Cisco UCS Server Configuration Utility, Release 3.1(6) User Guide

For Cisco UCS C-Series Servers

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Preface

This preface describes the organization and conventions of the *Cisco UCS Server Configuration Utility, Release 3.1(6)*. It also provides information on how to obtain related documentation and submit a service request.

Audience

This guide is intended primarily for data center administrators with responsibilities and expertise in server, storage, and network administration and network security.

Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	Overview	Provides an introduction to the utility and the features it provides.
Chapter 2	Launching UCS Server Configuration Utility	Contains information on booting the utility.
Chapter 3	Understanding UCS Server Configuration Utility User Interface	Contains information about the GUI and its elements.
Chapter 4	Viewing Server Inventory	Contains information about viewing the server inventory
Chapter 5	Viewing Server Health	Contains information about viewing the server health.
Chapter 6	Configuring Boot Order and RAID Levels	Contains information about the BIOS boot order and the RAID levels.
Chapter 7	Installing Operating Systems	Contains information about installing the operating systems.
Chapter 8	Diagnostic Tools	Contains information about diagnostic tools.

Chapter	Title	Description
Chapter 9	Viewing Logs	Contains information about viewing system and system event logs.
Chapter 10	Troubleshooting	Contains troubleshooting information and frequently asked questions.

Related Documentation

The documentation set for the Cisco Unified Computing System (UCS) C-Series rack-mount servers is described in the roadmap document at the following link:

Cisco UCS C-Series Documentation Roadmap

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.

Overview

The Cisco UCS Server Configuration Utility (SCU) is an application that helps you manage various tasks on your server. The utility helps you easily set up and manage your servers from a single application.

UCS-SCU reduces the complexity and time associated with setting up and maintaining Cisco C-Series servers. Server deployment is made easier. It guides you through questions to help quickly configure the server through automatic recognition of server hardware, with minimal reboots and an automated unattended operating system installation.

Using the SCU, you can perform the following tasks:

- Upgrade, troubleshoot, and configure the UCS C-Series server
- View server inventory
- Configure BIOS boot order
- Configure RAID volumes on attached hard drives
- Install an operating system
- Perform interactive offline diagnostics
- View server health and logs

Note Cisco UCS SCU does not support Internationalization.

This chapter includes the following sections:

- Supported Operating Systems, page 1-1
- Supported Platforms, page 1-2
- Supported Peripheral Devices, page 1-2
- Hardware Requirements, page 1-2

Supported Operating Systems

UCS-SCU supports unattended installation of the following operating systems:

- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2008 R2 (64-bit)

- Red Hat Enterprise Linux 6 Update 4 (x86-64)
- Red Hat Enterprise Linux 6 Update 5
- SUSE Linux Enterprise Server 11 Service Pack 3 (SP3)

Supported Platforms

UCS-SCU supports the Cisco C460 M4 Cisco platform.

Supported Peripheral Devices

Table 1-1 shows the LOM and LSI controller devices supported by UCS-SCU.

Table 1-1 LOM and LSI Controller Devices

Server	LOM Devices	LSI Controller	RAID Levels Supported
C460 M4	• Intel 1350 • Intel x540	LSI 9361-8i	• 0, 1, 5, 6, 10, 50, 60

Note The UCS-SCU RAID configuration utility detects the physical drivers only once when you enter this function area after the system is rebooted. Do not remove or add hard disk drivers while navigating within this function area.

Note Some LSI RAID controllers take time to complete the operation during RAID configuration. SCU does not have any control over this issue. As a workaround, you can either recreate the RAID or wait for the operation to complete.

Hardware Requirements

The following are the minimum hardware requirements for UCS-SCU:

- CD-ROM drive—A USB CD/DVD-ROM drive is required to be able to boot and run the UCS-SCU. You can also use the virtual media option in the CIMC KVM to boot UCS-SCU.
- Mouse—Some functions require a standard mouse (PS/2 or USB) for navigation.
- USB disk on key device—Functions such as saving UCS-SCU logs require a USB disk on key.
- RAM—A minimum of 1 GB RAM. If the available RAM is less than the minimum recommended value, UCS-SCU will not function properly.
- Network adapter—Some optional functions, such as, downloading the OS drivers from support.cisco.com, require network access. Any single onboard NIC adapter connection is supported.

Note Currently UCS-SCU supports only Intel/Broadcom adapters.

- RAID Cards—RAID configuration and OS installation are supported on select controllers. For details refer to the following document:
  - Hardware and Software Interoperability Matrix

Launching UCS Server Configuration Utility

UCS Server Configuration Utility (SCU) is a bootable image based on a 32-bit Linux kernel and can be used to perform operations such as BIOS setup, configure RAID logical volume, install operating systems, and perform diagnostics on Cisco rack servers. It is designed to run on one server at a time.

This chapter contains the following sections:

- Obtaining ISO Image From cisco.com, page 2-1
- Booting UCS-SCU, page 2-1
- Exiting UCS-SCU, page 2-4

Obtaining ISO Image From cisco.com

To find the ISO file download for your server online, follow these steps:

Step 1 Go to http://www.cisco.com/cisco/software/navigator.html.

Step 2 Click **Unified Computing** in the middle column.

Step 3 Click **Cisco UCS C-Series Rack-Mount Standalone Server Software** in the right-hand column.

Step 4 Click the name of your server model in the right-hand column.

Step 5 In the Select a Software Type list, select **Unified Computing System (UCS) Server Configuration Utility**.

The Download Software page appears listing the release version and the UCS-SCU image.

Step 6 Click **Download Now** to download the ISO file.

Step 7 Verify the information on the next page, then click **Proceed With Download**. If prompted, use your cisco.com credentials to log in.

Step 8 Continue through the subsequent screens to accept the license agreement and browse to a location where you want to save the SCU ISO file.

Booting UCS-SCU

You can launch the UCS-SCU application using one of the following options:

- Using Cisco Flexible Flash, page 2-2
- Using Virtual Media, page 2-2
- Using Physical Media, page 2-4

Using Cisco Flexible Flash

This section includes the following sections:

- About Cisco Flexible Flash, page 2-2
- Booting from Cisco Flexible Flash, page 2-2

About Cisco Flexible Flash

Some C-Series Rack-Mount Servers support an internal Secure Digital (SD) memory card for storage of server software tools and utilities. The SD card is hosted by the Cisco Flexible Flash storage adapter.

Starting with CIMC Release 1.5(4), the SD storage device is available to CIMC as a single HyperVisor partition. Prior versions had four virtual drives. Three were preloaded with Cisco software and the fourth could hold a user-installed hypervisor or other content. (bootable)

Booting from Cisco Flexible Flash

To load the UCS-SCU from the Cisco Flexible Flash card, follow these steps:

Step 1 During startup, press **F6** to enter the boot selection menu.

The boot selection menu appears.

Step 2 Use the arrow keys to select SCU, and then press **Enter**.

Note The **Drivers** option in the **F6** boot selection screen is not a bootable option. If you select this option accidentally, you should restart your server as a workaround and select a different option. The **HUU** and **SCU** options are bootable.

Using Virtual Media

You can use KVM Console to boot the UCS-SCU application with virtual media.

This section includes the following sections:

- About KVM Console, page 2-3
- Entering Virtual KVM Console, page 2-3
- Booting From Virtual KVM Console, page 2-3

About KVM Console

KVM Console is an interface accessible from CIMC that emulates a direct keyboard, video, and mouse (KVM) connection to the server. KVM Console allows you to connect to the server from a remote location.

Note KVM Console requires Java Runtime Environment (JRE) version 1.5.0 or higher.

KVM Console has the following tabs:

- KVM—This tab displays the UCS-SCU application when the application is booted.
- Virtual Media—This tab allows you to map the following to a virtual drive:
  - CD/DVD on your computer or your network
  - Disk image files (ISO or IMG files) on your computer or your network
  - USB flash drive on your computer

Entering Virtual KVM Console

To enter the virtual KVM Console, follow these steps:

Step 1 Log in to CIMC.

Step 2 Click **Launch KVM Console**.

Virtual KVM Console displays the server console.

Booting From Virtual KVM Console

Before You Begin

- Download the UCS-SCU ISO image file from cisco.com. For information on how to download the image, go to the "Obtaining ISO Image From cisco.com" section on page 2-1.

To boot the UCS-SCU application using virtual KVM Console, follow these steps:

Step 1 Log in to CIMC from your desktop.

Step 2 Click **Launch KVM Console** to launch KVM Console.

Step 3 Click the **Virtual Media** tab.

The Virtual Media tab opens.

Step 4 Click **Add Image.**

Step 5 Navigate to and select the ISO file and click **Open** to mount the image.

Step 6 In the Client View section, select the check box in the Mapped column for the ISO file that you added and then wait for the mapping to complete.

KVM Console displays the progress in the Details section.

Step 7 Reboot the server by clicking **Power Cycle Server** in the CIMC.

Step 8 Press **F6** when the server starts to select a boot device.

The boot selection menu appears.

Step 9 Use the arrow keys to select Cisco Virtual CD/DVD and then press **Enter**.

The server boots using the UCS-SCU image and launches the application in the KVM tab.

Using Physical Media

Before You Begin

- Download the UCS-SCU ISO image file from cisco.com. For information on how to download the image, go to the "Obtaining ISO Image From cisco.com" section on page 2-1.
- Create an .iso CD using an application that burns .iso CDs.

To boot the application on your server using a physical CD/DVD, follow these steps:

Step 1 Connect the USB DVD drive to the server through the USB port.

Step 2 Insert the physical media on to your DVD drive.

Step 3 Restart the server and press **F6** to enter the boot selection menu. Select **CDROM drive** as the boot device.

The server boots using the UCS-SCU image and starts the application.

Exiting UCS-SCU

To exit the UCS-SCU application, follow these steps:

Step 1 Remove the .iso disk from the disk drive.

Step 2 Click **Reboot** and then click **Yes** to confirm reboot of your server.

Understanding UCS Server Configuration Utility User Interface

The UCS-SCU GUI is a web-based management interface that allows you to perform tasks such as operating system installation, RAID configuration, and firmware updates.

This section includes the following sections:

- License Agreement, page 3-1
- UCS-SCU GUI Home Page, page 3-1

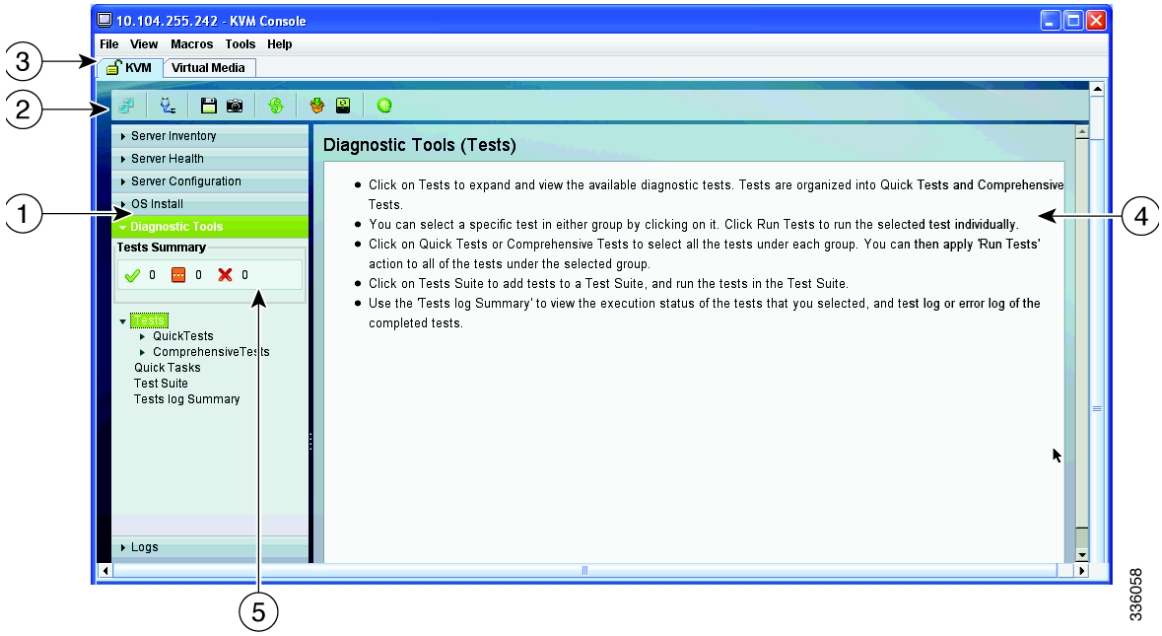
License Agreement

After UCS-SCU boots up, the first interface is the End User License Agreement. Select **I Accept** and click **Next** to agree to this license.

UCS-SCU GUI Home Page

Figure 3-1 shows the UCS-SCU GUI and the different elements in the GUI and Table 3-1 shows the description of each element.

Figure 3-1 UCS-SCU GUI



1	Navigation Pane
2	Toolbar
3	Tabs
4	Content Pane
5	Tests Summary Pane

Table 3-1 UCS-SCU GUI Elements

Element	Description
Navigation Pane	Displays on the left side in the UCS-SCU user interface. See Table 3-2 for a description of all the navigation pane elements.
Toolbar	Displays on the left-hand top corner and has a set of icons. See Table 3-3 for a description of all the toolbar icons.
Tabs	Provides the following options in the UCS-SCU: • KVM—Use this tab to enter KVM Console. • Virtual Media—Use this tab to access the virtual media.
Help	Opens a window in the application that displays context-sensitive help for the displayed page.
Content Pane	Displays on the right side of the GUI. Different pages appear on the content pane depending on the tab that you select in the Navigation Pane.
Tests Summary Pane	Provides details of tests passed, tests in the queue, and tests failed. Viewed only when Diagnostic Tools is selected.

This section includes the following topics:

- Navigation Pane, page 3-3
- Toolbar Pane, page 3-4

Navigation Pane

Table 3-2 describes the elements in the Navigation Pane.

Table 3-2 Navigation Pane Elements

Element	Description
Server Inventory	Displays the server information and inventory. Contains links to the following pages: • Server Information • Inventory For more information about Server Inventory, go to Chapter 4, "Viewing Server Inventory."
Server Health	Displays the health of the subsystems on your server such as CPUs, memory, power supplies, fans, storage, PCI devices, BIOS, and CIMC. For more information about Server Health, go to Chapter 5, "Viewing Server Health."
Server Configuration	Sets the BIOS boot order and configures a RAID volume on attached hard drives of your server. Contains links to the following pages: • Boot Order Configuration • RAID Configuration For more information about Server Configuration, go to Chapter 8, "Configuring Boot Order and RAID Levels."
OS Install	Installs the RHEL, SLES, and Windows operating systems in a fully unattended mode. The most recent drivers for all onboard components are added from the Tools and Drivers CD or from other supported locations during the operating system installation. For more information about OS Install, go to Chapter 6, "Installing Operating Systems."

Table 3-2 Navigation Pane Elements (continued)

Element	Description
Diagnostic Tools	Allows you to run various types of diagnostic tests to detect server failure. For more information about Diagnostic Tools, go to Chapter 7, "Diagnostic Tools."
Logs	Displays the System Log and System Event Log of your server. Contains links to the following pages: • System Logs • System Event Log For more information about Logs, go to Chapter 9, "Viewing Logs."

Toolbar Pane

Table 3-3 lists and describes all the UCS-SCU icons that you can use to perform specific tasks.

Table 3-3 Toolbar Elements

Toolbar Icon	Name	Function
	Network Configuration	Configures the IP address, DNS and Subnet mask, and Cisco.com credentials.
	Probe Server	Performs health check.
	Save Logs	Saves logs to an USB.
	Server Snapshot	Allows you to take a point-in-time inventory of the server.
	Refresh	Refreshes the content area, if supported.
	Update	Allows you to download the most recent versions of UCS-SCU, OS drivers, and Host Upgrade Utility.

Table 3-3 Toolbar Elements (continued)

Toolbar Icon	Name	Function
	HyperVisor Sync	Allows you to synchronize data that is written on a disk that is in an out-of sync RAID 1 partition to a replacement disk.
	Reboot	Reboots the server.

This section describes the toolbar elements in more detail:

- Configuring a Network, page 3-5
- Performing Server Health Check, page 3-6
- Saving Logs, page 3-6
- Using Server Snapshot, page 3-6
- Updating from Cisco.com, page 3-8
- Synchronizing the Hypervisor Partition, page 3-9
- Rebooting the Server, page 3-9

Configuring a Network

To configure a network, follow these steps:

Step 1 Click the **Network Configuration** button on the toolbar.

The Network Configuration dialog box appears.

Step 2 In the Network Configuration dialog box, do the following:

a. Select IP Address from DHCP server or Static IP Address. If you select Static IP Address, do the following:

- In the IP Address field, enter the IPv4 address.
- In the Subnet Mask field, enter the subnet IPv4 address.
- In the Gateway field, enter the gateway IPv4 address.
- (Optional) In the DNS field, enter the DNS IPv4 address.

Note Go to Step b. if you want to download software and drivers from cisco.com.

b. Select Direct Connection to internet or Manual Proxy. If you select Manual Proxy, do the following:

- In the HTTP Proxy Server URL field, enter the URL of the proxy server. The maximum limit is 45 characters.
- In the Port field, enter the port number. The maximum limit is 5 characters. By default, it is 8080.

- In the Proxy Server UserName field, enter the user name of the proxy server. The maximum limit is 45 characters.
- In the Proxy Server Password field, enter the password of the proxy server. The maximum limit is 45 characters.

Step 3 Click **Configure** to save the settings.

Network configuration is a one-time process, and if you have not configured your network, you are prompted to configure it during the following procedure:

- When you are downloading drivers from the network share or cisco.com during the operating system installation. (See "Installation Drivers" section on page 6-7).

Performing Server Health Check

The Probe Server functionality allows to perform a health check of the server subsystems. When you click the Probe Server icon, the server health check is initiated.

To view the health check results, click the **Server Health** tab in the navigation pane.

For more information about the Server Health tab, go to Chapter 5, "Viewing Server Health.".

Saving Logs

You can use the Save Logs functionality to save your log files. Before using Save Logs, you must insert a USB flash drive or vMedia for storing the log files.

Using Server Snapshot

You can use the Server Snapshot feature in the UCS SCU user interface to take a point-in-time inventory of a server. This feature allows you to compare inventories or components of a server over certain periods of time. Before you initiate a server snapshot, be sure that you connect a USB flash drive into the server. Without a flash drive available, the log file created by the server snapshot is not saved.

When you initiate a server snapshot, UCS SCU retrieves information on the server components, and also runs a series of quick tests to determine the state of the server. When you initiate a server snapshot, a series of quick tests such as processor, memory, disk, cache, network interface tests, QPI Link and Trafffic, LSI Battery backup and RAID adapter tests, and Chipset tests, are performed on the server.

The time to complete a server snapshot process depends on the server configuration such as installed memory, the number of physical disks and their sizes, and the number of network interfaces. This process could complete in 30-45 minutes or could a few hours.

After the server snapshot process is complete, the log file is saved on to the USB flash drive that you specified. You can open this log file in any editor, for example, WordPad. To help compare server inventories across time periods, we recommend that you store these log files in a location and archive it. When you have multiple log files, you can use a comparison tool from the Internet to view differences in the server inventory.

To take a server snapshot, follow these steps:

Step 1 Connect a USB flash drive to the server or through vMedia.

Without this flash drive, you cannot save the server snapshot log file. Be sure that there is adequate space on the flash drive to save the log file.

Step 2 Click the **Server Snapshot** icon in the UCS SCU interface.

A dialog box is displayed that prompts you to insert the USB flash drive.

Step 3 Click **Yes** to continue.

A dialog box prompts you to select the USB flash drive in which you would like to save the log file.

Step 4 Choose the USB flash drive from the drop-down menu and click **Save**.

The Server Snapshot process is initiated. This process could last up to 20 to 30 minutes. A dialog box indicating the progress of the server snapshot process appears. During this process, you cannot perform any other tasks on the server. At any moment during the process, you can cancel the server snapshot process by clicking **Cancel** in the dialog box.

Note During the server snapshot process, if the KVM connection is terminated, it does not terminate the server snapshot process. When you log in again to KVM Console, you will notice that the server snapshot process is still running or has completed. However, if the USB flash drive is connected through vMedia and the KVM connection is terminated, then the server snapshot process is halted as the connection to the USB flash drive is lost.

Step 5 After the snapshot process is complete, a dialog box message appears to indicate that the server snapshot process is complete. Click **OK**.

The log file is saved on the USB flash drive. The log file is a text file and is saved with the server name, and includes the date when the server snapshot was taken. For example: *UCSC_C260-BASE-2646_FCH1234345_06_08_2011* is the log file name of a server snapshot taken for UCS C-260 server on August 6th, 2001.

Step 6 Open this log file with any editor.

Note To compare inventory information of the same server over a period of time, we recommend that you archive these log files so that they are always available for comparison.

While running quick tests on the server, the server snapshot feature can determine only if a server component passed or failed a test. It cannot determine the reasons for a component not passing the quick test. While viewing the log file of the server snapshot process, if you notice that a server component did not pass the quick test, then check the quick test logs available under the Diagnostics Tools.

Note To know more about Diagnostic Tools, go to Chapter 7, “Diagnostic Tools.”

The log file of the server snapshot process includes the following information:

- Chassis Summary
- BaseBoard Summary
- CIMC Summary
- Processor Summary
- Memory Summary

- Storage Summary
- PCI Adapter Summary
- Power Supply Summary
- Server diagnostics Quick Test Results
- Server Probe Data

Updating from Cisco.com

To update the images to the Cisco Flexible Flash from cisco.com, follow these steps:

Step 1 Click **Cisco.com**.

If the network or user credentials are not configured, the Network Configuration dialog box appears. If they are configured, the Select Updates dialog box appears. If you need to configure the network, go to Step 2. If you do not need to configure the network, go to Step 3.

Step 2 In the Network Configuration dialog box, do the following:

a. Enter the IP addresses to configure the network. For more information about configuring the network, go to the "Configuring a Network" section on page 3-5.

b. In the User Name field, enter the cisco.com username. The maximum limit is 45 characters.

c. In the Password field, enter the cisco.com password. The maximum limit is 45 characters.

Step 3 In the Select Updates dialog box that is displayed, select the required version of the ISO image.

Step 4 Click **OK.**

Updating from Network

To update the image from your network to the Cisco Flexible Flash, follow these steps:

Step 1 Click **From Network**.

If the network or user credentials are not configured, the Network Configuration dialog box appears. If they are configured, the Network Location dialog box appears. If you need to configure the network, go to Step 2. If you do not need to configure the network, go to Step 3.

Step 2 In the Network Configuration dialog box, enter the IP addresses to configure the network. For more information about configuring network, go to "Configuring a Network" section on page 3-5.

Step 3 In the Network Location dialog box that is displayed, do the following:

a. In the User Name field, enter the login name to the network location.

b. In the Password field, enter the password to the network location.

c. In the Network Location field, enter the path name of the folder that contains the ISO image files.

d. Click **Connect**.

A file dialog box is displayed listing the images.

e. Select an .iso image file.

f. Click **Open**.

The selected file appears as a package name in the Network Location dialog box.

g. Click **Ok**.

Synchronizing the Hypervisor Partition

On servers that support the Cisco FlexFlash SD card, UCS-SCU provides an option to synchronize the Hypervisor virtual disk, on the SD card, configured as a RAID-1 disk. This feature is available only when both slots of the Cisco FlexFlash SD card are populated. UCS-SCU detects the presence and absence of SD cards on the server.

When one member slot of the SD card is corrupt, use this option to synchronize the Hypervisor data across 2 members of the RAID-1 virtual disk. You can initiate this synchronization only if 2 cards are detected and RAID-1 is determined as unhealthy (one member is corrupt).

To synchronize the Hypervisor virtual disk, follow these steps:

Step 1 Click the **Hypervisor Sync** icon on the toolbar.

A dialog box prompts you to confirm that you want to synchronize the hypervisor RAID.

Step 2 Click Yes.

When the synchronization is complete, a dialog box indicating the completion of the process is displayed.

Step 3 Click OK.

The **Hypervisor Sync** icon on the toolbar is greyed out.

Rebooting the Server

To reboot the server, follow these steps:

Step 1 Click the **Reboot** icon on the toolbar.

The Reboot dialog box appears.

Step 2 Click **Yes** to reboot.

The server is rebooted, and the UCS-SCU GUI reappears.

Viewing Server Inventory

This chapter provides information on viewing the server inventory.

You can use the server inventory functionality to perform an inventory of your server. You can view details such as server summary, server properties, and an inventory of subsystems on your server such as CPU, memory, power supplies, fans, IO devices, storage, BIOS, and CIMC.

To view the inventory of your server, follow these steps:

Step 1 Click the **Server Inventory** tab on the left navigation pane.

Step 2 Click the **Server Information** tab on the left navigation pane. The server properties and server summary appear.

Step 3 Click the **Inventory** tab to view an inventory of your server's subsystems, such as CPU, memory, power supplies, fans, IO devices, storage, BIOS, and CIMC.

Table 4-1 explains the various subsystem details you can view.

Table 4-1 Server Inventory Properties

Subsystem	Description
CPU	Displays the socket name, status, number of cores, number of threads, vendor, version, cores enabled, and signature of the CPUs on your server.
Memory	Displays the size, data width, locator, speed, and serial number of the DIMMs on your server.
Power Supplies	Displays the input power, output power (in watts), part number, version, serial number, and product name of the power supply units on your server.
Fans	Displays the status, power state, and speed of the fans on your server.
IO Devices	Displays the type, vendor, description, and MAC address and serial number of the I/O devices on your server.
Storage	Displays the type, description, vendor, size, bus information, and serial number of the storage devices on your server.
BIOS	Displays the vendor, version, physical ID, size, capacity, and boot order of the BIOS on your server.
CIMC	Displays the IP address, MAC address, firmware version, and IPMI version of the CIMC on your server.

CHAPTER 5

Viewing Server Health

This chapter provides information on viewing the health of your servers.

With the Server Health functionality, you can view the health of all the subsystems of your server (such as memory, processor, power supply, hard disk, fans, chipset, and CIMC) along with the status and message of a specific subsystem.

To view the health of your server, follow these steps:

Step 1 Click the **Server health** tab in the left navigation pane.

The server health displays in the right-hand content pane, along with the status and message for a specific subsystem.

Step 2 Click **Probe Server** from the toolbar to view the latest status of the subsystem. Click **Server Health** again to refresh the page after clicking on probe server

Step 3 Click the line corresponding to a subsystem to view details of your server health in the Server Health Details pane.

Note The message column in the server health pane displays the first issue corresponding to the subsystem. If the subsystem has multiple issues, they will appear in the Server Health Details pane.

CHAPTER 6

Installing Operating Systems

The unattended operating system installation function helps you install the Microsoft Windows and RedHat Linux operating systems. UCS-SCU has integrated device drivers including RAID drivers to seamlessly install operating systems on supported RAID logical arrays without additional load driver steps or devices such as the USB.

UCS-SCU supports operating system installation only on virtual disks. Installation on physical disks is not supported. All UCS-SCU supported operating systems are organized into three groups: Windows, Linux and RHEL

Note Before you begin the operating system installation, be sure that you have disabled the Watchdog Timer. If this feature is enabled and the value is set for a time duration that is less than the time needed to install the OS, the operating system installation process is interrupted. This Watchdog Timer feature automatically reboots or powers off the server after the specified time duration.

You can use the following two options to install the operating system:

- Quick Install, page 6-1—Use the Quick Install option to install the operating system with the default settings.
- Custom Install, page 6-4—Use the Custom Install option to modify the default settings prior to installing the operating system.

Quick Install

The Quick Install option allows you to quickly install the operating system with the default parameters. You can view the OS Install page with the default parameters depending on the target operating system. The Quick Install method does not require any user input and is a one-click operating system installation method.

To perform the quick installation of the OS, follow these steps:

Step 1 To enter the unattended operating system installation function area, click **OS Install** in the left navigation pane.

The OS Install page appears.

Step 2 Click any one of the operating system radio buttons.

Step 3 From the Operating System drop-down list, select the version of the operating system.

Step 4 (For Windows) From the Edition drop-down list, select the edition of the operating system.

The Default Settings area and the Quick Install and Custom Install buttons appear.

Table 6-1 shows the default parameters that are displayed in the Default Settings area for the Windows OS.

Table 6-1 Default Parameters (for Windows)

Parameter	Default Value
Time Zone	Central American Standard Time
Name	admin
Organization	Organization
Computer Name	Computer
Network	DHCP
Work Group Name	WORKGROUP
Drivers	All drivers will be installed from the SCU boot media
Firewall	Disabled
RDP	Disabled
Disk Details	
Disk Name	LSI
Disk Size	Minimum 40 GB
Partition Details	
Drive Letter	C
File System	NTFS
Size (MB)	Depends on logical disks

Table 6-2 shows the default parameters that are displayed in the Default Settings area for the Red Hat Enterprise Linux OS.

Table 6-2 Default Parameters (for Red Hat Enterprise Linux)

Parameter	Default Value
Time Zone	America/New_York
Name	root
Default Password	password
Network	DHCP
Drivers	All drivers will be installed from the SCU boot media
Disk Details	
Disk Name	LSI
Disk Size	Depends on logical disks
Partition Details	
Drive Letter	
File System	ext3

Table 6-2 Default Parameters (for Red Hat Enterprise Linux) (continued)

Parameter	Default Value
Size (MB)	Depends on logical disks
Drive Letter	
File System	linux-swap
Size (MB)	2048

Table 6-3 shows the default parameters that are displayed in the Default Settings area for the SUSE Linux Enterprise Server (SLES) OS.

Table 6-3 Default Parameters (for SLES)

Parameter	Default Value
Time Zone	America/New_York
Name	root
Default Password	password
Network	DHCP
Drivers	All drivers will be installed from the SCU boot media
Disk Details	
Disk Name	LSI0-Logical Vol-2
Disk Size	Depends on logical disks
Partition Details	
Drive Letter	/
File System	ext3
Size (MB)	Depends on logical disks
Drive Letter	swap
File System	linux-swap
Size (MB)	Minimum 2048

Step 5 Click **Quick Install** to complete the installation.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion.

Note Be sure that logical disks are created before you install the operating system. If logical disks are not available, the following occurs:

- The disk details are not displayed under Default Settings area
- The Quick Install and Custom Install buttons are not displayed
- The following warning message is displayed:

```
OS Installation cannot be done as no logical disks found in the system. Please use RAID
Configuration to create logical disks.
```

Custom Install

The Custom Install option allows you to customize the default settings.

Note If no parameters are modified, the custom installation performs with the default parameters. Table 6-1 and Table 6-2 displays the default parameters for the Windows and Red Hat Enterprise Linux operating systems and downloads the drivers from the SCU boot media.

This section covers the custom installation procedures for the following operating systems:

- Windows Server 2008 R2 Operating System Installation, page 6-4
- Linux Server Series Operating System Installation, page 6-9
- SUSE Linux Server Operating System Installation, page 6-11

Windows Server 2008 R2 Operating System Installation

For unattended Windows Server operating system installation, follow these steps:

Step 1 To enter the unattended operating system installation function area, click **OS Install** in the left navigation pane. The OS Install page appears.

Step 2 Click the **Windows** radio button and choose an operating system from the Operating System drop-down list.

The Edition drop-down list appears.

Step 3 From the Edition drop-down list, choose an edition.

The Default Settings area and the Quick Install and Custom Install buttons appear.

Note The Windows Server 2008 R2 option in the drop-down list is the same for both Windows Server 2008 R2 and Windows Server 2008 R2 SP1. Depending on the installation CD used (Win2k8 R2 or Win2k8R2 SP1), the corresponding Windows OS version gets installed.

Step 4 Click **Custom Install**.

A progress bar displays indicating the tasks being performed and the percentage of completion. A new OS Install page appears with the following list of collapsible windows:

- Personalization—To set the personalization settings, go to Personalization, page 6-5.
- Installation Partitions—To set the installation partition settings, go to Installation Partitions, page 6-5.
- Network Settings—To set the network settings, go to Network Settings, page 6-6.
- Installation Drivers—To set the driver settings, go to Installation Drivers, page 6-7.

Step 5 Click **Install**.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion. An OS Install dialog box appears which prompts you to remove the UCS-SCU media and insert the required operating system CD.

Step 6 Insert the operating system CD and click **Ok**.

The system reboots and installation of the operating system begins.

Personalization

To configure the personalization settings, follow these steps:

Step 1 Click **Personalization** to open the corresponding window.

Step 2 In the Personalization window, do the following:

a. From the Time Zone drop-down list, choose a time zone.

b. In the Name field, enter a name for the administrator. The maximum limit is 20 characters.

c. In the Organization field, enter a name of the organization of the administrator. The maximum limit is 15 characters.

d. Select one of the License Information radio buttons and enter the 25 character product key if license needs to be activated.

e. In the Computer Name field, enter the name of the server. The maximum limit is 15 characters.

f. In the Description field, enter the description of the server. The maximum limit is 25 characters

Installation Partitions

To configure the installation partition settings, follow these steps:

Step 1 Click **Installation Partitions** to open the corresponding window.

Step 2 In the Installation Partitions window, do the following:

a. From the Select Disk drop-down list, choose a disk to create a logical partition.

b. Click a disk name to view the corresponding partition details.

The disk entry expands and displays the partition name, drive letter, file system, and the space used in MB.

c. To edit a partition, do the following:

- Choose a partition to edit and click **Edit**.

  The Edit Partition dialog box is displayed.

- In the Edit Partition dialog box, do the following:
  - From the Drive Letter drop-down list, choose a drive.
  - In the Size text field, enter the partition size.

Note The size cannot be more than the available disk space.

- From the File system drop-down list, choose a file system.
- Click **OK** to save your changes.

d. To create a new partition, do the following:

- Choose a free space and click **New**.

  A Create Partition dialog box is displayed.

- In the Create Partition dialog box, do the following:
  - From the Driver Letter drop-down list, choose a drive.
  - In the Size field, edit the disk size.

Note The size cannot be more than the available disk space.

  - From the File System drop-down list, choose a file system.
  - Click **Ok**.

e. To remove a partition, do the following:

- Choose the partition to delete and click **Delete**.

  The OS Install dialog box is displayed.

- Click **Yes** to delete the partition.

Note In the Red Hat Enterprise Linux, the Root and Swap partitions are necessary. If you do not specify their sizes during the partition process, the UCS-SCU generates an alert message and suggests an alternate partition solution. Accept it if you are not familiar with Linux partitions.

Network Settings

The Network Settings allows you to enter the network configuration settings for the onboard network adapters that are detected by the operating system during installation. These settings do not affect the network settings for the CIMC. We recommend that you set different IP addresses for the operating system and CIMC. The network interface column lists each network adapter detected by the UCS-SCU. Your operating system may have a different name for the interface after you install the operating system.

To configure the network settings, follow these steps:

Step 1 Click **Network Settings** to open the corresponding window.

The Network Settings window displays the link status of available network interfaces and the corresponding IP address, subnet mask, gateway, DNS, link status, vendor, type, and MAC address.

Step 2 In the Network Settings window, do the following:

a. In the Work Group or Network Domain area, choose one of the following options:

- Select **No network** or **No domain** radio button when a network or domain does not need to be added. Enter a workgroup name in the Work Group Name field. The maximum limit is 20 characters.
- Select the **Join this Domain** radio button and do the following:
  - In the Domain Name text field, enter the name of the domain. The maximum limit is 20 characters.
  - In the Domain Username, enter the user name of the domain. The maximum limit is 20 characters.
  - In the Domain password, enter the password of the domain.The maximum limit is 20 characters.

b. Select or deselect the **Enable Remote Access (RDP)** radio button for remote access settings.

c. Select or deselect the **Disable Firewall** radio button for firewall settings.

d. In the DNS Suffix/Domain field, specify the DNS suffix of the domain.The maximum limit is 25 characters.

e. In DNS Suffix Search Order 1 field, enter a DNS suffix search order. The maximum limit is 25 characters.

f. In the DNS Suffix Search Order 2 field, enter another DNS suffix search order. The maximum limit is 25 characters.

g. In the Proxy Address field, enter the IP address or name of the proxy server. The maximum limit is 30 characters.

h. In the Port field, enter the port number of the proxy server. The maximum limit is 5 characters.

i. Edit the Network Settings by doing the following:

- Select a network interface and click **Edit.**

  The Network Settings dialog box displays.
- Select IP Address from DHCP server or Static IP Address. If you select Static IP Address, do the following:
  - In the IP Address field, enter the IPv4 address.
  - In the Subnet Mask field, enter the subnet IPv4 address.
  - In the Gateway field, enter the gateway IPv4 address.
  - In the DNS field, enter the DNS IPv4 address.
  - Click **OK**.

Installation Drivers

UCS-SCU displays all available drivers downloaded from the driver source. Deselect the drivers that you do not want to install. If you want to install an operating system on a RAID volume, select the driver for the appropriate RAID controller.

To configure the installation driver settings, follow these steps:

Step 1 Click **Installation Drivers** to open the corresponding window.

Step 2 Select the drivers that you want to install from the Choose Drivers to Install table.

If drivers are not available in the Choose Drivers to Install table, download the drivers using the Installation Drivers toolbar. To download the drivers, choose one of the following options:

- Downloading from Cisco.com, page 6-8
- Downloading from SCU Boot media, page 6-8
- Downloading from Network Share, page 6-8
- Downloading from USB, page 6-9

Downloading from Cisco.com

To download the most recent drivers from the Cisco support website, follow these steps:

Step 1 Click **From Cisco.com** in the toolbar.

Note Ensure that the server is only connected to one network during the download.

If your network is not configured or if user credentials are not entered, the Network Configuration dialog box is displayed. If your network is configured or if user credentials are entered, the Select Device Packages dialog box is displayed. If you need to configure your network, go to Step 2. If you do not need to configure your network, go to Step 3.

Step 2 In the Network Configuration dialog box, do the following:

a. Enter the IP addresses to configure the network. For more information about configuring network, go to the "Configuring a Network" section on page 3-5

b. In the User Name field, enter the cisco.com username. The maximum limit is 45 characters.

c. In the Password field, enter the cisco.com password. The maximum limit is 45 characters.

Step 3 In the Select Device Packages dialog box, select the required driver package and click **OK**.

A progress message is displayed and the list of drivers are populated in the Choose Drivers to Install table.

Downloading from SCU Boot media

To directly use the driver packages that are stored in the Tools and Drivers CD, follow this step:

Step 1 Click **From SCU Boot media** in the toolbar.

A progress message is displayed and the list of drivers are populated in the Choose Drivers to Install table.

Note UCS-SCU selects this option as default.

Downloading from Network Share

To download a driver package stored on a network share folder, follow these steps:

Step 1 Click **From Network Share** in the toolbar.

If your network is not configured or if user credentials are not entered, the Network Configuration dialog box is displayed. If your network is configured or if user credentials are entered, the Network Location dialog box is displayed. If you need to configure your network, go to Step 2. If you do not need to configure your network, go to Step 3.

Step 2 In the Network Configuration dialog box, enter the IP addresses to configure the network. For more information about configuring the network, go to the "Configuring a Network" section on page 3-5

Step 3 In the Network Location dialog box that is displayed, do the following:

a. In the User Name field, enter the login name to the network location.

b. In the Password field, enter the password to the network location.

c. In the Network Location field, enter the path name of the zip folder which contains the drivers.

d. Click **Connect**.

A file dialog box is displayed that lists the zip folders containing drivers.

e. Select a zip file.

f. Click **Open**.

The selected zip file appears as a package name in the Network Location dialog box.

g. Click **Ok**.

A progress message is displayed and the list of drivers are populated in the Choose Drivers to Install table.

Downloading from USB

To download the drivers that are stored in your USB key or USB hard drive, follow these steps:

Step 1 Click **From USB** in the toolbar.

A file dialog box is displayed that lists the USB folders.

Step 2 Navigate to the zip file that contains the drivers.

Step 3 Click **Ok**.

A progress message is displayed and the list of drivers are populated in the Choose Drivers to Install table.

Linux Server Series Operating System Installation

For unattended Linux operating system installation, follow these steps:

Step 1 Enter the unattended operating system installation function area by clicking **OS Install** in the left navigation pane.

The OS Install page appears.

Step 2 Click the **RHEL** radio button and choose an operating system from the Operating System drop-down list.

The Default Settings area and the Quick Install and Custom Install buttons appear.

Step 3 Click **Custom Install**.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion. A new OS Install page appears with the following list of collapsible windows:

- Basic Configuration—To set the personalization settings, go to Basic Configuration, page 6-10.
- Installation Partitions— To set the installation partition settings, go to Installation Partitions, page 6-5.
- Package Selection—To set the package selection settings, go to Package Selection, page 6-10.
- Network Settings—To set the network settings, go to Network Settings, page 6-11.
- Installation Drivers—To set the driver settings, go to Installation Drivers, page 6-7.

Step 4 Click **Install**.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion. An OS Install dialog box appears.

Step 5 Click **Ok**.

Step 6 Remove the UCS-SCU media and insert the required operating system CD.

Basic Configuration

To configure the basic configuration settings, follow these steps:

Step 1 Click **Basic Configuration** to open the corresponding window.

Step 2 In the Basic Configuration window, do the following:

a. In the Root Password field, enter the root password.

b. In the Confirm Root Password field, reenter the root password.

c. From the Default Language drop-down list, choose a default language.

d. From the Keyboard drop-down list, choose the type of keyboard layout.

e. From the Time Zone drop-down list, choose the time zone.

f. In the Additional Languages list, select all languages that apply.

Package Selection

To configure the package selection settings, follow these steps:

Step 1 Click **Package Selection** to open the corresponding window.

Step 2 Select all check boxes that apply.

Network Settings

To configure the network settings, follow these steps:

Step 1 Click **Network Settings** to open the corresponding window.

The Network Settings window displays the link status of available network interfaces and the corresponding IP address, subnet mask, gateway, DNS, link status, vendor, type and MAC address.

Step 2 To edit the Network Settings, do the following:

a. Select a network interface and click **Edit.**

The Network Settings dialog box is displayed.

b. In the Network Settings dialog box, do the following:

- Select IP Address from DHCP server or Static IP Address. If you select Static IP Address, do the following:
  - In the IP Address field, enter the IPv4 address.
  - In the Subnet Mask field, enter the subnet IPv4 address.
  - In the Gateway field, enter the gateway IPv4 address.
  - In the DNS field, enter the DNS IPv4 address.
- Click **OK**.

SUSE Linux Server Operating System Installation

To perform an unattended SLES operating system installation, follow these steps:

Step 1 To enter the unattended operating system installation function area, click **OS Install** in the left navigation pane.

The OS Install page appears.

Step 2 Click the **SLES** radio button and choose an operating system from the Operating System drop-down list.

The Default Settings area and the Quick Install and Custom Install buttons appear.

Step 3 Click **Custom Install**.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion. A new OS Install page appears with the following list of collapsible windows:

- Basic Configuration—To set the personalization settings, go to Basic Configuration, page 6-10.
- Installation Partitions—To set the installation partition settings, go to Installation Partitions, page 6-5.
- Package Selection—To set the package selection settings, go to Package Selection, page 6-10.
- Network Settings—To set the network settings, go to Network Settings, page 6-11.
- Installation Drivers—To set the driver settings, go to Installation Drivers, page 6-7.

Step 4 Click **Install**.

A progress bar is displayed that indicates the tasks being performed and the percentage of completion. An OS Install dialog box appears.

Step 5 Click **Ok**.

Step 6 Remove the UCS-SCU media and insert the required operating system CD.

Basic Configuration

To configure the basic configuration settings, follow these steps:

Step 1 Click **Basic Configuration** to open the corresponding window.

Step 2 In the Basic Configuration window, do the following:

- In the Root Password field, enter the root password.
- In the Confirm Root Password, reenter the root password.
- From the Default Language drop-down list, choose a default language.
- From the Keyboard drop-down list, choose the type of keyboard layout.
- From the Time Zone drop-down list, choose the time zone.

Package Selection

To configure the package selection settings, follow these steps:

Step 1 Click **Package Selection** to open the corresponding window.

Step 2 Select all check boxes that apply.

Network Settings

To configure the network settings, follow these steps:

Step 1 Click **Network Settings** to open the corresponding window.

The Network Settings window displays the link status of available network interfaces and the corresponding IP address, subnet mask, gateway, DNS, link status, vendor, type, and MAC address.

Step 2 To edit the Network Settings, do the following:

a. Select a network interface and click **Edit.**

The Network Settings dialog box displays.

b. In the Network Settings dialog box, do the following:

- Select IP Address from DHCP server or Static IP Address. If you select Static IP Address, do the following:
  - In the IP Address field, enter the IPv4 address

  - In the Subnet Mask field, enter the subnet IPv4 address.
  - In the Gateway field, enter the gateway IPv4 address.
  - In the DNS field, enter the DNS IPv4 address.
- Click **OK**.

Diagnostic Tools

You can use diagnostics tools to diagnose hardware problems with your Cisco servers. The user interface displays the status of the test run and examines log files for troubleshooting hardware issues.

This chapter contains the following sections:

- Diagnostic Tools Functions, page 7-1
- Using Diagnostic Tools, page 7-2

Diagnostic Tools Functions

Diagnostic tools allows you to:

- Run tests on various server components to find out hardware issues along with analysis of the test results in a tabular format.
- Run all the tests using the Quick Tasks functionality without browsing through available tests.
- Run tests serially, as running some tests in parallel may interfere with other tests.
- Configure the test by entering different argument values other than the default ones.
- Select tests you want to run using the Test Suite functionality.
- Save all the tests logs, such SEL logs, to an external USB flash drive.
- Probe the current state of the server and view hardware issues.

Table 7-1 describes when you should use a specific diagnostic functionality.

Table 7-1 Using Diagnostics

Diagnostic Component	Function
Quick Test	Use this test when you want to quickly check the status of a subsystem within a stipulated period. The components that can be tested under the quick test are processor, cache, memory, disk, video, network, QPI, CIMC, RAID, and chipset.
Comprehensive Test	Use this test when you want to test a subsystem in detail. These tests are designed to stress the subsystems and report the error. The tests that can be run are processor, memory, QPI, disk, and NUMA.
Quick Tasks	Allows for consolidated testing of both comprehensive and quick tests. You can run both types of tests using quick tasks.

Table 7-1 Using Diagnostics

Diagnostic Component	Function
Test Suite	All the tests available under the quick and comprehensive test are available here. The test suite gives you an option to choose as many tests as you like (using a check box) and running them together.
Tests Log Summary	Use the test log summary to view the log, error log, and analysis of all the tests you have run. You can use four filters to sort the logs.
Tests Summary	This table on the left-hand navigation gives you the results of the tests you have run in the form of either passed tests, tests in queue or failed tests.

Using Diagnostic Tools

This section describes the procedures to use the diagnostic tool components and contains the following sections:

- Quick Test, page 7-2
- Comprehensive Test, page 7-3
- Quick Tasks, page 7-4
- Tests Suite, page 7-4
- Tests Log Summary, page 7-5
- Non-Interactive Offline Diagnostics, page 7-5

Quick Test

You can run these tests quickly to determine any hardware issue. These tests usually take 20-30 minutes to run and test limited functionality for a few subsystems. The comprehensive test provides more exhaustive diagnostics.

To run the quick test follow these steps:

Step 1 Click **Diagnostic Tools** from the left navigation pane.

Step 2 Click **Tests**.

Step 3 Click the **Quick Test** collapsible button to view the types of quick tests available for you to run.

Step 4 Click a subsystem (such as memory, video, or network).

Step 5 On the content pane, click **Run Test**.

The test is run and the status is displayed in the **Tests Status** area.

Table 7-2 describes the sub-systems covered under quick test.

Table 7-2 Quick Tests

Test	Description
Processor Test	Runs processor-specific tests. This test performs arithmetic and floating point operations on all available cores. You can also specify the duration of the tests.
Cache Test	Runs test to exercise the CPU caches and checks for correctable and uncorrectable cache errors.
Memory Test	Tests DIMMs and memory controllers.
Disk Test	Tests the available disks in the system by reading each disk block-by-block.
Video Test	Test to stress the video memory.
Network Test	Tests the available network interfaces by running the internal loopback test, register test, Electrically Erasable Programmable Read Only Memory (EEPROM) test and interrupt test.
QPI Test	Tests the quick path interconnect fabric.
CIMC Test	Runs CIMC self-test through the IPMI interface and also checks for SEL fullness.
Chipset Test	Runs a test to check the chipset for any errors logged in the chipset RAS registers.
RAID Adapter Test	Runs test to check the LSI MegaRAID 9361-8i controller and battery backup unit diagnostics.

Comprehensive Test

The Comprehensive test can run for hours and usually runs when quick tests cannot diagnose the issue with your server. The test is designed to test multiple hardware components and find issues that may be caused due to multiple components on your server.

The individual tests run can be customized to test some user-defined conditions. You can also select a group of tests to be run.

To run the comprehensive test, follow these steps:

Step 1 Click **Diagnostic Tools** from the left navigation pane.

Step 2 Click **Tests**.

Step 3 Click the **Comprehensive Test** collapsible button to view the types of comprehensive tests available for you to run.

Step 4 Click a subsystem (such as processor, memory, or network).

Step 5 On the content pane, click **Run Tests**.

The test is run and the status is displayed in the **Tests Status** area.

Table 7-3 describes the sub-systems covered under comprehensive tests

Table 7-3 Comprehensive Tests

Test	Description
Processor Stress Test	Imposes maximum stress on CPU and memory on the system. You can set the time (in minutes) that you want this test to run for.
Memory Pattern Test	Tests the available free memory by writing and reading various patterns to the memory.
QPI Stress Test	Runs test to stress the QPI interconnect by generating traffic between the NUMA nodes.
Smart Disk Test	Tests the available disks in the system by reading each disk block by block.
NUMA Test	Runs test to stress the NUMA memory access patterns and check for errors.
VDisk Stress Test	Runs test to stress the virtual disks in the system. This test runs for a longer time, depending on the size of the virtual disk.

Quick Tasks

Quick Tasks allow you to get started with diagnostic tools immediately. You can run all the tests (Quick and Comprehensive) from here and report the details to Cisco to troubleshoot the logs and provide information about problems with your system. To use this feature, follow these steps:

Step 1 Click **Diagnostic Tools** from the left navigation pane.

Step 2 Click **Quick Tasks.**

Step 3 Select either **Run Quick Tests** or **Run Comprehensive Test** from the toolbar.

The status appears in the Test Status pane. You can also view detailed test results under Tests log summary.

Tests Suite

The Test Suite allows you to run the quick test and comprehensive test in a batch. It lists the various tests available, along with the test type and description of the test. You can select any number of tests you want to run from the list and view the result in the Tests Status column.

To run the test suite, follow these steps:

Step 1 Click **Tests Suite** from the left navigation pane.

Step 2 Select the tests you want to run by clicking the required check boxes.

Step 3 Click **Run Tests Suite** to run the tests you added to the test suite.

The status appears in the Tests Status pane along with the name, suite ID, Result, start time and end time. You can also view the Tests Log Summary to view the execution status of the tests in the test suite.

Tests Log Summary

Use the Tests Log Summary functionality to examine the test logs for troubleshooting. To view the Tests Log summary, follow these steps:

Step 1 Click **Diagnostic Tools** on the left navigation pane.

Step 2 Click **Tests Log Summary** on the left navigation pane.

Step 3 Select a filter from the filter drop-down and click **Go**. The status, result, start time, and end time of the test displays.

Step 4 Click a specific log entry (for example, click **memory test**) for more details.

The Log, Error Log (if the test failed), and the analysis of the specific test appears in the content pane.

Tests Summary

The Test Summary table in the left navigation area provides you with a quick view of the tests that have passed, tests in queue and tests that have failed.

Non-Interactive Offline Diagnostics

Cisco UCS C-series servers with CIMC version 1.5(2) or later support using an XMLAPI interface for running server snapshot tests without any manual intervention. You can use an XMLAPI client to run the server snapshot process on a C-Series server and copy the resulting server snapshot output to another machine (Windows or UNIX) using either SFTP or SCP unattended. Non-Interactive Offline Diagnostics can be run simultaneously on multiple C-series servers with logs archived automatically on a remote server.

For more information on using the XML API, see the *Cisco UCS Rack-Mount Servers CIMC XML API Programmer's Guide* available at:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/sw/api/b_cimc_api_book.html

Configuring Boot Order and RAID Levels

You can configure the server BIOS boot order settings and perform RAID configuration using the Server Configuration function.

This chapter contains the following sections:

- Boot Order Configuration, page 8-1
- RAID Configuration, page 8-1

Boot Order Configuration

UCS-SCU displays a list of all bootable devices on the server.

To set the BIOS boot order of your server, follow these steps:

Step 1 Click **Server Configuration** in the left navigation pane, and then click **Boot order Configuration**. You can choose the devices that you want to participate in the boot order configuration, using the arrow keys between the Device Types and Boot Order column.

Step 2 Highlight a device in the Device Types column (choose from either HDD, CD/DVD, Internal EFI Shell, Network Device, or FDD), click the left-to-right arrow key to arrange the server boot order that you prefer, and click **Apply**.

Step 3 Click **Apply**.

The Boot Order is saved on this server.

Step 4 Reset the boot order by clicking **Reset**.

Note If the system has multiple boot devices under each component, for example, if the system has multiple bootable hard disks under the same controller or CD drives, SCU will not display this information. You will have to enter the BIOS and configure the order of these subcomponents manually.

RAID Configuration

You can use the RAID Configuration functionality to configure the on-board or PCIe supported RAID controller cards.

If your system has multiple RAID controllers, UCS-SCU displays a list of all available RAID cards, and physical and logical disks on the RAID Configuration page.

The following RAID configuration options are available:

- Automatic setup with redundancy
- Automatic setup without redundancy
- Single RAID levels—RAID 0, RAID 1, RAID 5 and RAID 6
- Nested RAID levels—RAID 10, RAID 50 and RAID 60

This section includes the following sections:

- RAID Configuration Page Components, page 8-2
- Configuring RAID Arrays, page 8-3
- Clearing RAID Arrays, page 8-7

RAID Configuration Page Components

This section describes the RAID Configuration page and contains the following topics:

- Physical Disks Table, page 8-2
- Logical Disks Table, page 8-3

Physical Disks Table

The Physical Disks table in the RAID Configuration page lists the following:

- ID—The identifying number of the physical disk.
- Slot—The slot in which the physical disk belongs.
- State—The status of the disk. For more information about the various disk states, go to Table 8-1.
- Size—The size of the physical disk.
- Device Speed—The disk access speed of the controller.
- Link Speed—The link speed of the controller.
- Logical Disk—The logical disk to which the physical disk belongs to.

Table 8-1 describes the various disk status conditions.

Table 8-1 Disk Status Conditions

Status Condition	Description
Online	The drive is already used in another array.
Global Hotspare	The drive will be used to repair any array in the system that had a drive failure, if the failed drive is equal to, or smaller than the hot spare drive.
Unconfigured Good	The drive is unused or available.
Ready	The drive is online and operating correctly.
Offline	The drive is offline or absent. No actions can be performed on the drive until it is back online.

Table 8-1 Disk Status Conditions

Status Condition	Description
Unconfigured Bad	The drive is not operational and needs to be replaced. Disks with a status of "Unconfigured bad" cannot be used for RAID configurations.
Foreign	The drive is part of an array created on a different controller, or created within one enclosure and moved to another on the same controller. It can be used to create a new array after clearing the configuration.

Logical Disks Table

The logical disks pane in the RAID Configuration page displays the information about the logical disks.

Table 8-2 explains the RAID array attributes.

Table 8-2 RAID Array Attributes

Option	Description
ID	Unique ID to the logical disk.
Size	Logical drive size. The maximum value depends on RAID level selected and the physical disks size involved.
Primary RAID level	RAID 0 (Data striping), 1 (Disk Mirroring), 5 (Data Striping with Striped Parity), 6 (Distributed Parity and Disk Striping).
Secondary RAID Level	Applicable only for nested RAID levels.
Stripe size	Size of the data stripe across all disks. Each physical disk has a smaller stripe of data. The sum of all the stripes equals the stripe size.
Read policy	No Read Ahead, Read Ahead, Adaptive. Read Ahead will read additional consecutive stripes. Adaptive will turn on Read Ahead for sequential reads and turn it off for random reads.
Write policy	Write Through or Write Back. With Write Through, I/O completion for write operations is signaled when the data is written to the disk. With Write Back, I/O completion is signaled when the data is transferred to cache.
Cache policy	Direct I/O or Cached I/O. Choose Direct I/O for unchecked read and write operations. Choose Cached I/O to cache all write operations and check the cache first for read operations.

Configuring RAID Arrays

Only unconfigured good disks can be used for RAID configuration. Disks that are already part of RAID are not available for RAID configuration.

To create custom or multiple RAID arrays, follow these steps:

Step 1 Click **Server Configuration** in the left navigation pane and then click RAID configuration.

The RAID Configuration page displays with the list of physical disks and logical disks.

Step 2 Click the **Configure RAID** icon on the top-right of the page.

The RAID Configuration page appears.

Step 3 From the RAID level drop-down list, select one of the following RAID levels:

- Automatic Setup without Redundancy, page 8-4
- Automatic Setup with Redundancy, page 8-5

Note The automatic setup with or without redundancy overrides all the existing RAID arrays.

- Single-Level RAID Configuration, page 8-5
- Nested RAID Configuration, page 8-6

Step 4 Click **Create Array**.

Note The Create Array button is enabled only if the minimum required number of drive groups are created.

A progress bar is displayed and then a RAID Configuration dialog box appears depicting the completion of a RAID configuration.

Step 5 Click **OK**.

The RAID Configuration page appears. You can view the following:

- The drive group information is displayed in the Logical Disks table.
- The physical disks information is displayed in the Physical Disks table.
- The status of the physical disks that are part of the drive group changes to Online and the status of the backup physical disk changes to Hot spare.

Automatic Setup without Redundancy

Automatic setup without redundancy requires one or more hard drives. UCS-SCU creates RAID 0 with this option.

Table 8-3 shows the default values that are displayed for automatic setup without redundancy.

Table 8-3 Default Values for Automatic Setup without Redundancy

Parameters	Values
Controller	MegaRAID SAS <*family*>
RAID Level	0
Stripe Size	64
Read Policy	No Read Ahead
Writer Policy	Write Back
Cache Policy	Direct IO
Size (MB)	Depends on the physical disk size

Note The common parameters, except for total size, are the default values for the controller.

Automatic Setup with Redundancy

Automatic setup with redundancy is the default RAID configuration option. This configuration requires at least two physical drives to be available. If two physical disks are not available, the default RAID configuration would be automatic setup without redundancy.

Table 8-4 shows the default values that are displays.

Table 8-4 Default Values for Automatic Setup with Redundancy

Parameters	Values
Controller	MegaRAID SAS <*family*>
RAID Level	1
Stripe Size	64
Read Policy	No Read Ahead
Writer Policy	Write Back
Cache Policy	Direct IO
Size (MB)	Depends on the size of the logical disk

Note The common parameters, except for total size, are the default values for the controller.

Single-Level RAID Configuration

To configure single level RAID, follow these steps:

Step 1 From the RAID drop-down list, select a RAID level (**0** or **1** or **5** or **6**).

The Drive Groups pane appears with a list of physical disks and drive groups. For more information about a physical disk, hover the cursor over the physical disk until the tooltip is displayed.

Step 2 From the Physical Disks list, select the physical disks that you want to include in the Drive Groups list.

Table 8-5 displays the minimum number of physical disks required for each of the RAID levels.

Table 8-5 Minimum Number of Required Physical Drives

RAID Level	Number of Physical Disks Required
RAID 0	1
RAID 1	2
RAID 5	3
RAID 6	4

Step 3 Click **Create Drive Group**.

Note The Create Drive Group button remains disabled until the minimum number of physical disks for a RAID level is selected.

The selected physical disks are included in the Drive Groups list.

Note The Delete Drive Group button remains disabled until a drive group is created.

Step 4 From the Physical Disks list, choose a drive to be a hot spare drive or a standby drive.

Step 5 From the Stripe Size list, choose a stripe size for the RAID level.

Step 6 From the Read Policy list, choose a read policy for the RAID level.

Step 7 From the Write Policy list, choose a write policy for the RAID level.

Step 8 From the Cache Policy list, choose a cache policy for the RAID level.

Step 9 In the Size (MB) text field, enter the size of the logical disk in MB.

Nested RAID Configuration

Nested RAID levels have primary and secondary RAID levels. You need to create a minimum of two drive groups in nested RAID levels and the drive groups should have the same number of physical disks.

To configure nested RAID levels, follow these steps:

Step 1 From the RAID drop-down list, select a nested RAID level.

The Drive Groups pane appears with a list of physical disks and drive groups. For more information about a physical disk, hover the cursor over the physical disk until the tooltip is displayed.

Step 2 From the Physical Disks list, select the physical disks that you want to include in the Drive Groups list.

Table 8-6 displays the minimum number of physical disks and data groups required.

Table 8-6 Minimum Number of Required Physical Drives and Data Groups

RAID Level	Minimum Number of Physical Disks	Minimum Number of Data Groups
RAID 10	4	2
RAID 50	6	2
RAID 60	8	2

Step 3 Click **Create Drive Group**.

Note The Create Drive Group button remains disabled until the minimum number of physical disks for a RAID level is selected.

The selected physical disks are included in the Drive Groups list.

Note The Delete Drive Group button remains disabled until a drive group is created.

Step 4 From the Stripe Size list, choose a stripe size for the RAID level.

Step 5 From the Read Policy list, choose a read policy for the RAID level.

Step 6 From the Write Policy list, choose a write policy for the RAID level.

Step 7 From the Cache Policy list, choose a cache policy for the RAID level.

Step 8 In the Size (MB) text field, enter the size of the logical disk in MB.

Clearing RAID Arrays

You can use the RAID Configuration page to delete all the created virtual disks or specific disks to free up the disk space.

This section contains the following topics:

- Deleting All the Virtual Disks, page 8-7
- Deleting Single or Multiple Disks, page 8-7

Deleting All the Virtual Disks

To clear up all the disks, follow these steps:

Step 1 Click **Server Configuration** in the left navigation pane and then click RAID configuration.

The RAID Configuration page displays with the list of physical disks and logical disks.

Step 2 Click the **Clear Configuration** icon on the top-right of the page.

The RAID Configuration dialog box appears.

Step 3 Click **Yes** to confirm the operation.

All the virtual disks under Logical Disks are cleared and the state of the hard disks change to Unconfigured Good.

Deleting Single or Multiple Disks

In single RAID levels and nested RAID levels, if the number of unconfigured good physical disks is less than the minimum disks required for the selected RAID level, a RAID Configuration dialog box appears specifying that logical disks need to be deleted to free up the physical disks.

To clear up the logical disks, follow these steps:

Step 1 Click Yes in the RAID Configuration dialog box that appears.

A Delete Logical Disks dialog box appears.

Step 2 Select the logical disk to be deleted. The physical disks that are part of the logical disk is displayed at the bottom of the dialog box.

Note If you delete a logical disk, all the information stored in the disk will be inaccessible.

Step 3 Click **Delete**.

Viewing Logs

The UCS-SCU Logs functionality allows you to take corrective action by examining your server logs. UCS-SCU provides the following types of logs:

- System Logs, page 9-1
- System Event Log, page 9-1

System Logs

The system log file displays events that are logged by the operating system components. These events are often predetermined by the operating system itself. System log files display information about device changes, device drivers, system changes, events, operations, and more.

To view the system logs, follow these steps:

Step 1 Click **Logs** on the left navigation pane.

Step 2 Click **System Logs**.

Step 3 Select a filter from the filter drop-down list.

Step 4 Click **Go**.

The system log is displayed.

System Event Log

The system event log file displays events that are logged by your server.

To view the system event logs follow these steps:

Step 1 Click **Logs** on the left navigation pane.

Step 2 Click **System Event Log**.

Step 3 Select from either the **Description** or **Severity** filter from the drop-down list.

- If you select the **Description** filter and click **Go**, all the system event logs with a description and severity are displayed.

- If you select the **Severity** filter, you can select the type of severity from the second drop-down list and click **Go**. A list with the logs of the specified severity type is displayed.
- Click **Clear Filter** to clear the filter you applied.

Troubleshooting

This chapter lists various troubleshooting options available when using the UCS-SCU application.

UCS-SCU Issues and Solutions

- The OS installation process is interrupted and the server is rebooted.

  Determine the value set for the Watchdog Timer. The Watchdog Timer is a new feature in the BIOS of the C-series servers. If this feature is enabled and the value is set for a time duration that is less than the time needed to install the OS, then the OS installation process is interrupted. This Watchdog Timer feature automatically reboots or powers off the server after the specified time duration. Before you begin the OS installation process, disable the Watchdog Timer feature.

- UCS-SCU displays the following message even after mapping the virtual USB or connecting the physical USB:

```
No USB Disk on Key detected
```

  - For USB devices mapped through vmedia, try selecting the **USB reset** from the vmedia GUI (virtual media session -> details -> USB reset)
  - For a physical USB device, check the vendor and product information or try a different device.

- After installing Windows OS, the KVM mouse does not work and Windows Device Manager displays a yellow bang for the USB human interface device.

  Check the version of CIMC. Ensure that you have the latest version of CIMC installed on your server.

- Windows 2008 installation fails and the following message is displayed:

```
Selected disk has MBR partition table. On EFI systems, Windows can only be installed to
GPT disks.
```

  The EFI CD ROM device for the virtual drive was used to boot the Windows 2008 image. Use the CD ROM device from BIOS CD ROM order.

- After installing the Windows operating system through UCS-SCU, Windows Device Manager displays some devices with a yellow bang.
  - The device may not be in the Cisco support matrix.
  - You may not have selected some device drivers in the SCU GUI.

- Windows setup fails with BSOD 0x7B (inaccessible boot device).

  You may not have selected the device driver for boot controller in SCU GUI.

- CIMC change does not reflect in UCS-SCU immediately.

  Changes made to virtual disks using CIMC may not be immediately viewable in the SCU user interface, if the server is booted with SCU. Reboot the server to synchronize with CIMC.

- During the Power On Self-Test (POST), both LSI embedded MegaRAID and LSI 2008 controller are detected but only the LSI 2008 controller is viewed in the UCS-SCU.

  Both LSI embedded MegaRAID and LSI 2008 are not supported together in the UCS-SCU. If you have both, then only LSI 2008 gets detected. Remove the controller for the LSI embedded MegaRAID to get detected.

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