Cisco UCS: The Right Foundation for OpenStack Deployments

Solution Brief
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Highlights

Provision Cloud Infrastructure Faster

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

Scale on Demand

- The Cisco Unified Computing System™ (Cisco UCS®) architecture allows you to easily add computing and storage resources as demand increases.

Install OpenStack Quickly

- The Cisco® Validated Design for Cisco UCS with Red Hat OpenStack Platform accelerates deployment of an OpenStack cloud with tested guidelines and proven configurations.

Simplify Operations

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

Use Policy-Based Management

- Cisco UCS allows physical infrastructure to be built and configured automatically through software, according to predetermined application policies.

Improve Collaboration

- Programmable infrastructure enables the IT staff to provide on-demand resources to lines of business and development staff.

Don't compromise your OpenStack deployment. Cisco Unified Computing System™ (Cisco UCS®) is the right platform for global delivery of applications and services.

Innovation and digital disruption are 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 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) capable of being managed from a single interface. Server, networking, storage, and 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.

Supporting both traditional blade chassis and racks, Cisco UCS can be used to build a physically distributed, centrally managed system that delivers scalability and performance. A unified network 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.

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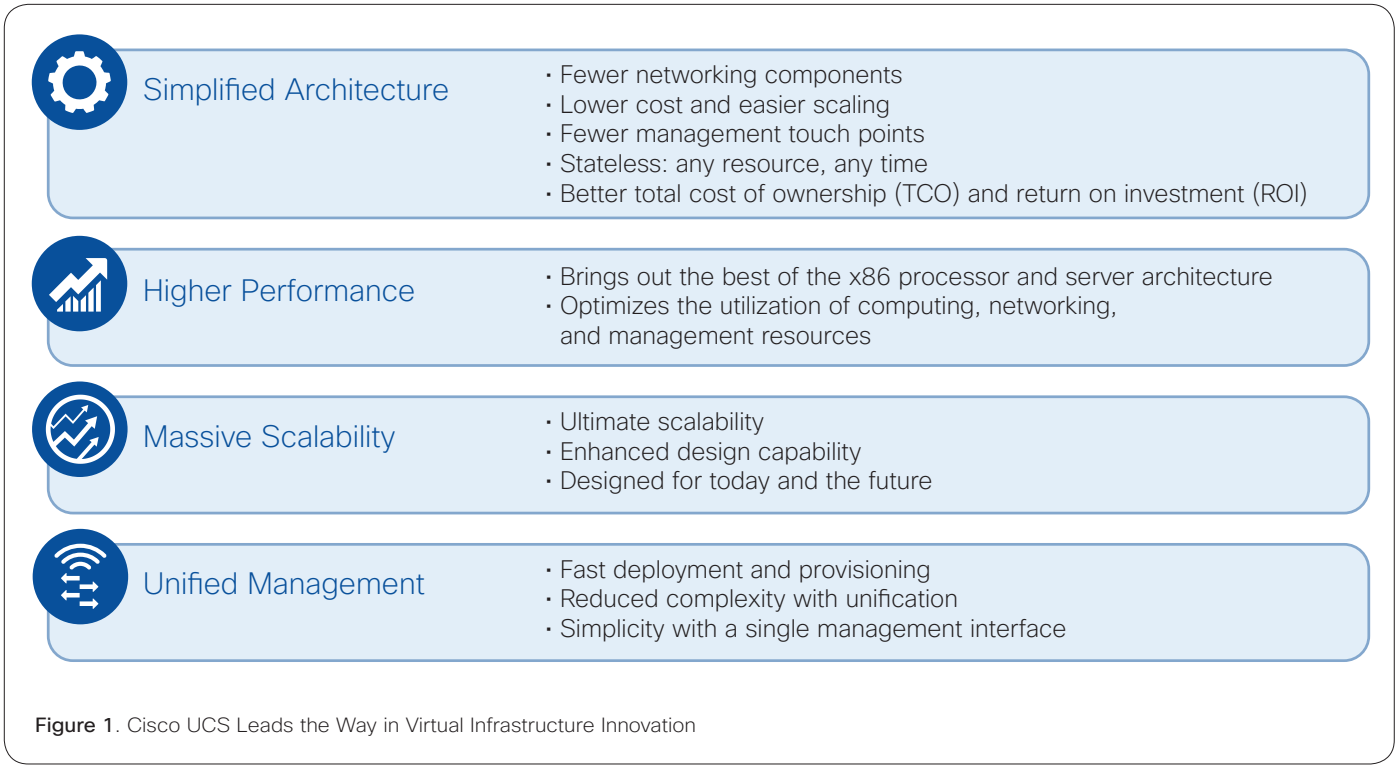

Figure 1. Cisco UCS Leads the Way in Virtual Infrastructure Innovation

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. By choosing Cisco UCS, IT departments remain flexible enough to change their cloud approach when market conditions change or when they want to take advantage of technological advancements and lower the cost of their OpenStack deployments.

Cost-Effective, Industry-Standard Foundation

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, In both 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.

Faster 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 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.

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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 impromptu 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 are part of a 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.

Greater Infrastructure Density

Cisco UCS enables cloud infrastructure to meet ever-increasing guest memory demands on fewer physical servers. The system's high-density design increases the number of virtual servers that can run on each physical host, saving capital, operations, physical space, and licensing costs. With support for up to 3 terabytes (TB) of high-speed memory in a 2-socket server, OpenStack deployments can host more applications using less-expensive servers without sacrificing performance.

Support for DevOps

At the core of Cisco UCS Integrated Infrastructure is a centralized policy framework that integrates with OpenStack Group Based Policy (GBP). Group-Based Policy exposes an application policy interface to OpenStack and helps ensure that the infrastructure automatically supports the security, connectivity, and performance requirements of an application. Compliance is automatically maintained as the application is scaled or migrated from a private cloud to a public cloud, greatly reducing management tasks. Other OpenStack services such as HEAT, as well as Puppet Grizzly and Chef Recipes, can use the policy framework to deploy a complete infrastructure that continues to meet application and tenant requirements.

Installation Confidence

Organizations that choose OpenStack for their cloud can take advantage of the Cisco infrastructure plug-ins that enable OpenStack to transparently deploy Cisco UCS servers and Cisco Nexus® switches and virtual switches. Baseline monitoring capabilities for system processes and physical components are also installed.

Less Administrative Effort

Cloud infrastructure can be extensive, so it must be easy and cost effective to manage. With Cisco UCS as your cloud foundation, the physical hardware is not configured directly, but through software, which provides the basis for automation that increases the speed and reliability of deployment and scale-out. A Cisco UCS domain consists of up to 160 Cisco UCS servers connected and managed by of a pair of fabric Interconnects running an instance of Cisco UCS Manager. The system is a scalable, multiserver platform in which all physical and logical components are unified by a central control plane and managed through software. Cisco UCS Manager is the single point of management for the entire Cisco UCS domain. All components—servers, I/O adapters, and network components—are integrated and managed as a whole through an intuitive GUI, a CLI, or an API.

With the addition of Cisco UCS Central Software, you can manage multiple Cisco UCS domains across globally distributed data centers and thousands of virtual machines. Cisco UCS Central Software is designed to provide global awareness of inventory and operations statistics, automated standards compliance, increased asset utilization, and better alignment with service-level agreements (SLAs). 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.

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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, visit http://www.cisco.com/go/smartplay.

For more information about Cisco solutions for OpenStack, visit http://www.cisco.com/go/openstack.

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