Cisco UCS Manager 2.2

Product Overview

Cisco UCS® Manager provides unified, embedded management of all software and hardware components of the Cisco Unified Computing System™ (Cisco UCS) across multiple chassis, rack servers, and thousands of virtual machines. Cisco UCS Manager manages Cisco UCS as a single entity through an intuitive GUI, a command-line interface (CLI), or an XML API for comprehensive access to all Cisco UCS Manager functions.

Cisco UCS Manager is embedded on a pair of Cisco UCS 6200 or 6100 Series Fabric Interconnects using a clustered, active-standby configuration for high availability. Cisco UCS Manager participates in server provisioning, device discovery, inventory, configuration, diagnostics, monitoring, fault detection, auditing, and statistics collection. An instance of Cisco UCS Manager with all Cisco UCS components managed by it forms a UCS domain that can include up to 160 servers.

By enabling better automation of processes, Cisco UCS Manager allows data center managers to achieve greater agility and scale in their server operations while reducing complexity and risk. Cisco UCS Manager provides flexible role- and policy-based management using service profiles and templates. The system's information can be exported to configuration management databases (CMDBs) for use in ITIL processes. Cisco UCS Manager also provides detailed Cisco UCS system visibility to higher-level systems management tools from independent software vendors (ISVs) such as BMC, CA, HP, and IBM, and others. ISVs and in-house developers can use the Cisco UCS XML API to enhance the value of the Cisco UCS platform based on their unique requirements.

Cisco UCS Manager 2.1 and later can register with Cisco UCS Central in a large-scale multi-domain Cisco UCS environment. The physical connection of Cisco UCS C-Series Rack Servers within a domain is also simplified.

Features and Benefits

Service Profiles

An important feature of Cisco UCS Manager is its use of service profiles to provision and manage Cisco UCS blade servers and rack servers and their I/O properties within a single management domain. Service profiles are created by server, network, and storage administrators and are stored in the Cisco UCS 6200 or 6100 Series Fabric Interconnects. Infrastructure policies needed to deploy applications are encapsulated in the service profiles. The policies coordinate and automate element management at every layer of the hardware stack, including RAID levels, BIOS settings, firmware revisions and settings, server identities, adapter settings, VLAN and VSAN network settings, network quality of service (QoS), and data center connectivity.

The service profile consists of a software definition of a server and the associated LAN and SAN connectivity that the server requires. When a service profile is associated with a server, Cisco UCS Manager automatically configures the server, adapters, fabric extenders, and fabric interconnects to match the configuration specified in the service profile. Service profiles improve IT productivity and business agility. With service profiles, infrastructure can be provisioned in minutes instead of days, shifting the focus of IT from maintenance to strategic initiatives. Service profiles enable preprovisioning of servers, making it possible to configure new servers and associated LAN and SAN access settings even before the servers are physically deployed.

Service profiles benefit both virtualized and nonvirtualized environments. Workloads may need to be moved from one server to another to change the hardware resources assigned to a workload or to take a server offline for maintenance. Service profiles can be used to increase the mobility of nonvirtualized servers. They also can be used in conjunction with virtual clusters to bring new resources online easily, complementing existing virtual machine mobility. Service profiles are also used to enable Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) capabilities for servers that will run hypervisors enabled for Cisco Data Center VM-FEX.

Service Profile Templates

Service profile templates are used to simplify the creation of new service profiles, helping ensure consistent policies within the system for a given service or application. Whereas a service profile is a description of a logical server and there is a one-to-one relationship between the profile and the physical server, a service profile template can be used to define multiple servers. The template approach makes it just as easy to configure one server or hundreds of servers with perhaps thousands of virtual machines. This automation reduces the number of manual steps needed, helping reduce the opportunities for human error, improving consistency, and further reducing server and network deployment times.

Management Interface Options

Cisco UCS Manager has a GUI as well as a CLI for use by server, network, and storage administrators. Cisco UCS Manager also provides a powerful XML API for integration with existing data center systems management tools. Some examples of additional management interfaces are Intelligent Platform Management Interface (IPMI); keyboard, video, and mouse (KVM); serial-over-LAN (SoL); and Simple Network Management Protocol (SNMP). The XML interface allows the entire system to be monitored or configured externally by higher-level systems management tools from Cisco's many ecosystem partners. Figure 1 shows the Cisco UCS Manager GUI showing components in a Cisco UCS server chassis.

Figure 1.　Cisco UCS Manager Provides Visibility into All Physical and Virtual Networking, Computing, and Storage Infrastructure in the Data Center
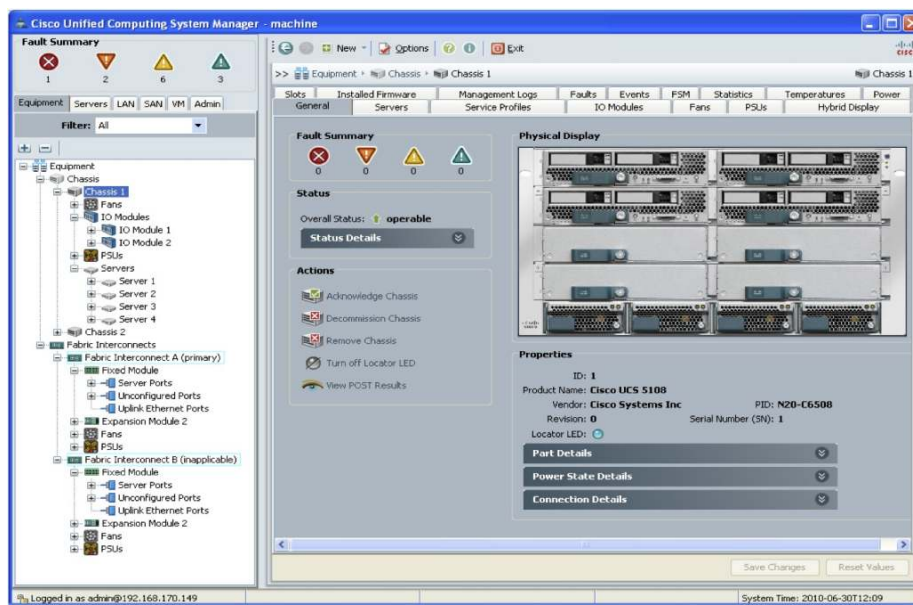
Table 1 summarizes the main features of Cisco UCS Manager.

Table 1.   Features and Benefits

Feature	Benefit
Embedded device management	Cisco UCS Manager is delivered embedded in the Cisco UCS 6200 or 6100 Series Fabric Interconnects. It is not a separate entity, and no separate management station or associated software is needed.
Service profiles	The service profile allows Cisco UCS servers to be treated as raw computing capacity that can be allocated and reallocated among application workloads, enabling a much more dynamic and efficient use of the server capacity than exists in today's data centers. Server deployment with service profiles takes minutes instead of the many days or weeks that server deployment takes in many existing data centers. Service profile templates help ensure consistent policies within the system for a given service or application.
Policy-based management	Cisco UCS Manager implements policy-based management of the Cisco UCS server and network resources. Network, storage, and server administrators all participate in creating policies in their areas of domain expertise. Policies are consumed in service profiles, allowing Cisco UCS Manager to fully configure the servers, adapters, and fabric extenders and the appropriate isolation, QoS, and uplink connectivity on the Cisco UCS 6200 or 6100 Series Fabric Interconnects.
Firmware provisioning	Cisco UCS Manager provides an easier, faster, more flexible, and unified solution for managing firmware across the entire hardware stack than traditional approaches to server firmware provisioning. Using service profiles, administrators can associate any compatible firmware with any component of the hardware stack. After the firmware versions are downloaded from Cisco, they can be provisioned within minutes on components in the server, fabric interconnect, and fabric extender based on the required network, server, and storage policies for each application and operating system. The firmware auto-installation capability simplifies the upgrade process by automatically sequencing and applying upgrades to individual system elements.
Autodiscovery and dynamic pooling	Cisco UCS Manager automatically discovers devices that are added, moved, or removed from the system; adds them to its inventory; and applies service profile configurations as appropriate. Using policies, servers can be automatically grouped into dynamic pools based on capacity, scale, or performance as they are discovered.
Storage topology flexibility	Cisco UCS Manager supports a variety of storage topologies with multihop Fibre Channel over Ethernet (FCoE), Fibre Channel zoning, and unified connect with NetApp storage.
Cisco Data Center VM-FEX	Cisco UCS implements Cisco Data Center VM-FEX technology. This technology consolidates virtual and physical networking resources into a single infrastructure. Data center administrators can use it to provision, configure, manage, monitor, and diagnose virtual machine network traffic and bare-metal network traffic within a unified infrastructure.
GUI and CLI	All aspects of Cisco UCS Manager can be controlled through a Java-based GUI that is automatically downloaded from the Cisco UCS 6200 or 6100 Series Fabric Interconnects or through a fully functional CLI.
XML-based API	A full-featured XML API exposing more than 9000 objects provides powerful new opportunities for service providers, ISVs, and users interested in customizing the behavior of Cisco UCS to enhance its value in their own unique environments.
Integration with leading systems management solutions	Tested, optimized integration with higher-level systems tools covering the entire operation lifecycle, from orchestration through deployment to monitoring and analysis, helps IT ensure transparent workload migration and simplified operations and accelerate service delivery, using familiar processes and tools.
Role-based access control (RBAC)	RBAC simplifies operating tasks that span server, network, and storage administrator teams, while preserving the specialized knowledge that exists in each group. This approach allows subject-matter experts to continue with their normal procedures, but all the configuration data is captured in a single, unified device manager, instead of in the separate, individual device managers that exist in today's data centers.
High availability	Cisco UCS Manager is designed for enterprise data centers that require high availability. Two fully redundant instances of Cisco UCS Manager are replicated across a pair of Cisco UCS 6200 or 6100 Series Fabric Interconnects, so the loss of a single fabric interconnect will not affect Cisco UCS Manager access or use.
Scalability	One Cisco UCS Manager instance can manage two Cisco UCS 6200 or 6100 Series Fabric Interconnects, multiple Cisco UCS 5100 Series Chassis, 20 Cisco UCS 2200 or 2100 Series Fabric Extenders, and 160 Cisco UCS B-Series Blade Servers or Cisco UCS C-Series Rack Servers.
Cisco® Call Home support	The Cisco Call Home feature provides proactive diagnostic information and real-time alerts when problems are detected.

Management Scope

Cisco UCS Manager provides end-to-end management of all the devices in the Cisco UCS domain it manages. Devices that are uplinked from the fabric interconnect must be managed by their respective management applications.

Licensing

Cisco UCS Manager is provided at no additional charge with every Cisco UCS platform.

No Additional System Requirements

Cisco UCS Manager resides as embedded software on the Cisco UCS fabric interconnects, fabric extenders, servers, and adapters. No external management server is required, thereby simplifying administration and reducing capital expenses for the management environment. The communication between the Cisco UCS Manager on the fabric interconnect and the subsidiary functions found in the fabric extenders, chassis, servers, and adapters is built in and automatic. This feature reduces the challenges and costs associated with implementation and maintenance of connectivity between traditional central management servers and the devices they are tasked with managing.

Why Cisco?

Cisco has significant experience in responding to customer requirements with solid technology innovations for the enterprise data center. Enhancing Cisco's ability to deliver standards-based solutions is a broad ecosystem of industry-leading partners that provide end-to-end customer solutions and services that can accelerate the transition to a unified computing architecture. Unified computing elevates the traditional product classification of network, server, storage, operating systems, and applications to a data center-wide vision. Cisco Unified Computing Services helps our customers quickly deploy data center resources, simplify ongoing operations, and optimize infrastructure to better meet business needs. For more information about these and other Cisco Data Center Services offerings, visit http://www.cisco.com/go/unifiedcomputingservices.

For More Information

- Understanding Cisco UCS Manager Service Profiles (white paper):
  http://www.cisco.com/en/US/partner/prod/collateral/ps10265/ps10281/white_paper_c11-590518.html.
- Cisco UCS Manager Architecture (white paper):
  http://www.cisco.com/en/US/partner/prod/collateral/ps10265/ps10281/white_paper_c11-525344.html.
- Manage Cisco UCS C-Series Rack-Mount Servers (white paper):
  http://www.cisco.com/en/US/prod/collateral/ps10265/ps10281/whitepaper_c11-701809.html
- Cisco Unified Computing: http://www.cisco.com/en/US/partner/netsol/ns944/index.html
- Cisco UCS Manager: http://www.cisco.com/en/US/partner/products/ps10281/index.html
- Forrester Report, Total Economic Impact of the Cisco UCS:
  http://www.cisco.com/en/US/solutions/collateral/ns340/ns517/ns224/ns944/total_economic_impact_forrester_research.pdf