

# Cisco and NetApp: Build an Application Centric Private Cloud

## Challenges

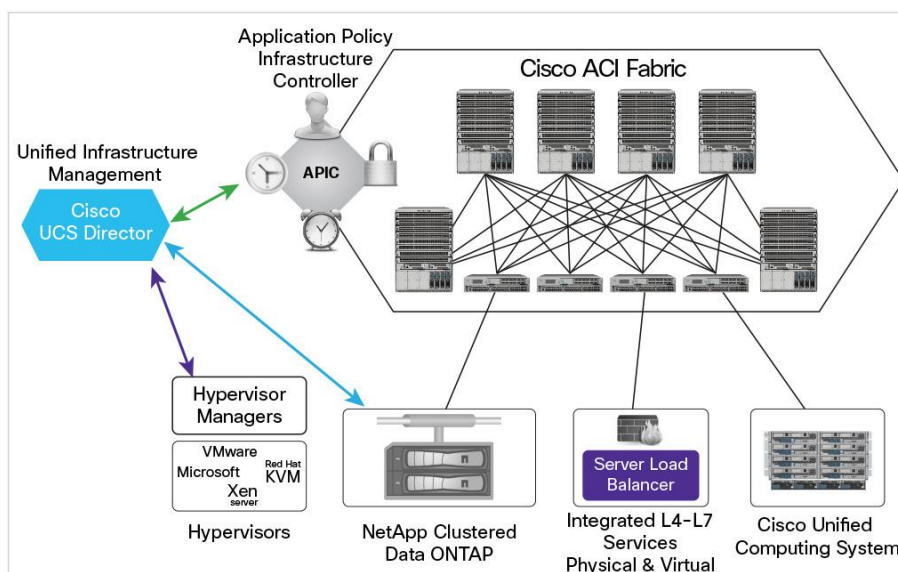
Enterprise data centers today face a variety of challenges:

- **Scalable infrastructure:** The strategic discussion today among chief information officers (CIOs) and IT managers is about business agility and data center responsiveness. To meet these growing needs, the infrastructure at all layers (computing, network, and storage) needs to respond quickly and be agile, scalable, and elastic. Security is also paramount and must comply with regulatory frameworks such as the Sarbanes-Oxley Act, Health Insurance Portability and Accountability Act (HIPAA), and Payment Card Industry (PCI) standards.
- **Unified infrastructure management:** IT managers who are operating modern data centers with shared computing, networking, and storage infrastructure need unified infrastructure management tools. Critical requirements include the capability to dynamically provision infrastructure resources per tenant, show chargeback metrics for consumed resources, and offer applications such as software-as-a-service (SaaS) implementations. Infrastructure management needs the flexibility to inventory the elements under management, monitor these elements with key performance indicators (KPIs) to watch for resource depletion, and expand or shrink resources based on tenant utilization and changing application needs.
- **Self-service provisioning:** Enterprises using a development and operations (DevOps) agile model need to provide development environments that are readily accessible to developers and quality-assurance engineers in a self-service portal. Enterprise end users such as developers and application owners want their application infrastructure readily available through a self-service portal. Infrastructure administrators want to assemble their application catalogs with computing, networking, and storage characteristics and publish these to their end-user self-service portal.

## The Solution

To meet the challenges of today's IT departments, Cisco and NetApp have collaborated to offer an application centric infrastructure (ACI) solution consisting of the Cisco® Application Policy Infrastructure Controller (APIC), Cisco Nexus® 9000 Series Switches, Cisco Unified Computing System™ (Cisco UCS®), Cisco UCS Director, and NetApp Clustered Data ONTAP (cDOT; Figure 1).

**Figure 1:** Cisco APIC, Cisco UCS Director, and NetApp cDOT



## Cisco and NetApp ACI Solution Benefits

The Cisco and NetApp ACI solution provides these business benefits:

- Rapid and scalable application provisioning: Predefined application requirements and descriptions (policy profiles) automate the provisioning of the infrastructure, application services, Layer 4 through 7 security policies, tenant subnets, and workload placement. The customizable application catalogs include:
  - Computing policies that define virtual machine parameters such as CPU and memory and bare-metal servers for mission-critical applications
  - NetApp storage policies, which incorporate rapid provisioning, storage efficiency, application-specific quality-of-service (QoS), and data-protection capabilities in a secure multitenant architecture
  - Cisco ACI Application Network Profile, which defines application centric network and Layer 4 through 7 service policy requirements; Cisco ACI provides automation and monitoring of network and Layer 4 through 7 services based on application requirements
- Infrastructure that supports multiple hypervisors and bare-metal systems: Cisco ACI and FlexPod are multiple-hypervisor ready, with support for virtual and physical workloads.
- Secure Multitenancy: The Cisco and NetApp solution provides built-in security, with Cisco ACI providing isolation of tenant and application traffic and advanced troubleshooting and monitoring. NetApp cDOT provides tenant-secure storage and network separation with distributed NetApp storage systems.
- Scalable infrastructure: Cisco ACI and NetApp cDOT provide an intrinsically scalable infrastructure. Cisco ACI is built to scale to thousands of hosts, storage systems, and virtual machines. Tenant Applications benefit from NetApp cDOT storage virtualization and are provisioned in a nondisruptive, always-on, and massively scalable storage solution.
- Unified infrastructure management: Cisco UCS Director provides centralized automation, orchestration, and reporting across Cisco UCS servers, Cisco ACI fabric, and NetApp cDOT with detailed inventory collection, tenant-specific resource allocation, and infrastructure monitoring. Cisco UCS Director provides a comprehensive task library for NetApp cDOT, Cisco UCS Manager, and virtual and physical infrastructure management. Cisco UCS Director provides a self-service portal for the tenant end user, who can access the application catalogs published by the Cisco UCS Director administrator. Tenants can instantiate applications through their self-service portals and view the health of their allocated infrastructure and applications.

## For More Information

- To learn more about Cisco ACI, visit <http://www.cisco.com/go/aci>.
- Find out more about Cisco UCS Director at <http://www.cisco.com/go/ucsdirector>.
- To learn more about NetApp cDOT, visit <http://www.netapp.com>.



## About NetApp

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Our commitment to living our core values and consistently being recognized as a great place to work around the world are fundamental to our long-term growth and success, as well as the success of our pathway partners and customers. Discover our passion for helping companies around the world go further, faster at <http://www.netapp.com>.

## About Cisco

Cisco (NASDAQ: CSCO) is the worldwide leader in IT that helps companies seize the opportunities of tomorrow by proving that amazing things can happen when you connect the previously unconnected. One of Cisco's key differentiators has been our ability to capture market transitions which drive innovation that enables our customers' long-term success. At the heart of these transitions - cloud, mobility, video, any device and social - is the network. Cisco's vision is to become our customers' most strategic business partner by delivering intelligent networks and technology and business architectures built on integrated products, services, and software platforms which enable our customers' success. Cisco has shaped the future of the Internet by creating unprecedented value and opportunity for our customers and ecosystem partners and has become the worldwide leader in networking - transforming how people connect, communicate and collaborate.

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