

Application Centric Infrastructure with Cisco UCS Director

Solution Brief
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Highlights

Cisco Understands

- We know the challenges of running applications, and we help align IT with your business by fully automating and orchestrating your application lifecycle.

Applications on Demand

- We combine Cisco® Application Centric Infrastructure (ACI) and Cisco UCS® Director for single-pane management for all your infrastructure, including networking, computing, and storage resources.

Simplified Operations

- We simplify operations with role- and policy-based orchestration that allows workloads to be placed anywhere in your data center without concern for network boundaries.

Massive Scale

- We provide networking technology to unite your entire data center with a single fabric, with investment protection that lets you migrate on your schedule, smoothly and without disruption.

Increased Business Agility

- The result is a more agile, efficient data center with lower cost and risk—and a path that takes you to the next step toward delivery of platform as a service (PaaS) to your customers.

What if your infrastructure could tailor *itself* to the specific needs of individual applications? We give you the automation to quickly align IT with business goals.

You run applications to help your business earn revenue. And you understand that every application is different and has different infrastructure requirements. We offer the intelligence to easily and automatically provision physical and virtual infrastructure uniquely for each application. Now your infrastructure is optimized from top to bottom, with every application, client, and tenant securely separated from all the others. This document shows you how Cisco UCS® Director can manage Cisco® Application Centric Infrastructure (ACI) to make this vision a reality in your data center.

Cisco Application Centric Infrastructure

Cisco ACI sees the network through the lens of applications. It is a holistic network architecture with centralized automation and policy-based application profiles. Cisco ACI delivers virtual network flexibility with the scalability of hardware performance. Application profiles define groups of application components (endpoint groups) and the ways they are allowed to communicate (contracts). It establishes secure multitenant environments for your applications, and it does so with dramatically lower capital expenditures and operating expenses.

Massive Scale Without Silos

The industry moved on from application silos long ago. But infrastructure silos still exist in almost every data center. Whether your traditional environments are deployed one rack, pod, or row at a time, chances are good that the network limits the locations at which you can easily deploy application components.

Cisco ACI breaks down the barriers. With a consistent, uniform, massively scalable fabric, your data center becomes a single pool of resources. You can recruit resources anywhere to support any application. For example, virtualization pools can extend across infrastructure that would normally not be in the same Layer 2 domain: for example, across multiple FlexPod instances or VCE Vblock™ Systems.

Infrastructure can be partitioned so that resources can be securely allocated to different tenants, whether they are service provider customers or clients of your IT department. Resources can be moved in and out of tenants as needed.

Applications Everywhere

With a single network fabric spanning your entire data center, applications and their components can live anywhere in the fabric, without regard to traditional barriers such as VLAN numbering. Cisco ACI service chaining interposes physical and virtual security and load balancing between endpoint groups,

automating the implementation of your best practices.

Applications are placed intelligently, with the infrastructure understanding underlying resource constraints, providing a new level of flexibility in the placement and movement of workloads so they can perform best and make better use of your IT resources.

Application profiles help ensure that your policies are implemented consistently and accurately. With a multitenant environment eliminating name space conflicts, you can deploy test, development, and production environments that are exactly the same down to the smallest details.

Multitenancy is supported naturally because Cisco ACI encapsulates all traffic into VXLAN tunnels that are established and maintained by the fabric. This encapsulation securely separates applications, clients, tenants, and other business organizations from each other.

Healthy Applications Means That SLAs Are Met

Cisco ACI understands the mapping of virtual network resources to physical network resources that support any given application profile. Built-in hardware telemetry capabilities enable application health checks with moment-by-moment status of network conditions.

Unlike with traditional software-defined networks (SDNs), Cisco provides deep visibility into the network fabric so that

any problems at the virtual level can quickly be mapped to the offending physical component, with traffic routed around it. No other combination of technology gives you this level of visibility into virtualized networks.

Healthier applications mean a more effective IT department that meets its service-level agreements and responds more quickly to rapidly changing workload conditions.

Smooth Migration Without Forklift Upgrades

Your old and new environments need to exist together in harmony. We have developed technology and procedures that can help you move from where your network is today to where you want it to be tomorrow—all while protecting your investments.

We can provide a bridge from your existing pod-based network architecture to your new Cisco ACI fabric so that both environments can coexist. Now you can migrate from traditional networking to Cisco ACI networking on a schedule that best suits your needs.

Application-Ready Infrastructure Managed by Cisco UCS Director

When you use Cisco UCS Director to manage Cisco ACI fabrics, you get application-ready infrastructure that makes better use of your IT resources, reduces time to revenue, improves compliance, and quickly aligns IT infrastructure with business operations.

Greater Business Agility with Cisco ACI

"We don't know ahead of time what the customer workloads are going to be. The ability to scale and grow as our customer's workloads grow and as we get new customers is a big piece of it."

Nik Weidenbacher
Principal Engineer
Sungard Availability Services

[\(See the video\)](#)

Cisco UCS Director Integration with Cisco ACI

When you define an application container with Cisco UCS Director, it first interfaces with the Cisco Application Policy Infrastructure Controller (APIC). Cisco APIC uses your policies to create a secure tenant environment to contain the application, endpoint groups to contain application components, and contracts to enable communication between them.

After the network environment is prepared, Cisco UCS Director provisions the physical and virtual computing and storage infrastructure that resides within the application container. Cisco UCS Director can facilitate final provisioning by initializing storage volumes with appropriate golden images. With point-and-click simplicity, you deliver IT infrastructure as a service (IaaS) through a single interface (Figure 1).

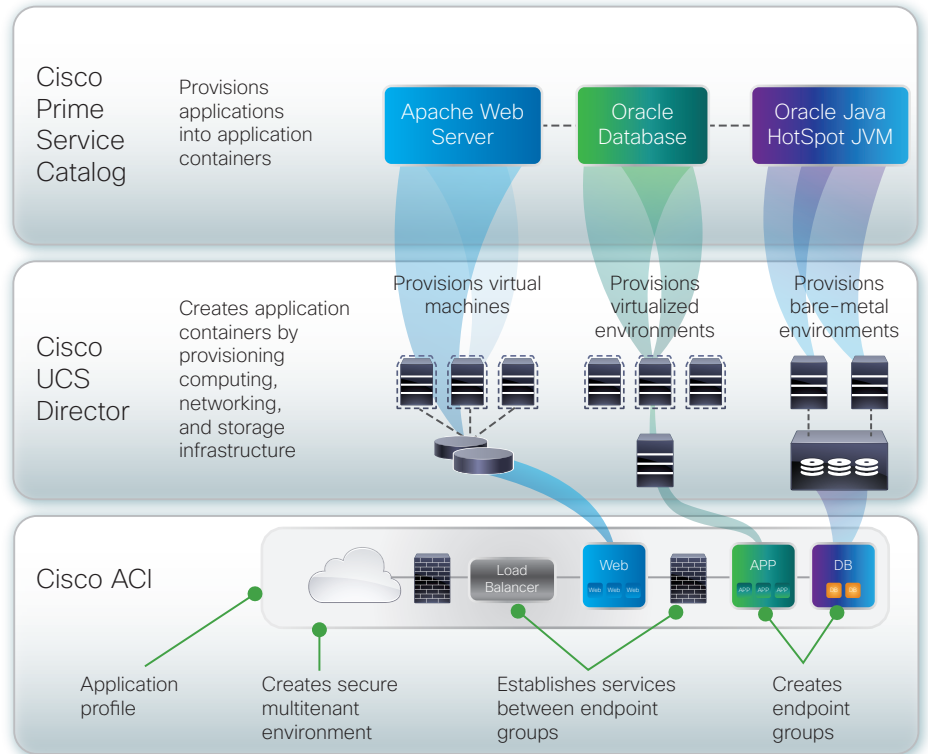


Figure 1. Cisco UCS Director Creates Application Containers from Cisco ACI Application Profiles, and Cisco Prime Service Catalog Can Provision Applications with Drag-and-Drop Simplicity

Earn Revenue Sooner

“Before, creating every virtual machine required efforts from specialists in Cisco UCS, Nexus®, NetApp, or VMware. Now, after we’ve created a template for a certain type of server, Cisco UCS Director automatically provisions all components end-to-end. Our customers can start using cloud resources sooner, and we start earning revenues sooner.”

Pablo Lambert
Director of Innovation and Development
Entel

[\(See case study\)](#)

Automating and Orchestrating Your IT Processes

Cisco UCS Director automates IT processes that you design, automating and orchestrating your organization’s best practices. The capability of Cisco UCS Director to interface with a wide range of IT infrastructure allows you to manage both your existing, traditional infrastructure and your new, Cisco ACI infrastructure. This feature provides you with additional investment protection and a migration path that you can implement as your business requirements dictate. Cisco UCS Director provides:

- **Single-pane infrastructure management:** Through a single point, you can automate and orchestrate your IT infrastructure, including computing, networking, and storage infrastructure, with physical and virtual resources that are treated equally. This holistic management makes your processes consistent and reliable.
- **Policy-based infrastructure provisioning:** Cisco UCS Director is role- and policy-based, so your subject-matter experts can work together to define your policies and

practices once. Then any level of administrator can use policies to provision resources for clients.

- **End-to-end infrastructure process automation:** Cisco UCS Director deploys solutions quickly and accurately, orchestrating every step necessary to prepare the networking, computing, and storage resources to support an application. Deployment time is reduced, and so is testing and debugging time—all shortening time to revenue.
- **Complete infrastructure lifecycle management:** Cisco UCS Director implements your processes to deliver IT infrastructure as a service, monitor that service as it operates, and decommission the service when it is no longer required, helping you reclaim and make better use of your IT investment. Future integration with Cisco ACI telemetry can help you monitor application health and proactively maintain service levels.

Implement Platform as a Service with Cisco Prime Service Catalog

Cisco UCS Director with Cisco ACI automates the process of creating application containers with computing, networking, and storage components all securely, consistently, and intelligently provisioned.

Adding Cisco Prime™ Service Catalog empowers you and your customers to deploy applications in application containers. Now the process of creating entire multitier applications can be simplified to implement a self-service, platform-as-a-service (PaaS) operation.

With Cisco Prime Service Catalog, end users can select an application and then drag and drop it onto an application container. Within minutes, applications are delivered with policy-based, intelligent orchestration according to the parameters that are important to your end users—and your business.

Conclusion

It is always wise to walk before you run. Cisco believes that you can best move to policy-based, automated application delivery by taking one step at a time.

- **Cisco ACI** establishes a foundation of policy-based, secure, intelligent network containers.
- **Cisco UCS Director** creates application containers by provisioning your application computing and networking components in network containers.
- **Cisco Prime Service Catalog** gives your users the power to deliver applications themselves.

Cisco helps you do all this with a smooth migration strategy that preserves investment while helping you move toward a PaaS future.

With some of the most advanced and cost-effective networking technology available anywhere, computing resources available from Cisco Unified Computing System™ (Cisco UCS), and application acceleration through Cisco UCS Invicta™ Series Solid State Systems, no other vendor can promise such a comprehensive vision of the future and then deliver the infrastructure products to support the vision.

For More Information

Learn more about Cisco ACI at <http://www.cisco.com/go/aci>.

Learn more about Cisco UCS Director at <http://www.cisco.com/go/ucsdirector>.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

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

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The Netherlands

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