Managing Cisco UCS C-Series Rack Servers as Standalone Systems

Cisco UCS C-Series Rack Servers
Cisco UCS® C-Series Rack Servers extend unified computing innovations to a rack-mount form factor. They are the only servers that can be used either standalone or integrated as part of the Cisco Unified Computing System™ (Cisco UCS).

When used as standalone servers, these systems can be managed through the Cisco® Integrated Management Controller (IMC), integrated management software that provides network-based access to every aspect of server management, from power state and firmware revisions to remote keyboard, video, and mouse (KVM) devices.

The flexibility to manage rack servers as standalone servers or as part of Cisco UCS makes Cisco UCS C-Series Rack Servers the preferred choice for many organizations. These organizations may also prefer Cisco UCS C-Series Rack Servers for their high I/O bandwidth, the massive amount of memory they can support, and the massive amount of internal disk space that is available.

Comprehensive, Flexible, Standards-Based Standalone Server Management
As standalone systems, Cisco UCS C-Series servers provide a flexible, comprehensive, standards-based set of management interfaces that can be accessed by in-band or out-of-band tools and techniques (Figure 1):
• Ethernet network access to the Cisco IMC
• Agent and agentless management with third-party tools through in-band data-plane connections
• Front-or back-panel access for video, USB (with the capability to boot from a USB CD/DVD drive), and serial console access

Logical Management Interfaces
The Cisco IMC runs in the system’s baseboard management controller (BMC) and can be accessed through the server network management ports. It provides out-of-band management that can be accessed through standard management protocols, CLIs, and web-based interfaces.

IPMIv2
IPMI supports out-of-band management through third-party tools including commercial enterprise management systems and open-source tools such as ipmitool. IPMI allows these tools to manage server power states.

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and monitor operation parameters available through temperature, fan-speed, power-supply voltage, and power sensors.

SNMPv3
SNMP supports out-of-band management with third-party tools including network management tools that use SNMP to monitor system status variables and receive SNMP traps in the event that the status falls outside predetermined ranges.

Open XML API
The Cisco IMC supports an open XML API that enables third-party software to access all the system’s features and capabilities discussed in “Cisco IMC Features and Capabilities” later in this document.

Command-Line Interface
The Cisco IMC CLI can be accessed through a Secure Shell (SSH) connection to the Cisco IMC. Through this interface, administrators can perform server control and administration tasks, and they can script configuration tasks so that they can be reliably reproduced on a number of servers without errors.

Web User Interface
The web user interface supports out-of-band management through a standard web browser. It includes server management, remote KVM, virtual media, and administration capabilities:

- Server management includes power management, server reset, component inventory, and event logging.
- Virtual media enables peripherals such as CD and DVD drives to appear as if they were connected directly to the server, facilitating remote OS and application software installation.
- Remote KVM capability gives remote administrators the same level of control, including console video, as when they are physically connected to the server.

Managing Through Enterprise Management Tools
Third-party management tools typically use a combination of in-band and out-of-band management techniques, both of which are supported by Cisco UCS C-Series servers.

- **In-band management** is performed through the server’s data network connection. Different tools use different techniques, including interaction with the host operating system with and without the use of agents. In-band management can interact with OS-based management tools to accomplish tasks including inventory, performance management, troubleshooting, and OS and interface provisioning.

- **Out-of-band management** tools such as Altiris Deployment Solution, BMC BladeLogic, CA Spectrum, HP IT Performance Suite, IBM Tivoli, and Microsoft System Center use Cisco IMC interfaces available through the network management port. These tools typically interact with servers through IPMI, SNMP, or the open XML API.

Cisco IMC Features and Capabilities
With the Cisco IMC, administrators can perform the following server management tasks with role-based access that is easily defined on a per-user basis:

- Power on, power off, power cycle, reset, and shut down the server
- Manage server BIOS settings
- Toggle the locator LED
- Configure the server boot order
- Configure Cisco virtual interface cards (VICs)
- View server properties and sensors
- Create and manage local user accounts and connect to external authentication and authorization systems, including Microsoft Active Directory
- Configure network-related settings, including network interface card (NIC) properties, IPv4, VLANs, and network security
- Configure communication services, including HTTP, SSH, and IPMI over LAN
- Specify events to trigger platform event traps
- Manage certificates
- Update system firmware
- Monitor faults, alarms, and server status

Why Cisco?
Cisco UCS continues Cisco’s long history of innovation in delivering integrated systems for improved business results based on industry standards. Cisco delivers foundational technologies, including the Cisco Nexus® Family, supporting unified fabric and server virtualization. Cisco UCS delivers innovation in architecture, technology, partnerships, and services. Cisco is well positioned to deliver innovation through a systems approach to computing that unifies network intelligence and scalability with innovative application specific integrated circuits (ASICs), integrated management, and standard computing components.

Cisco Services
Cisco Unified Computing Services helps you quickly deploy servers, optimize ongoing operations to better meet your business needs, and migrate to Cisco’s unified computing architecture.

For More Information

Managing Cisco UCS C-Series Rack Servers with Cisco UCS Manager discusses how Cisco UCS C-Series Rack Servers integrate with Cisco UCS for greater management scalability.