service_policy

```
- name: Manage service policies
  cisco.dcnm.dcnm_service_policy:
    fabric: cl-fabric
    service_fabric: service-fabric
    state: merged | replaced | overridden | deleted | query
    config:
      - name: fw_service_policy
        node_name: FireWall-CL
        rp_name: FireWall-CL-RP
        src_vrf: vrf_app1
        dest_vrf: vrf_app1
        src_network: net_11
        dest_network: net_12
        next_hop: 192.161.1.100
        reverse_next_hop: 192.161.2.100
        reverse: true
```





NDFC Resource Manager Module

https://github.com/CiscoDevNet/ansible-dcnm/blob/main/docs/cisco.dcnm.dcnm_resource_manager_module.rst

dcnm_resource_manager

- **Purpose:** Manage NDFC Resources
- **States:** Merged, Deleted, Query
- **Notes:**
  - Format of entity depends on the scope type
  - Scope Types: Fabric, Device, Device Pair, Device Interface, Link

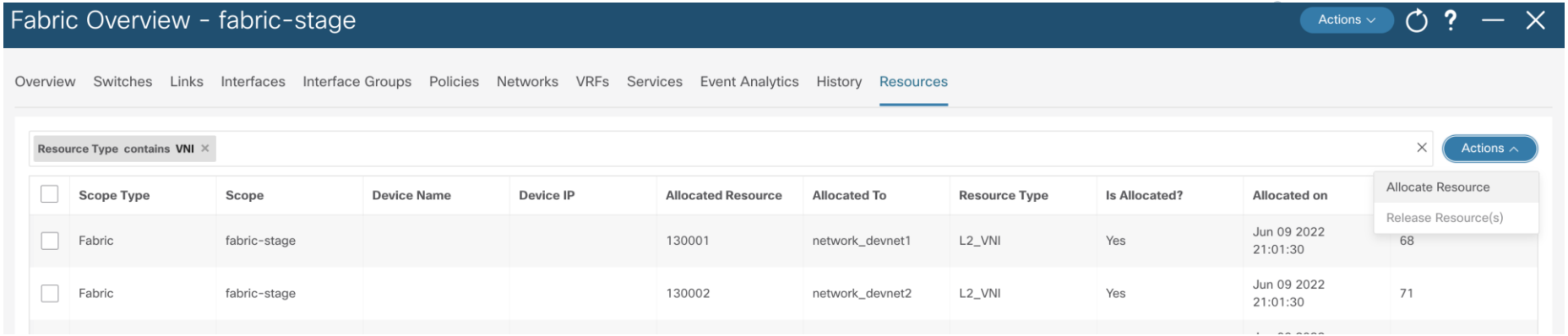
NDFC Resource Manager Module

dcnm_resource_manager

```
- name: Manage NDFC Resources
  cisco.dcnm.dcnm_resource_manager:
    state: merged | deleted | query
    fabric: cl-fabric
    config:
      - entity_name: "l3_vni_fabric"
        pool_type: "ID"
        pool_name: "L2_VNI"
        scope_type: "fabric"
        resource: "101"
```

These 3 parameters act as selectors for different resources

NDFC Resources Allocation Screen



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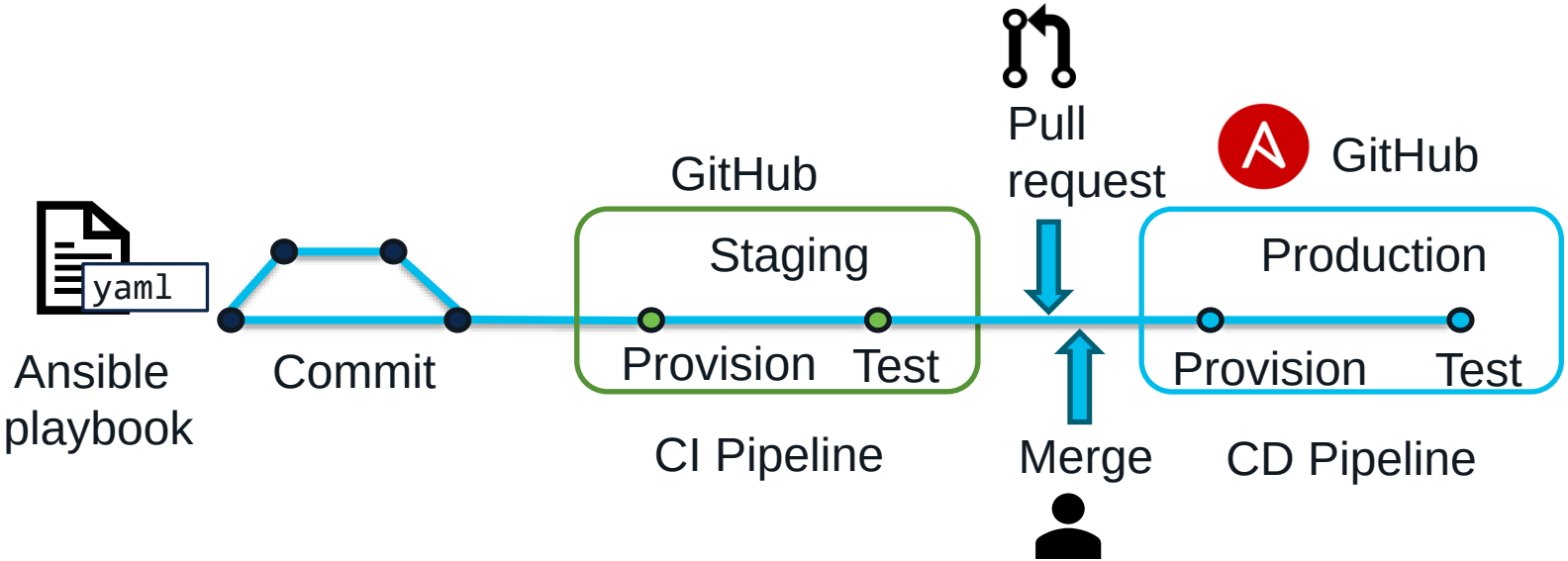
CI/CD Pipeline – Network as Code



General CI/CD Pipeline Steps

1. Changes made in a Staging branch
2. Commit Code → Pre Merge Validation
3. Open PR From Staging – CI Pipeline Starts
4. Merge Code into Main Branch → CD Pipeline Starts
5. Deploy changes to Production environment

Demo

Ansible NDFC CI/CD Pipeline

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Roadmap

- POAP switch discovery and pre-provision
- Support for additional roles
- VPC Pairing
- RMA Workflows
- External Fabric Interface Support
- Customized Template Support
- Enhanced VRF and Network module capabilities
- Image and Patch management

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