Cisco UCS Business Advantage Delivered: Data Center Management

Highlights

A Better Data Center Management Model
- Cisco Unified Computing System™ (Cisco UCS™) simplifies management with fewer touch points, reducing administrative and operating costs and improves efficiency and resource delivery

Faster Resource Allocation
- Policy-based templates automate and speed configuration and deployment; server configurations can be created in advance of equipment availability, further speeding asset availability

Role-Based Integration
- Cisco UCS increases subject-matter experts' strengths, effectiveness, and efficiency, with transparent, cross-discipline visibility

Cross-IT Visibility
- Cisco UCS Manager removes the traditional data center management silo barriers, speeding time to production for IT assets that are critical to business success

Dynamic Response
- Cisco UCS offers an "instant-on" solution, allowing servers to be brought online in minutes to meet critical business needs

Compliance
- Reliable, automated configuration management helps to ensure full compliance with corporate policies and mandates.

Today more than ever, successful businesses must be able to adapt quickly to rapidly changing business conditions. The real challenge is to be more flexible and agile than competitors, and to meet this challenge with a cost-efficient model.

One of the biggest challenges that IT organizations face is the need to balance the tactical concerns of information technology management with the strategic requirement to deliver results for long-term business initiatives. This challenge is difficult to meet because day-to-day systems and application management is resource intensive, and traditional infrastructure management architectures were put in place as an afterthought. These traditional "accidental architecture" management systems consist of too many tools that require administrators to waste time performing too many steps to handle routine administrative tasks. According to many industry studies, 70 percent of current IT budgets is spent on maintenance activities, and only 30 percent is spent on innovations. This spending imbalance slows, delays, or defers many initiatives that can provide significant revenue benefits for the business. In addition, there is little visibility or consistency across the multiple roles and tiers in the data center, forcing administrators to use sticky-notes as their primary method of communication. The overlaying of virtualization to these environments often causes administrative roles and communications to become less well defined. All these challenges hamper an IT organization's ability to balance the need to run day-to-day operations and meet compliance objectives, and the need to effectively and efficiently respond to the dynamic requirements of the business.

A Better Data Center Management Model

Cisco Unified Computing System™ (Cisco UCS™) delivers the business advantage that IT organizations need to shift their focus from tactical to strategic goals. The system's integrated, model-based Cisco UCS Manager increases visibility and access with a single tool that integrates many servers, chassis, and racks. Cisco UCS Manager supports all IT administrative roles, including server, network, and storage administration. It operates with an intuitive GUI, and its open standards-based XML API enables higher-level tools to integrate directly with the system.

Cisco UCS is the first data center platform that combines industry-standard, x86-architecture blade and rack-mount servers with networking and storage access into a single converged system. The system is self-aware and self-integrating, automatically discovering and inventorying components. This feature makes new capacity (server, network, and storage resources) easily accessible through the system's automated configuration. New resources can now be put to work in a fraction of the time required by traditional systems. 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 data center. Embedded management is an integral part of the system's foundation, enabling IT organizations to be more effective; reducing the

time that IT administrators, managers, and executives must spend on tactical operation activities; and freeing staff to focus on more strategic, business-critical functions. By achieving superior efficiencies, Cisco UCS dramatically affects not just today's work; it can allow businesses to advance with new initiatives and achieve benefits sooner.

Integrated Delivery

The system's unified, model-based management creates a single virtual blade chassis that is centrally managed yet physically distributed. The resulting smart infrastructure is managed through an intuitive role- and policy-based GUI, with more than 40 third-party developer management tools (see Table 1) that can manage Cisco UCS through an open standard XML API. Essential to the Cisco UCS design is the capability to integrate well with

other products, while delivering an embedded, unified management tool. This "better together" approach enables the use of customers' current management tools, delivers increased management efficiency, and provides economies of scale while reducing overall management overhead and cost. Cisco UCS offers a real and quantifiable business advantage, delivering faster time to production for assets, resulting in increased revenue potential.

Cisco UCS Business Advantage

The resulting Cisco UCS business advantage is a virtual infrastructure that spans blade chassis, rack-mount servers, and even racks and rows with server, network, and storage resource visibility and administration available from a single unified touch point (see Figure 1). This solution greatly simplifies all aspects of management with fewer
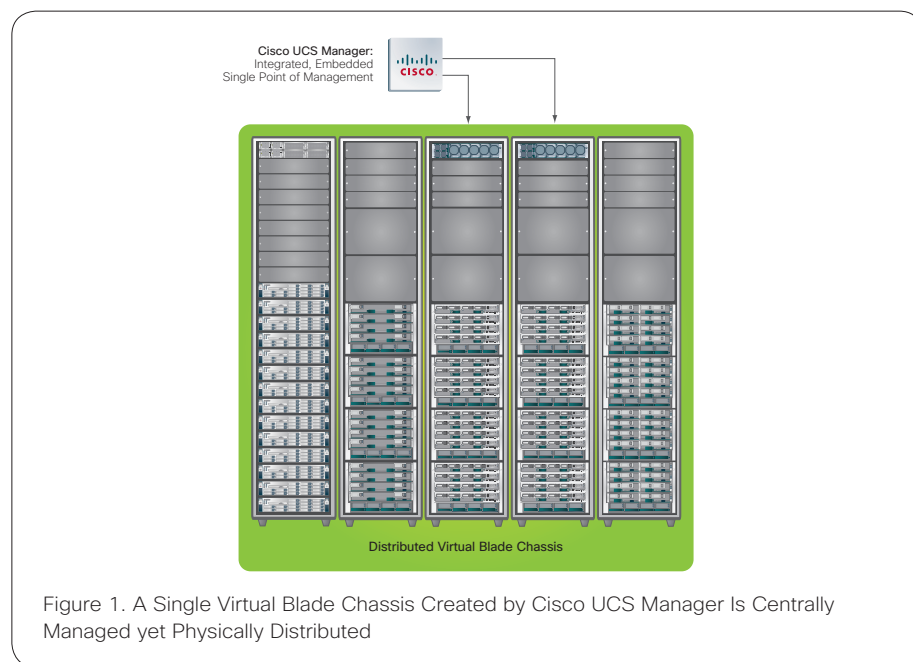

Figure 1. A Single Virtual Blade Chassis Created by Cisco UCS Manager Is Centrally Managed yet Physically Distributed

Table 1. Third-Party Management Tools That Integrate Through the Cisco UCS XML API, with More Management Tools Being Qualified Frequently

Operating Systems	Monitoring and Analysis	Deployment and Configuration	Service Orchestration
Microsoft Windows Server	BMC ProactiveNet Performance Management	BMC BladeLogic Server Automation	BMC Cloud Lifecycle Manager
Red Hat Enterprise Linux	HP Operations Manager and Open View	HP Server Automation and Network Automation	HP Operations Orchestration
Novell SuSE Enterprise Linux	CA Spectrum Infrastructure Manager and eHealth Performance Manager	CA Spectrum Automation Manager	VMware vCloud Director and vCenter Orchestrator
Oracle Enterprise Linux	IBM Tivoli Monitoring and Netcool/OMNIbus	IBM Tivoli Provisioning Manager and Network Manager	Cisco Tidal Enterprise Orchestrator and Intelligent Automation for Cloud
Oracle Solaris	EMC DCI	Microsoft Systems Center	Cloupia Unified Infrastructure Controller
	Microsoft Systems Center	Symantec Altiris Deployment Server	EMC Unified Infrastructure Manager
	Solarwinds Orion NPM	VMware vCenter	DynamicOps Cloud Automation Center
	Zenoss Enterprise		
	Compuware Vantage		
	InfoVista 5View and VistaInsight		

A 74% Reduction in Time to Provision Servers

[For 120 servers] "[i]mplementation was much easier than I had anticipated. We just configured the fabric interconnects, created address pools, and created service profiles to apply to each blade. Network provisioning took 30 minutes on Cisco UCS, compared to 90 minutes for a [traditional] blade server. Any additional chassis and [Cisco UCS] blades that we add in the future won't require even a minute more on connectivity."

Seth Mitchell
Infrastructure Team Manager
Slumberland, Inc.

http://www.cisco.com/en/US/solutions/collateral/ns340/ns517/ns224/ns944/case_study_C36-587967.html

touch points, reducing administrative and operating costs and improving efficiency and resource delivery.

Faster Resource Allocation

Traditional systems are typically managed through the use of multiple management tools, connected together to give the illusion of unity, and obscuring what is ultimately an accidental, multipart architecture. This approach forces administrators to use various element managers to interface with dozens of management touch points distributed across multiple servers, blade chassis, racks, and networking and storage resources, all necessary just to set up and run each server. This complex management environment creates more work for administrators and results in higher error rates, contributing to lower

availability that affects IT organizations and the overall productivity of the organization.

Improve Time-on-Task Efficiency

Cisco UCS model-based management allows administrators to create policy-based templates, configured in the form of Cisco® service profiles and available for recurring use. Templates can be used to create a Cisco service profile each time a new server is brought online, automating configuration and deployment. These templates (and the derivative service profiles) can define more than 95 server identity, personality, and connectivity attributes, including network and storage connectivity. Administrators can create multiple templates to match their various resource and application needs, freeing administrators and subject-matter experts from tedious manual, repetitive, time-consuming chores. Work that is often the source of errors that slow the time to production or increase the downtime of existing applications is eliminated.

Repurposing or reallocating servers is as simple as applying service profile templates. These templates enable servers to be easily redeployed and become better aligned with changing business needs and requirements. Administrators can create a new service profile (or configuration) and launch a server in minutes. This capability creates improved capital utilization without increasing administrative costs. The end result is a more efficient use of capital investment dollars with an enhanced return on investment by delivering the best-aligned data center resources for any initiative.

Role-Based Integration

Blade servers and virtualization have resulted in a breakdown of traditional data center administrative roles because server administrators often manage blade chassis and resident network switches, and system (application) administrators often manage hypervisor-based software switches. This role breakdown makes data center security and quality of service (QoS) consistency and adherence difficult. These shifted roles put additional stress on the organization without any added benefit. Cisco UCS Manager supports security and management that is consistent with historic data center server, storage, and network administrative roles. Subject-matter experts can use Cisco UCS Manager to establish configuration policies that are then applied easily and faithfully when servers are actually configured. This approach uses each subject-matter experts' expertise, allowing each to do what he or she does best in an independent, efficient, and effective manner that can be accessed and used by other groups in the data center.

Simplify Role-Based Management

All server, network, and I/O resources have their personality abstracted so that every aspect of the hardware and network configuration can be programmed in service profiles. More than 95 attributes can be programmed, including MAC addresses and unique universal identifiers (UUIDs), firmware, BIOS settings, RAID controller settings, host bus adapter (HBA) and network interface card (NIC) settings, network security, and QoS. With Cisco virtual

interface cards (VICs), even the number, type, and speed of virtual and physical interfaces (NIC or HBA) can be programmed, enabling true virtual machine portability that includes network policies, security, and QoS. After the appropriate administrators (role based) define the properties, the configuration is applied to one or more servers as needed, making configuring hundreds of servers as easy as configuring a single server.

Maintain Roles in Virtualized Environments

With the Cisco Fabric Extender Architecture (FEX Architecture), roles and configuration settings are extended all the way to virtual machines. Even when a virtual machine moves from one server to another, all identity and

configuration information (particularly network, storage access, and security information) automatically travels with the virtual machine and is maintained and consistent throughout the move. This consistency helps ensure adherence to data center policies, regardless of whether the server is physical or virtual or where it resides, now or in the future. Today's environment of regulatory and government security and compliance policy mandates make this feature increasingly valuable.

Cross-IT Visibility

With traditional management architectures, it is difficult to view assets across the data center in one clear, concise presentation. The Cisco UCS infrastructure allows the entire ecosystem to be managed as a single logical entity within a higher-level framework. Within this framework, administrators in each administrative role can view the configurations and policies established by the other roles in addition to managing their specific environments. This enhanced management view enables transparent visibility to other role assets and policies without sacrificing individual role-based

security, responsibility, visibility, and element control.

Enable Efficient Cooperation Across the Data Center

Gone are the days of sticky-notes from one administrator to another to communicate important configuration information for individual systems. Cisco UCS Manager enables, encourages, and supports immediate, real-time, and efficient cooperation between administrative roles with cross-role transparent visibility. This visibility provides a path to preprovisioning of critical elements in the deployment process. The inherent cooperative nature of Cisco UCS Manager removes the traditional data center management silo barriers, which have historically slowed the time to production for important IT assets that are critical to business success.

Achieve Visibility in Virtualized Environments

Traditional virtualized environments require the use of a software-based switch that resides in the hypervisor. The interposition of a new switch causes a loss of visibility from the physical network interface to virtual

machines. The result is a network that cannot be seen, and so cannot be effectively managed, and therefore cannot be secured. Cisco FEX Architecture extends the visibility of network and storage access all the way to individual virtual machines. This capability supports the uniform application of data center policies and processes across all servers, both physical and virtual. Regardless of a physical or virtual machine's state or location, network security and QoS is maintained automatically, helping ensure policy compliance through automation rather than error-prone, manual procedures.

Dynamic Response

Responding rapidly to changing business conditions is one of the biggest challenges that IT organizations face. Manual, time-consuming, and error-prone server configuration slows response time and increase the risk of downtime. Automated configuration with Cisco UCS service profiles gives companies true instant-on capability with rapid one-touch deployment, redeployment, and scaling. This feature puts capital equipment to work more quickly to respond to business

changes, providing greater agility and flexibility and increasing the return on investment. Cisco UCS blade server slots can be set to automatically configure blade servers upon insertion with network and storage settings and be in compliance with the policies established by server, network, and storage administrators. Configuration can also be performed as a manual process with full server identity parameter control and integration with network and storage resources.

Compliance

Not complying with government mandates, industry regulations, or data center best practices can have enormous consequences. With the ever-increasing array of codes and regulations, data centers must have the appropriate governance models in place, and those policies must be consistently and uniformly applied to remain in compliance. The Cisco UCS model provides a source of truth about the system, enabling Cisco UCS to be integrated as part of ITIL processes and higher-level management tools and facilitating compliance with existing data center policies, best practices, and governance. In addition, Cisco UCS reliably and repeatedly automates configuration management for all Cisco UCS infrastructure through the use of templates. It makes compliant configurations the norm, which means that noncompliant configurations can be created only with additional effort and workarounds.

Conclusion

Cisco UCS delivers a data center business advantage that goes beyond efficiency, making IT organizations truly more effective in their mission. This effectiveness is accomplished with cost-effective, unified, model-based management that provides faster resource allocation and enables businesses to respond to changing needs dynamically, with instantly available agility and flexibility. The embedded management solution easily integrates with organizations' current data center policies and practices, enabling role-based administration and cross-IT visibility for both physical and virtual servers for efficient collaboration. This visibility and control is handed to the organization's high-level management software, reducing points of management and simplifying compliance with industry and government regulations at the server and data center levels.

For More Information

To learn more about the Cisco UCS and how it delivers business advantage, visit http://www.cisco.com/go/ucs or contact your local account representative.