Cisco UCS: The Right Foundation for OpenStack Deployments
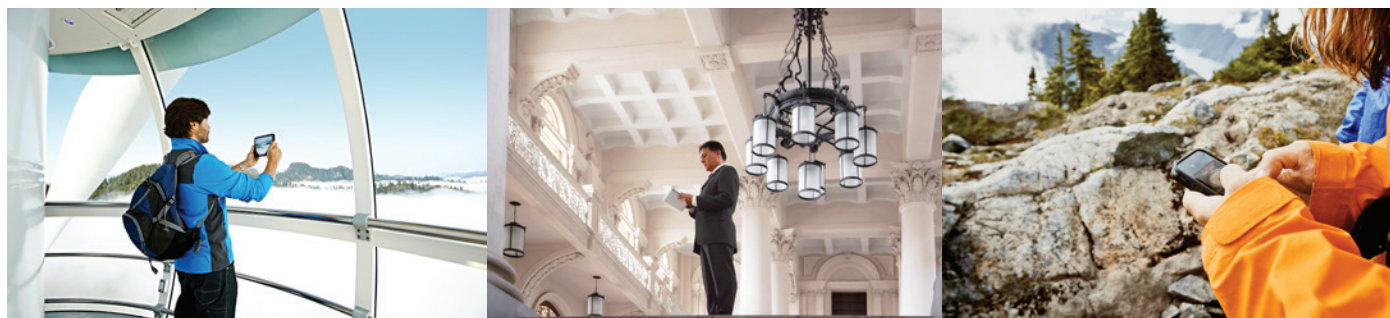
Highlights

Deploy the Cloud You Need

· Cisco Unified Computing System™ (Cisco UCS®) running OpenStack technology can be used to build public, private, and hybrid cloud infrastructure.

Provision Cloud Infrastructure Faster

· Built-in automation enables configurations to be deployed quickly, easily, and accurately.

Install OpenStack Quickly

· The Cisco UCS OpenStack Installer provides a validated installation for an active-active, highly scalable architecture for OpenStack services.

Scale on Demand

· The Cisco UCS architecture allows you to easily add computing and storage resources as demand increases.

Eliminate Network Sprawl and Complexity

· Cisco UCS provides greater network density with less cabling and complexity.

Simplify Management

· End-to-end management provides visibility and enables the monitoring and automated remediation of physical servers, storage, and network devices.

If you plan to deploy OpenStack technology, look no further. Cisco Unified Computing System™ (Cisco UCS®) is the right platform for building scalable cloud infrastructure.

Community innovation is creating new opportunities for cloud computing. Many organizations are turning to OpenStack technology to create massively scalable cloud infrastructure. Cisco's approach—innovative and unified data center infrastructure that provides the underlying foundation for OpenStack technology—helps IT departments transform their complex environments into agile and secure cloud infrastructure that costs less to acquire, operate, and maintain.

Cisco UCS: The Foundation for OpenStack Deployments

Virtualized infrastructure is the foundation of most cloud environments. Cisco UCS leads the way in virtual infrastructure innovation, integrating industry-standard, x86-architecture Intel® Xeon® processor-based servers with networking and storage access into a unified system (Figure 1). Server, networking, storage, and intelligent management resources work together in a self-aware and self-integrating system. This design delivers greater computing density and network simplicity in a smaller footprint that reduces operating costs.

Transcending the boundaries of traditional blade chassis and racks, Cisco UCS creates a physically distributed, centrally managed system that delivers scalability and performance. A unified fabric supported by a single, distributed virtual switch interconnects all server resources. The system represents a radical simplification compared to traditional architectures, resulting in lower capital and operating costs.

Why Deploy OpenStack on Cisco UCS

Cloud-enabled applications can run on organization premises, in public clouds, or on a combination of the two (hybrid cloud) for greater flexibility and business agility. Finding a platform that supports all these scenarios is essential—and many choices exist. With Cisco UCS, IT departments can take advantage of technological advancements and lower the cost of their OpenStack deployments.

Open Architecture

A market-leading, open alternative to expensive, proprietary environments, the simplified architecture of Cisco UCS running open source OpenStack software delivers greater scalability, manageability, and performance at a significant cost savings compared to traditional systems, both in the data center and the cloud. Using industry-standard x86-architecture servers and open source software, IT departments can deploy cloud infrastructure today without concern for hardware or software vendor lock-in.

Accelerated Cloud Provisioning

Cloud infrastructure must be able to flex on demand, providing infrastructure to applications and services on a moment's notice. Cisco UCS simplifies and accelerates cloud infrastructure deployment through automated configuration. The abstraction of server identity, personality, and I/O connectivity from the hardware allows these characteristics to be applied on demand. Every aspect of a server's configuration, from firmware revisions and BIOS settings to network profiles, can be assigned through the system's open, documented, standards-based XML API or Cisco UCS Manager GUI. Cisco service profile templates establish policy-based configuration for server, network, and storage resources and can be used to logically preconfigure these resources even before they are deployed in the cloud infrastructure.

Simplicity at Scale

With IT departments challenged to deliver more applications and services in shorter time frames, the architectural silos that result from an ad hoc approach to capacity scaling with traditional systems poses a barrier to successful cloud infrastructure deployment.

Cisco UCS enables IT departments to start with the computing and storage infrastructure needed today and then scale easily by adding components. Because servers and storage systems integrate into the unified system, they do not require additional supporting infrastructure or expert knowledge. The system simply, quickly, and cost-effectively presents more computing power and storage capacity to cloud infrastructure and applications.
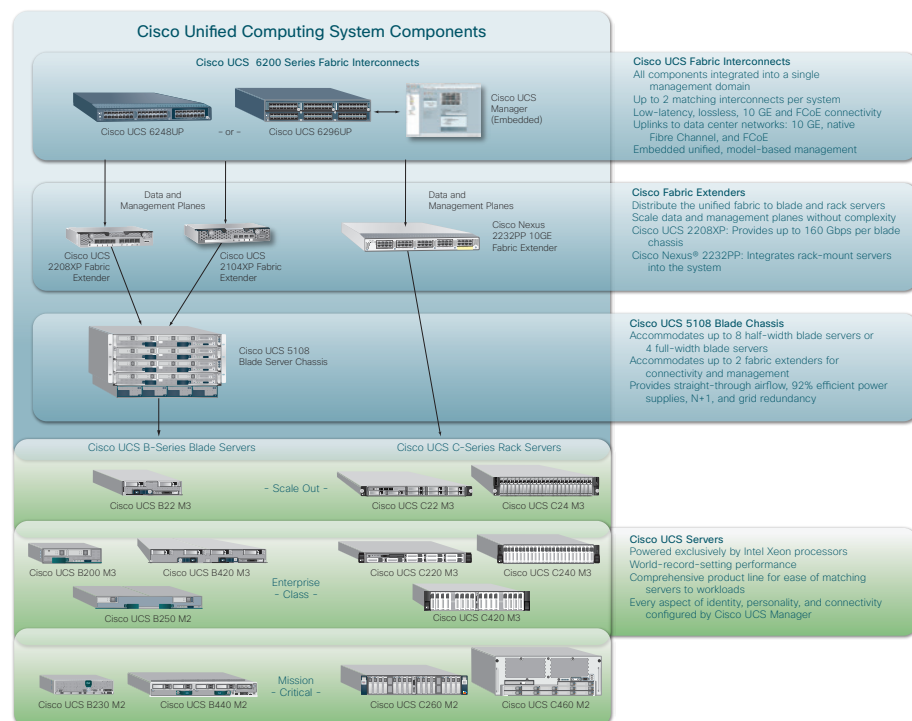

Figure 1. Cisco UCS Leads the Way in Virtual Infrastructure Innovation

Virtual Infrastructure Density

Cisco UCS enables cloud infrastructure to meet ever-increasing guest OS memory demands on fewer physical servers. The system's high-density design increases consolidation ratios for servers, saving the capital, operating, physical space, and licensing costs that would be needed to run virtualization software on larger servers. With support for up to 1 terabyte (TB) of high-speed memory in a 2-socket server, OpenStack deployments can host more applications using less-expensive servers without sacrificing performance.

Simplified Networking

As more users move applications to OpenStack environments, underlying infrastructure can become a sprawling complex of networked systems. Unlike traditional server architecture, Cisco UCS provides greater network density with less cabling and complexity. Cisco's unified fabric integrates Cisco UCS servers with a single high-bandwidth, low-latency network that supports all system I/O. This approach simplifies the architecture and reduces the number of I/O interfaces, cables, and access-layer switch ports compared to the requirements for traditional cloud infrastructure deployments. This unification can reduce network complexity by up to a factor of three, and the system's wire-once network infrastructure increases agility and accelerates deployment with zero-touch configuration.

Installation Confidence

Organizations that choose OpenStack for their cloud software can take advantage of the Cisco UCS OpenStack Installer. This software performs the work needed to install a validated OpenStack deployment. Unlike other solutions, Cisco's approach provides an active-active, highly scalable architecture for OpenStack services. Baseline monitoring capabilities for system processes and physical components are also installed.

Easy Management

Cloud infrastructure can be extensive, so it must be easy and cost effective to manage. Cisco UCS Manager provides embedded management of all software and hardware components in Cisco UCS. Using Cisco® SingleConnect technology, Cisco UCS Manager controls multiple chassis and manages resources for thousands of virtual machines. Integration with popular systems-management solutions supports the use of existing IT staff, skills, tools, and processes. A comprehensive, open XML API exposes 9000 points of integration and facilitates custom development to achieve increased system visibility and control.

Cisco UCS Manager resides as embedded software on the Cisco UCS fabric interconnects, fabric extenders, servers, and adapters. No external management server is required, simplifying administration and reducing capital expenses for the management environment.

Cisco UCS SmartPlay Configurations to Accelerate Your Deployment

Whether your business needs to create a private, public, or hybrid cloud, Cisco

UCS SmartPlay bundles provide a fast and easy approach to the purchase of Cisco UCS technology. These preconfigured solutions are designed for cloud deployments and can be upgraded to match your memory, local storage, and I/O requirements.

Conclusion

Community-powered OpenStack software innovation provides a robust foundation for cloud-enabled applications. If your business has already deployed virtual infrastructure with Cisco UCS, adding OpenStack technology is the next step toward implementing cloud infrastructure. Similarly, if your IT department has adopted or is considering OpenStack technology, deploying it on Cisco UCS offers simplicity at scale so that your company can stay ahead of the competition.

For More Information

For information about Cisco UCS, visit http://www.cisco.com/go/ucs.

For more information about Cisco UCS SmartPlay configurations, please visit http://www.cisco.com/go/smartplay.

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