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# Cisco Integrated Management Controller (IMC)

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## Product overview

The Cisco® Integrated Management Controller (IMC) is a baseboard management controller that provides embedded server management for Cisco UCS® C-Series Rack Servers and Cisco UCS S-Series Storage Servers. The Cisco IMC enables system management in the data center and across distributed branch-office locations. It supports multiple management interfaces, including a Web User Interface (Web UI), a Command-Line Interface (CLI), and an XML API that is consistent with the one used by Cisco UCS Manager. IMC also supports industry-standard management protocols, including Redfish, Simple Network Management Protocol Version 3 (SNMPv3), and Intelligent Platform Management Interface Version 2.0 (IPMIv2.0). Figure 1 shows a sample Cisco IMC screen.



**Figure 1.** Cisco IMC server properties details, including chassis status and server utilization

## Features and benefits

Table 1 summarizes the features and benefits of the Cisco IMC.

**Table 1.** Features and benefits

Feature	Description
<b>Simplified server setup and configuration</b>	
<b>Simple firmware upgrade</b>	<ul style="list-style-type: none"> <li>Out-of-band upgrades               <ul style="list-style-type: none"> <li>BIOS, Cisco IMC, and Cisco UCS VIC adapter firmware upgrade</li> <li>RAID and LOM</li> </ul> </li> <li>Automated multisystem upgrade (noninteractive upgrade)</li> </ul>
<b>Integrated diagnostics</b>	Platform diagnostic suite
<b>Local storage configuration</b>	<ul style="list-style-type: none"> <li>Out-of-band RAID configuration wizard</li> <li>Simple, fast configuration of RAID arrays and multiple volumes</li> </ul>

Feature	Description
<b>Boot control</b>	<ul style="list-style-type: none"> <li>• Flexible boot target configuration management</li> <li>• One-time boot support</li> </ul>
<b>Cisco UCS Virtual Interface Card (VIC) configuration</b>	<ul style="list-style-type: none"> <li>• Configuration of Cisco UCS VIC</li> <li>• Configuration to enable Ethernet and Fibre Channel over Ethernet (FCoE)</li> <li>• Network Interface Card (NIC) configuration, which eliminates the need for configuration from the OS</li> </ul>
<b>Interfaces</b>	
<b>XML API</b>	<ul style="list-style-type: none"> <li>• Easy-to-use programmable interface</li> <li>• Agentless</li> <li>• Microsoft Windows PowerShell support (Cisco UCS PowerTool for standalone Cisco UCS C-Series Rack Servers)</li> <li>• Python SDK</li> <li>• Cisco IMC Supervisor for multisystem monitoring and management</li> <li>• Consistent model for Cisco UCS Manager and standalone deployments</li> </ul>
<b>WebUI</b>	<ul style="list-style-type: none"> <li>• Access to IMC configuration and control from a web browser</li> <li>• HTML5 WebUI support</li> </ul>
<b>CLI</b>	CLI for scripted environments
<b>Redfish</b>	Support for Redfish
<b>SNMP v2 and v3</b>	Embedded agentless MIB catalog
<b>IPMI v2.0</b>	Support for IPMI tool
<b>Serial over LAN</b>	Support for serial-over-LAN capability
<b>SmartAccess: Serial</b>	Capability to access the BMC CLI through host serial port
<b>SMTP support</b>	Ability to send emails for faults
<b>Remote administration</b>	
<b>Virtual Keyboard, Video, and Mouse (vKVM)</b>	<ul style="list-style-type: none"> <li>• Remote access to server console screen (HTML5)</li> <li>• HTML5 vKVM available for M4 and M5 servers</li> </ul>
<b>Virtual power on and off</b>	Remote power on, off, and reset from WebUI, KVM, and XML API
<b>Global team collaboration (KVM)</b>	<ul style="list-style-type: none"> <li>• RBAC for distributed global teams</li> <li>• Up to 5 simultaneous administrator sessions</li> </ul>
<b>Locally mountable virtual media</b>	<ul style="list-style-type: none"> <li>• Remote mounting of network-available media using Network File System (NFS) and Common Internet File System (CIFS); KVM-mounted or IMC-mounted</li> <li>• Connectivity support for USB, CD, ISO images, virtual floppy drive images, and remote storage</li> </ul>
<b>Serial over LAN</b>	SSH serial-over-LAN server administration
<b>Network Time Protocol (NTP)</b>	NTP support for remote operations

Feature	Description
<b>SNMP</b>	<ul style="list-style-type: none"> <li>• SNMP support from management plane</li> <li>• Use of Cisco Unified Computing System™ (Cisco UCS) MIBs</li> <li>• Consistent data format across Cisco UCS Manager and standalone modes</li> </ul>
<b>XML API</b>	Agentless out-of-band management
<b>Cisco Intersight™</b>	Cisco IMC embeds a Cisco Intersight Device Connector for connectivity with Cisco Intersight. Cisco UCS C-Series M4 servers can support Cisco Intersight when the corresponding Cisco IMC version is 3.0(4) or later, Cisco UCS C-Series M5 servers can support Cisco Intersight when the corresponding Cisco IMC version is 3.1 or later, and Cisco UCS S3260 standalone servers support Cisco Intersight when the corresponding Cisco IMC version is 4.0(4e) or later.
<b>Embedded system health monitoring</b>	
<b>System health and configuration data</b>	Embedded fault engine, delivering consistent error reporting through IMC interfaces
<b>System event log</b>	Security compliance and event monitoring and filtering
<b>Audit log</b>	Security compliance and filtering
<b>Technical support data export</b>	<ul style="list-style-type: none"> <li>• Quick access to configuration information, logs, and diagnostic data</li> <li>• Simpler and faster troubleshooting and resolution of technical problems</li> </ul>
<b>Watchdog timer</b>	System crash recovery
<b>Nonmaskable interrupt (NMI) generation</b>	<ul style="list-style-type: none"> <li>• Generation of NMI to x86 host</li> <li>• Creation of crash dump file</li> <li>• Debugging of OS crashes</li> </ul>
<b>RAID support</b>	Embedded monitoring of entire RAID subsystem: RAID controller, battery backup units, SuperCap batteries, and Hard-Disk Drives (HDDs)
<b>MAC address inventory</b>	Inventory of all physical NIC and LOM MAC addresses
<b>Cisco UCS VIC support</b>	<ul style="list-style-type: none"> <li>• Monitoring of Cisco UCS VIC</li> <li>• Ethernet and FCoE monitoring</li> </ul>
<b>CPU, temperature, fan, and motherboard</b>	<ul style="list-style-type: none"> <li>• Remote status and monitoring of system health</li> <li>• Run-time monitoring</li> <li>• Complete system sensor data</li> </ul>
<b>System memory</b>	Inventory, specifications, and health status
<b>Predictive failure analysis</b>	<ul style="list-style-type: none"> <li>• Memory DIMM failure prediction</li> <li>• Battery backup unit or SuperCap battery</li> </ul>
<b>Power management</b>	
<b>Dynamic power capping</b>	Data center power management
<b>Power monitoring and reporting</b>	<ul style="list-style-type: none"> <li>• Power management</li> <li>• Compliance reporting</li> </ul>

Feature	Description
<b>Network connectivity</b>	
<b>Single-wire connection</b>	<ul style="list-style-type: none"> <li>• Simplified connectivity when deployed in a Cisco UCS Manager domain</li> <li>• Support for simplified connection with Cisco UCS VIC</li> <li>• Converged fabric</li> </ul>
<b>Dedicated management port</b>	Dedicated management port for installations requiring separate cable connection for data and management
<b>Generic connectivity support</b>	<ul style="list-style-type: none"> <li>• Dynamic Host Configuration Protocol (DHCP) support</li> <li>• IPv4 support</li> </ul>
<b>Shared LAN-On-Motherboard (LOM) mode</b>	<ul style="list-style-type: none"> <li>• Simplified cabling</li> <li>• Management and data traffic over a single wire</li> </ul>
<b>Security</b>	
<b>Secure Sockets Layer (SSL)</b>	Cryptographic security
<b>Secure Shell (SSH)</b>	Cryptographic network protocol for secure data communication (including key-based authentication)
<b>Lightweight Directory Access Point (LDAP) support</b>	Out-of-the-box Microsoft Active Directory integration (including encrypted connection)
<b>Role-based access control (RBAC)</b>	RBAC for separation of concerns and authorizations in data center operation
<b>Locally stored accounts</b>	Capability to define user accounts locally
<b>Power-on password</b>	Enable password requirement at power-on or reboot
<b>Management IP whitelist</b>	Prevents connections from being made from unspecified IP addresses
<b>Other</b>	
<b>Integration with Cisco UCS Manager</b>	Service profile management model <ul style="list-style-type: none"> <li>• Scalability</li> <li>• Virtual machine migration</li> </ul>
<b>Local language support</b>	Language support for Chinese, English, Japanese, Korean, Russian, and Spanish

## Management scope

Cisco IMC provides end-to-end management of all the devices in a rack server.

## Licensing

Cisco IMC is currently provided at no additional charge with Cisco UCS C-Series Rack Servers and Cisco UCS S-Series Storage Servers.

Cisco IMC is supported on all Cisco UCS C-Series Rack Servers and Cisco UCS S-Series Storage Servers

## Why Cisco?

Cisco has significant experience in responding to customer requirements with solid technology innovations for the enterprise data center. Enhancing Cisco’s capability 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 data center 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 <https://www.cisco.com/go/unifiedcomputingservices>.

## Cisco environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>

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## For more information

For additional information, see:

- [Cisco UCS Manager](#)
- [Understanding Cisco UCS Manager Service Profiles \(white paper\)](#)
- [Cisco UCS C-Series Rack Servers](#)
- [Cisco Unified Computing](#)
- [Cisco IMC Supervisor](#)
- [Integrating with Cisco IMC](#)
- [Cisco Intersight](#)

## Footnotes

This product includes cryptographic software written by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)).

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<https://www.openssl.org/>)

This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).

This product includes software developed by Yen Lim and North Dakota State University.

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