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Cisco Nexus One Fabric Experience

One Fabric experience for Cisco's Data Center architecture options

Meet your data center business goals with Cisco Nexus® Dashboard acting as a single point of control and operations, providing a consistent fabric experience across multiple data center fabric architectural design choices offered with Cisco® NX-OS and Cisco Application Centric Infrastructure (Cisco ACI®).

Overview

Customers today are inundated with the complexities of managing disparate data center networks architectures with poor operational experience and facing productivity declines thus resulting in increased total cost of ownership. Managing multiple fabric types requires often multiple management tools, and communicating between fabrics opens the environment to vulnerabilities. Customers are looking for a consistent and cohesive experience when it comes to managing and operating these data center networks. They crave simplicity amid this complexity and seek greater data center security —a single touch point that streamlines provisioning, offers in-depth visibility, performs reactive and proactive diagnostics, and delivers robust automation capabilities and reduced attack surface across the perimeter of the data center.

What is One Fabric experience?

One Fabric provides consistent user experience to deliver data center use cases across different fabric technologies. End-to-end segmentation across Cisco ACI and NX-OS is achieved with common policy facilitated by Cisco Nexus Dashboard, which centralizes operations across both fabrics.

Cisco Nexus Dashboard is a one-stop shop for all your data center network control and operations. Whether you are deploying network overlays (Cisco ACI or Cisco NX-OS Virtual Extensible LAN Ethernet VPN [VXLAN EVPN]), or spine-leaf routed fabric, or a three-tiered network.Cisco Nexus Dashboard provides a consistent experience to deploy, operate, and troubleshoot data center networks at scale.

Benefits

- Enhance productivity and reduce training cost with Cisco Nexus Dashboard's consistent fabric experience.

- Deliver unparalleled security with end-to-end micro-segmentation and L4–L7 service chaining across different data center network fabrics.

- Flexible fabric options to choose from depending on technical requirements to drive business outcomes.

- Reduce Mean-Time-to-Repair and Mean-Time-to-Innocence with advanced diagnostics tools that span multiple data center networks with different architectures.

- Avoid network downtime with AI/ML–powered proactive and predictive algorithms in Nexus Dashboard.

Trends and challenges

Data is the new gold. Data is consumed by consumers through a variety of applications. The digital era and modern applications produce vast amounts of data, necessitating efficient management through data centers to optimize operations, glean insights, and enhance overall efficiency. To support the explosion of data and to provide premium application experience, data centers are moving closer to the source of the data and closer to the applications consuming the data. These macro changes are resulting in different types of data center network architectures with different sizes, catering to different business outcomes across multiple locations that often span the entire globe. Deploying and operating these disparate network architectures with differing capabilities can be complex. Existing products are unable to:

- Provide consistent user experience to deploy, operate, and troubleshoot different fabric architectures.

- Deliver uniform and predictable automation for cloudlike operational model for all fabrics.

- Implement seamless end-to-end policy, micro-segmentation, service chaining, and inter-operability.

- Troubleshoot across multiple fabrics and multiple sites.

- Bring power of data with predictive diagnostics to avoid unexpected downtime.

The result: Network administrators and operators are drowned with mundane tasks, leaving them with limited capacity to innovate faster to enable lines of business, higher time to value, and overall increased total cost of ownership.

How it works

The Cisco Data Center One Fabric experience comprises two solution elements:

1. Nexus Dashboard, a single touch point that streamlines provisioning, offers unparalleled visibility, enables advanced troubleshooting, and delivers robust automation capabilities (single point of control and operations)

2. Industry's widely deployed Nexus 9000 series switches that can be deployed in:

   a. Cisco ACI either in multi-pod or multi-site or remote-leaf models

   b. Cisco NX-OS either in VXLAN EVPN or L3 routed access or access-aggregation-core three-tier models

Cisco ACI has pioneered policy for security and advanced service chaining use cases with Endpoint Group/Endpoint Security Group

(EPG/ESG) constructs and with VXLAN technology under the hood. By incorporating IETF standards-based VXLAN EVPN Border Gateway, ACI continues to expand its open architecture capabilities and enables VXLAN EVPN inter-op with policy aware and policy unaware non-ACI fabrics.

Cisco NX-OS has delivered innovative features in VXLAN EVPN over the years and has transformed the VXLAN landscape and adoption. By implementing security groups based on IETF standards (Group-Policy-Object draft), NX-OS brings ACI ESG-like capabilities into VXLAN EVPN that can be deployed optionally.

With ACI VXLAN Border Gateway (BGW) and NX-OS security groups coming together, sophisticated end-to-end policy can be implemented on top of VXLAN EVPN inter-op between ACI and NX-OS.

Whether you are implementing ACI or NX-OS VXLAN EVPN or both, Cisco Nexus Dashboard provides the single point of control and operations for all the data center fabrics including policy implementation and multi-fabric interconnectivity in a consistent way. Nexus Dashboard becomes the single pane of glass to deploy, operate, troubleshoot, and automate all fabric architectures built with Cisco Nexus switch platforms.

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Use Cisco Lifecycle Services to Boost Cisco Nexus Deployment Success

Cisco Services has helped companies implement the Cisco Nexus switches in thousands of locations globally. We help you succeed across the various phases of your network and IT lifecycle, combining services from Cisco and our partners and providing on-site support if you need it.

In planning, we help you assess existing infrastructure, identify gaps and end-state goals, and develop a deployment plan. In the build phase, we help you design and deploy your Cisco Nexus installation and integrate your solution with existing systems. Then we'll help you manage the deployment, through network optimization and operational efficiency.

Table 1.   Use Cases

Industry name	Use case description
Enterprise	• End-to-end security policy • Reduce complexity of managing operations • Single point of control and operations
Commercial/ Small-Medium-Business	• Flexibility to choose fabric architectures depending on data center needs. • Consistent automation and management experience
Public Sector	• Architecture and automation options for air-gap networks • End-to-end security at all layers
Service Provider/Telco DC	• Flexibility to choose fabric architectures depending on scale and data center location • Multiple data center to transport hand-off options. • End-to-end security policy
Web companies	• Highly scalable, yet simple routed access fabric architecture • Dev-ops friendly, enable infrastructure-as-code operational model

ACI expands its open architecture.

"ACI VXLAN EVPN BGW enables VXLAN EVPN inter-op with policy aware and policy unaware non-ACI fabrics."

NX-OS brings policy into its VXLAN EVPN solution.

"NX-OS brings security groups into its VXLAN EVPN architecture that can be deployed optionally to implement policy."

Nexus Dashboard is the single point of control and operations.

Cisco Nexus Dashboard becomes the single point of control and operations for all the data center fabrics including policy implementation and multi-fabric interconnectivity in a consistent way.

"We can move quicker as business and deliver new services faster, because we have faith in that infrastructure. It allows us to test a lot of our services and deliver our internal applications quicker."

Source: Nexus Dashboard IDC Business Value Study

"NX-OS is very mature, it offers high availability features like stateful switchover, and it has open APIs that make it easy to integrate with tools like Ansible and Python," Ghayas says. "We used those tools to automate the entire fabric rollout for each data center."

Source: Workday case study

"Together with Cisco, we've established end-to-end service automation and orchestration. In this way, we provide our customers with the most innovative services in the shortest time via a solid and secure data center infrastructure," says Durmus.

Source: Turkcell case study

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Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. **Learn more**.

Customer case studies

Cisco customers are realizing significant value by leveraging Cisco Nexus Dashboard services to support their network management operations. These benefits would result in a three-year ROI of 350%, 33% less time in keeping the lights on, 27% more efficient troubleshooting teams, 52% more efficient help desk operations among other significant TCO and ROI business value findings based on an **independent study** conducted by IDC.
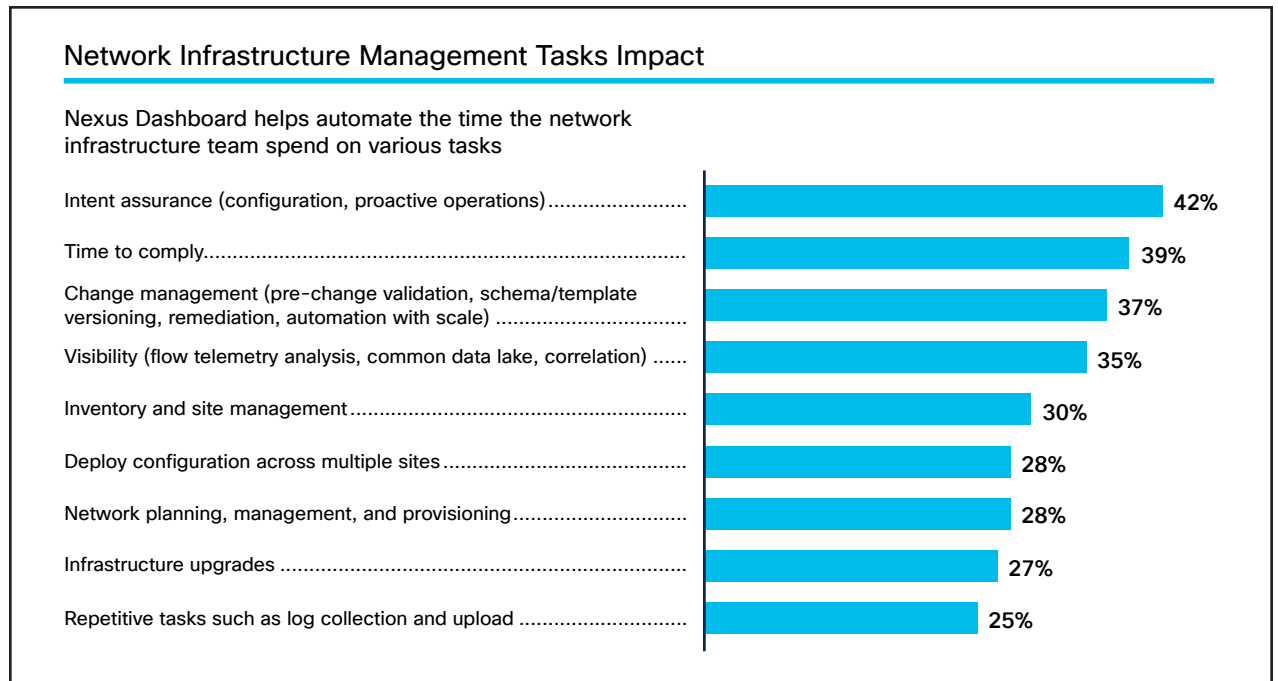
Network Infrastructure Management Tasks Impact

Nexus Dashboard helps automate the time the network infrastructure team spend on various tasks

Task	%
Intent assurance (configuration, proactive operations)	42%
Time to comply	39%
Change management (pre-change validation, schema/template versioning, remediation, automation with scale)	37%
Visibility (flow telemetry analysis, common data lake, correlation)	35%
Inventory and site management	30%
Deploy configuration across multiple sites	28%
Network planning, management, and provisioning	28%
Infrastructure upgrades	27%
Repetitive tasks such as log collection and upload	25%

Figure 1.   Nexus Dashboard IDC study

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The Cisco Advantage

Software-Defined Networking (SDN) is at the heart of the network's transformation to the Digital Age. Cisco is a leader in providing SDN solutions and has the industry's broadest ecosystem, with more than 300 development partners. Piecemeal, non-integrated solutions defeat the objective of end-to-end control, and only Cisco with its One Fabric experience and partner ecosystem can help you build a data center that serves for all your needs from a single pane of glass. All while preparing for the security vulnerabilities that arise with the multitude of workloads running in the data center. One Fabric brings the same simplified fabric experience for your brownfield and greenfield data centers, thus offering investment protection.

Start simplifying your data center operations today with Cisco Nexus Dashboard.

Are you deploying your data center networks manually? Are you operating and troubleshooting with CLI or ad-hoc scripts? Dramatically reduce your time to deploy and automate your operations and troubleshooting with Cisco Nexus Dashboard. Access to Nexus Dashboard is built into every Nexus Essentials, Advantage, and Premier license. For additional information, visit **https://www.cisco.com/go/nexusdashboard**, then contact your Cisco Services sales representative or Cisco authorized channel partner.