User Workspace Management

Access the User Workspace Management Interface

After you have started the Cisco Modeling Labs server, you can access the **User Workspace Management** interface to manage user accounts, projects, licenses, and virtual machine images on the Cisco Modeling Labs server.
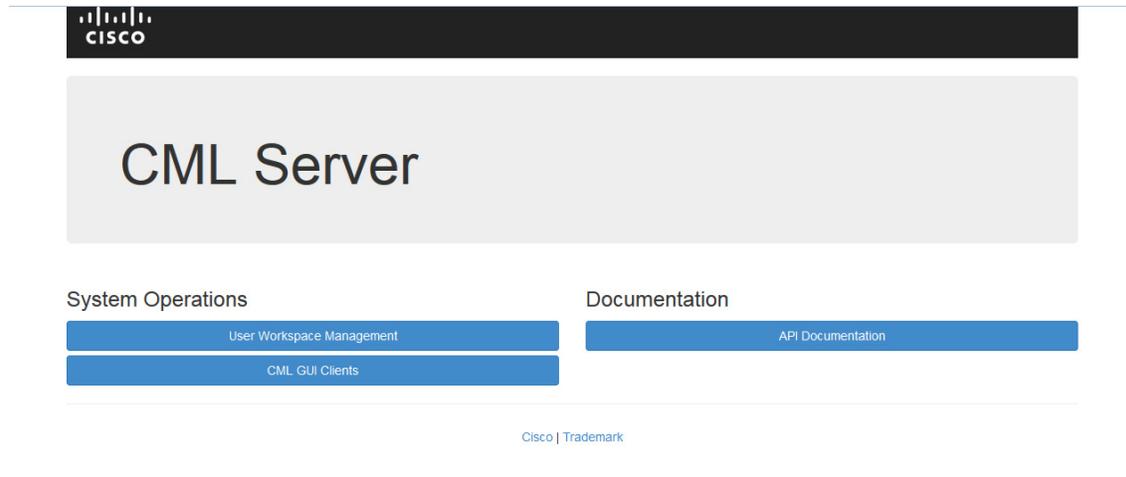
To access the **User Workspace Management** interface, complete the following steps:

Step 1   In a web browser, enter the IP address or hostname in the format, `http://`*`<IP address | hostname>`*.

The **CML Server** main menu page is displayed.

Figure 1: CML Server Main Menu

Step 2   Click **User Workspace Management** to access the **User Workspace Management** interface.

Step 3   Log in to the **User Workspace Management** interface using the username uwmadmin and the password password.

     Note   You can log in to the **User Workspace Management** as either an administrator or as a non-administrative user. Uwmadmin is an administrative user.

The application opens on the **Overview** page.

Figure 2: User Workspace Management Overview
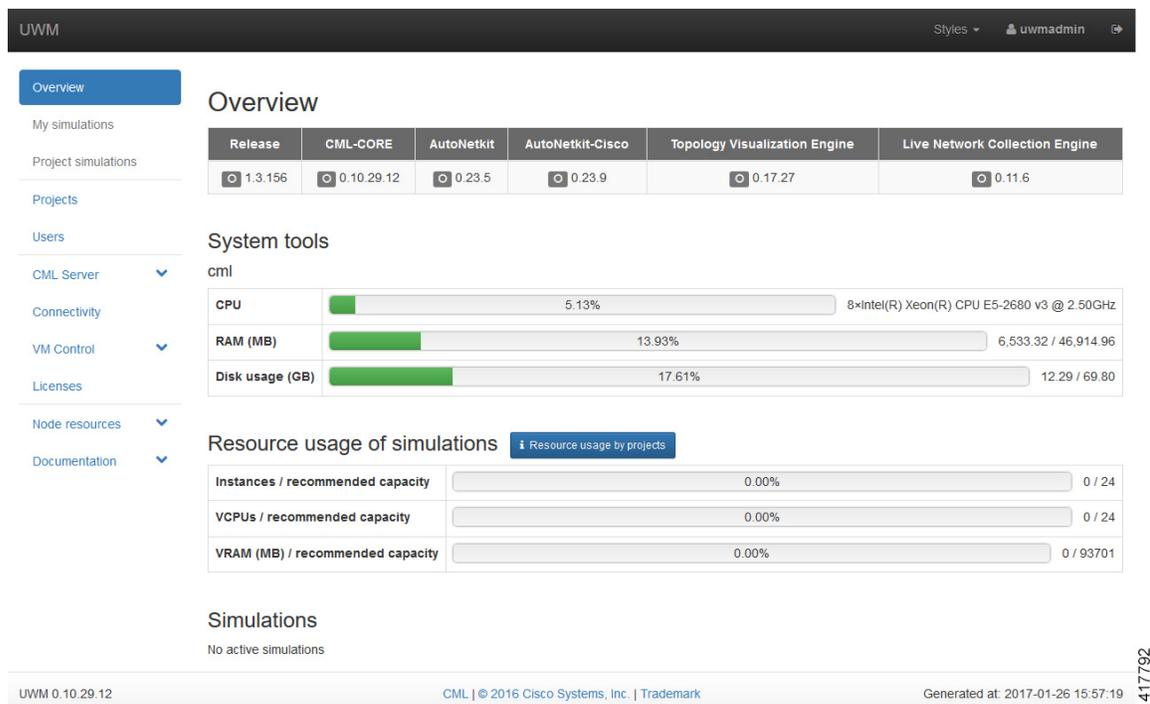
The task bar on the left enables the following functions:

- **Projects**—Allows you to import and export projects. You can also add new projects, enable, disable, modify, and delete current projects.

- **Users**—Allows you add new user accounts, enable, disable, modify, and delete current user accounts.

- **CML Server**—Available options are:

  - **System Configuration**—Allows you to control system configuration. You can set configuration parameters for the System, Networks, VIRL Services, Infrastructure, and Resources.

  - **System Tools**—Allows you to collect, view and download system status information. Display Statistics reports historical system operation data such as the number simulations that have been run, the mix of nodes in the simulations, and so on. Download System Logs Collection gathers log files from the system which are invaluable when troubleshooting and diagnosing issues; delivered as a .ZIP file. Check Health Status performs a system check and generates a report on same.

  - **Download**

- **Connectivity**—Allows you to add L2 FLAT IP addresses, L3 SNAT IP addresses, and Project Management IP Addresses.

- **VM Control**—Allows system administrators to stop specific components of an active simulation. Available options are:

- ◦ **Nodes**

- ◦ **Networks**

- ◦ **Ports and Floating IPs**

- ◦ **Hosts**

- ◦ **Allocated Ports**

- **Licenses**—Allows you to manage product licenses on the system.

- **Node Resources**—Available options are:

  - ◦ **Flavors**—Allows you add and delete virtual machine flavors.

  - ◦ **Images**—Allows you add new virtual machine images, modify, and delete current images. You can also modify and delete image snapshots.

  - ◦ **Containers**—Allows you to manage and add new LXC images and templates.

  - ◦ **Subtypes**—Allows you to import, export, and duplicate subtypes.

- **Repositories**—Allows you add, delete, and refresh files from Git repositories.

- **Documentation**—Available options are:

  - **STD API**—Allows you to access STD API documentation.

  - **UWM API**—Allows you to access to UWM API documentation.

  - **Simulation Concepts**—Allows you to access Cisco Modeling Labs simulation concepts documentation.

User Management Workspace User Types

Within the User Management Workspace interface there are two types of users available. These are administrator and non-administrator user. The following tables describe the different functions available for each user type.

Table 1: Available Functions for Administrator Users

Function	Description
Overview	Allows you to view current system version information, physical resource usage, and a list of all deployed simulations. You can stop all or selected simulations.
Projects	Allows you to import and export projects. You can also add new projects, enable, disable, modify, and delete current projects.
Users	Allows you add new users, enable, disable, modify, and delete current users.

Function	Description
CML Server	Under System Configuration, you can set configuration parameters. Under System Status, you can collect, view and download system status information.
Connectivity	Allows you to add and delete L2 Flat IP, L3 Snat IP, and Management IP allocations for projects.
VM Control	Allows you to delete nodes, networks, ports and IP allocations, as well as disable some host services when problems are encountered.
Licenses	Allows you to manage product licenses on the system.
Node Resources	Allows you add new images, modify, and delete current images. You can also modify and delete image snapshots. You can add and delete flavors and import and export subtypes. You can also create a new subtype based on one of the available built in subtypes. You can manage and add new LXC images and templates.
Repositories	Allows you to add, delete, and refresh files from Git repositories.
Documentation	Allows you to access STD and UWM API documentation.

Table 2: Available Functions for Non-Administrator Users

Function	Description
My Simulations	Review and operate a user's own simulations.
Project Simulations	Review simulations in a user's own project.
Connectivity	Review a user's own IP address allocations.
Node Resources	Review details for flavors and subtypes. Review and add new images, LXC images and templates for use by the user's own project.
Repositories	Allows you to add, delete, and refresh files from Git repositories.
Documentation	Allows you to access STD and UWM API documentation.

Projects (Admin User)

Within the **User Workspace Management** interface, a project represents a set of resources that are available to all users of that project. It has the following characteristics:

- By default, each project is created with one user account that has the same name as the project.

- Each user belongs to exactly one project. Users should typically each have a project of their own, hence creating a new project is the preferred and efficient process for adding new users.

- Additional users can be assigned to a project as required.

- If a user is added to a project, the username of the user is prefixed with the project name.

- Deleting a user account does not delete a project that the user is assigned to.

- Deleting a project deletes all users of the project.

In the **Projects** page, you can perform a number of operations for projects. These operations are:

Operation	Description
Import	Imports a project and its users from a JavaScript Object Notation (JSON) or tab-Separated values (TSV) file.
Export	Exports a project and its users as a JSON or TSV file.
Add	Creates a new project and its default user.
Enable	Enables a selected project.
Disable	Disables a selected project.
Modify	Modifies details for a selected project.
Delete	Deletes a selected project and its users.

Create a Project

To create a new project, and a user for the project complete the following steps:

Step 1 In the **User Workspace Management** interface, click **Projects**.

The **Projects** page, which lists all of the current projects, appears.

Step 2 Click **Add** to create a new project.

The **Create Project** page appears.

Figure 3: Create a New Project

Step 3 Under **General Settings**, add a name and a description for the project. In the **Expires** field, you can either add an expiry date for the project or accept the default, which is **Never**, meaning the project will never expire. Leave the **Enabled** check box checked to enable the project for use.

Step 4 Under **Project Quotas**, you can either accept the default values for the system quotas or increase or decrease them based on your project requirements:

- **Instances** quota is the maximum number of virtual machines of any type that can be operational at any given time within the project per user or for all users associated with that project.

- **RAM (MB)** is the maximum RAM that can be consumed by virtual machines running in the project per user or for all users associated with that project.

- **VCPUS** is the maximum number of virtual cores consumed by the virtual machines running in the project.

Step 5 Click **Create**.

The **Edit User** page appears.

Figure 4: Edit the Project User

Using this window, you can add details for the new user created when the project is created.

Step 6 In the **Password** and **Password Again** fields, enter a new password for the user.

Note The default password can be used or a more meaningful password can be entered. This password can also be changed at a later time.

Step 7 In the **Email** field, add a valid email address for the user.

By default, the user is assigned a member role, which means the user is a non-admin account. Set Role to admin if the user needs to perform the same administrative functions as the uwmadmin user.

Step 8 In the **Expires** field, you can add an expiry date for the user or accept the default **Never**. Leave the **Enabled** check box checked to enable the project for immediate use. Alternatively, you can set up a project and users, but you cannot enable them to be configured and available at a later time.

Step 9 Click **Save** to save the changes for the user.

Step 10 (Optional) To confirm that the project has been added, click **Projects** to view the newly added project, and click **Users** to view the newly added user.

Export a Project

Export allows you to export selected projects and all their users to a JSON or TSV file.

To export a project and all its users, complete the following steps:

Step 1 Check the check box beside the project or projects for export.

Step 2 Click **Export** to export the selected projects and all their users.

Step 3 From the drop-down list, choose the type of file to export to, JSON or TSV.

The **Open** dialog box appears.

Step 4   Click the **Save File** radio button and click **OK** to save the file.
The exported file is saved to the specified location.

Import a Project

Files for import must be in the JSON or TSV format and must have previously been exported from the **User Workspace Management** interface.

Note   The uwmadmin project and user are not modified by this function when imported data contains it.

To import a project and its users, complete the following steps:

Step 1   Click **Import** to import a new project and its associated users.

The **Import Projects and Users** page appears.

Step 2   Click **Browse** to locate the applicable JSON or TSV file for import.
Note   If you import projects and users that already exist, they will be updated.

Step 3   Click **Import**.
The newly imported project is listed on the **Projects** page.

Users (Admin User)

Within the **User Workspace Management** interface, you can manage user accounts from the **Users** page. User accounts permit access to the Cisco Modeling Cisco Modeling Labs server from the Cisco Modeling Labs client.

In the **Users** page, you can perform a number of operations for users. These operations are:

Operation	Description
Add	Creates a new user account.
Enable	Enables a selected user account.
Disable	Disables a selected user account.
Modify	Modifies details for a selected user account.
Delete	Deletes a selected user account.

Create a User

To create an additional user under an existing project, complete the following steps:

✎

Note It is preferred for each user to have their own project.

Step 1 In the **User Workspace Management** interface, log in as admin and click **Users**.
The Users page, which lists all the users, appears.

Step 2 Click **Add** to create a new user.

The **Create User** page appears.

Figure 5: Create a New User

Step 3 In the **Username** field, enter a username for the new user.
Note To create multiple users, click the **Add** (+) icon to the right of the **Username** field.

Step 4 In the **Password** and **Password Again** fields, enter a password for the new user.

Step 5 In the **Email** field, enter a valid email address for the user.

Step 6 From the **Project** drop-down list, choose the applicable project for the user.

Step 7 From the **Role** drop-down list, choose the applicable role for the user.
Note A user with administrative rights has administrative rights across the entire system.

Step 8   In the **Expires** field, you can either add an expiry date for the user or accept the default, which is **Never**.

Step 9   Leave the **Enabled** check box checked.

Step 10   Click **Create**.
The **User** *<Project Name>-<Username>* page appears.

This page presents details and project quotas for the user.

Step 11   (Optional) Click **Modify User** to amend the details for a user, or click **Delete User** to delete the user.

Step 12   Click **Users** to view the newly created user.

CML Server (Admin User)

Within the **User Workspace Management** interface, under **CML Server**, you are able to make changes to your Cisco Modeling Labs server configuration under the **System Configuration** option.

Under the **System Status** option, you can review system operational statuses and download log files.

Figure 6: CML Server Options
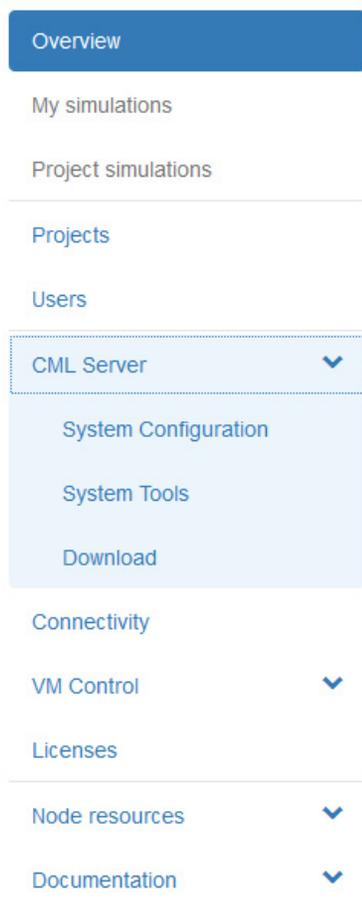
System Configuration

Within the **User Workspace Management** interface, under **CML Server** > **System ConfigurationCML Server**, you are able to make changes to your Cisco Modeling Labs server configuration.

You can update the following system control parameters.

- System
- Networks
- Services
- Infrastructure
- Resources

System Configuration Controls

To update system configuration controls, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **CML Server** > **System Configuration**.

The **System Configuration Controls** page appears.

Figure 7: System Configuration Controls

Step 2   Update the fields as required.

Table 3: System Configuration Parameters

Parameter	Description
Hostname	Enter the server hostname.
Domain Name	Enter the domain name.
NTP Server	Enter the DNS name or IP address for the NTP server. If you are behind a firewall/proxy, ensure that your NTP server is reachable from this location.
Ramdisk enabled	This option must be enabled to speed up I/O operations.

Parameter	Description
VNC enabled	Use this option to start the VNC server on the host. It operates on TCP port 5901.
VNC Password	Enter the password for the VNC server.
Primary Ethernet Port	Enter the primary ethernet port.
Use DHCP on Primary Ethernet port?	Use this option to enable DHCP on the primary ethernet port.
Static IP address	Enter the static IP address.
Primary port network	Enter the primary port network.
Primary port netmask	Enter the primary port netmask.
Primary port gateway	Enter the primary port gateway.
Primary DNS server IP address	Enter the primary DNS server IP address.
Secondary DNS server IP address	Enter the secondary DNS server IP address. Ensure you do not set the same address as you set for the primary DNS server IP address.
Is your system behind a proxy?	Use this option if your system is behind a proxy.
HTTP/HTTPS Proxy	Enter the URL of your internal access proxy in the following format "http://<proxy IP or name>:<port number>/".

**Step 3**   Click **Apply Changes** when you are finished to save your changes.

Networks Configuration

To update the Networks configuration, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **CML Server** > **System Configuration**.

The **System Configuration Controls** page appears. Click the **Networks** tab to access the network parameters.

Figure 8: Networks Configuration

Step 2   Update the fields as required.

Table 4: Networks Configuration Parameters

Parameter	Description
Flat Network Port	Enter the Flat network port.
Flat Network Address	Enter the Flat network address.
Flat Network Address/Mask	Enter the Flat network address/mask.
Flat Network Netmask	Enter the Flat network netmask.

Parameter	Description
Flat Network Gateway IP Address	Enter the Flat network gateway IP address.
Flat Address Pool Start Address	Enter the Flat address pool start address.
Flat Address Pool End Address	Enter the Flat address pool end address.
Flat Primary DNS server IP address	Enter the Flat primary DNS server IP address.
Flat Secondary DNS server IP address	Enter the Flat secondary DNS server IP address. Ensure you do not set the same address as you set for the primary DNS server IP address.
2nd Flat Network Enabled	Use this option if a second Flat network, Flat1, is to be enabled.
2nd Flat Network Port	Enter the name of the host's physical port used for the L2 Flat network, Flat1.
2nd Flat Network Address	Enter the IP address for the second Flat network, Flat1.
2nd Flat Network Address/Mask	Enter the Flat network address/mask for Flat1.
2nd Flat Network Netmask	Enter the Flat network netmask for Flat1.
2nd Flat Network Gateway IP Address	Enter the Flat network gateway IP address for Flat1.
2nd Flat Address Pool Start Address	Enter the Flat address pool start address for Flat1.
2nd Flat Address Pool End Address	Enter the Flat address pool end address for Flat1.
2nd Flat Primary DNS server IP address	Enter the Flat primary DNS server IP address for Flat1.
2nd Flat Secondary DNS server IP address	Enter the Flat secondary DNS server IP address for Flat1. Ensure you do not set the same address as you set for the primary DNS server IP address.
Snat Network Port	Enter the name of the host's physical port used for L3 Snat network, ext-net.
Snat Network Address	Enter the IP address for the CML host in the L3 Snat network.
Snat Network Address/Mask	Enter the Snat network address/mask.
Snat Network Netmask	Enter the Snat network netmask.
Snat Network Gateway IP Address	Enter the Snat network gateway IP address.
Snat Address Pool Start Address	Enter the Snat address pool start address.
Snat Address Pool End Address	Enter the Snat address pool end address.

Parameter	Description
Snat Primary DNS server IP address	Enter the Snat primary DNS server IP address.
Snat Secondary DNS server IP address	Enter the Snat secondary DNS server IP address. Ensure you do not set the same address as you set for the primary DNS server IP address.

Step 3   Click **Apply Changes** when you are finished to save your changes.

Services Configuration

To update the services configuration, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **CML Server** > **System Configuration**.

The **System Configuration Controls** page appears. Click the **Services** tab to access the services parameters.

Figure 9: Services Configuration

Step 2   Update the fields as required.

Table 5: Services Configuration Parameters

Parameter	Description
Apache Server Port	Enter the number for the Apache server port.
Start Host-granted TCP Port	Host grants TCP ports to the simulations starting from this value.
End Host-granted TCP Port	Host grants TCP ports to the simulations ending with this value.
First VM Serial Console TCP Port	Simulated VMs with serial consoles use TCP ports starting from this value.
Last VM Serial Console TCP Port	Simulated VMs with serial consoles use TCP ports ending with this value.

Parameter	Description
Web Services Port	Enter the TCP port number for the simulation engine services.
UWM Port	Enter the TCP port number for the User Workspace Management interface.
AutoNetkit Webserver Port	Enter the TCP port number for the configuration engine preview interface.
Live Visualization Webserver Port	Enter the TCP port number for the Live Visualization interface.
UWM Web-SSH Port	Enter the TCP port number for the User Workspace Management SSH web interface.
Nova Websocket Serial Port	Enter the TCP port number for the websocket-based serial console connections.
Disable Serial Timeout	Disable timeout of serial consoles after 15 minutes of inactivity.
Nova Websocket VNC Port	Enter the TCP port number for the websocket-based VNC console connections.
Docker Registry Port	Enter the port number for the docker registry.

Step 3   Click **Apply Changes** when you are finished to save your changes.

Infrastructure Configuration

To update the Infrastructure configuration, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **CML Server** > **System Configuration**.

The **System Configuration Controls** page appears. Click the **Infrastructure** tab to access the infrastructure parameters.

Figure 10: Infrastructure Configuration

Step 2   Update the fields as required.

Table 6: Infrastructure Configuration Parameters

Parameter	Description
OpenStack Password	Enter the password for administrator access to OpenStack operations.
MySQL Password	Enter the password for OpenStack database access.
Guest Account Present?	Use this option to create a default guest account.

Step 3   Click **Apply Changes** when you are finished to save your changes.

Resources Configuration

To update the Resources configuration, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **CML Server** > **System Configuration**.

The **System Configuration Controls** page appears. Click the **Resources** tab to access the resources parameters.

Figure 11: Resources Configuration
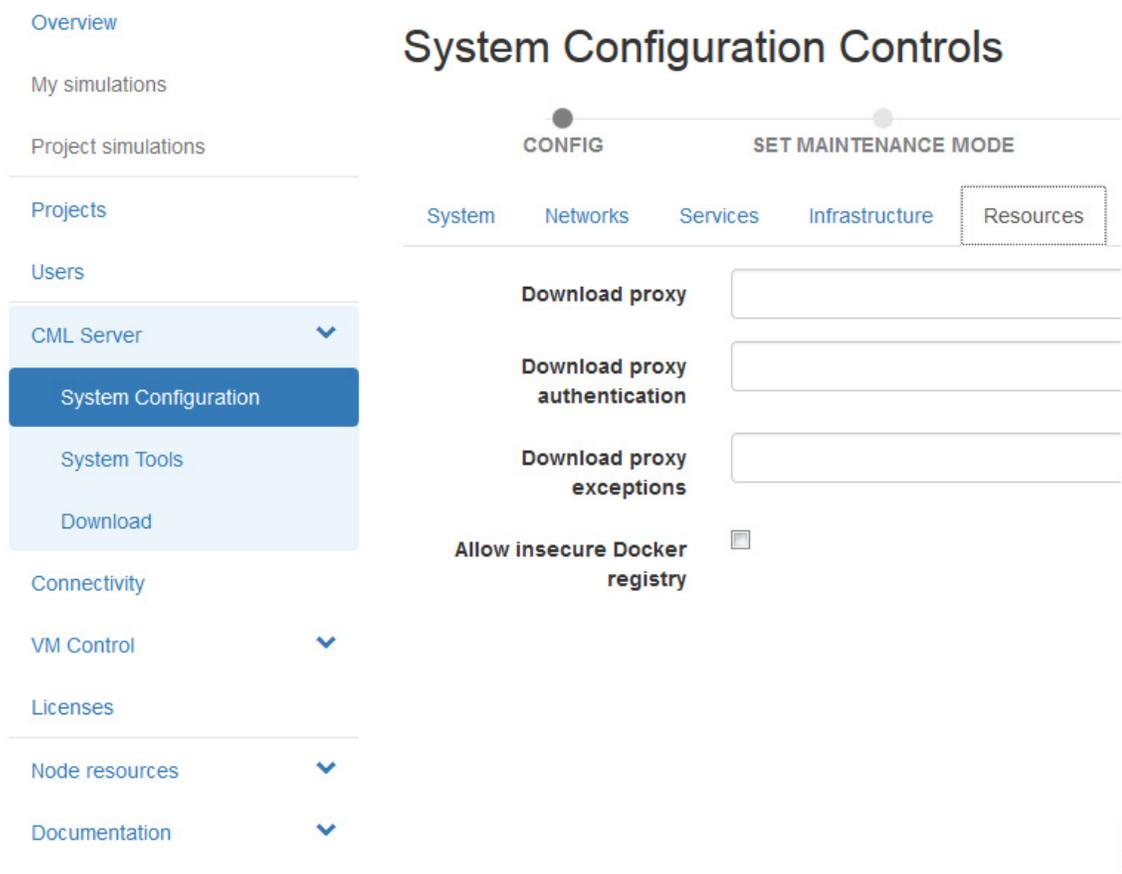
Step 2   Update the fields as required.

Table 7: Resources Configuration Parameters

Parameter	Description
Download Proxy	Enter the proxy server for downloading files, such as images and external git repositories, from outside the local network. Leave blank if the use of a proxy is not required.

Parameter	Description
Download Proxy Authentication	Enter download proxy credentials in the format "<username>:<password>".
Download Proxy Exceptions	Provide a list all host names and/or IP addresses for image and git repository sources where the download proxy shall not be used, such as servers, on the local network.

Step 3   Click **Apply Changes** when you are finished to save your changes.

System Tools

Within the **User Workspace Management** interface, under **CML Server** > **System Tools**, you can view various statistics concerning the usage and operation of your system and check on server status and system services. You also have the ability to download system log files.

Figure 12: System Tools Options
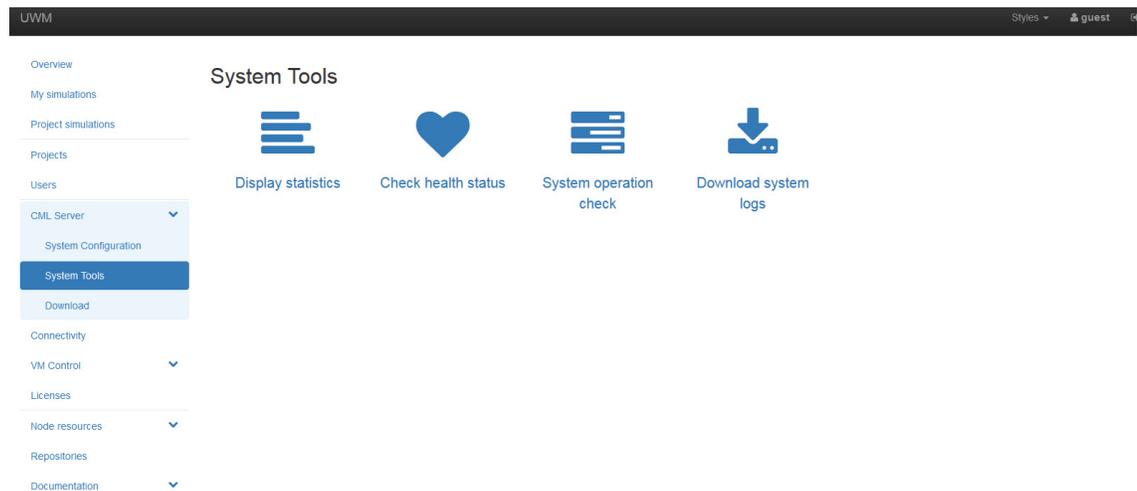
To download the system log files, click **Download System Logs**. A dialog box is displayed where you can opt to open or save the system log file.

System Statistics

You can view various statistics concerning the usage and operation of your Cisco Modeling Labs system. System statistics are available from the **User Workspace Management** interface under **CML Server** > **System Tools** > **Display Statistics**.

The following areas are covered:

Table 8: System Statistics

Area	Description
Statistics	Lists the memory usage history per day, week and month and their average and maximum usage stats. **Statistics** System / Statistics Memory usage history Average Max Last month 50.77% 99.77% Last week 65.39% 99.77% Last day 71.50% 85.09%
Projects and Users	Lists the number of current projects and users. **Projects and users** Number of projects 11 Number of users 13
Simulations	Lists details for the number of active simulations and nodes for the last week, the last month, the previous 24 hours, and those currently running. **Simulations** Active Simulations Nodes In last month 253 1687 In last week 94 821 In last day 42 565 Now 2 76 There are two further categories:

Area	Description
Subtype Usage in Simulations	Lists the subtypes and their average and maximum usage stats. Subtype usage in simulations 	Subtype	Average	Max
---	---	---
ASAv	0.26	2
CSR1000v	0.47	15
IOS XRv	0.50	8
IOSv	3.03	73
IOSvL2	0.61	12
jumphost	0.04	1
lxc	0.03	2
lxc-iperf	0.33	20
lxc-ostinato	0.05	3
mgmt-lxc	0.64	1
NX-OSv	0.33	3
server	0.26	3
all (nodes ran in a simulation)	6.54	81	
Simulation/node Operation Failures	Lists the number of simulation/node failures for the last week, the last month, and the previous 24 hours. Simulation/node operation failures |	Simulation launch	Simulation termination	Node start	Node stop
---	---	---	---	---
In last month	60	5	64	111
In last week	6	0	0	0
In last day	1	0	0	0	

Area	Description
AutoNetkit	Lists details for the number of configurations generated in the last week, the last month, and the previous 24 hours, including the number of invalid topologies encountered. The category **Subtype Usage in Configured Topologies** lists the subtypes used in configuration requests along with their average and maximum usage stats. AutoNetkit **Configs in last month** 128 (3 invalid topologies) **Configs in last week** 23 (0 invalid topologies) **Configs in last day** 6 (0 invalid topologies) Subtype usage in configured topologies | Subtype	Average	Max
---	---	---
ASAv	0.40	2
CSR1000v	0.91	15
IOS XRv	0.48	8
IOSv	4.42	73
IOSvL2	0.93	12
lxc	0.09	2
lxc-iperf	0.46	20
lxc-ostinato	0.20	3
NX-OSv	0.42	2
server	0.40	2
all (topology size)	8.70	80	

System Health Status

You can check on server status and system services that are running using the **Check Health Status** option. It performs a system check and generates a report. It is available from the **User Workspace Management** interface under **CML Server** > **System Tools** > **Check Health Status**.

Table 9: Health Status Check

Area	Services Checked
Server Status	Click each entry to view further details. • Disk space • RAM • CPU • Network interfaces • Proxy • Hypervisor • NTP • Bridge patch applied • OpenStack cluster infrastructure
System Services	Click each entry to view further details. • MySQL • RabbitMQ • OpenStack cluster host information • OpenStack system services • OpenStack endpoint URLs • OpenStack system response • AutoNetkit services • CML-CORE services • STD configuration

Figure 13: Health Status Page

Note   When an issue is discovered, a red x is displayed next to the entry. Click the entry to view further details.

Available options on the **Health Status** page are:

- **Check Again:** Allows you to run the health status check again.
- **Download:** Allows you to open or download the health status log file.
- **Display RAW Report:** Displays the health status log file to screen.

System Operation Check

The System Operation Check performs a series of tests to ensure that your system is in a fully functional state. These tests include checking all of the core services as well as starting up a small simulation. The results will confirm if your system is performing as expected or if there are problems, and if so, in which area(s) the

problems lie. The tests will take ~5 minutes to complete. the system operation check is available from the **User Workspace Management** interface under **CML Server** > **System Tools** > **System Operation Check**.

Figure 14: System Operation Check

The following areas are tested:

Table 10: System Operation Check Tests

Area	Description
Service	Click each entry to view further details of the tests run.

Area	Description
VIRL API Service	Click each entry to view further details of the tests run.
Simulation	Click each entry to view further details of the tests run.

The **Summary** table provides details of tests passed, failed, skipped or not applicable.

Available options on the **System Operation Check** page are:

- **Download Results:** Allows you to open or download the system operation check log file.
- **Rerun Tests**: Allows you to run the tests again.

Download

Within the **User Workspace Management** interface, under **CML Server** > **Download**, you are able to download various Cisco Modeling Labs client versions and Python libraries as shown.

Figure 15: Files Available for Download

Double-click on the applicable file(s) to download it.

Connectivity

Within the **User Workspace Management** interface, the **Connectivity** page provides details on all OpenStack ports available on the external (FLAT and SNAT) and project management networks.

- L2 FLAT IP address allocations—Create an externally reachable fixed IP address for a project.

- L3 SNAT IP address allocations—Create a floating IP address for a project. Floating IPs are externally reachable and are mapped to an internal fixed IP address.

- Project Management IP address allocations—Create a fixed IP address on the management network of the selected project. This IP address can be statically assigned to the nodes.
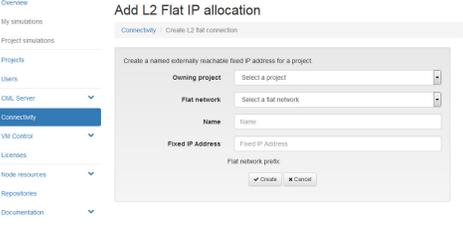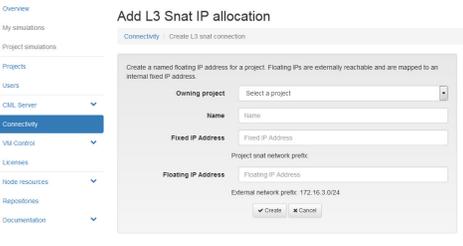
Create a Port Connection

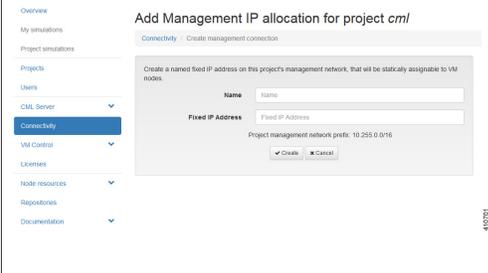To create a new port connection, complete the following steps:

Step 1   In the **User Workspace Management** interface, click **Connectivity**.
The **Outside Connections** page, which lists all current port connections appears.

Step 2   Connections are grouped into three areas: **L2 FLAT**, **L3 SNAT**, and **Project Management**. Click **Add** in the applicable group to create the required port connection for that type.

The corresponding **Add IP Allocation** page appears.

Step 3   Complete the fields as required for the applicable port connection.

| Connection Type	Field	Description
Layer 2 FLAT IP Address Allocations	**Owning Project**	Choose a project from the drop-down list.
	FLAT Network	Choose a FLAT network from the drop-down list.
	Name	Enter a name for the new port connection.
	Fixed IP address	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.
Layer 3 SNAT IP Address Allocations	**Owning Project**	Choose a project from the drop-down list.
	Name	Enter a name for the new port connection.
	Fixed IP Address	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.

Connection Type	Field	Description
	Floating IP Address	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.
Project Management	**Name**	Enter a name for the new port connection.
	Fixed IP Address	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.

Step 4   Click **Create**.

The new connection is created and its details are displayed in the **Connectivity** page.

Using the VM Control Tool (Admin User)

The **VM Control** tool is available to aid system administrators with troubleshooting issues encountered in the **User Workspace Management** interface. The tool enables system administrators to stop specific

components of an active session. In circumstances where components of a session fail to be deleted through the normal shutdown methods, this tool enables system administrators to remove blocked components.

Figure 16: VM Control Tool
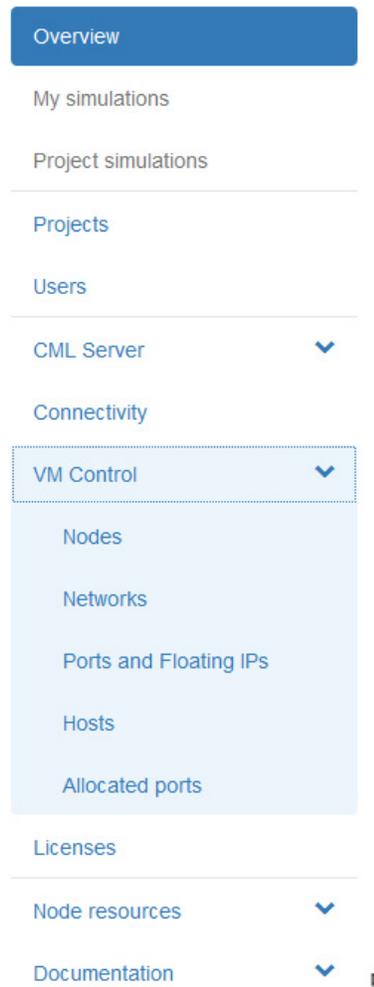
VM Control Nodes

The **Nodes** page lists all the nodes for all the currently running projects for all users. You can delete a specific node or all the nodes for a specific project or projects.

Figure 17: Nodes Page

Step 1 To delete a specific node:

a) In the node list for the applicable project, check the corresponding check box.

b) Click **Delete** in the **Options** column.
The node is deleted.

Step 2 To delete all the nodes for a specific project:

a) In the node list for the applicable project, check the corresponding **Name** check box.

Note When you check the **Name** check box for a particular project, the check boxes for all the nodes in the project are automatically checked. You cannot uncheck individual nodes within a project; either all the nodes or no nodes are checked.

b) Click **Delete Selected**.
All nodes for the particular project are deleted.

VM Control Networks

The **Networks** page lists all the networks for all the currently running projects for all the users. You can delete a specific network or all the networks for a specific project or projects.

Figure 18: Networks Page

Step 1   To delete a specific network:

a) In the network list for the applicable project, check the corresponding **Name** check box.

b) Click **Delete** in the **Options** column.
    The network is deleted.

Step 2   To delete all the networks for a specific project:

a) In the network list for the applicable project, check the corresponding **Name** check box.

  Caution   When you check the **Name** check box, the check boxes for all the networks in the project are automatically checked. In the **Networks** page, for each user project, two networks are listed in blue with an information icon. These two networks are specifically created for use by all users of the project when the project is created. These networks cannot be recreated automatically; the project would need to be deleted and recreated as a whole. We recommend that you do not delete these networks. Uncheck the check boxes for these two networks before clicking **Delete Selected**.

b) Click **Delete Selected**.
    All the networks for the particular project are deleted.

VM Control Ports and Floating IPs

The **Ports and Floating IPs** page lists all the ports and floating IPs for all the currently running projects for all the users. You can delete a specific port or floating IP or all the ports and floating IPs for a specific project or projects.

Figure 19: Ports and Floating IPs Page

Step 1 To delete a specific port or floating IP:

a) In the port or floating IP list for the applicable project, check the corresponding check box.

b) Click **Delete** in the **Options** column.
The port or floating IP is deleted.

Step 2 To delete all the ports or floating IPs for a specific project:

a) In the port or floating IP list for the applicable project, check the **Name** check box.

   Note   When you check the **Name** check box for a particular project, the check boxes for all the ports or floating IPs in the project are automatically checked. You can uncheck individual ports or floating IPs within the project as required.

b) Click **Delete Selected**.
All ports or all floating IPs for the particular project are deleted.

VM Control Hosts

The **Hosts** page lists all the compute services and network agents. Maintenance mode on a host disables the compute service on that node. It prevents new virtual machines from being deployed on that host.

Figure 20: Hosts Page

VM Control Allocated Ports

The **Allocated ports** page lists details for all of the currently allocated ports on the system.

Figure 21: Allocated Ports Page

Cisco Modeling Labs Licenses (Admin User)

Within the **User Workspace Management** interface, you can manage Cisco Modeling Labs licenses. A license specifies the options that are enabled for Cisco Modeling Labs.

The **Licenses** page provides details on all the licenses that are currently installed on the CML server. These include the license ID, type of license, number of nodes per license, and the expiry date.

Figure 22: Licenses Page

Register a Cisco Modeling Labs License

To register a license, complete the following steps:

Step 1   Open the email containing your Cisco Modeling Labs license key.

Step 2   Using a text editor, open the attached .lic file.

Step 3   In the **User Workspace Management** interface, click **Licenses**.
The **Licenses** page, which lists all valid licenses, appears.

Step 4   Click **Register License** to register a valid license.

The **Register licenses** page appears.

Figure 23: Register Licenses

Step 5   Copy and paste the license key from the .lic file into the **Licenses** text area.

Step 6   Click **Register**.
The license is applied.

Step 7   Return to the **Licenses** page to view the newly registered license.

Node Resources

Within the **User Workspace Management** interface, under **Node Resources**, you can manage virtual machine run-time parameters and virtual machine images. You can also manage LXC container images and templates.

Figure 24: Available Node Resources
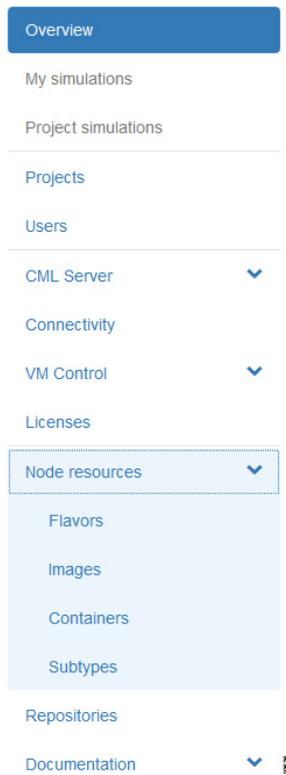
Virtual Machine Flavors

Within the **User Workspace Management** interface, as part of the creation process for virtual machine images, a virtual machine flavor is created. Flavors are used in each virtual machine to define the CPU, memory (RAM) allocation, disk space, the number of cores, and so on.

In the **Flavors** page, you can perform two operations for flavors. These operations are:

Operation	Description
Add	Creates a new flavor.
Delete	Deletes a selected flavor.

Create a Virtual Machine Flavor

To create a new virtual machine flavor, complete the following steps:

Step 1   In the **User Workspace Management** interface, in admin mode, click **Flavors**.

The **Flavors** page, which lists all of the available flavors, appears.

Step 2   Click **Add** to create a new flavor.

The **Create Flavor** page appears.

Figure 25: Create a Flavor

Step 3   In the **Name** field, enter a name for the flavor.

Step 4   From the **RAM** drop-down list, choose the amount of memory allocation for the flavor.

Step 5   From the **Virtual CPUs** drop-down list, choose the number of virtual CPUs for the flavor.

Step 6   Click **Create** to create your virtual machine flavor.

The **Flavors** page appears with the newly created flavor listed.

Step 7   Under the **Options** column, use the **Delete** option to delete a virtual machine flavor.

Images

Within the **User Workspace Management** interface, you can add new images, update details for existing images, or delete images from the system. Additionally, you can take a snapshot of the disk content of a virtual machine image. This newly created user-specific disk image can be used in other simulated sessions.

Cisco Modeling Labs 1.3 includes the following images built into the Cisco Modeling Labs client:

- Cisco IOSv Software Release 15.6(2)T
- Cisco IOSv Layer 2 Switch Software Release 15.2 (03.2017)
- Cisco IOS XRv Software Release 6.1.3 CCO
- Linux server (Ubuntu 16.04.1 Cloud-init)
- Unmanaged switch
- Cisco ASAv Software Release 9.7.1

For the most up-to-date list of virtual images, see Release Notes for Cisco Modeling Labs 1.3.

The following demo images are available from the FileExchange:

- Cisco IOS XRv 9000 Software Release 6.0.1 demo image
- Cisco CSR1000v Software Release 16.5.1b XE-based demo image
- Cisco NX-OSv 9000 Software Release 7.0.3.16.1 demo image

In the **Images** page, you can perform a number of operations for images. These operations are:

Operation	Description
Add	Creates a new virtual machine image.
Modify	Modifies details for a selected virtual machine image.
Delete	Deletes a selected virtual machine image.

Create a Virtual Machine Image

To create a new virtual machine image, complete the following steps:

Step 1 In the **User Workspace Management** interface, log in as admin and click **Images**.

The **Images** page, which lists all of the available registered images, appears.

Step 2 Click **Add** to create a new image.

The **Create VM Image** page appears.

Figure 26: Create VM Image

Step 3	From the **Owning Project** drop-down list, choose the appropriate project for the new image.
Step 4	Click the **Project Specific** check box if you want the new image to be private and only available to the owning project.
Step 5	From the **Subtype** drop-down list, choose the appropriate subtype for the new image.
Step 6	In the **Name/Version** field, enter a name or version number for the image.
Step 7	In the **Release** field, enter the release number for the image.
Step 8	Click the appropriate **Image Source**: File on Server, URL, or Local Image File.
Step 9	In the **Image Path** field, enter a path on the server/virtual machine (an HTTP, FTP or TFTP URL) or choose a file to upload.
Step 10	To upload an image from your own device, click **Browse** to navigate to the image file.
Step 11	Click **Create** to create your virtual machine image.

> **Note** The creation process can take a while depending on where the image file is located relative to the Cisco Modeling Labs server. Both virtual machine disk (VMDK) and QEMU copy-on-write 2 (QCOW2) image formats are supported. As part of the creation process for images, a default flavor is also created if missing, which contains information on the CPU and memory allocation for the virtual machine image.

The **Image <*Image Name*>** page, which contains the details and properties of the virtual machine image, appears.

Step 12   Click **Images** to view the newly added image.

Step 13   Under the **Options** column, use the **Modify** or **Delete** options to amend the details for the virtual machine or to delete a virtual machine image. After the image is installed, it is available for users to select for their topology simulation.

Step 14   In the **Cisco Modeling Labs** client, click **File** > **Preferences** > **Node Subtypes**.
The **Node Subtypes** dialog box is displayed.

Figure 27: Available Node Subtypes
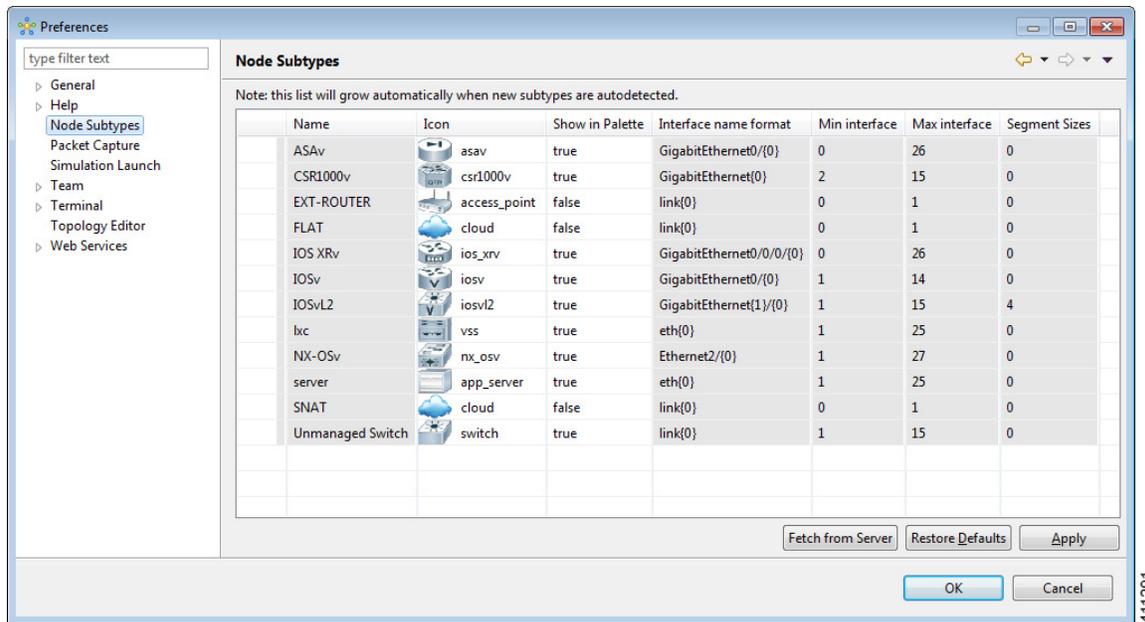
Step 15   In the **Node Subtypes** dialog box, click **Fetch from Server**.
The **Confirm** dialog box is displayed.

Step 16   Click **OK** to update the list of node subtypes based on the currently configured Cisco Modeling Labs server.

Create an Image Snapshot

When a Linux server is present in a running simulation, you can take a snapshot of the disk content of the server. This newly created user-specific disk image can be used in other simulated sessions.

To take a snapshot of the server's disk content, complete the following steps.

Step 1   Log in to the **User Workspace Management** interface.

Note   You must log in as a user other than the uwmadmin user, for example, guest.

Step 2   On the **Overview** page, under **Sessions**, choose the applicable running session.

A list of active virtual machines is displayed.

Step 3 Choose the applicable virtual machine image, and under the **Options** column, click the **Create Snapshot** icon.

Figure 28: Create Snapshot Icon

Project details for the newly created snapshot are displayed.

Figure 29: Newly Created Image Snapshot

The new image snapshot is listed under the Image Snapshot section on the Images page.

Figure 30: Available Image Snapshots

The image snapshot can be reused in the Cisco Modeling Labs client under **Properties** > **Node** > **VM Image.**

See Cisco Modeling Labs Corporate Edition User Guide, Release 1.3 for more information.

Containers

In the **User Workspace Management** interface, the **Containers** page provides a list of LXC images and templates. Here you can manage LXC container images and templates.

In the **Containers** page, you can perform a number of operations for LXC images and templates. These operations are:

Operation	Description
Add	Create a new LXC image and/or LXC template.
Modify	Modify details for LXC images
Delete	Delete LXC images and templates as required.

Create an LXC Image

To create a new LXC image, complete the following steps:

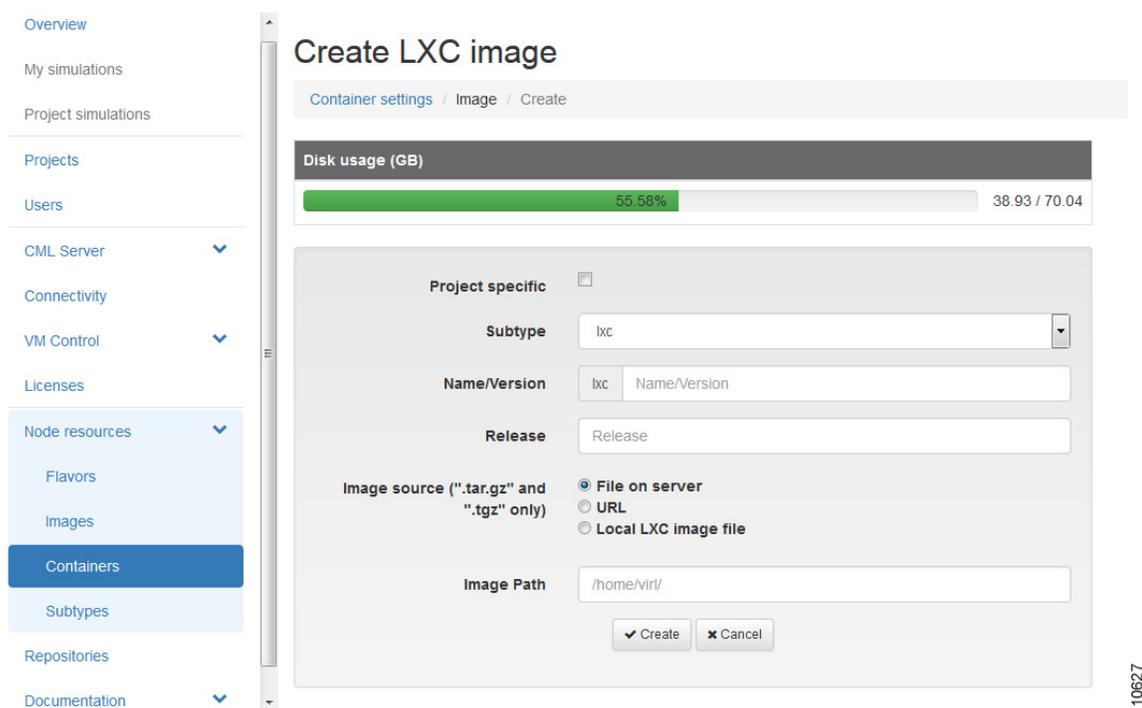**Step 1** Click **Node Resources** > **Containers** in the **User Workspace Management** interface.

The **Containers** page, which lists all of the available LXC images and templates, appears.

Step 2   Click **Add** to create a new LXC image.

The **Create LXC Image** page appears.

Figure 31: Create an LXC Image

Step 3   Click the **Project Specific** check box if you want the new image to be private and only available to the owning project.

Step 4   Choose the appropriate subtype for the new LXC image from the **Subtype** drop-down list.

Step 5   Enter a name or version number for the image in the **Name/Version** field.

Step 6   Enter the release number for the image in the **Release** field.

Step 7   Click the appropriate **Image Source**: File on Server, URL, or Local Image File.

Step 8   Enter a path on the server/virtual machine (an HTTP, FTP or TFTP URL) or choose a file to upload in the **Image Path** field.

Step 9   Click **Browse** to navigate to the LXC image file to upload an image from your own device.

Step 10   Click **Create** to create your LXC image.

Step 11   Click **Images** to view the newly added image.

Step 12   Under the **Options** column, use the **Modify** or **Delete** options to amend the details for the LXC image or to delete an LXC image. After the LXC image is installed, it is available for users to select for their topology simulation.

Create an LXC Template

To create a new LXC template, complete the following steps:

Step 1   Click **Node Resources** > **Containers** in the **User Workspace Management** interface.

The **Containers** page, which lists all of the available LXC images and templates, appears.

Step 2   Click **Add** to create a new LXC template.

The **Create LXC Template** page appears.

Figure 32: Create a LXC Template

Step 3   Click the **Project Specific** check box if you want the new image to be private and only available to the owning project.

Step 4   Choose the appropriate subtype for the new LXC image from the **Subtype** drop-down list.

Step 5   Enter a name or version number for the image in the **Name/Version** field.

Step 6   Enter the release number for the image in the **Release** field.

Step 7   Click the appropriate **Template Source**: File on Server, URL, or Local Image File.

Step 8   Enter a path on the server/virtual machine (an HTTP, FTP or TFTP URL) or choose a file to upload in the **Template Path** field.

Step 9   Click **Browse** to navigate to the LXC image file to upload from your own device.

Step 10   Click **Create** to create your LXC template.

Step 11   Click **Images** to view the newly added LXC template.

Subtypes

In the **User Workspace Management** interface, the **Subtypes** page provides a list of integrated subtypes, which users can use as templates to create their own custom subtypes. Using the **Specialize** option for a subtype, a user can duplicate the subtype template and make the necessary updates to create a new custom subtype. Subtypes can be imported and exported, which allows users to apply their custom subtypes to other Cisco Modeling Labs server installations.

In the **Subtypes** page, you can perform a number of operations for subtypes. These operations are:

Operation	Description
Import	Imports a subtype from a JSON file.
Export	Exports a subtype to a JSON file.
Specialize	Duplicates an available subtype to create a custom subtype.

Import a Subtype

Subtypes for import must be available in a JSON file.

To import a subtype, complete the following steps:

Step 1   Click **Import** to import a new subtype.

The **Import Subtypes** page appears.

Step 2   Paste the subtype details from the JSON file into the text area.

Step 3   Click **Import**.

The newly imported subtype is listed on the **Subtypes** page.

Step 4   (Optional) Click **Specialize** to create a custom subtype based on the newly imported subtype, click **Modify** to amend the details for the subtype, or click **Delete** to delete the subtype.

Create a Custom Subtype

To create a custom subtype, complete the following steps:

Step 1   For the applicable subtype, under the **Options** column and click the **Specialize** icon.
The **Specialize Subtype** page appears.

Step 2   Update the subtype fields as required.

Note   You can use the default values on the **Subtypes** page; however, you must provide a new name for the new subtype.

Table 11: New Subtype Fields

Field	Description
Name of new subtype	Enter a name for the new subtype.
Description of plugin	Provide a description of the plug-in to be created.
Name of management interface	Enter a name for the management interface.
Names of dummy interfaces	Enter names for dummy interfaces, inserted between management interface and first data interface.
Pattern for data interface names	Provide the interface name format, for example, GigabitEthernet0/{0}.
First data interface number	Enter a valid integer for the first interface.
Max count of data interfaces	Enter the maximum allowed number of interfaces.
Number of interfaces per LC	Enter the permitted number of interfaces per line card (LC) allowed.
Number of serial interfaces	Choose the number of interfaces allowed. Options are **0**, **1**, **2**, **3**, and **4**.
Protocol for network CLI	Choose the type of console connection. Options are **Telnet** or **SSH**.
Make VNC access available	Allow VNC access. Enabled when the check box is checked.
Name of icon for GUI	Enter a name for the subtype icon that is displayed in the Cisco Modeling Labs client.

Field	Description
Show subtype on GUI palette	Allow the subtype icon to be displayed in the Cisco Modeling Labs client. Enabled when the check box is checked.
Configuration disk type	Choose the type of configuration disk. Options are **cdrom**, **disk**, **cloud-init**, **iso9660**, and **vfat**. For LXC subtypes, set to **lxc**.
ISO 9660 Level in cdrom Disk	Choose the ISO 9660 level in cdrom disk. Options are **2**, **3**, and **4**.
Name of file for config drive	Enter a name for the configuration drive file.
Virtual interface model	Choose a virtual interface model. Options are **e1000**, **virtio**, and **rtl8139**.
Main disk bus model	Choose a main disk bus model. Options are **ide**, **virtio**, and **scsi**.
RAM (MB) allocated per node	Specify the amount of RAM (MB) to use for each node.
Number of CPUs allocated per node	Choose the number of CPUs to allocate per node. Value range is 1 to 16.
Extra comma-separated image properties	Enter any additional image properties, set on all images added for that subtype through the Create New Image page.
Name of default image	Enter a name for the default image.
Name of default flavor	Enter a name for the default flavor for VM-based subtypes and a default template name for LXC subtypes.

Note   You can choose to go with the default values on the Subtypes page; though you must provide a name for the new subtype.

Step 3   When completed, click **Create** to create the new custom subtype.

The new subtype is created and its details are displayed in the **Subtypes** page for the new subtype.

Note   For a newly created subtype, the value in the **Dynamic** column is **Yes**, which indicates that the subtype is not built into the server, and therefore may be modified or deleted.

Step 4   (Optional) On this page, you can click **Specialize** to create a custom subtype based on the newly created subtype, click **Modify** to amend the details for the subtype, or click **Delete** to delete the subtype.

Step 5   Click the **Subtypes** tab to see the custom subtype listed on the page.
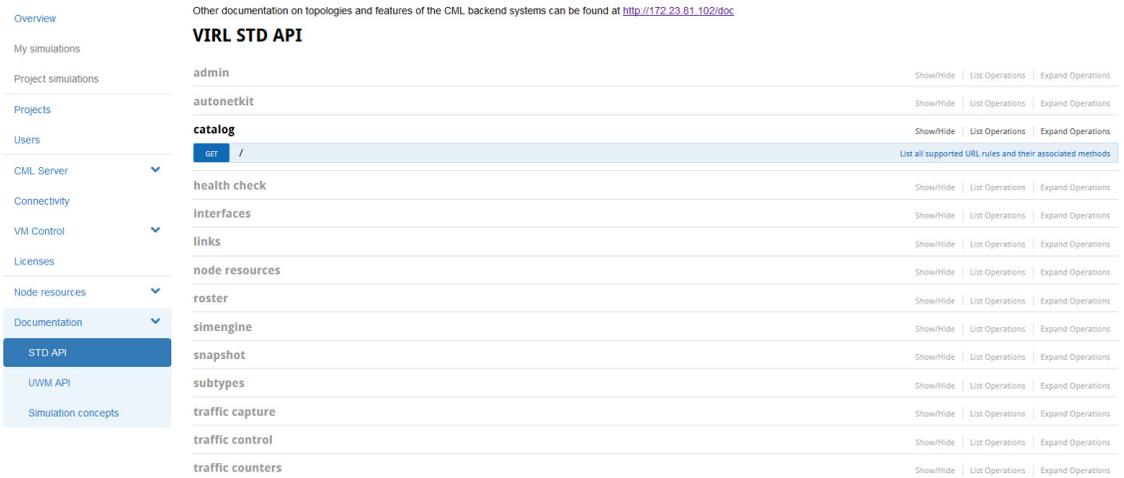
Documentation

Within the **User Workspace Management** interface, you can access STD API and User Workspace Management API documentation. It is available from **User Workspace Management** > **Documentation**.

Figure 33: Documentation Options
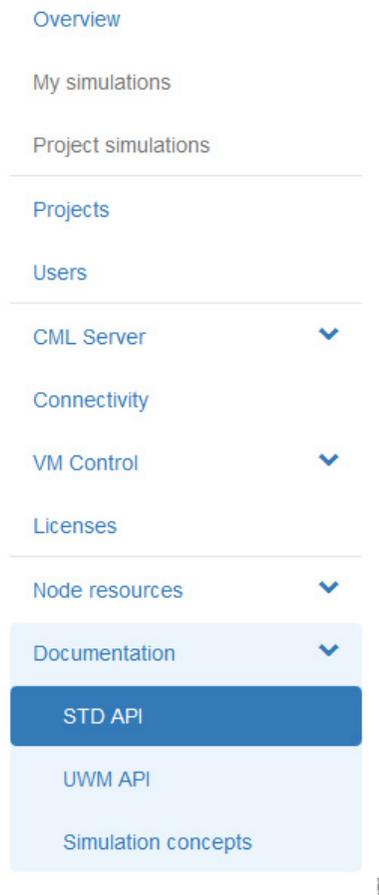
To access the STD API, click **STD API**. The **STD API** page is displayed.
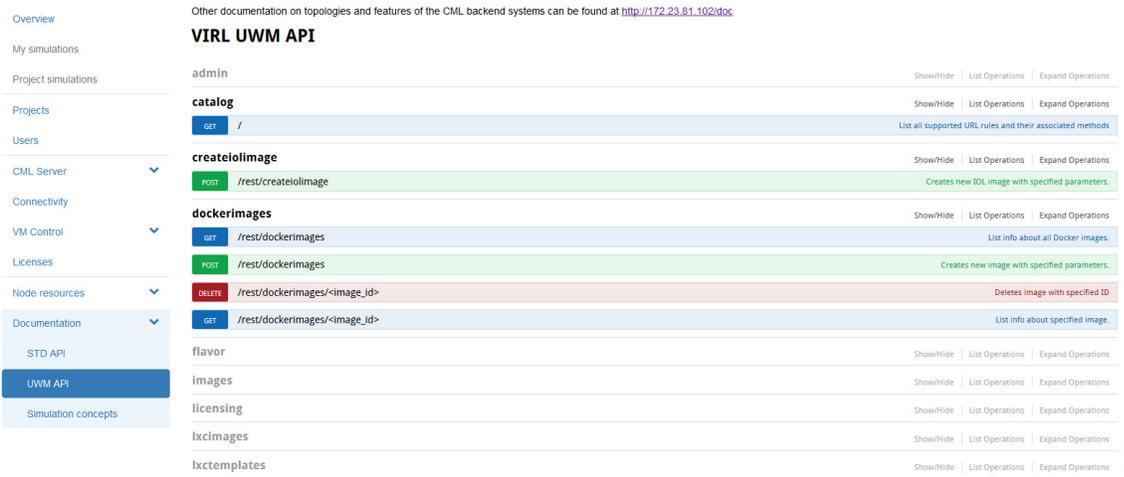
Figure 34: Standard API

From this page, you are able to browse the available REST calls and see examples of the call structures for the STD API.

To access the User Workspace Management API, click **UWM API**. The **UWM API** page is displayed.

Figure 35: UWM API

From this page, you are able to browse the available REST calls and see examples of the call structures for the UWM API.

To access the Cisco Modeling Labs simulation concepts' pages, click **Simulation concepts**. The **Simulation concepts** main page is display. Click **1. README** to access the documentation.

Figure 36: Simulation Concepts Documentation