



Cisco Nexus One Fabric Experience



Nexus one for Cisco's Data Center architecture options

Meet your data center networking business goals with Cisco Nexus one fabric solution, providing a consistent fabric outcomes across data center fabric architectural design choices offered with Cisco Nexus 9000 switches.

Overview

Over the past decade, the rapid proliferation of applications serving both consumers and businesses has driven the generation of vast amounts of data and the development of diverse data center architectures. These architectures are designed to enable agile application innovation at scale without compromising security. To support global application demands, data centers now vary in size, capabilities, and geographic distribution. While Software Defined Networking (SDN) has effectively addressed many application needs, its disparate implementations have introduced long-term operational challenges, including declining productivity and increasing total cost of ownership.

In this evolving landscape, customers are increasingly seeking open standards-based solutions that provide a consistent and cohesive experience for managing and operating data center networks. They prioritize simplicity in the face of complexity and demand enhanced security. Customers seek a unified solution that streamlines provisioning, offers comprehensive visibility, enables proactive and reactive diagnostics, delivers robust automation, and minimizes the attack surface across data center perimeters.

Benefits

Reduce TCO

- **Automation and Orchestration:** Cisco Nexus one integrates automation tools that simplify network operations, reducing manual intervention and operational complexity. This leads to significant savings in operational expenses.
- **Unified Management:** Nexus Dashboard provides a centralized point for managing network operations, which reduces the need for multiple management tools and streamlines processes, thereby lowering costs associated with network management.

Increase ROI

- **Efficient Resource Utilization:** By automating network services and utilizing a software-defined networking policy model, Nexus one enhances resource utilization, which accelerates data center application deployments and increases ROI.
- **Improved Operational Efficiency:** Nexus Dashboard's capabilities in reducing troubleshooting time and enhancing help desk operations contribute to a three-year ROI of 350%, as demonstrated in the publicly available IDC TCO/ROI study.

Enhancing Operational Simplicity

- **Simplified Network Architecture:** Nexus one's integration of NX-OS VXLAN and Cisco ACI with a common policy across fabrics simplifies the network architecture, making it easier to manage and operate.
- **Proactive Management:** The use of AI/ML-powered algorithms in Nexus Dashboard helps in proactive network management, reducing downtime and improving operational efficiency.
- **Security and Automation:** Unparalleled security with end-to-end micro-segmentation and service chaining, across flexible fabric options to meet diverse business needs.

What is Nexus One?

Cisco Nexus one is the next generation software defined networking solution that converges Cisco NX-OS VXLAN EVPN and Cisco ACI fabrics based on open standards, providing a consistent user experience via Cisco Nexus Dashboard to deliver data center use cases across these two fabric technologies. Nexus One converges VXLAN EVPN and ACI by implementing a unified data plane, unified control plane, unified policy plane and a unified management plane. With Nexus one, customers can implement data center networks with network-wide micro-segmentation policies, insert L4-L7 services in a single or multi-site environment, seamlessly interoperate with brownfield VXLAN EVPN, brownfield ACI, enterprise campus networks and public cloud deployments. With Nexus one and with Nexus one's unified and open architecture, customers will be able to innovate faster to enable business, lower time to value, and reduce total cost of ownership.

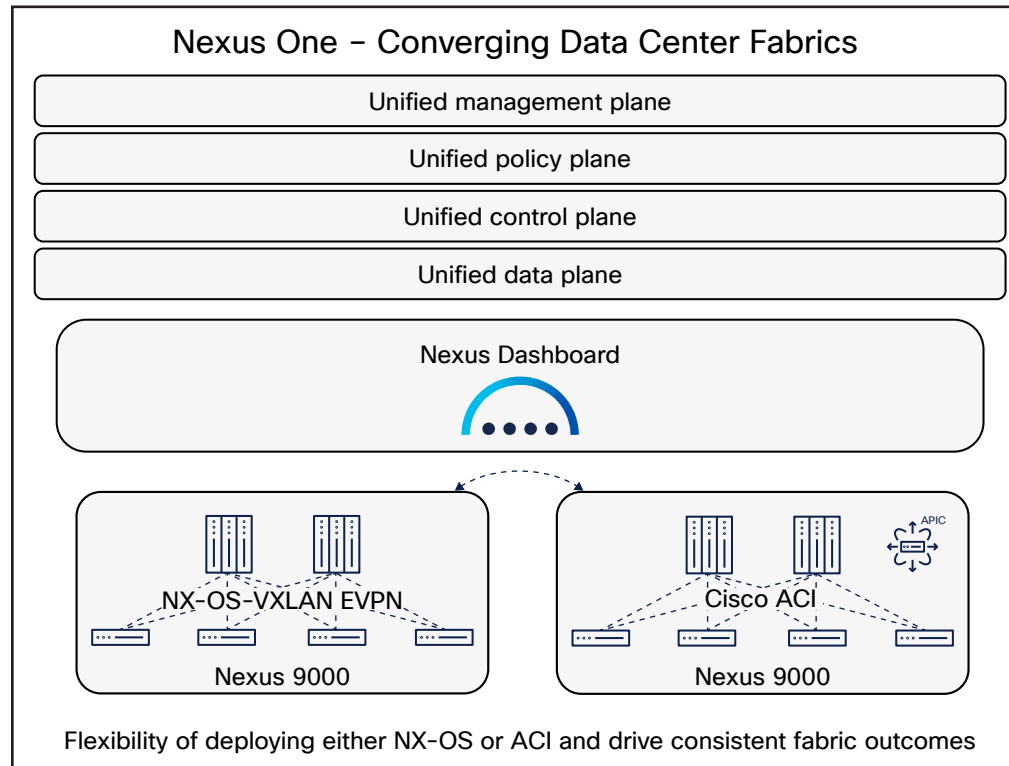


Figure 1. Nexus One - Converging Data Center Fabrics

How it works

The Cisco Data Center Networking's Nexus one solution comprises two solution elements:

1. Industry's widely deployed Cisco 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

2. Cisco 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).

Cisco has consistently demonstrated a commitment to pioneering groundbreaking networking solutions and advancing innovation through open standards. Cisco NX-OS has played a pivotal role in shaping the VXLAN EVPN landscape, delivering innovative features over the years. By leveraging open standards-based innovation, Cisco NX-OS has transformed how VXLAN technology is utilized in modern data center architectures. Similarly, Cisco Application Centric Infrastructure (ACI) has been a trailblazer in introducing policy-driven security and advanced service chaining use cases with Endpoint Group (EPG) and Endpoint Security Group (ESG) constructs and harnessing VXLAN technology under the hood. As Cisco has done with many innovations, Cisco has contributed ACI innovations to the industry via IETF standards. And these standards are developed on top of the existing VXLAN EVPN standards for investment protection and backward compatibility.

With Cisco Nexus One solution initiative, NX-OS, ACI and Nexus Dashboard are enhanced to implement the additional standards to provide that consistent fabric experience to Nexus customers. To elaborate more in detail, NX-OS implemented ACI's ESG-like policy-based segmentation capabilities based on the new IETF specifications (Group-Policy-Object draft). Additionally, Cisco ACI continues to expand its open architecture by integrating IETF standards-based VXLAN EVPN Border Gateway functionality with ability to extend policy. This innovation allows seamless interoperability of VXLAN EVPN with both policy-aware and policy-unaware non-ACI fabrics, reinforcing Cisco's commitment to open standards and interoperability.

Cisco Nexus One extends its capabilities with the Cisco Nexus Dashboard, a unified platform that serves as the single point of control and operations for all data center fabrics. Whether deploying Cisco ACI or NX-OS VXLAN EVPN, Nexus Dashboard provides a consistent approach to policy implementation and multi-fabric interconnectivity. Acting as a single pane of glass, it simplifies the deployment, operations, troubleshooting, and automation of fabric architectures built with Cisco Nexus switch platforms. This powerful tool ensures seamless management and operational efficiency across diverse data center environments, reinforcing Cisco's leadership in delivering comprehensive networking solutions.

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.

Use cases

Table 1. Use cases

| Industry name | Use case description |
|--------------------------------------|--|
| Enterprise | <ul style="list-style-type: none">▪ End-to-end security policy▪ Reduce complexity of managing operations▪ Single point of control and operations |
| Commercial/ Small-Medium-Business | <ul style="list-style-type: none">▪ Flexibility to choose fabric architectures depending on data center needs.▪ Consistent automation and management experience |
| Public Sector | <ul style="list-style-type: none">▪ Architecture and automation options for air-gap networks▪ End-to-end security at all layers with granular control▪ Service redirection of selective traffic to firewalls |
| Service Provider/Telco DC | <ul style="list-style-type: none">▪ 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 | <ul style="list-style-type: none">▪ Highly scalable, yet simple routed access fabric architecture▪ Dev-ops friendly, enable infrastructure-as-code operational model |
| M&A | <ul style="list-style-type: none">▪ Seamless interoperability between ACI and NX-OS▪ End to end policy extension across fabrics▪ Highly scalable VXLAN fabrics post acquisition▪ Single point of control and automation |
| Healthcare | <ul style="list-style-type: none">▪ Granular control over large number of end points▪ Flexibility to control traffic coming from end points in the Campus▪ Consistent automation and management experience |

Customer testimonials

Security is of utmost importance to us and VXLAN GPO will give us the freedom to granularly segment our east west traffic at scale. We are excited to deploy the functionality within our data center.

- Lead Architect, top European University

Having a VXLAN gateway on ACI is a good move. Offers a choice of operating model and allows for more design patterns – like aggregated fabrics. Additionally, providing transition/migration options.

- CTO, leading telecommunications provider

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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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.](#)

The Cisco Advantage

Why Cisco

- **Consistent Fabric Experience:** Nexus One provides a cohesive and consistent fabric experience, addressing the complexities of managing disparate data center networks.
- **Security:** With Nexus One, you can enhance protection against vulnerabilities by securing both east-west and north-south traffic in data centers, while delivering a simplified fabric experience for brownfield and greenfield environments, thus offering investment protection.
- **Unified Management:** Cisco Nexus Dashboard acts as a single point of control, with single install, consolidating all the previous services, streamlining operations and enhancing security across multiple fabric architectures with Nexus One.
- **Commitment to Open Standards:** Cisco has been at the forefront of Data Center innovations while heavily investing in making them available based on open standards. With Nexus One, you can take advantage of end to end policy enforcement and unified management based on open standards.

Start building heterogenous fabrics
(consisting of both NX-OS VXLAN EVPN and Cisco ACI) seamlessly

Are you managing separate NX-OS VXLAN EVPN and Cisco ACI fabrics manually? Are you facing challenges in integrating policy and troubleshooting across diverse architectures? Dramatically reduce your time to deploy and automate your operations and troubleshooting for heterogenous fabrics with Cisco Nexus Dashboard.