



Application Centric Infrastructure: Redefine the Power of IT



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Solution Overview

Cisco transforms next-generation data center and cloud deployments with its innovative Cisco® Application Centric Infrastructure (ACI) solution, which radically simplifies, optimizes and accelerates the entire application deployment lifecycle.

With tight integration between physical and virtual elements, an open ecosystem model, and innovation-spanning ASICs, hardware, and software, Cisco ACI takes a holistic system-based approach. This unique approach leverages a common policy-based operational model across ACI-ready network, compute, storage and security elements, overcoming silos and drastically reducing cost and complexity.

In addition, new Cisco Services accelerate deployment of Cisco ACI, helping customers to achieve their business and technical objectives, reduce risk, and realize the true value of their network.

Cisco ACI redefines the power of IT, helping make IT more responsive to changing business and application needs, enhancing agility and adding business value.

Key Market Trends That This Solution Addresses

With increasing pressure on IT to deliver solutions, the landscape for IT providers is undergoing rapid change and expansion. Cisco ACI is built from the ground up to respond to industry trends such as these:

- Growth
 - Most data center traffic is within the data center.
 - Global data center IP traffic will nearly quadruple over the next five years (source: Cisco Global Cloud Index).
 - Global cloud IP traffic will increase sixfold over the next five years and will account for nearly two-thirds of total data center traffic by 2016 (source: Cisco GCI).
 - Mega Data Centers (more than 40,000 square feet) are becoming increasingly prevalent. They are likely to consume 10 percent of all data center space by 2016 (source: IDC).
- Changing business models
 - Service providers continue to be the main force behind IT spending and will account for one quarter of all data center space by 2016 (source: IDC).
 - Cloud computing will continue to have a compounded annual growth rate (CAGR) of 36 percent through 2016, with infrastructure-as-a-service (IaaS) deployments projected to grow by 37 percent (source: 451 Research).
 - The number of workloads per installed traditional and cloud servers will increase in the coming years, and nearly two-thirds of all workloads will be processed in the cloud by 2016 (source: Cisco GCI).
 - Over 40 percent of overall data center expenditures is related to people, energy, and facilities (source: Gartner – Cisco IT, “Data Center Cost Portfolio”).



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Business Problems That This Solution Solves

Table 1 describes the challenges addressed by Cisco ACI and the benefits for customers.

Table 1. Challenges Addressed by Cisco ACI

Customer Challenges	Solution	Customer Benefits
Enterprise customer is challenged with bringing applications quickly through development, testing and quality assurance (QA), and production lifecycle.	Cisco ACI allows application administrators to build built-in templates that can easily map network and security policies to applications through its development lifecycle.	Reduces time to service from weeks and days to minutes.
Service provider wants to accelerate deployment of applications and services for its customers.	Cisco ACI provides simplified automation with an application-based policy model that unifies isolated network, security, application, and cloud teams through the entire application lifecycle.	More than 50% faster deployment of network and security services.
Inconsistency exists across virtualized and nonvirtualized deployments; multiple management tools are used along with traditional approaches that view operations in isolation.	Cisco ACI provides centralized policy for virtual and nonvirtual applications and visibility with real-time application health monitoring.	Reduced operation complexity and cost.
Limited workload mobility across different subnets is causing inflexibility in management of data center resources.	Cisco ACI uses Virtual Extensible LAN (VXLAN) bridging and routing capabilities on the same port, takes a hypervisor-independent approach, and uses a common Application Network Profile across the system.	Much simpler design, allowing application mobility across physical and virtual environments.
Enterprise customer wants to migrate to 40 Gigabit Ethernet to accommodate higher bandwidth needs in the most cost-effective way.	Cisco 40-Gbps Quad Small Form-Factor (QSFP) bidirectional (BiDi) optics enable transparent migration from 10 to 40 Gigabit Ethernet over the existing 10 Gigabit Ethernet fiber infrastructure.	Zero cost fiber upgrade to existing cabling and 70% lower fiber cabling costs for new (greenfield) 40 Gigabit Ethernet deployments.
Massive Scale Data Center (MSDC) customer wants to meet growing demand for data capacity and lower power consumption.	Use of Cisco Nexus® 9000 Series Switches allows IT to build massive capacity with 10 and 40 Gigabit Ethernet port densities and low power consumption.	More than 15% savings on power and cooling.



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What to Sell

Cisco Products

- Customers will be able to purchase the Cisco Nexus 9000 Series for standalone/non-ACI deployments (using NX-OS) and move to Cisco ACI (using the Cisco APIC) whenever ready.
- The Cisco Nexus 9000 Series consists of fixed and modular switches for flexible deployment in the data center. The modular switches support a variety of line cards for 10/40/100-Gbps connectivity as well as application-centric deployments.
- The Cisco Application Policy Infrastructure Controller requires the Cisco Nexus 9000 Series for Cisco ACI deployments in which centralized network, security, and service policies are managed centrally.
- See the [Cross-sell/Upsell Opportunities](#) section as well.

Table 2 provides ordering information.

Table 2. Ordering Information

Part Number	Description
Nexus 9500	
N9K-C9508	Nexus 9508 Chassis with 8 linecard slots
N9K-C9508-B1	Nexus 9508 Chassis Bundle with 1 Sup, 3 PS, 2 System Controllers, 3 Fan Trays
N9K-C9508-B2	Nexus 9508 Chassis Bundle with 1 Sup, 3 PS, 2 System Controllers, 6 Fan Trays
N9K-SUP-A	Nexus 9500 Supervisor
N9K-C9508-FM	Fabric Module for Nexus 9508 chassis
N9K-PAC-3000W-B	Nexus 9500 3000W AC Power Supply, cold air in
N9K-X9636PQ	Nexus 9500 linecard, 36p 40G QSFP+ aggregation linecard (non-blocking)
N9K-X9564PX	Nexus 9500 ACI leaf linecard, 48p 1/10G SFP+ plus 4p QSFP+ linecard (non-blocking)
N9K-X9564TX	Nexus 9500 ACI leaf linecard, 48p 1/10G-T plus 4p QSFP linecard (non-blocking)
N95-LAN1K9	Enhanced L3 SW license for Nexus 9500
DCNM-LAN-	DCNM License for Nexus 9500
Nexus 9300	
N9K-C9396PX	Nexus 9300 with 48p 1/10G SFP+ and 12p 40G QSFP+
N9K-C93128TX	Nexus 9300 with 96p 1/10G-T and 8p 40G QSFP+
N93-LAN1K9	Enhanced L3 SW license for Nexus 9300
DCNM-LAN-N93-K9	DCNM License for Nexus 9300
Optics (NOTE: Existing Cisco SFP+ and QSFP+ optics will be supported on Nexus 9000 switches)	
QSFP-40G-SR-BD	40GBASE-SR-BD QSFP module,LC connector (multi- mode fiber, MMF at 100m OM3)



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What to Sell

Cisco Services

Cisco Services for ACI analyze all operational aspects of customer data center networks and prepare detailed migration plans for a smooth and successful transformation. In addition, Cisco Services to Secure the Data Center Infrastructure help reduce vulnerabilities and build security into the data center architecture.

These services are available to Cisco Certified Partners under the Cisco Branded Services family for partners certified to resell Cisco Nexus switches. Cisco Services to Secure the Data Center infrastructure can be co-delivered by Cisco and Cisco Security Specialized Partners.

Why Cisco Services?

Delivered by Cisco and our Cisco Certified Partners, service engagements result in measurable business gains for our customers, who have achieved benefits such as 15 to 20 percent faster time to revenue, 30 percent lower infrastructure costs, 50 percent faster disaster recovery, and 90 percent reduction in deployment time.

Cisco Services can complement your practice, speed time to delivery on new Cisco ACI initiatives, and positively affect your profitability. When Cisco Certified Partners resell Cisco Services, their overall service margins are 11 to 23 percent higher, and their professional services margins are 14 to 26 percent higher.*

For information about Cisco Services for ACI, contact your local Cisco Services Partner Development Manager or as-aci-support@cisco.com.

Part Number	Service	Description
Contact for quote	Cisco Business Strategy	Provides capabilities to articulate the strategy and develop the business case and an architectural-led master plan for ACI.
AS-ACI-CNSLT	Cisco Readiness Planning	Identifies risks and opportunities, analyzes operations, and recommends detailed migration plans to help enable a smooth transition to Cisco ACI.
AS-ACI-SME for US/EMEAR AS-ACI-CNSLT for APJC	Cisco Quick Start Service for Nexus 9000	Provides consulting services that include technical advice and assistance to help deploy the Cisco Nexus 9000 Series.
ASF-DCV1-NEX-ADS for fixed price AS-ACI-CNSLT for SOW-based	Cisco Accelerated Deployment Services for Nexus 9000	Support rapid transition to an application-centric architecture.
AS-DCN-CNSLT	Cisco Data Center Services for Operations Enablement	Prepare an environment for Cisco ACI while addressing all stages of the operations lifecycle.
AS-DCVSEC-CNSLT	Cisco Data Center Security Design Assessment Service	Helps customers understand security infrastructure design and how it aligns with security policy.
AS-DCVSEC-CNSLT	Cisco Data Center Security ASA Migration Service	Helps migrate a third-party or Cisco Adaptive Security Appliance (ASA) platform to a virtualized environment.
List Price Catalog	Product Support for Cisco Nexus	Can be delivered by partners with their own brand of support through Cisco Partner Support Service** or Cisco Smart Care** ; partners who want Cisco-delivered support can choose Cisco SMARTnet or Cisco Smart Net Total Care*** .

*Cisco Global Touch Survey, 2012; **Contact your local Cisco Partner Services Development Manager about availability of smart capabilities for the Nexus 9000; ***Cisco products only

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When to Offer One Product/Solution Instead of Another

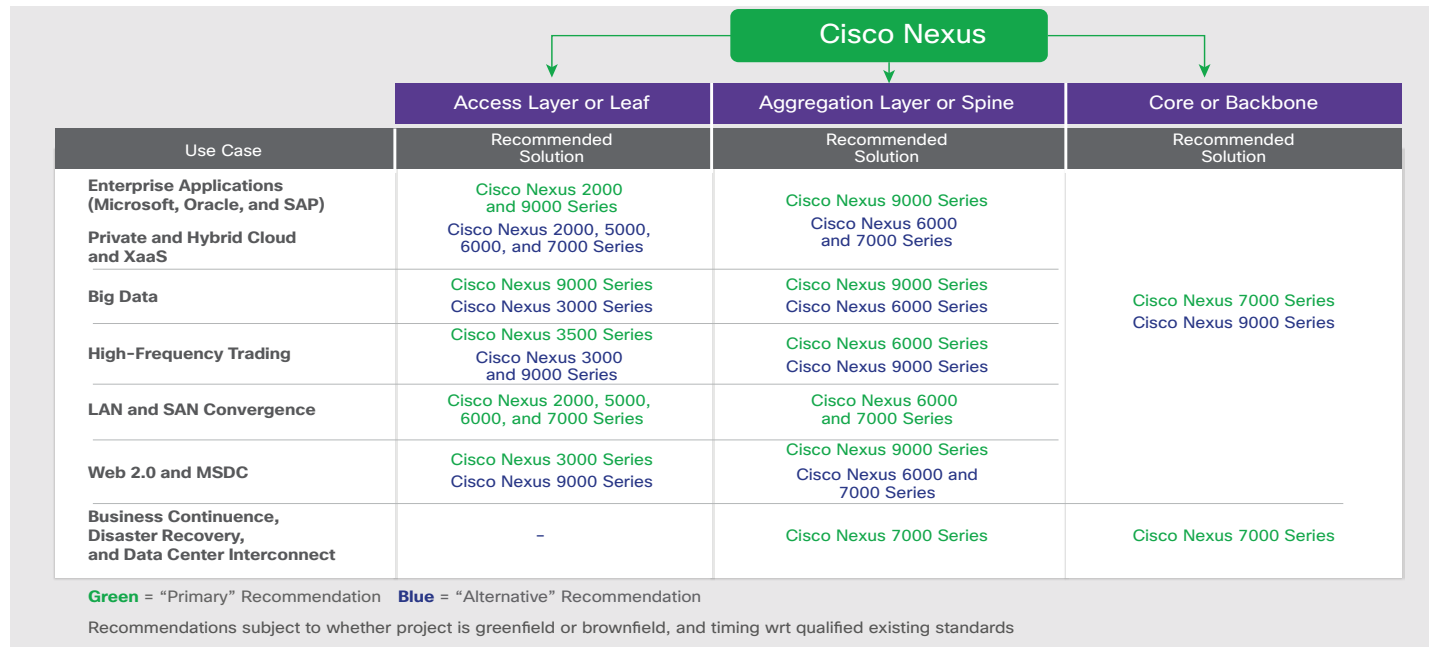
The Cisco ACI portfolio extends to support the new trends in data centers (Table 3).

Table 3. Cisco ACI Options

Options	Trade-off
Cisco Nexus 9000 Series standalone mode or fabric mode	<ul style="list-style-type: none"> In standalone mode (using NX-OS), the network can be configured to run traditional routing protocols, virtual PortChannel (vPC), Spanning Tree Protocol (STP) and VXLAN. It allows customers to gain the advantages in port density, performance, power consumption, price, and programmability of the Cisco Nexus 9000 Series with a traditional network design. In fabric mode (using the Cisco APIC), customers can take advantage of centralized policy, security, and services to accelerate the entire application deployment lifecycle.
Cisco Nexus 9000 Series modular or fixed switch	<ul style="list-style-type: none"> A modular Cisco Nexus 9500 Series Switch can be deployed as an end-of-row (EoR) or leaf switch and as a spine to support high-density 10 and 40 Gigabit Ethernet aggregation requirements. A fixed Cisco Nexus 9000 Series Switch can be deployed as a top-of-rack (ToR), middle-of-row (MoR) or leaf switch to support 1 and 10 Gigabit Ethernet access requirements.

Figure 1 provides general guidance for data center switch solutions based on use cases.

Figure 1. Data Center Switch Solutions





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Target Customers and Concerns

A new architectural approach and network innovations deliver compelling business and IT benefits for a variety of deployment models for both existing and new data center buildouts. These include deployments for MSDCs, cloud data centers, service provider data centers, and traditional enterprise data center buildouts (Table 4).

Table 4. Target Customers and Concerns

Audience	Concerns
Chief executive officer (CEO)	<ul style="list-style-type: none"> Increased business agility.
Chief information officer (CIO)	<ul style="list-style-type: none"> Faster Application Deployment. Integrated view for capacity planning. Lower total cost of ownership (TCO). Best-in-class application delivery. Security, visibility, audits, forensics, and compliance. Open ecosystem approach.
Chief security officer (CSO)	<ul style="list-style-type: none"> Visibility, telemetrics, auditing, forensics, and compliance. Open and flexible integration with leading security vendors.
Chief Financial Officer (CFO)	<ul style="list-style-type: none"> Lower TCO. Lower CAPEX vs VM based overlay (no VM tax).

The application centric vision and new infrastructure elements together deliver compelling business benefits to meet a variety of customer requirements across a variety of deployment models and segments. These benefits are also increasingly relevant to virtualization administrators and application architects as well as officers in charge of network purchases (Table 5).

Table 5. Business Benefits

Application Owners and Teams	Benefits
Application owners and lines of business	<ul style="list-style-type: none"> Dramatically reduce time to service delivery and time to revenue for business applications (from days to seconds). On-demand scale out and tear down lead to more predictable application and IT spending that is aligned with business activities. Cisco ACI can be flexibly deployed on premises or in a hybrid cloud without application modification and with consistent policies and quality of service (QoS) to help optimize costs. Visibility across physical and virtual infrastructure helps solve a major IT problem: finding the problem.
Server, storage, and virtualization teams	<ul style="list-style-type: none"> Increase server and storage infrastructure efficiency with the flexibility to move workloads on demand. Create a self-service, on-demand application deployment model, including network and security infrastructure that can be guided by the application deployment team, reducing costs and helping eliminate the network as a bottleneck. Automate remediation tasks to help ensure QoS at all times. Visibility across physical and virtual infrastructure reduces the mean time to repair (MTTR).



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Application Owners and Teams	Benefits
Network team	<ul style="list-style-type: none"> • Cisco ACI empowers network administrators to play a more central role in IT environments and brings them into direct conversations with application groups. • Networking teams retain complete control of policies and infrastructure buildout while providing replicable network containers with predefined policies for self-service deployments. • 100% automation of network provisioning tasks reduces overhead, accelerates deployment times, reduces errors, and allows application owners to use self-service for better alignment between IT and lines of business. • No cost per virtual machine. • No fiber cost for 40 Gigabit Ethernet upgrades. • Automated remediation reduces overhead and helps ensure optimal network performance for all applications at all times. Visibility across physical and virtual infrastructures shortens MTTR.
Security team	<ul style="list-style-type: none"> • Security teams gain more control over security policies on an application-by-application basis with fewer errors. • Security teams retain control over policies for compliance purposes, while allowing a self-service IT model for on-demand application provisioning and scale-out. • Automated insertion of virtual security services simplifies application deployments. • Security teams can flexibly support virtual and physical security services side by side, with consistent policies and QoS.
Cloud team	<ul style="list-style-type: none"> • Cisco ACI helps ensure consistency of policies and services whether applications are deployed on premises or in the cloud. • The cloud team can easily help optimize costs with on-demand cloud bursting. • With no application dependencies on underlying infrastructure, all applications can be cloud ready with little additional effort or overhead, making them easier to manage, deploy and migrate.

Questions and Strategies for Initiating a Sales Meeting

- **Network IT team:** Would you like to give the applications team members full ownership to deploy applications whenever they want without additional network provisioning overhead while you retain complete control of infrastructure and policies?
- **Network IT team:** I can help you build a highly scalable data center with low power consumption while reducing the costs of migrating from 10 to 40 Gigabit Ether by more than 70 percent by deploying 40 Gigabit Ethernet over existing 10 gigabit Ethernet fiber infrastructure. Does that sound interesting?
- **Network IT team:** Are you experiencing operation inefficiencies and complexities in managing your virtual and physical environments using different tool sets?
- **Network IT team:** Does your current infrastructure allow placement of any workload anywhere with transparent mobility within and across data centers?
- **Security IT team:** Would you like to give the application team members full ownership to deploy applications whenever they want without additional security provisioning overhead while you retain complete control of security policies and compliance on an application-by-application basis?
- **Cloud IT team:** If I tell you that we can accelerate network policies and services by more than 50% to shorten application deployment times from days or weeks to hours, would you like to learn how we do it?
- **Cloud IT team:** With your current data center operating model, does the coordination between isolated computing, network, and security teams constrain the speed with which you can deploy applications?
- **Cloud and network IT teams:** Do you have application-level visibility across your virtual and nonvirtualized environments to easily determine whether you are meeting your service-level agreements (SLAs)?

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Competitive Positioning

Tables 6 and 7 summarize reasons for using Cisco solutions.

Table 6. Why Use Cisco for ACI Deployments

Competitor	Impact	Why Cisco?
VMware NSX	<ul style="list-style-type: none"> • Number 1 vendor in the server virtualization software market. • Strategy: Software-defined data center. • Virtualization: Bundled solution for server and network virtualization (VMware vCloud Suite). • Cisco technology partner with Cisco Unified Computing System™ (Cisco UCS®). 	<ul style="list-style-type: none"> • Cisco ACI accelerates application deployments with software flexibility and hardware speed. • Cisco ACI provides an integrated physical and virtual solution for better visibility into traffic, troubleshooting, and analysis. • Cisco ACI is not based on a per VM consumption model (VM tax for network virtualization).
Arista	<ul style="list-style-type: none"> • Number 2 mind share. • Initial attraction and penetration in high-frequency trading (HFT) market with low-latency ToR switch offerings. • Low-cost high-performance devices based on merchant silicon. • Strong partnership with VMware to build relevance in virtualization, cloud, and software-defined networking (SDN) environments. 	<ul style="list-style-type: none"> • Cisco Nexus 9000 is a true integrated solution from its foundation that integrates hardware, ASICs, and software to accelerate application deployments. • Cisco Nexus 9000 provides more programmability than Arista EOS, with additional features such as In-Service Software Upgrade (ISSU), Single Sign-On (SSO) patchability, flexible Cisco NX-API (XML and JSON), and Linux Bash Access and Container. In addition, the entire fabric provided with Cisco ACI can be programmed.
HP	<ul style="list-style-type: none"> • Number 2 vendor share in LAN switching behind Cisco. • Aggressive SDN strategy to gain mind share related to OpenFlow switches and an open SDN ecosystem, which includes an SDN app store. • Plans to federate its SDN controller with the VMware NSX controller to provide physical-layer visibility and control. 	<ul style="list-style-type: none"> • HP lacks an architectural solution that provides the agility, simplicity, and automation provided by the Cisco ACI architecture. • HP lacks the integration and true fabric convergence to reduce customer TCO. Cisco reduces TCO with Cisco UCS and now Cisco ACI.



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Table 7. Why Use Cisco for Standalone Deployments

Competitor	Impact	Why Cisco?
Arista	<ul style="list-style-type: none"> Number 2 mind share. Initial attraction and penetration in HFT market with low-latency ToR switch offerings. Low-cost high-performance devices based on merchant silicon. 	<ul style="list-style-type: none"> Power: The Cisco Nexus 9500 and 9300 platforms combine to provide 15% power saving over Arista. For a network with 13,440 host ports, a Cisco Nexus 9000 Series data center network would save 20,000 kW per year. Performance: Cisco provides all line-rate ports for all packet sizes. Arista provides line rate for 30 out of 36 ports in its 36-port 40 Gigabit Ethernet line card. Cisco Nexus 9000 Series buffers are optimized for microburst traffic, whereas Arista has an unnecessarily large buffer in the spine and a very small buffer in the leaf layer. Port density: Cisco offers the highest port density, with 288 40 Gigabit Ethernet or 1152 10 Gigabit Ethernet ports on the Cisco Nexus 9508 Switch. Price: With the Cisco QSFP+ Bidir transceiver, there is no facility cost when upgrading from 10 to 40 Gigabit Ethernet. Two-strand fiber costs 75% less than 12-strand fiber, and LC-MPO patch cable costs 70% less than MPO-MPO patch cable.
HP	<ul style="list-style-type: none"> Number 2 vendor share in LAN switching behind Cisco. HP FlexFabric Data Center Switching portfolio refresh in May 2013, including the HP FlexFabric 12910/16 core switch, the FlexFabric 11908-V, a small data center core switch, and the HP 5900 AF family ToR. OS rewrite (Comware v7) now based on Linux and includes features such as TRILL. 	<ul style="list-style-type: none"> The Cisco Nexus 9500 platform has more switching capacity, with more 10 and 40 Gigabit Ethernet ports per rack. Cisco provides an advanced data center switching fabric solution that is two generations ahead of HP's fabric. Cisco provides the flexibility, supporting deployments in both standalone mode and fabric mode.

Cross-Sell and Upsell Sales Opportunities

Table 8 lists additional Cisco ACI sales opportunities.

Table 8. Additional Sales Opportunities

Opportunity	Reason
Cisco Financing	Provides flexible purchasing options
Migration from Cisco Catalyst 6500 Series Switches non-E chassis	Meets data center demands
Cisco ACI in combination with Cisco UCS and UCS Director	Accelerates application deployment

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Handling Objections

Use Table 9 to respond to objections.

Table 9. Handling Objections

Objection	Your Response
Why is Cisco offering two solutions, Cisco Dynamic Fabric Automation (DFA) and Cisco ACI?	<p>Different customers have different needs. The Cisco DFA solution, based on currently shipping Cisco Nexus 6000 and 7000 Series products, is targeted at data center customers that require network optimization, simplification, and automation that addresses the most immediate needs of our customers. It is more evolutionary in nature.</p> <p>Cisco ACI is a transformational architecture that consists of Cisco Nexus 9000 Series switches and the Cisco APIC and is designed to address existing and future application data center infrastructure demands for centralized policy, automation, and security. Cisco Nexus 9000 offers a path to help customers to deploy with NX-OS today and upgrade to ACI mode whenever they want to realize the OPEX savings delivered by a policy based management of the application deployment lifecycle.</p>
How reliable is the Cisco Nexus 9000 Series portfolio?	The Cisco Nexus 9000 Series supports existing Cisco NX-OS Software, which has over 40,000 deployments. In addition, the chassis has no back or midplane, which results in a simpler less failure prone design.
It seems like the Cisco Nexus 9000 Series is the only platform in town. Why should I keep investing in the current Cisco Nexus products?	With the Cisco Nexus 9000 Series, Cisco has expanded the Cisco Nexus portfolio to meet customer needs. In addition, Cisco has announced and released new platforms, line cards, and features in the past few months for the existing Cisco Nexus switches. A committed roadmap for the rest of the portfolio offers expanded solutions and investment protection to our customers. Please contact specific business units for details.

For More Information

For more information go to: <http://www.cisco.com/go/aci> or for services questions, send an email to: as-aci-support@cisco.com.