



# Cisco Nexus One



## Unifying data center operations with open choice and no compromises

Data center architectures have evolved rapidly over the last decade. As applications proliferate and AI workloads demand unprecedented scale, infrastructure has become increasingly fragmented. Organizations often find themselves managing disparate fabrics, struggling with complex operations, and facing security vulnerabilities across expanded perimeters.

While Software Defined Networking (SDN) solved initial connectivity challenges, it often introduced operational silos. Today's IT leaders need more than just connectivity; they need a unified, flexible operating model that simplifies scale and security.

### Enter Nexus One

Nexus One represents a paradigm shift—an open, unified networking platform that integrates silicon, systems, software, and a single operating model. Designed to adapt to customers' unique needs and stages of network transformation, Nexus One provides flexibility and interoperability across the stack, while maintaining operational consistency across the network. The philosophy is simple: Open Choice. No Compromises. Whether you are building massive AI clusters or enterprise clouds, Nexus One provides the consistency and performance you need.

Here is how Cisco Nexus One transforms data center infrastructure, structured by its core architectural layers

### The operating model: Unity across environments

At the top of the Nexus One framework lies the Operating Model. This layer is designed to orchestrate across multiple sites and fabrics, streamlining how you scale and operate networks. The goal is to deliver a consistent experience, regardless of where your workloads live. Nexus One provides consistent networking across on-premises, sovereign cloud, underlay, overlay, and Kubernetes environments. With Cisco Isovalent, you also gain deep visibility into service IPs and traffic patterns, eliminating operational blind spots.

#### On-Premises with Nexus Dashboard

For organizations managing on-premises data centers, the Cisco Nexus Dashboard serves as the single point of control for provisioning, visibility, troubleshooting, and automation.

- **Unified Management:** It offers unified operations across NX-OS VXLAN EVPN and Cisco ACI fabrics.
- **Deep Observability:** With native Splunk integration, you get unified analytics and federated search across network telemetry and the Nexus Dashboard Data Lake without any requirement for data duplication. This helps maintain data sovereignty, cut operational costs, and speed up anomaly detection and root cause analysis.
- **Agentic Automation:** The platform features **AgenticOps**, which uses reasoning agents to resolve multi-domain issues and validate changes under human guardrails.



## Systems and software: A universal platform

At the heart of the Nexus One framework lies a transformative layer of hardware and software that powers your network with unmatched agility and intelligence. Experience complete flexibility with Nexus One, empowering you to tailor your infrastructure and operating models precisely to your unique business requirements. Whether you prioritize scalability, performance, or operational simplicity, Nexus One provides the freedom to innovate without compromise.

### Systems

- **Massive AI Scale-Out fabric:** Support 1M+ GPU clusters with G300, providing ultra-high-bandwidth, scale-out fabrics for sustained, bursty AI workloads with higher cluster level performance and utilization than prior generations. Performance isn't just bandwidth—it's what the network does with every packet.
- **Distributed AI Performance for Scale-Across:** Silicon One P200 ASIC brings quantum threat-resilient line-rate encryption and industry-leading deep buffers—optimized for universal spine use cases in distributed and multi-cloud environments.
- This architecture enables organizations to deploy AI workloads across geographic regions, sovereign clouds, or multiple data center sites while maintaining the performance characteristics of a single, unified infrastructure.
- **Programmable Silicon One Foundation:** Highly programmable, field-upgradable for new features for adaptive future-proofed Intelligent networks.

### Cisco N9000 systems

The foundation of this layer is the Cisco N9000 series switches. These switches act as a universal platform capable of running different operating systems.

- **New Innovations:** The newly introduced **Cisco N9364-SG3** systems are purpose-built for AI scale. Featuring 1.6T-capable ports and direct-to-chip liquid cooling options, they deliver wire-speed performance and massive throughput (102.4 Tbps) needed for GPU clusters.
- **Sustainability:** New systems support Linear Pluggable Optics (LPO), which can lower switch power consumption by up to 30%.

### Choice of operating system

True to the promise of “Open Choice,” Nexus One does not lock you into a single environment. You can run:

- **Cisco NX-OS:** For traditional, highly scalable open standards based VXLAN EVPN fabrics.
- **Cisco ACI:** For API-driven, automated fabrics.
- **SONiC:** For customers who prefer an open-source containerized operating system.

By supporting these diverse OS options on common hardware, Cisco ensures investment protection. You can pivot your software strategy without overhauling your hardware.



## Silicon: The foundation of performance

Custom silicon is the cornerstone of Cisco's competitive edge, driving unmatched innovation and differentiation. It enables groundbreaking advancements such as flexible forwarding tiles, intelligent buffering, and advanced load-balancing capabilities, setting Cisco apart in the industry. Custom silicon embodies seamless integration across hardware and software.

### Cisco Silicon One

Cisco's proprietary **Silicon One** architecture powers the latest Nexus switches, offering industry-leading efficiency and scale.

- **G300 Series:** Designed for massive AI scale-out fabrics, supporting clusters of over 1 million GPUs. It features large, shared buffers to absorb the microbursts typical of AI training traffic.
- **P200 Series:** Built for distributed performance, ideal for connecting training sites across vast distances.

### NVIDIA Spectrum-X Ethernet switch silicon

Recognizing the diverse needs of modern data centers, Nexus One also embraces open ecosystem partnerships, including new Nexus switching platforms such as the Cisco N9100 series switches, that are NVIDIA Cloud Partner (NCP) reference architecture compliant, powered by NVIDIA Spectrum-X Ethernet Switch silicon. This flexibility ensures that customers can choose the technologies that best fits their specific workload requirements.

### Cisco Cloud Scale

Cisco Cloud Scale ASIC is designed for high-density leaf-and-spine data center networks, prioritizing wire-rate telemetry, security, and flexible port speeds.

## The pillars: Observability and security

Observability and security are critical pillars in data center networking, enabling organizations to manage complex, high-performance infrastructures effectively.

- **Unmatched Observability:** Effective management begins with comprehensive visibility. Cisco Nexus One delivers real-time, end-to-end visibility spanning from the network port to the GPU. This unparalleled observability enables IT teams to monitor traffic patterns meticulously, detect anomalies promptly, and proactively troubleshoot issues before they impact operations. By providing deep insights into every aspect of the network fabric, Nexus One empowers organizations to optimize performance, enhance security, and maintain operational continuity with confidence.
- **Enhancing AI Job Observability:** Cisco Nexus One delivers end-to-end observability from AI jobs to network fabric and hardware telemetry, including GPU and optics health metrics. This unified visibility, combined with AI-driven assurance and automation, empowers IT teams to optimize AI workload performance, troubleshoot issues proactively, and maximize resource utilization.
- **AgenticOps:** Traditional network operations models can't keep pace with the scale and complexity of managing AI infrastructure. The next step is true autonomous, intelligent network operations. With AgenticOps for data center networking through AI Canvas, teams get the ability to troubleshoot, gain insights, configure, and optimize enterprise infrastructure, including AI fabrics, through guided, human-in-the-loop conversations.
- **Splunk Integration:** Because Cisco owns both the network and the operational telemetry layer through Splunk, we deliver true end-to-end Time to Remediation (TTR) across your entire infrastructure stack. Whether it's application behavior, network conditions, or security signals, issues are detected, correlated, and resolved faster—reducing downtime and protecting your business outcomes.

## Security without compromise

Security is a foundational element of modern data center networking, not an afterthought. Cisco Nexus One exemplifies this principle by embedding security deeply within its architecture to reduce the attack surface across the entire data center perimeter. Leveraging hardware-accelerated enforcement and distributed protections at the workload level, Nexus One delivers robust, scalable defense that safeguards critical infrastructure against evolving threats.

- **Quantum safe line-rate encryption:** Cisco Nexus mitigates “harvest now, decrypt later” risk through quantum-safe key exchange for MACsec, IPsec and SSH/TLS aligned with NIST-approved post-quantum algorithms. New platforms incorporate quantum-safe digital signatures for secure boot, secure storage, and device identity.
- **Continuous Defense:** With the new Cisco Live Protect enforcement mode, organizations can automatically deploy kernel-level mitigations in real time, addressing vulnerabilities and zero-day exploits without maintenance windows or downtime.
- **Consistent Policy:** Whether you use ACI or NX-OS, Nexus One offers end to end policy enforcement across the heterogenous domains, ensuring distinct micro-segmentation across east-west traffic.

## 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.



## 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](#)

## Conclusion

The data center is the engine of modern innovation, but complexity can stall that engine. Cisco Nexus One offers a path forward that clears the clutter. By unifying operations, offering unmatched flexibility in hardware and software, and embedding security and observability at every level, it empowers organizations to innovate faster.

With Nexus One, you no longer have to choose between openness and performance. You get open choice with no compromises.

## The Cisco Advantage: Why Choose Nexus One?

In a fragmented landscape of data center solutions, Cisco stands apart by delivering unified experience. The Nexus One platform not just brings together the hardware and software; but also a strategic approach to modernizing infrastructure that prioritizes your operational freedom.

### Consistent fabric experience

Whether you are managing a single on-premises data center or a distributed network spanning multiple clouds, Nexus One provides a cohesive operational experience. We eliminate the complexity of managing disparate networks by offering a unified fabric that behaves consistently across all environments. This means your teams can apply the same skills and processes everywhere, reducing the learning curve and operational overhead.

### Security at every layer

We believe security should be foundational, not an afterthought. Nexus One integrates robust protection directly into the fabric, securing both east-west and north-south traffic. From quantum-resilient encryption to continuous runtime defense, we help you mitigate risks and reduce your attack surface without compromising performance.

### Unified management

Simplicity drives speed. Unified management with Cisco Nexus One goes beyond the Nexus Dashboard, integrating Nexus Hyperfabric for cloud-managed operations and robust API-driven automation. This combination gives you a single point of control for your entire network, enabling consolidated provisioning, troubleshooting, and deep observability—regardless of where your infrastructure resides or how you choose to manage it. This unified approach streamlines workflows and empowers your teams to move from reactive troubleshooting to proactive optimization.

### Commitment to open standards

Innovation thrives on openness. Cisco is committed to open standards-based networking, ensuring that your investment today does not limit your choices tomorrow. Nexus One allows you to leverage end-to-end policy enforcement and interoperability across diverse ecosystems. By embracing open APIs and multi-vendor support, we ensure your infrastructure remains flexible and future-ready.

## Cisco Capital

### 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.](#)

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

Are you managing separate NX-OS VXLAN EVPN, Cisco ACI and SONiC 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 One.

### Resources:

[Cisco Nexus Dashboard webpage](#)

[Cisco NX-OS webpage](#)

[Cisco ACI webpage](#)

[Cisco Nexus 9000 Series Switches](#)

[Cisco Silicon One](#)

[Cisco Nexus One Fabric: Unify Data Center Operations with Open VXLAN/EVPN Standards](#)