Cisco Unified Computing System Platform Emulator

Release Notes

February 2011, Version 1.4

Contents

Installation Instructions **3**
Prerequisites 3
Cisco UCSPE Download 3
Starting the Virtual Machine 3
Starting the Virtual Machine for the First Time 3
Assigning a Static IP to Your Virtual Machine 5
Launching the Cisco UCS Manager GUI **6**
Launching the Cisco UCS Manager CLI **7**
Cisco UCSPE Control Panel Menu **8**
Cisco UCS Manager 8
UCS Manager Home 8
Managed Object Browser 8
XML API Docs 9
API Schema and Samples 9
Hardware Inventory 10
Start-up Inventory 10
Action Icons 10
Adding a New Server to Hardware Designer from the Catalog 11
Using the Stash Area 12
Emulator Settings 13
a. Status Summary 13
b. Management IP 13
c. High Availability 13
d. Database Persistence 13
e. Startup Config URL 13
f. Fabric Interconnect 13
Restart 13
a. Restart Cisco UCSPE 13
b. Reboot the virtual machine 13
c. Shutdown the virtual machine 14
d. Reset the UCSM database 14
e. Factory Reset 14
Customer Support and User Community **14**
Release Notes **14**
Release Version 14
Form of Delivery 14
System Requirements 14
Limitations 14
Inherent Limitations of the Cisco UCS Emulated Environment 16
Limitations the of the Current UCSPE Release 16
Known Issues 17
Locator LED 17
Internet Explorer Support 17
VMPlayer's "Preserve Physical Connection State" checkbox 17
"Save as" XML Export in Chrome Browser 17
Requests Timing Out 17
Firmware Versions of Hardware Imported from Live UCS 17
Catalog Info for Chassis PSU and Fan and Server DIMMs 17
FEX and Rack-Mount Server Data is Static 17

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Installation Instructions

Prerequisites

To unpack and run the Cisco Unified Computing System Platform Emulator (UCSPE) virtual machine and to start the Java GUI, you must first install the following software:

- VMware™ Player from www.VMware.com (for other supported types of VMware products see Release Notes below)
- Sun JDK version 1.6 or later, from java.sun.com
- An unzip program*

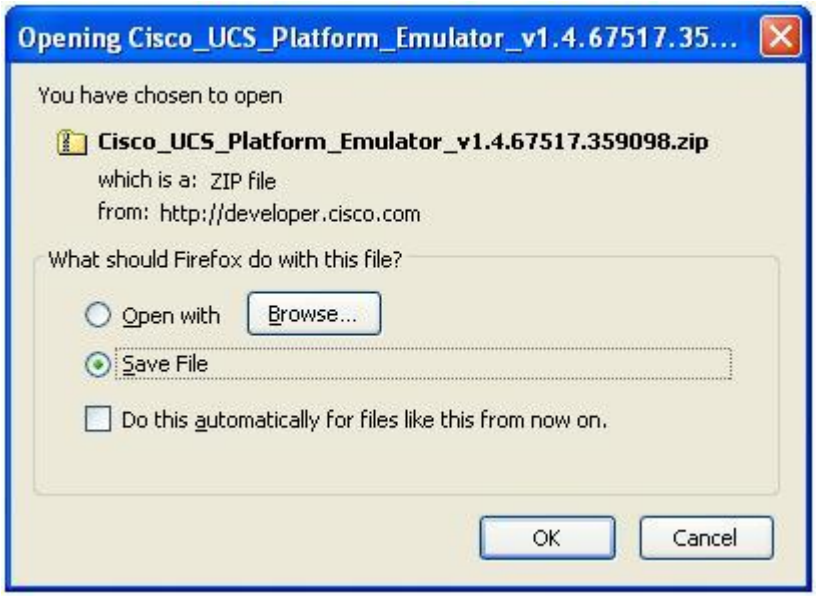
Note: We used 7-Zip (www.7-zip. org) for archiving and validation.

Cisco UCSPE Download

Download and unzip the following file to your hard drive:

Cisco_UCS_Platform_Emulator_v1.4.67517.359904.zip

Note: The exact file name depends on the build number (the numbers that follow v.1.4), therefore the name of the actual file that is available for download at the present time may differ from the name provided above. The download link is provided on the same page from which you downloaded this document. When prompted by the browser, please select Save File and choose a location on your hard drive.



This file is approximately 350 MB in size. Unzipping it creates a directory with the name UCSPE.

Starting the Virtual Machine

After the UCSPE/ directory is unzipped, double-click the file `UCSPE/UCSPE.vmx` to start the virtual machine (on Mac or Windows; or, if you are in Linux, type `vmplayer UCSPE.vmx` in the command prompt).

Starting the Virtual Machine for the First Time

By default, the VM is configured to use the local DHCP network to obtain its IP address. If your local network does not support DHCP, you may choose to change the networking setting of your Cisco UCS

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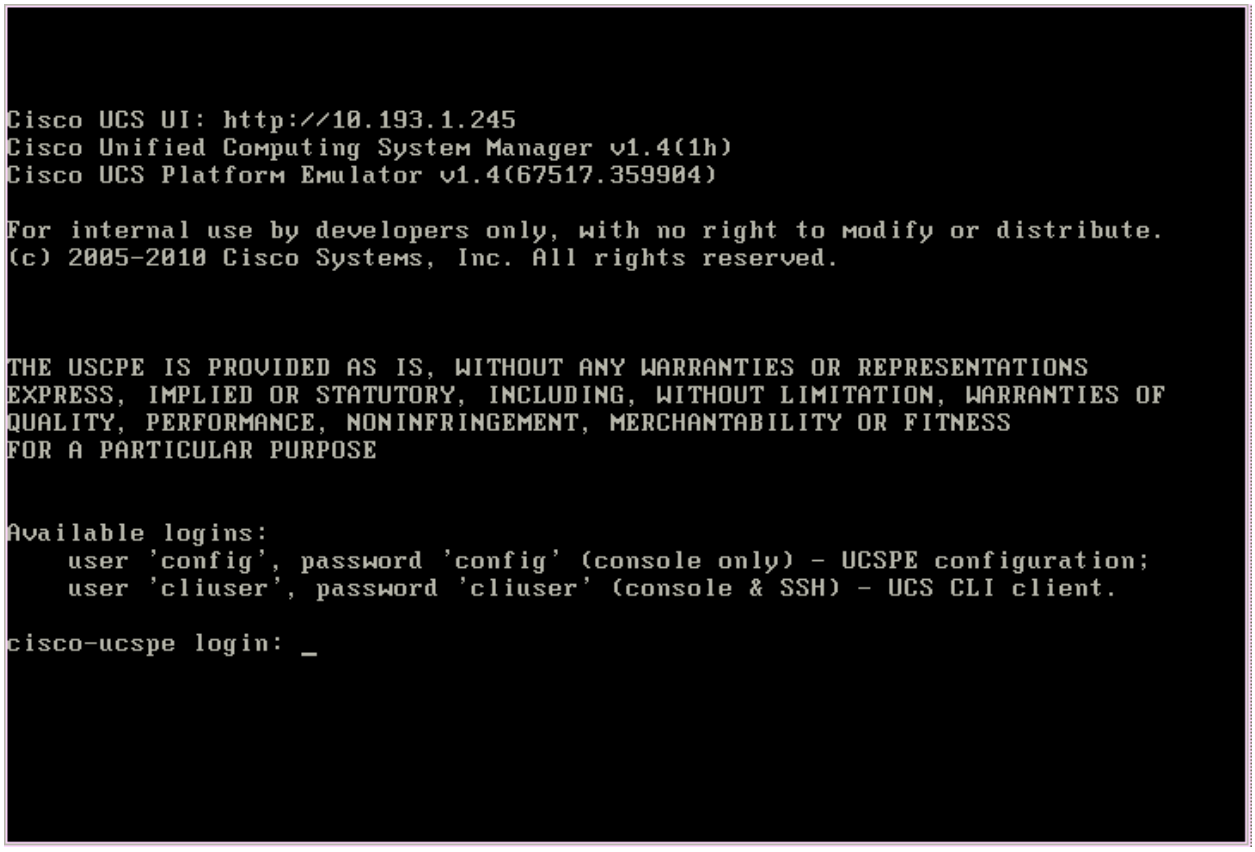
Platform Emulator virtual machine from the default NAT mode to Host Only mode. After you change the networking settings, you must reboot the VM for the settings to take effect.

Note: The first time the virtual machine starts, it will perform a one-time installation process. Please allow the installation to finish before rebooting the virtual machine.

After the initial installation completes, the virtual machine console will display a login prompt similar to the following:



The management IP address is indicated in the top line of the console. If the IP address was assigned by a DHCP server, it will tend to persist across VM reboots (however, this depends on the configuration of the DHCP server in your local network). If there is no DHCP server on your network, please see the "Assigning a Static IP to Your VM" section below.

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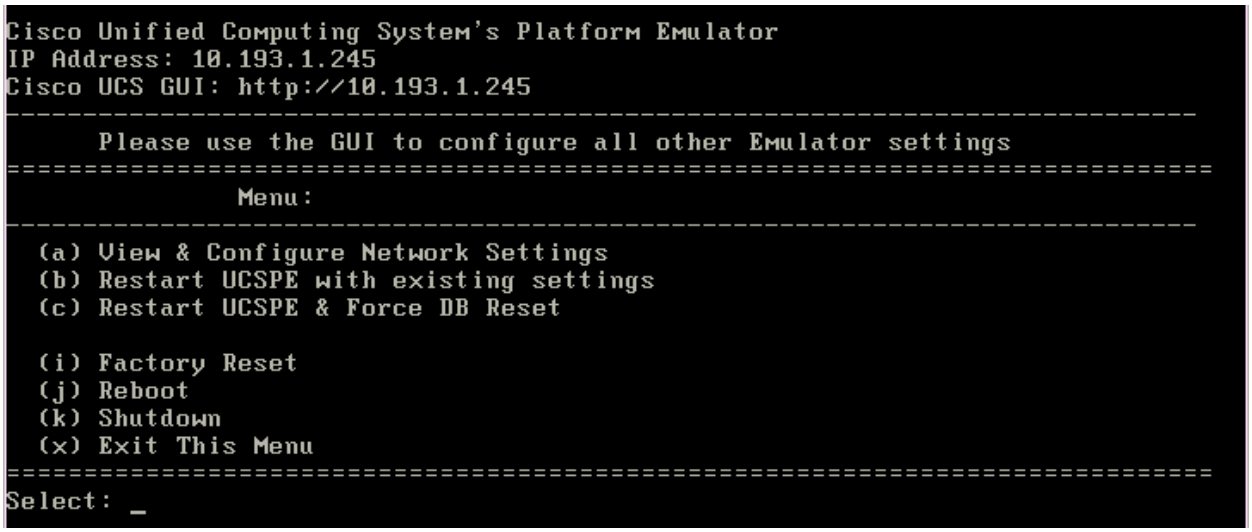
Assigning a Static IP to Your Virtual Machine

Login as user 'config' to see the following menu.



Select option (a) to change the network settings to use a statically-assigned IP address:

Follow the prompts to answer:

Change settings? y

Use DHCP? n

Enter the desired IP address, netmask and default gateway into the prompts that follow. After you enter the default gateway, the network interface will reinitialize with your settings, and the system will become accessible via the new IP address. If you would like to cancel your entry and return to the menu, press Ctrl+C.

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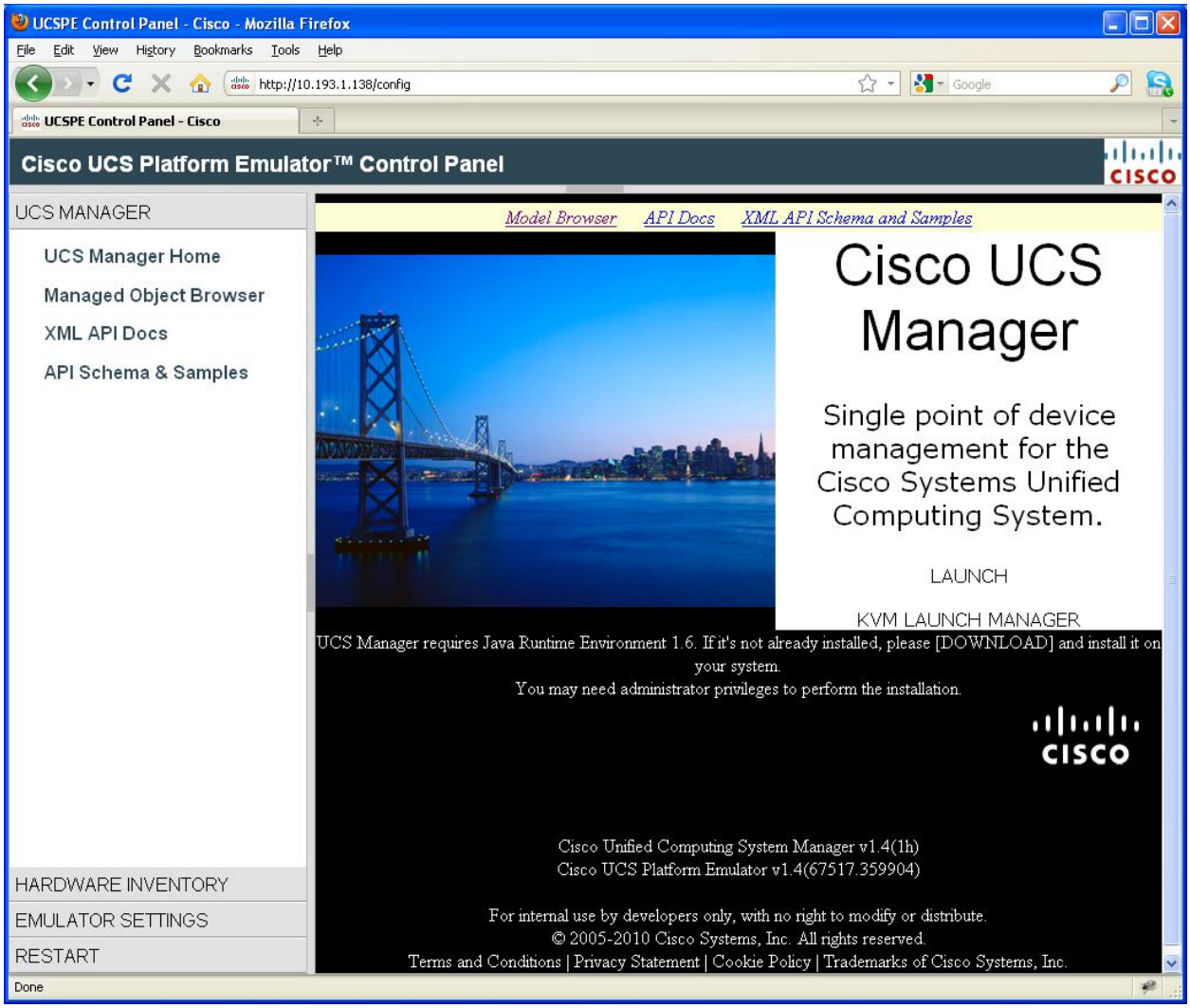
Launching the Cisco UCS Manager GUI

After the VM startup completes, point your browser to the Cisco UCS UI address displayed on the VM console. The Cisco UCS Manager introductory HTML page displays. Click the LAUNCH link to start the UCS Manager Java GUI download and launch.



The Cisco UCS Manager GUI Login window will appear. You can simply press “Login” without entering a username or a password. This is because in the emulation mode, user authentication is turned off.

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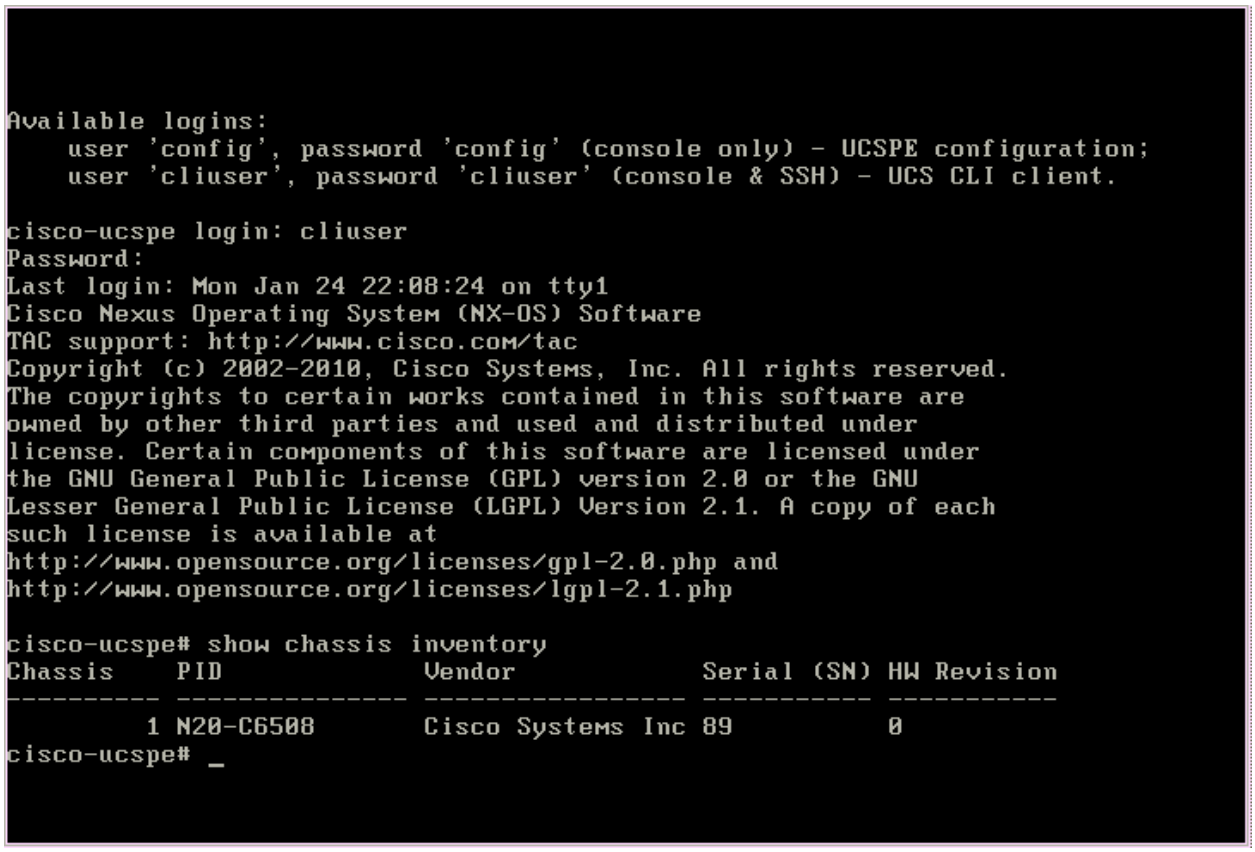
Launching the Cisco UCS Manager CLI

The Cisco UCSPE virtual machine supports a single CLI session. To access the CLI prompt, in the virtual machine console (or SSH) login as user “cliuser” with password “cliuser”.



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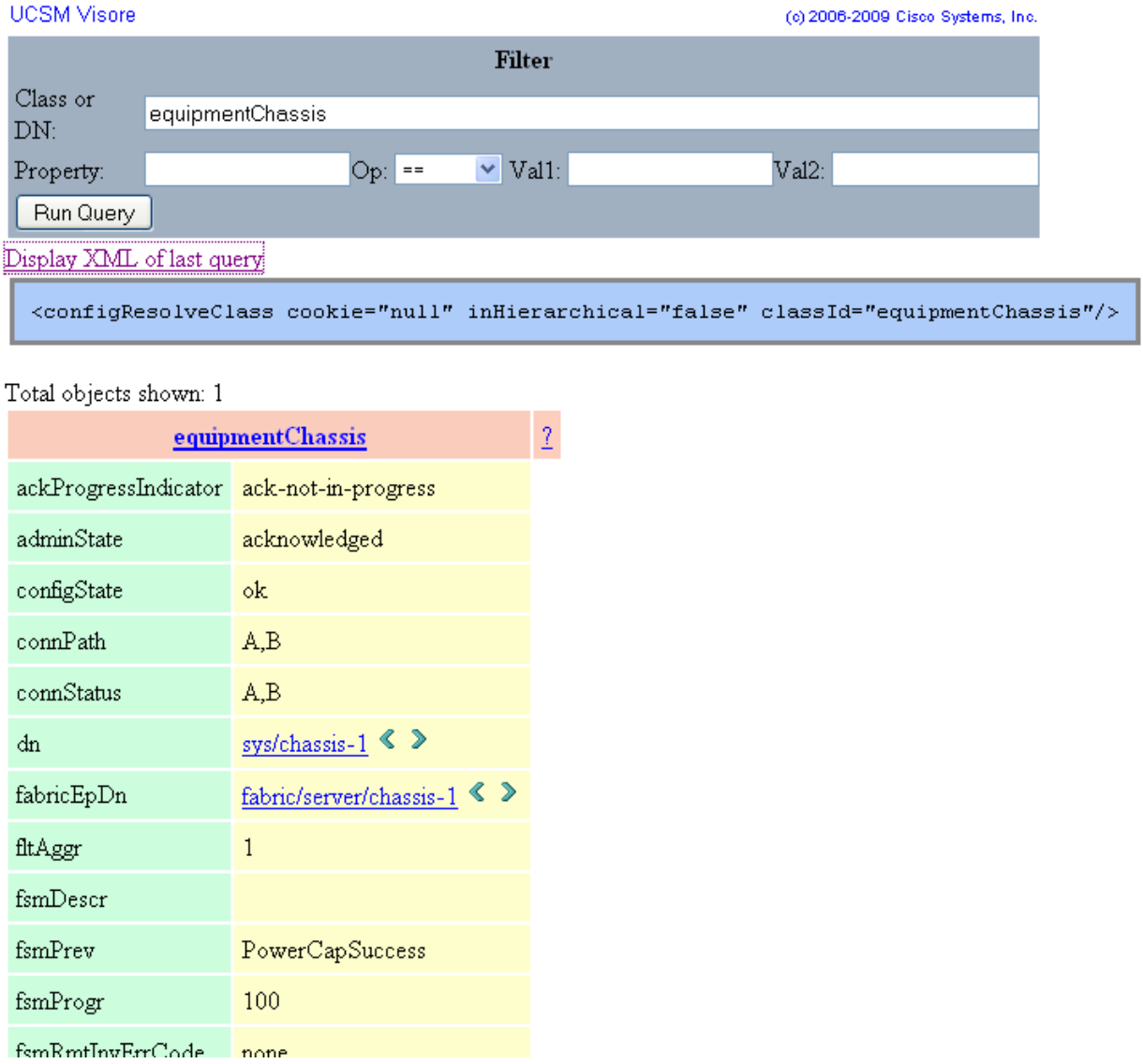
Cisco UCSPE Control Panel Menu

Cisco UCS Manager

UCS Manager Home

Displays the front web page of the UCSM. The LAUNCH link allows to launch the UCSM GUI (Java).

Managed Object Browser



The Managed Object Browser allows browsing the internal state of the Data Management Engine of Cisco UCSM. It is a tool useful when developing integration with Cisco UCSM using its XML API.

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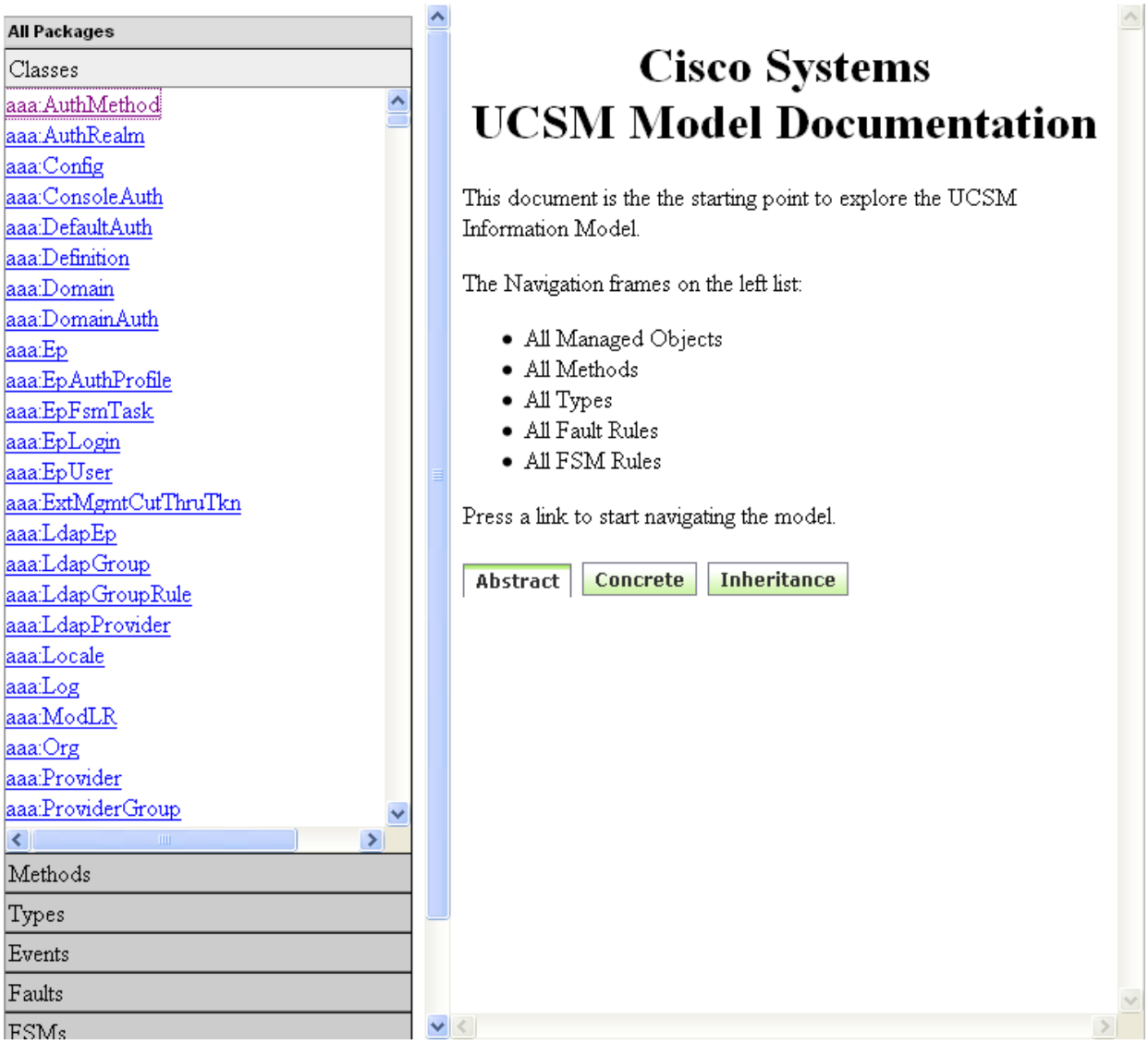
XML API Docs



This section provides a complete XML API reference. The documentation is auto-generated from the most current UCSM Information Model.

API Schema and Samples

This link provides a way to download XML schema files (*.xsd) and sample XML requests. This information can be useful for XML API developers.

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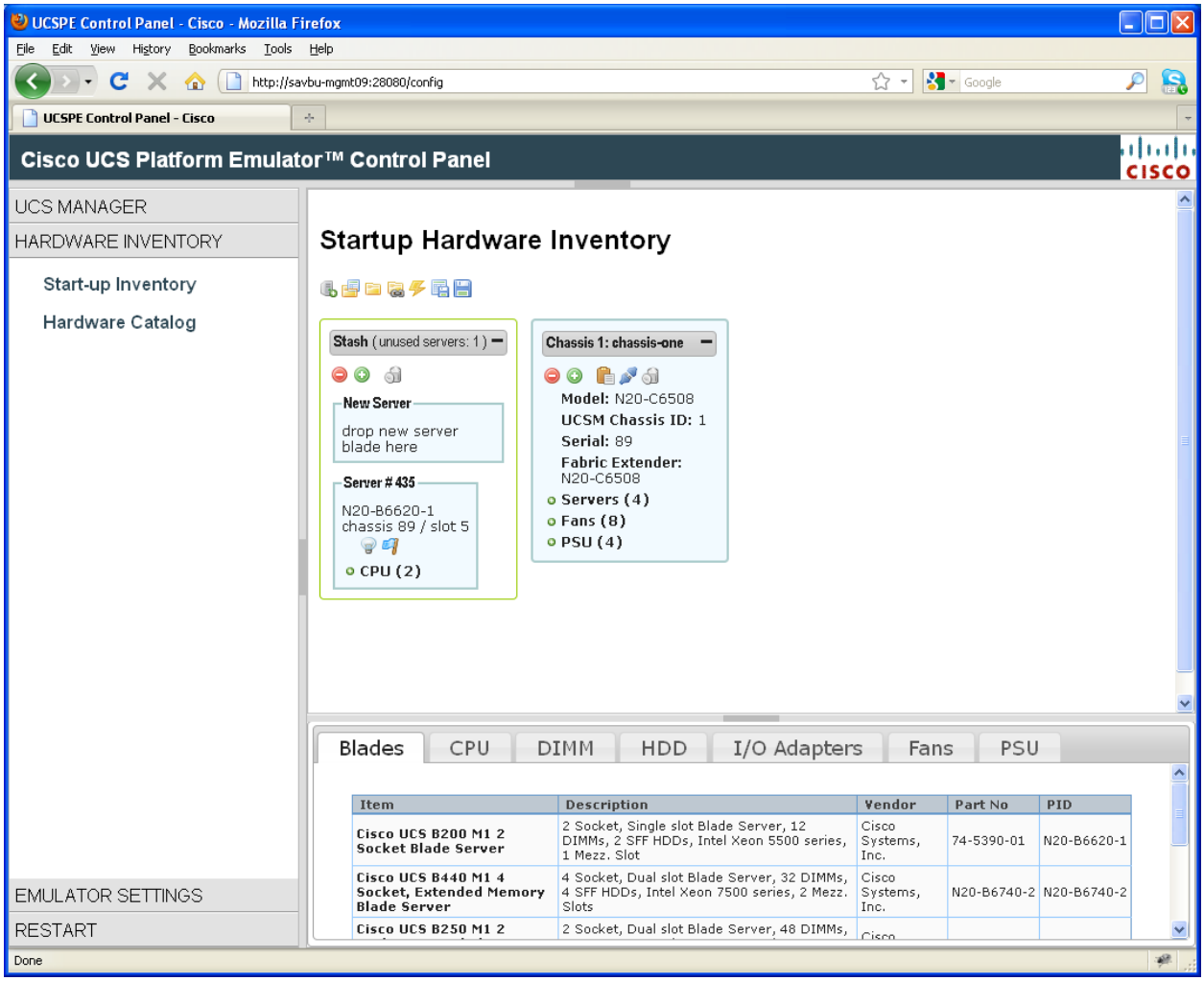
Hardware Inventory

Start-up Inventory



This section is the Hardware Designer of the UCS Platform Emulator. It allows visually creating and modifying the set of UCS hardware that the UCS Manager will discover once the virtual machine restarts.

Action Icons

The descriptions of the action icons located at the top of the page are as follows:

	Add new chassis. In the form that appears when you click the icon, please specify a chassis ID and a unique name.
	Load a previously saved hardware configuration. Click on a name of a configuration file in order to load it. The loaded configuration will replace the configuration currently displayed. These configurations are kept inside the VM. Each configuration is accessible via its own URL, for example, the content of configuration named “SampleConfiguration” can be downloaded or displayed in the browser via http://UCSPE-VM-IP/hardware/startup/file/dump/SampleConfiguration
	Upload (import) hardware configuration from a file on the local disk. Click “Browse…” to pick an XML file for uploading. The loaded configuration will replace the configuration currently displayed. Note that the “current” configuration can be displayed or downloaded from URL

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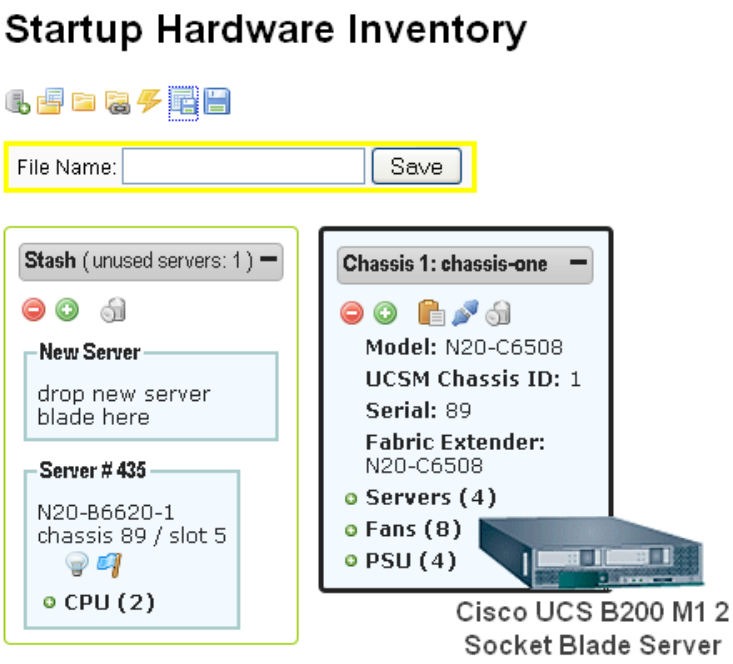
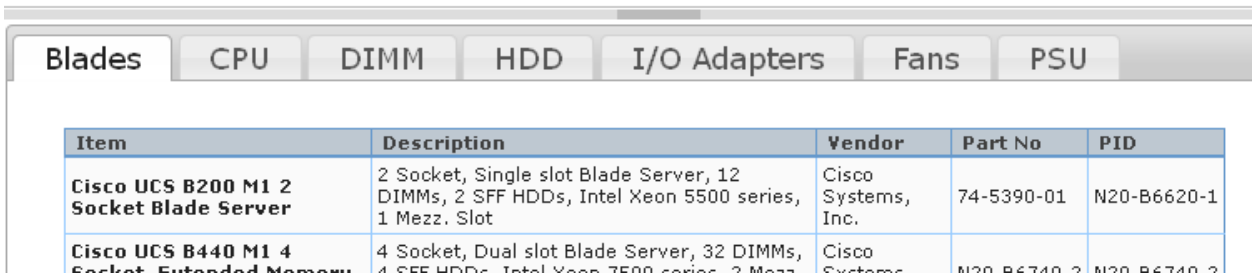
	http://UCSPE-VM-IP/hardware/startup/export
	Import equipment from a live UCS system. In the form that appears, enter the management IP of a UCS system, along with admin username and password, then click “Load”. This will replace the current equipment in the Hardware Designer with the exact set of equipment that comprises the live UCS system. *Note: as with all other “hardware load” functions, the emulation of the newly loaded equipment set will begin once Cisco UCSPE has been restarted.*
	Restart UCSPE. This action is necessary if you would like to cause the emulated UCS Manager to discover the hardware configuration changes that you have just made in the Hardware Designer.
	Save hardware configuration. In the form that appears, enter a unique (not previously used) file name. After this, a file with this name will show in the “Load previously saved configuration” list – see above.
	Export configuration as XML file. Opens a new browser tab to display the XML of the hardware configuration that is currently displayed in Hardware Designer. If you would like to save this XML as a local file, please use the “Save as…” menu of your browser.

Adding a New Server to Hardware Designer from the Catalog

At the bottom of the page you will find a tabbed catalog of supported UCS hardware components. Select the “Blade” tab to see a table of all available server types. Using your mouse, drag a server from the table onto a chassis, as shown below:





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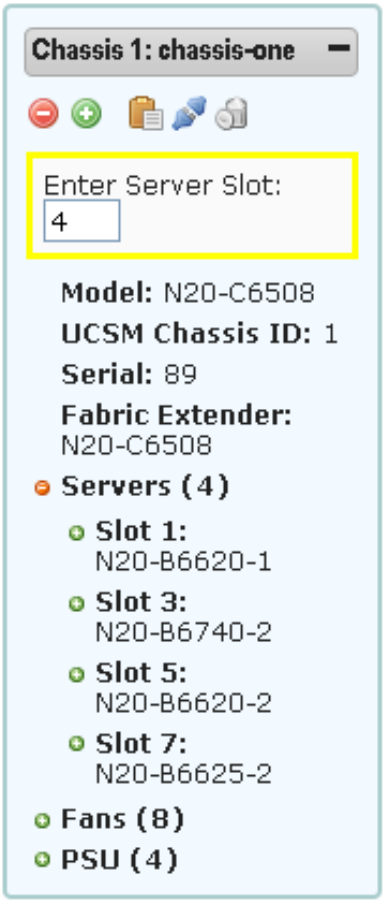


When dragging the server, you will notice that the chassis box is highlighted by a thick black frame. Once the chassis of your choice is highlighted this way, you can "drop" the server onto it. In the form that appears, enter the slot number of the chassis where you would like to install the new server. It helps to open the "Servers" subtree of the chassis, to see which slots are already occupied. Hit <Enter> to complete the insertion, or <Esc> to abort it.

In a similar way, choose a CPU from the catalog at the bottom of the page and drag it over the chassis. In the form that appears, you will be asked to provide both the Server Slot number and the CPU socket number (e.g. for a 4-socket server, the range of numbers is 1..4). Similarly to adding a CPU, continue on to add DIMM(s), HDD(s) and I/O Adapter(s). You can also add chassis-specific components such as a chassis power supplies (PSU) and fans.

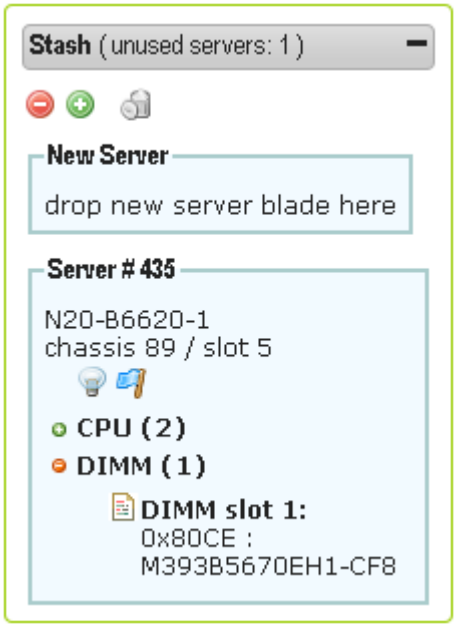
The following icons are located at the top of each chassis

and allow you (left-to-right):

1. Collapse all elements of the chassis view subtree
2. Expand all elements of the chassis view subtree
3. Make a clone of this chassis
4. "Disconnect" this chassis: make it invisible to UCS Manager
5. Remove this chassis

Using the Stash Area

The Stash area is similar to a "lab desk" where you would put a server blade, once you pull it out of a chassis. It allows you to manipulate a server blade (edit its contents) before inserting it back into the chassis. The Stash remembers the chassis and the slot from which the server came, and can automatically reinsert it back, upon clicking the black "+" icon. If you would like to "copy" a server, drag it and drop over the "New Server" area of the Stash. You can also drag-n-drop a new server from the Catalog table. If you would like to reinsert a server from the Stash area into a different chassis or slot, simply drag it from the Stash area and drop onto the appropriate chassis.



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Emulator Settings

a. Status Summary

This page displays a summary of all Cisco UCSPE settings.

b. Management IP

Use this form to change management IP settings of the Cisco UCSPE virtual machine. A second way to change these settings is via the VM console menu accessible under the login "config/config". The default is to use DHCP server for management IP address assignment.

c. High Availability

Choose whether UCSPE will emulate a non-HA, single-Fabric-Interconnect system, or a dual-Fabric-Interconnect, HA system. This setting does not take effect until Cisco UCSPE is restarted.

d. Database Persistence

Choose whether Cisco UCSPE should preserve the UCS Manager database between restarts of the emulator (UCSPE) and/or between virtual machine reboots.

e. Startup Config URL

Choose the URL of the hardware configuration file. This hardware configuration will be emulated by Cisco UCSPE on the next restart. By default, the configuration that is currently displaying in Hardware Designer will be used (the "Local Inventory" option).

One possible advanced use of this feature is for organizations running multiple Cisco UCSPE virtual machines. In this case, one can store the configuration in a "master" UCSPE virtual machine, and have all other UCSPE virtual machines configured to point their Startup Config URL to the master.

f. Fabric Interconnect

Choose the number of uplinks between a chassis and the Fabric Interconnect.

g. NTP Synchronization

Enter the IP address of the NTP server available in your network. If the virtual machine is going to have world-wide-web connectivity, the standard NTP server pool.ntp.org can be used instead. A proper NTP configuration is necessary if you require that time stamps reported by Cisco UCS Manager (for example, in Event Log or Fault history) be correct.

Restart

a. Restart Cisco UCSPE

Restart the UCSPE services (without rebooting the virtual machine).

b. Reboot the virtual machine

Reboot the OS of the virtual machine.

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c. Shutdown the virtual machine

Shutdown the OS of the virtual machine.

d. Reset the UCSM database

Remove the current Cisco UCS Manager database and restart all UCSPE services. This type of restart is required for reinitializing hardware configuration.

e. Factory Reset

Reinstall the UCSPE. Performs a complete reinstallation of UCSPE software within the virtual machine, an action similar to the one performed during the very first boot of the virtual machine.

Customer Support and User Community

The Cisco Developer Network includes a section dedicated to Cisco UCS Manager. The section is located at http://developer.cisco.com/web/unifiedcomputing

Issues and requests relating to the UCS Platform Emulator and UCS XML API can be posted to UCS Manager forum at http://developer.cisco.com/web/unifiedcomputing/forums. The forums are periodically monitored by Cisco developers and support personnel. However, please note that this is the only level of support available for UCSPE users, and there are no response-time guarantees.

Release Notes

Release Version

Version 1.4 of Cisco Unified Computing System (UCS)

Version 1.4 of the Cisco UCS Platform Emulator (UCSPE).

The Cisco UCS Platform Emulator Virtual Machine can be executed in:

- VMware Player or Workstation on Windows XP;
- VMware Fusion on Mac OS X;
- VMware ESXi hypervisor.

Form of Delivery

The Cisco UCS Platform Emulator is distributed as a VMware virtual machine appliance. It can be downloaded from the Cisco website. For more information, contact your sales representative.

System Requirements

The minimum system requirements are:

- 1 GB free RAM
- 8 GB disk space (plus an additional 2.2 GB during the unzip)
- 1.8 GHz single CPU

Limitations

Cisco UCSPE is an emulated environment that recreates interactions between hardware and firmware components of UCS and its management software. The emulated environment makes it possible for the

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management software to operate without any real hardware. This approach has the inherent limitations outlined below.

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Inherent Limitations of the Cisco UCS Emulated Environment

- No Data Path

  Cisco UCSPE only emulates whatever is necessary for the management plane to function. Specifically, it does not emulate network data flow.

- No Cut-Through Interfaces to Equipment (such as IPMI)

  Servers in the real Cisco UCS system contain board management controllers (BMCs), each of which supports an IPMI interface. Switch components of UCS support an SNMP interface. Because both switch and BMC are considered “endpoints” of the UCS management system, these interfaces are, in fact, cut-through interfaces that bypass the central management system. These cannot be supported in the emulated environment.

- No SSH / FTP/ telnet

  Similarly to SNMP and IPMI interfaces, SSH, FTP, and telnet, access (through user-facing or management-plane-facing Ethernet interfaces) is unavailable because it also bypasses the management software and is considered cut-through access.

- No KVM (keyboard/video/mouse)

  KVM is also a cut-through interface and therefore is not supported. And as there are no real servers attached to the emulation system, there are no ports to which KVM could connect.

- Limited High-Availability Failover Emulation

- Although UCSPE can run in high-availability mode, it runs both sets of UCS management processes on a single OS. Consequently, it supports only one failover scenario: when one of the two management processes in the HA pair dies. Scenarios pertaining to link loss between cluster members, loss of EEPROM readability, and others, are not supported.

Limitations the of the Current UCSPE Release

- No AAA/Security Backend Emulation

  In emulation mode, the UCS Manager accepts security configuration changes, but does not enforce any security. Specifically, any username and password combination can successfully login to the management GUI, and all such logins have the “administrator” role.

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Known Issues

Locator LED

Locator LED is not fully emulated. The LED state defaults to “on” on all chassis, and to “off” on all servers. The states cannot be changed from the GUI.

Internet Explorer Support

Two sections of the UCSPE Control Panel UI, “Model Object Browser” and “Start-up Inventory” do not work with Microsoft Internet Explorer and require a Mozilla-compatible browser such as Mozilla Firefox™ or Google Chrome™. The rest of the Control Panel UI works with Internet Explorer of versions 8.0 and higher.

VMPlayer’s “Preserve Physical Connection State” checkbox

This checkbox exists in the latest versions of VMPlayer’s Network Settings dialog box, next to the “Bridged” mode selector. When bridged mode is selected, this checkbox should NOT be checked, otherwise DHCP address assignment is known to require two restarts of networking services within the emulator VM.

“Save as” XML Export in Chrome Browser

The Startup Hardware Configuration UI allows to save the XML-formatted hardware configuration to a local computer (the client computer that is running the browser). This is done by clicking the Export Configuration to XML File icon, and then using the browser’s “Save as…” function to save the displayed XML text to a local file. However, users of Chrome browser must pick “.txt” extension when saving the file. If any other extension is chosen (including “.xml”), Chrome will add unnecessary HTML tags into the saved file, producing incorrect XML format.

Requests Timing Out

The Emulator VM is scalability-tested to remain stable through hours or days of uptime, and sustain multiple millions of XML queries. However, if the VM stops responding to XML requests due to an unforeseen issue, it should be rebooted. Reboot can also be done programmatically via an HTTP POST request to http://VM_IP/settings/restart/vmreboot with the POST body containing “confirm=yes”.

Firmware Versions of Hardware Imported from Live UCS

When hardware is imported, the versions of firmware will be set to the current (1.4) version level, regardless of the version levels existing in the source UCS.

Catalog Info for Chassis PSU and Fan and Server DIMMs

When the Emulator is populated with 10 or more chassis, the UCS GUI may not always display the catalog part info (i.e. the textual description of the hardware part) for some of the PSUs and Fans in some of the chassis, randomly. Additionally, the UCS GUI will not show part info for certain types of DIMMs.

FEX and Rack-Mount Server Data is Static

In this release, the servers and FEX devices displayed in the UCS GUI are not fully emulated. They are statically pre-configured upon Emulator start-up for demo purposes. In addition, there will be critical and major faults created against these devices, resulting in the devices signaled with red frames and icons in the GUI. This is expected behavior. The full emulation of rack-mounted servers will be available in future releases of the Emulator.

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