cisco Live!
Let's go

The bridge to possible

Cisco Nexus Dashboard Fabric Controller (NDFC)

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Agenda

- Cisco Nexus Dashboard
- Automation
- Management
- Visibility
- IP Fabric for Media
- SAN Controller
- Conclusion

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The new normal is a hyper-distributed, extremely diverse IT landscape

How do you adapt to change now and stay in control for the future?

Connectivity

Operations

App experience

Cisco Nexus Dashboard

Nexus Dashboard

Services

Provisioning

Fabric Controller

Orchestrator

Automation

splunk> servicenow Terraform ENTERPRISE ANSIBLE PANDUIT VERTIV.

Operations

Insights

Visibility Analytics Troubleshooting Compliance

Access to Nexus Dashboard services/features is based on the Cisco Nexus 9000 switch license tier

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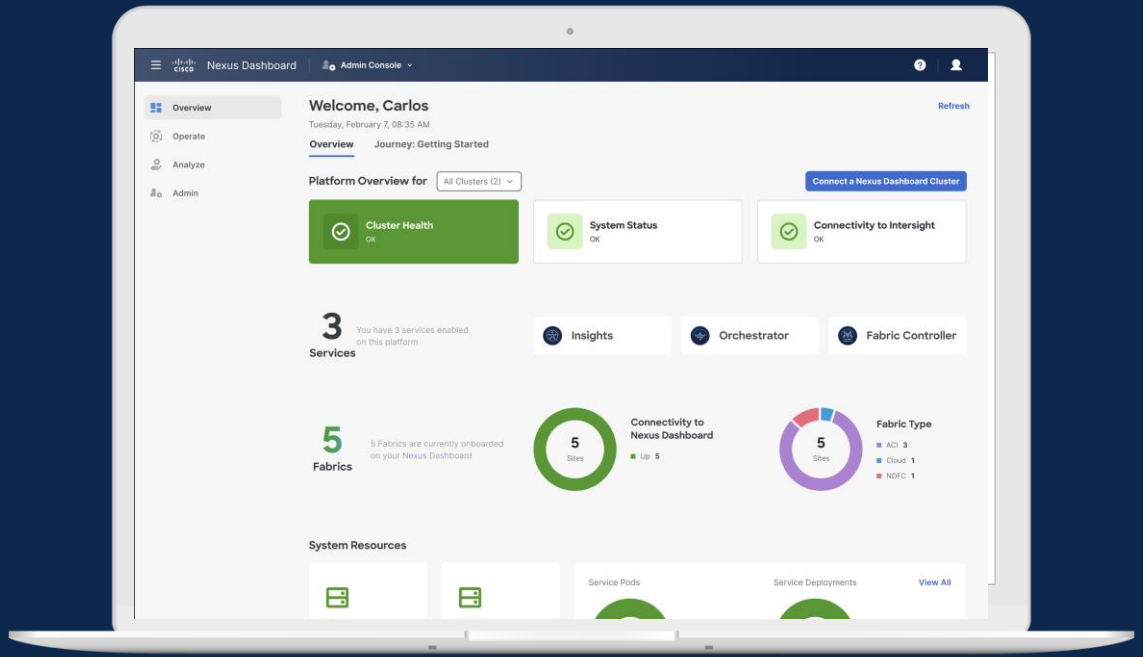
Cisco Nexus Dashboard

- Microservices architecture – scalability and performance
- Supported on both virtual and physical ND
- Multicluster support
- 3 node active active HA
- Unified upgrade



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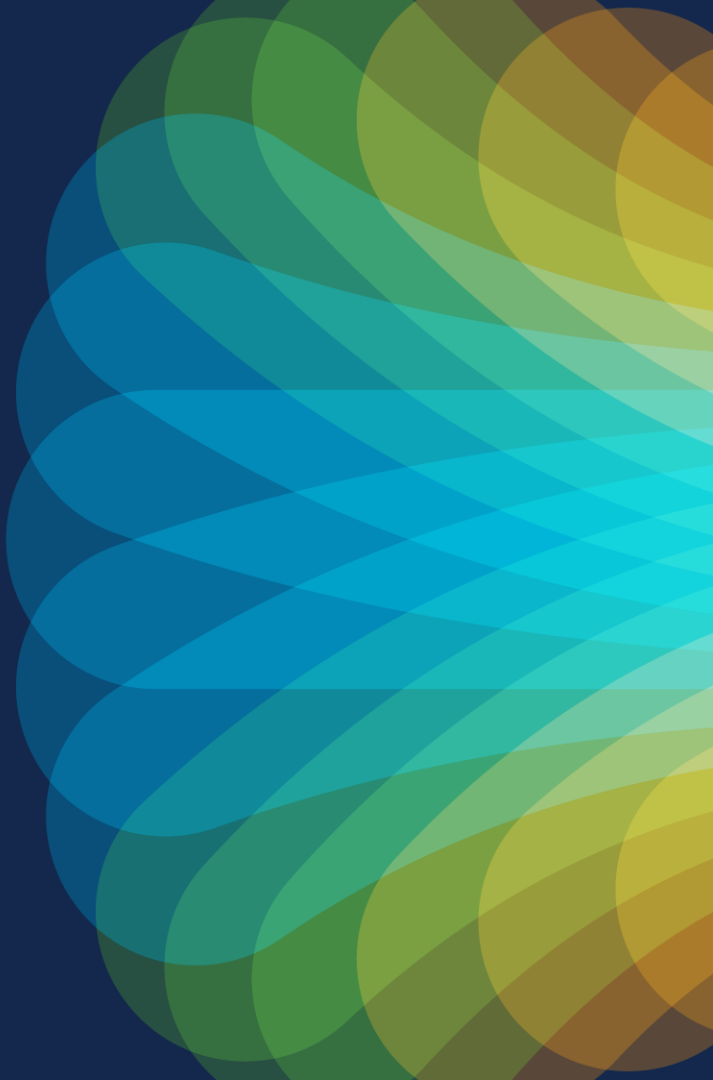
Cisco Nexus Dashboard Fabric Controller



Cisco Data Center Network Manager

Has become Cisco Nexus Dashboard Fabric Controller (NDFC)

Cisco Data Center Network Manager

Cisco Nexus Dashboard Fabric Controller

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Cisco NDFC

Automation

Accelerate provisioning and simplify deployments

Management

Gain in-depth management and control for all network deployments

Visibility

Centralize visibility and monitoring views

Fabric types

LAN (VXLAN and classic)

Media fabrics

SAN fabrics

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Cisco NDFC modes

Fabric discovery for LAN Deployments

Onboard NX-OS switches for Insights

Fabric controller for LAN and IPFM Deployments

Onboard NX-OS switches for automation including insights

SAN controller

Onboard MDS switches for automation and SAN insights

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Automation

Accelerate provisioning from days to minutes

Easy-to-understand approach to auto-bootstrapping of entire fabric

Rapid deployment with fabric builder best-practice templates for VXLAN EVPN, classic Ethernet

DevOps friendly

Enhanced programmability

Scale within and across data centers

Benefits

Simplify fabric deployments	Developer agility	Multisite

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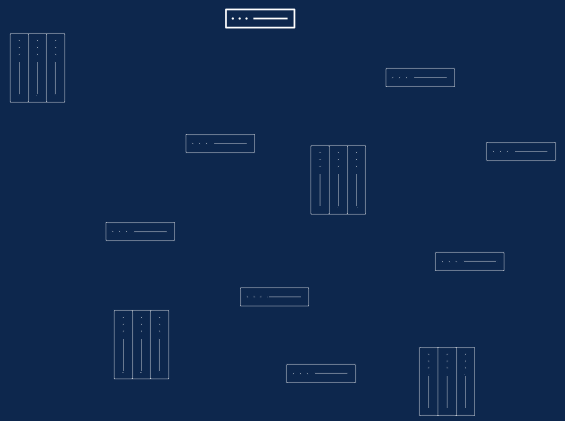
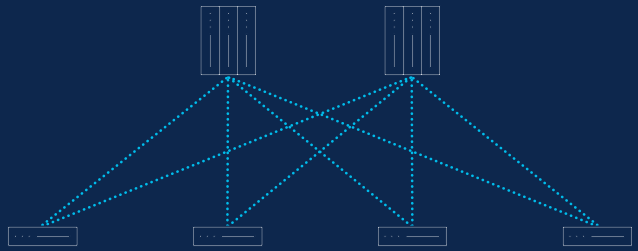
Provision a new fabric in minutes

Unprovisioned switches



Cisco best practice implemented



Fast, automated process

Benefits

NXOS Accelerated fabric deployments | Automated consistency | Minimize risk

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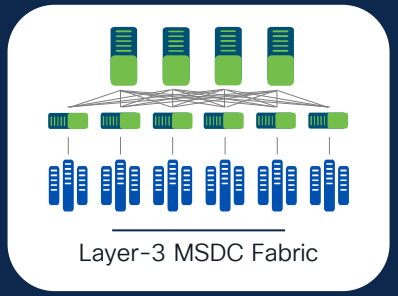
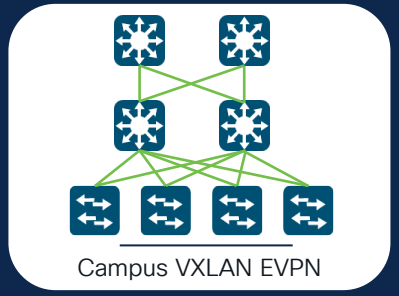
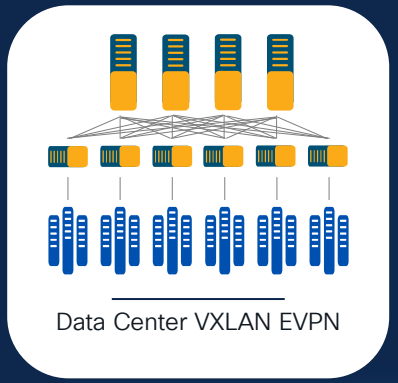
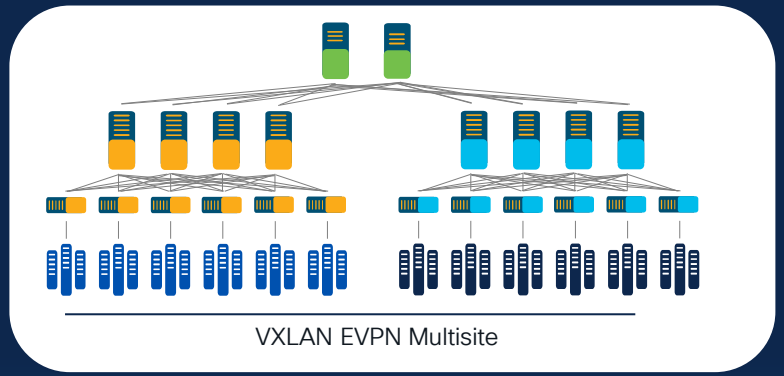
Fabric Builder

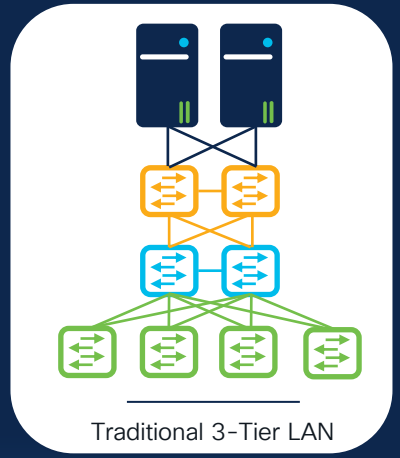
Multi-architecture











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Automate VXLAN EVPN deployments

- Cisco best-practice templates for VXLAN EVPN templates
- Fabric builder
- Support for both brownfield and greenfield deployments

Benefit

Simplify deployment time, reduce chances of error

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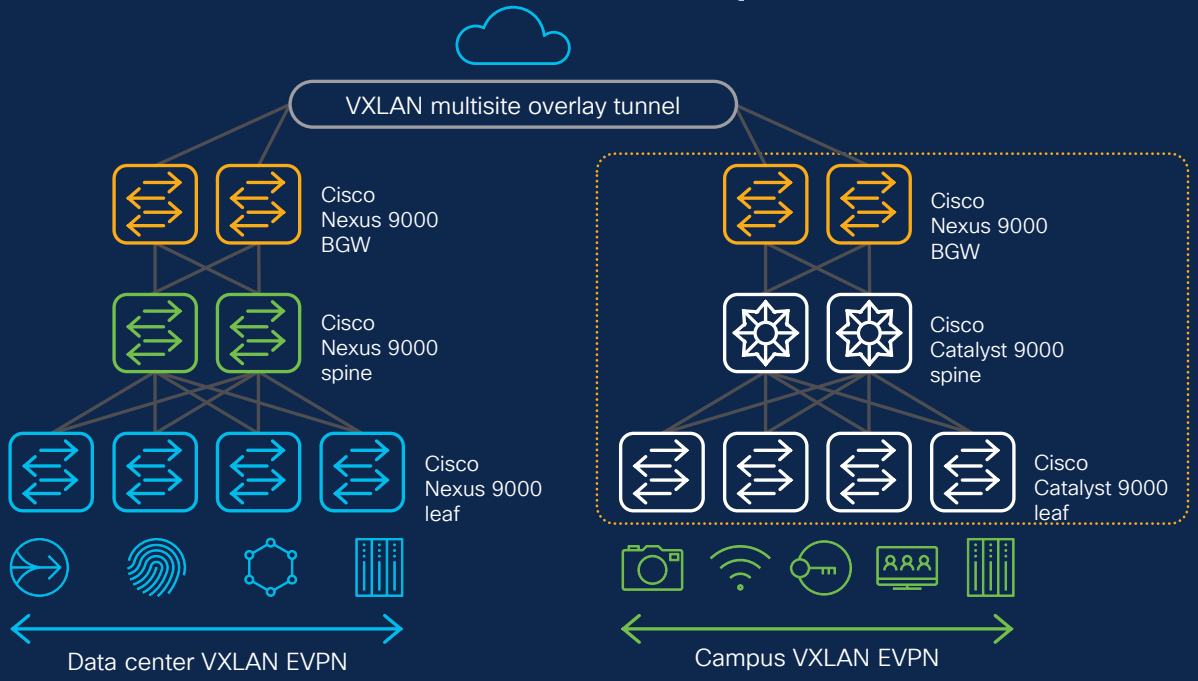
Data center and campus VXLAN EVPN multisite



- Scale out
- Overlay connectivity across sites
- VRF stretch
- L2/L3 network stretch
- Intersite connectivity automation through BGWs
- Overlay BGP EVPN/VXLAN
  - Full mesh
  - Centralized to route-server
  - Cloud

*Cat9K BGWs once available (TBD)

Benefits

Fault containment | Separated admin domains | Unified solution | Network policy consistency | Increased scalability values

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Cisco hybrid cloud automation

Solution overview

Automate connectivity and segmentation, and get full visibility across distributed sites with Cisco Nexus Dashboard Fabric Controller (NDFC)

Benefits

Automated connectivity and routing (L2/L3 stretch)	Consistent security and segmentation	Unified view and management across sites	DCI connectivity health, tunnel path and statistics	Scale out NDFC architecture

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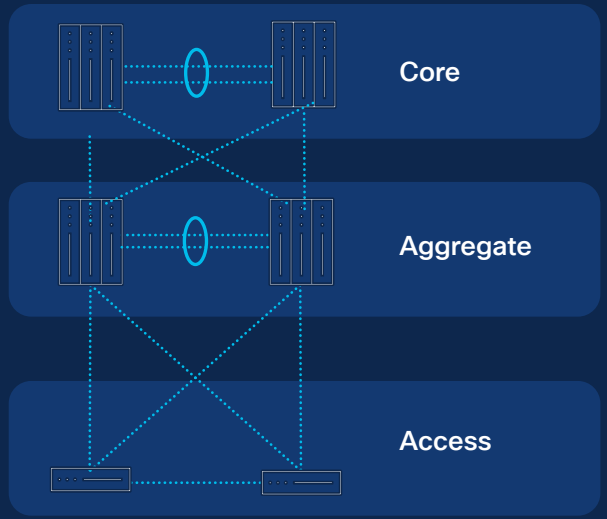
Automate Layer 2 / Layer 3 deployments



- Fully automated fabric – enhanced classic LAN
- Support for greenfield and brownfield deployments
- Provisioning of 3-tier architecture/L2/L3 networks and VRFs
- VRF-lite between aggregate and core

Benefits

Best-practice templates	Simplified workflows	Flexibility based on customer needs

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Increase developer agility with NDFC DevOps

DevOps

RED HAT ANSIBLE

HashiCorp Terraform

REST : API

Utilize GUI or automation through APIs

Integrations with Ansible and Terraform

Benefits

Accelerate deployments | Increase consistency | Minimize risk

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Management

Single point of management for data center operations

Change control management, rollback capability

Optimized for both large deployments and traditional deployment models

Ensure consistency and reliability of data center fabrics

License management

Role-based access control (RBAC) to reduce administrative workflows

Management for non-Nexus platforms

Benefits

Reliability	Compliance	Secure

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Change control management

New user roles

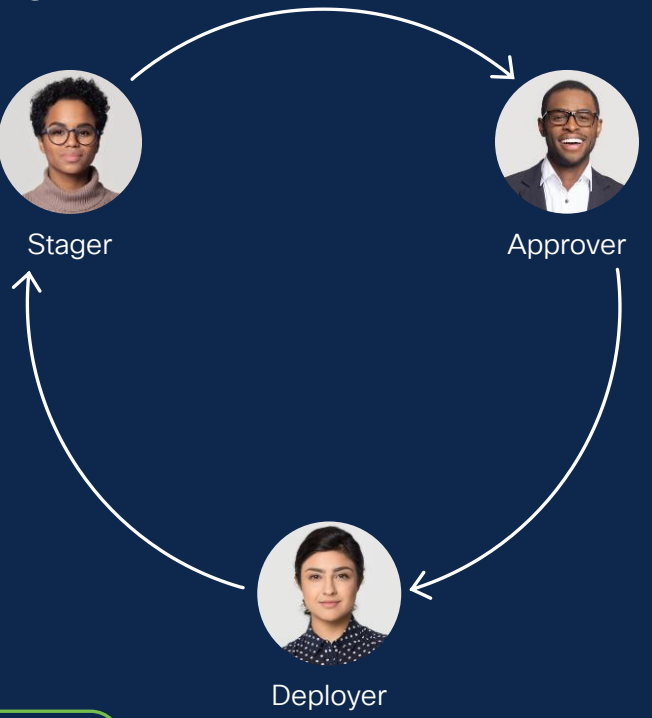
Enhanced RBAC with new roles and distinct user privileges

Guided workflows

Workflows for user changes and approvals prior to deployment

Rollback

Support to rollback changes at a granular level – Pre-deploy rollback and Post-deploy rollback



Benefit

Simplified workflows for change control

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Seamless data center expansion

Data center VXLAN EVPN

500 switches

Fabric discovery

1000 switches

External connectivity

1000 switches

Benefits

Lower operating expenses	Customizable	Secure

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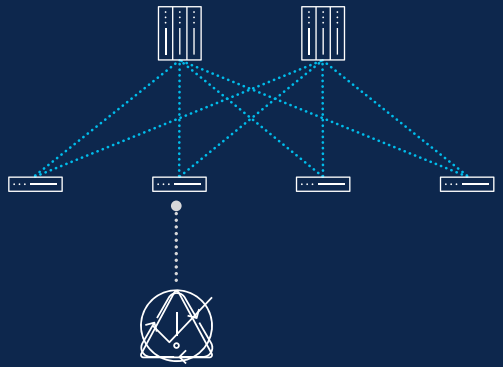
Configuration compliance

Ensure fabric consistency

Continuously monitors if configuration complies with user intent

Error detection, flag drifts for remediation



Benefits

Fabric reliability and visibility

Operations confidence

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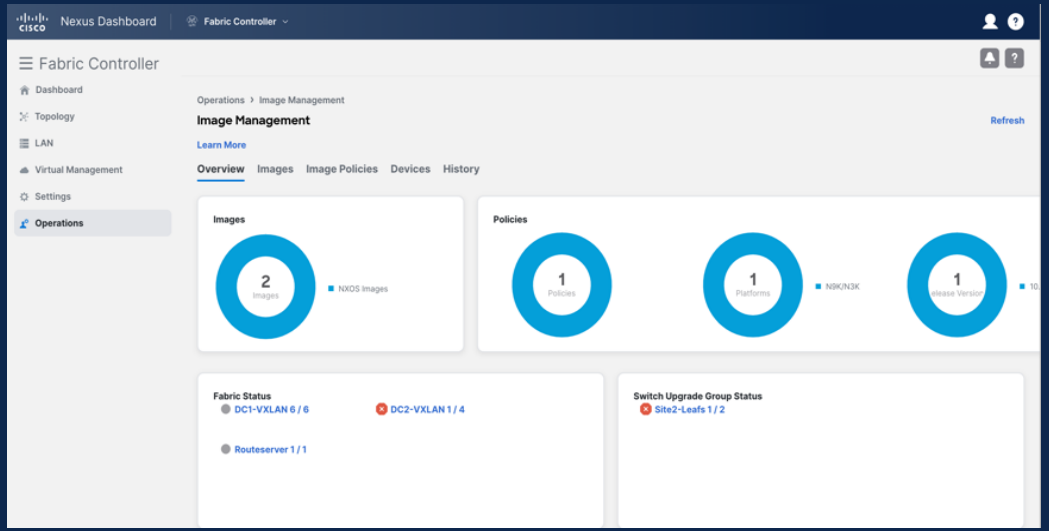
Streamlined image and patch management

Image management dashboard

Guided workflows, switch groups

NX-OS: Image upgrades/downgrades, EPLD upgrades, patch installs, RMA

IOS XE: PnP, SWIM, RMA (Starting NDFC 12.1.3)



Benefits

Simplified | Intuitive | Customizable

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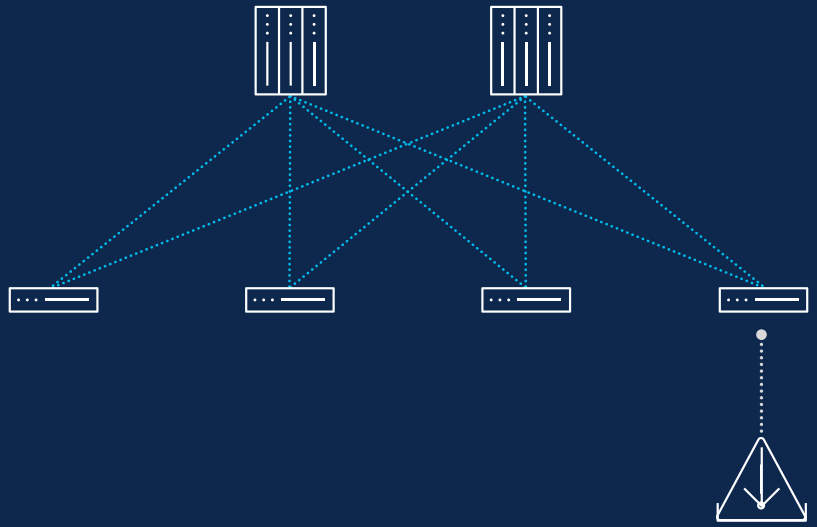
RMA replacement



RMA for defective switch is required

Benefit

Easily perform RMAs from NDFC UI

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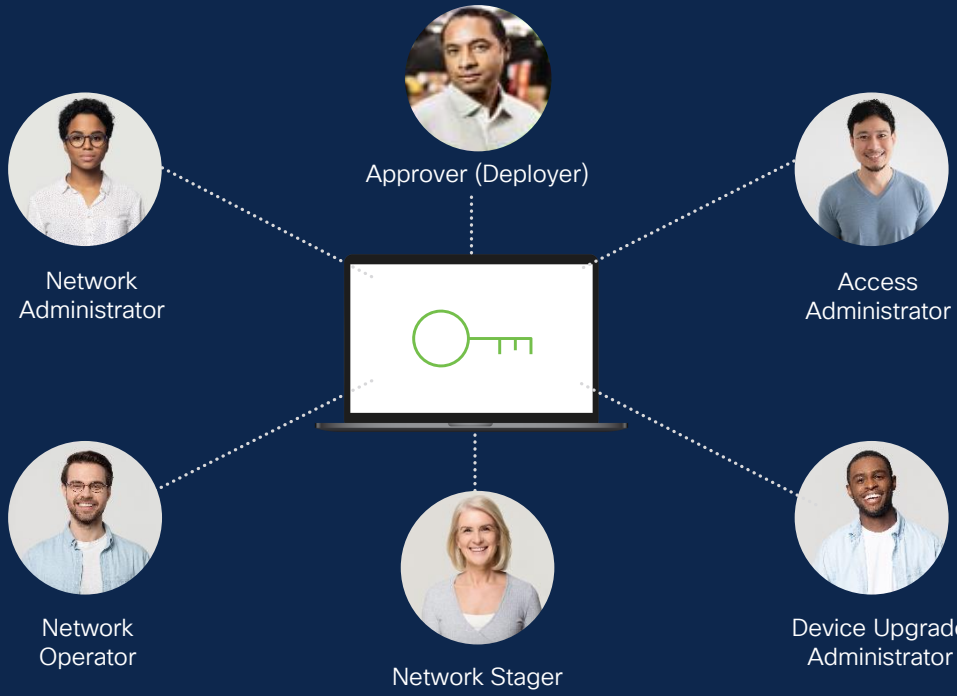
Role-based access control (RBAC)



Benefit

Increase efficiency and productivity with granular roles orchestrated from Cisco Nexus Dashboard

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Management for non-Nexus platforms

Configuration management for
Cisco IOS XR and IOS XE devices

VXLAN EVPN management for
Cisco IOS XE Catalyst devices

ARISTA

Discovery and basic monitoring for
third-party devices

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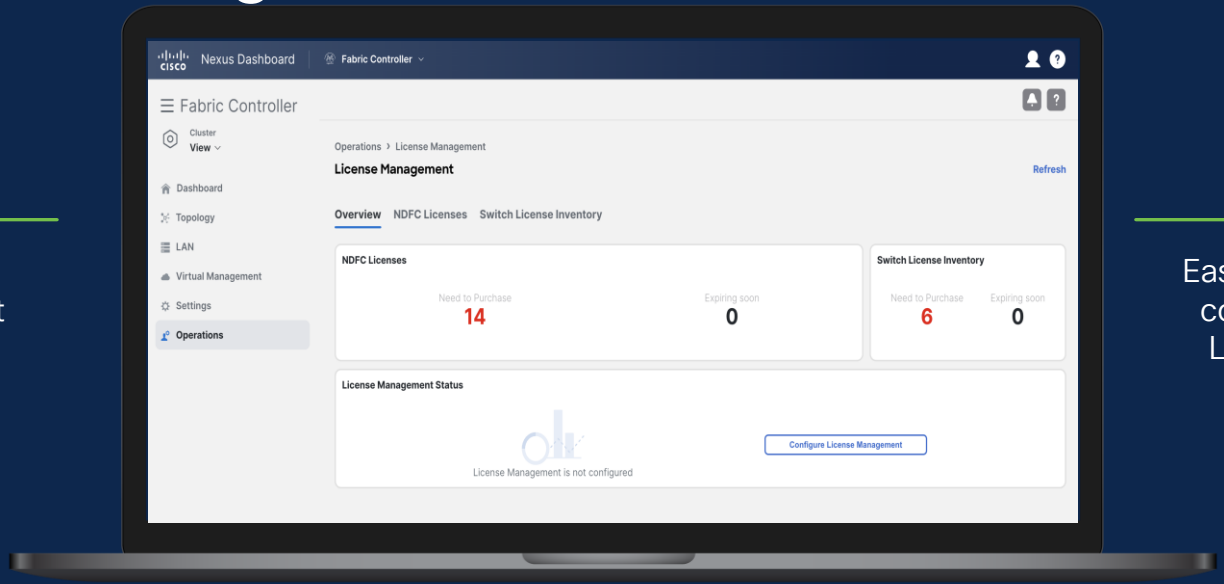
License management

NDFC offers unified license management for NX-OS and MDS deployments



Easily activate and configure Smart Licensing from NDFC UI

Benefits

Easily license your devices | Monitor license usage | Ensure compliance

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Visibility and monitoring

Get comprehensive monitoring

Enhanced topology views

Compute and endpoint visibility

OAM support with NDFC

Obtain detailed inventory, health, resource consumption information on devices

End-to-end visibility, monitoring, and troubleshooting

Integrate with Day-2 operations

Benefits

Intuitive	Deep visibility	Enhanced monitoring

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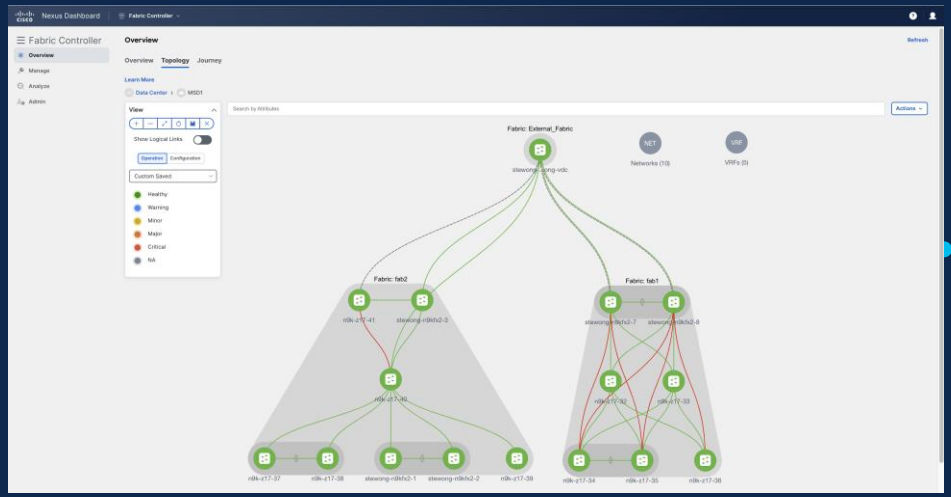
Visualize multiple fabrics with topology views



Benefit

Dynamic and intuitive, superior app experience

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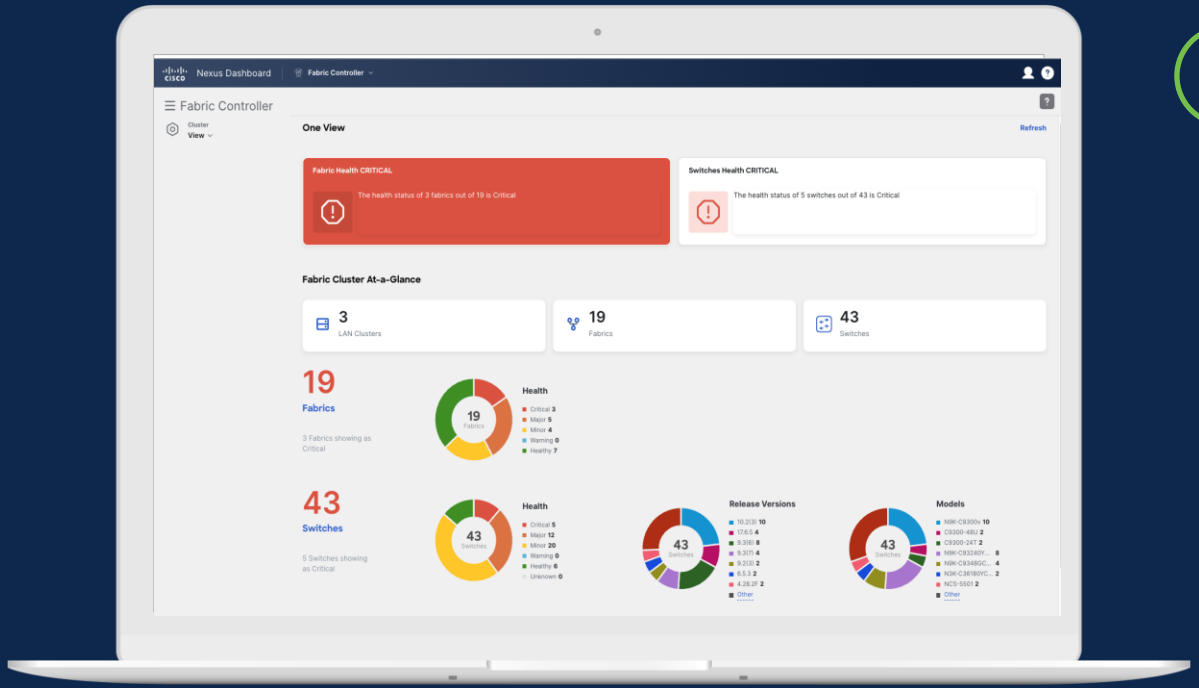
LAN fabrics – One view



Features

One view dashboard for LAN fabrics across NDFC clusters

Summary dashboard – LAN fabrics, switch health, switch release, models

Ability to launch any fabric view from any NDFC instance

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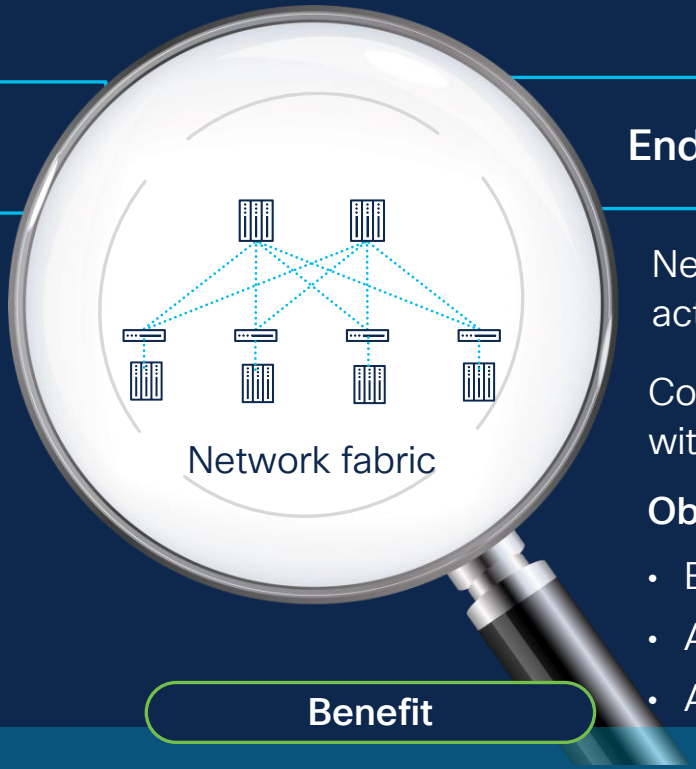
Compute and Endpoint visibility

Dynamic fabric topology views

Visibility from network fabric and infrastructure

Kubernetes and VM-level visibility



Endpoint locator

Near real-time data on active endpoints

Consolidated in single view with endpoint locator dashboard

Obtain information on:

- Endpoint life and history
- Active VRFs
- Active networks

Benefit

Single point of management providing in-depth visibility and information

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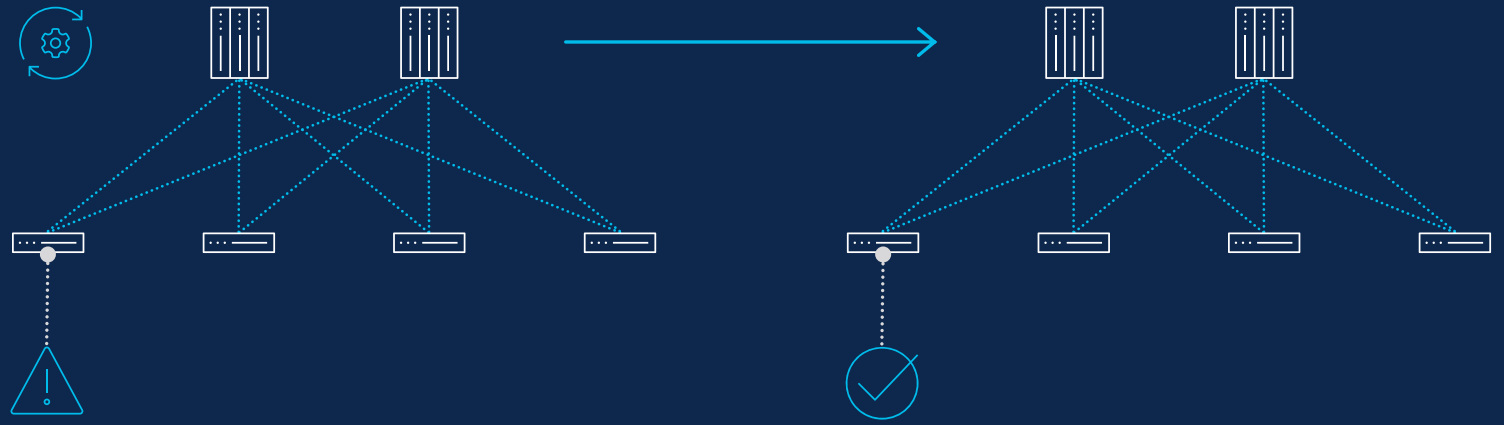
Operations, administration, and maintenance (OAM) with NDFC

NDFC supports OAM for VXLAN, external, and classic **LAN** fabrics



Benefits

Enhanced management

Monitoring and troubleshooting capabilities

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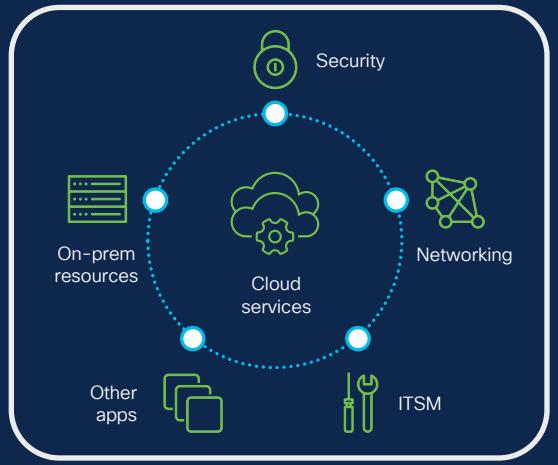
NDFC with Cisco Nexus Dashboard Insights

360-degree visibility



Network, applications, integrations

Analytics

Digitization, telemetry, correlation

Nexus Dashboard

Unprecedented visibility into data center environments

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IP Fabric for Media

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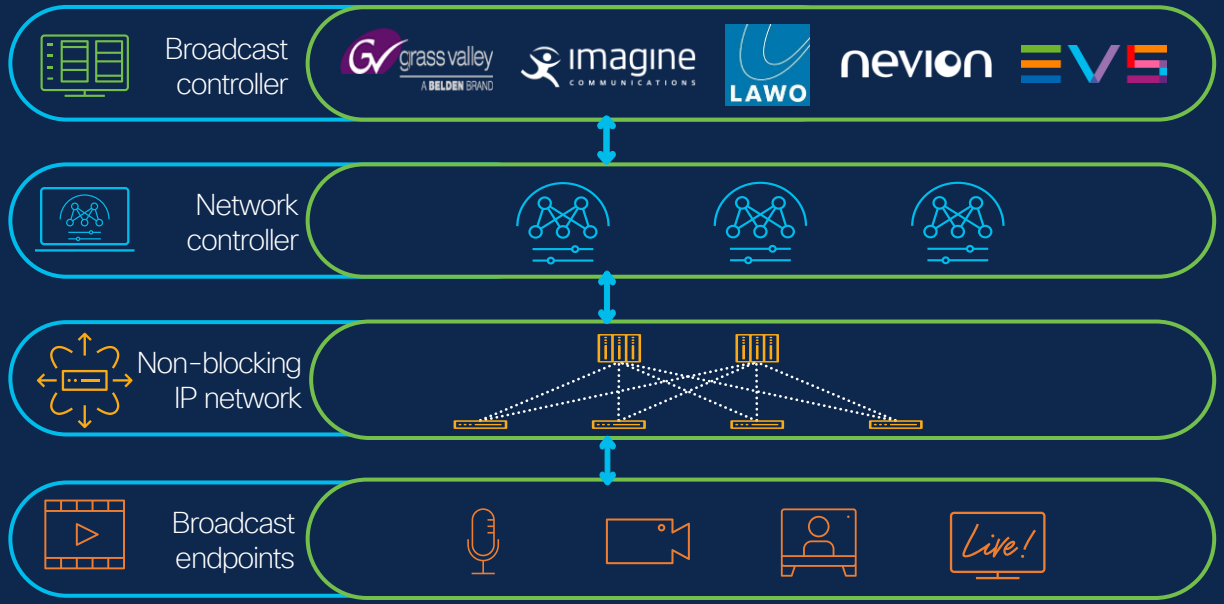
Cisco IP Fabric For Media (IPFM)



Deployment locations

Studio

Stadium

OB van/truck

Benefits

Deterministic and non-blocking IP fabric	Highly scalable multicast and PTP timing	Highly secure admission control and policing	Turnkey automation and deep visibility with NDFC

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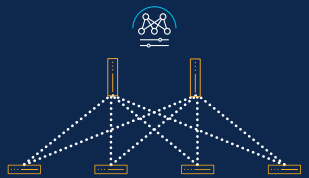
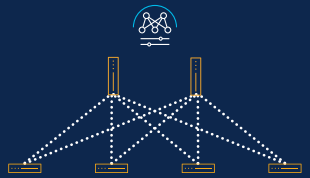
IPFM deployment use cases

Studio (multiple rooms)



Spine-leaf

Entertainment venue



Spine-leaf

OB van/truck

Single modular switch

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IPFM key features

- Scaled deployments with 120 switches per fabric
- IPFM dashboard new look and feel
  Easy fabric provisioning
- Per fabric RBAC
- End-to-end host and flow visibility
- Backup and restore
- PTP and RTP flow monitoring at scale
- Multitenancy and multicast NAT
- Kafka notifications for real-time events

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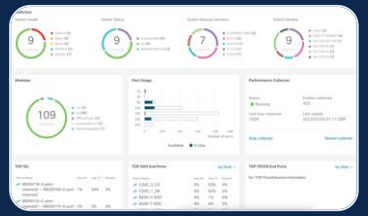
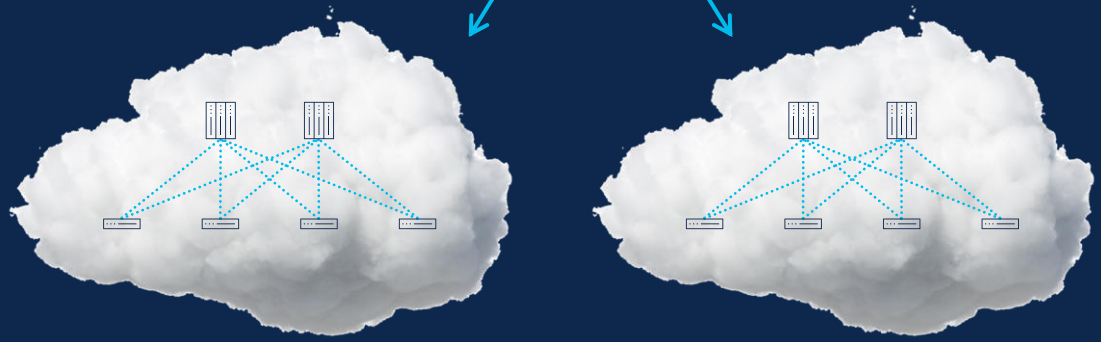
SAN Controller

NDFC provisions and monitors storage area networks

Manages and monitors Cisco MDS and Nexus switching and integrates with Cisco UCS



Single dashboard for day-to-day SAN management and SAN Analytics



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SAN Controller key features

Dashboard to help summarize current state across all fabrics

SAN Insights—visualizes fully integrated SAN Analytics data

SAN performance trending with vCenter integration

SAN Insights shows end-to-end path from source to LUN

Modular software platform with true high availability architecture

SAN Insights supports both SCSI and NVMe FC flows

Zoning, event policy, event management, FCIP configuration

Backup and restore

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SAN Controller visibility and analytics with SAN Insights

Host and flow path visualization

NDFC provides a view of the discovered hosts and end-to-end flows

Path from source to destination shown in physical topology

Provides information to show the congestion points in the path

Auto learning

NDFC aggregates hundreds of thousands of auto learned FC flows

No need to program source and destination information or protocol type

Integrates slow drain metrics from end to end

Benefits

High level of network visibility for diagnostics

Monitoring and management of SAN networks

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Licensing

Easily license your NDFC

Software included with switch subscription licenses

NDFC 12.0 is transitioning to a Smart Licensing-only release

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NDFC summary and benefits

NDFC solution benefits

Get streamlined lifecycle management

Automate and configure your networks with ease

Maintain compliance and detect errors

Extensive visibility, monitoring, and modernized topology views

Expand your network with integrations from NDI

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