

# Cisco Application Centric Infrastructure and Cisco Nexus Switching: Delivering Investment Protection

Cisco's innovation and market leadership in data center and cloud networking provides the foundation of the broadest portfolio of networking solutions in the industry. Cisco Nexus<sup>®</sup> switching and Cisco<sup>®</sup> NX-OS software have gained considerable traction in the industry, with more than 55,000 Cisco NX-OS customers. This technology note, intended for an audience of technical architects, summarizes how customers embracing Application Centric Infrastructure (ACI) can extend the benefits of the ACI policy model across the entire Nexus portfolio, including existing Nexus 1000 through Nexus 7000 deployments, radically simplifying, optimizing and accelerating the application deployment lifecycle.

Customers will be able to use their current Cisco Nexus products along with existing Layer 4 through 7 service appliances and add Cisco ACI capabilities incrementally. The integration of Cisco ACI into an existing Cisco Nexus environment will not require replacement of existing Cisco Nexus switches. Customers will be able to both transform their business with Cisco ACI and use existing Cisco Nexus infrastructure. A major focus of the integration is the use of the existing network as an optimized transport for the Cisco ACI policy-based overlay network, instead of requiring specific hardware or software upgrades to existing Cisco Nexus switches. This approach provides a solution that is superior to other overlay approaches in the industry because it provides integrated support for both physical and virtual servers, it allows the use of existing Layer 4 through 7 infrastructure, and it provides the capabilities of the Cisco ACI policy model.

Cisco will provide interoperability and investment protection across the Cisco Nexus switching portfolio by initially focusing on two scenarios:

- Extension of Cisco ACI policy and forwarding to physical and virtual servers on existing Cisco Nexus networks using the Cisco Application Policy Infrastructure Controller (APIC) as a policy provisioning mechanism for both
- Use of Cisco Nexus 7000 Series Switches data center interconnect (DCI) devices between the Cisco ACI fabric and the existing Cisco Nexus fabric (primarily over the WAN at a remote data center)

The first scenario benefits customers that want to extend the Cisco ACI fabric policy capabilities to physical or virtual servers on their existing Cisco Nexus fabric. In this scenario, the existing Cisco Nexus fabric is connected to the Cisco ACI fabric through standard Layer 2 extensions (VLAN or Virtual Extensible LAN [VXLAN]) or through standard Layer 3 routing. Cisco APIC enforces policy for physical and virtual servers in the existing Cisco Nexus environment. Customers seeking to extend Cisco ACI to an existing hypervisor-enabled server can use an application virtual switch (AVS), which is essentially an OpFlex-capable virtual leaf, in a server attached to the existing Cisco Nexus fabric. The AVS acts as a virtual leaf for the Cisco ACI fabric and supports Cisco ACI Layer 2 and 3 forwarding, policy, and Layer 4 through 7 service insertion.

---

For physical servers and mixed physical and hypervisor-enabled servers, the recommended approach is to deploy a Cisco Nexus 9300 platform switch as a leaf node supporting both physical and multivendor virtual servers. These leaf switches will be under the automation and policy control of Cisco APIC and will support distributed Cisco ACI forwarding, policy, Layer 4 through 7 service insertion, leaf-to-leaf atomic counters, and integration with Cisco APIC day-two operation services such as health scores and statistics rollups. The AVS and Cisco Nexus 9300 platform combination of leaf switches allows servers as well as service appliances attached to the AVS or Cisco Nexus 9300 platform switch to act as endpoints in the Cisco ACI fabric.

The second scenario benefits customers by allowing the Cisco ACI fabric to connect to the Cisco Nexus fabric at remote data centers over the WAN. In this scenario, the Cisco Nexus 7000 Series Switches perform a DCI function between the Cisco ACI fabric and the existing Cisco Nexus fabric. The Cisco Nexus 7000 Series Switch functions as a peripheral WAN and DCI router to the Cisco ACI fabric, using OpFlex as an interface with the Cisco ACI fabric to automate provisioning and to exchange tenant information.

Note that the Cisco Nexus 2200 platform fabric extenders are transparently supported in the Cisco ACI fabric as the fabric extenders of choice and are already an integral part of the Cisco ACI solution.

With Cisco's support in these critical areas, customers will be able to use their current and future investment in Cisco Nexus 2000 through 7000 Series devices even as they plan for an application-centric data center. Additional details of deployment models will be published in a separate technical white paper and at <http://www.cisco.com/go/aci>.



---

Americas Headquarters  
Cisco Systems, Inc.  
San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV Amsterdam,  
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)