



# User Workspace Management

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- [Access the User Workspace Management Interface, on page 1](#)
- [User Management Workspace User Types, on page 3](#)
- [Projects \(Admin User\), on page 4](#)
- [Users \(Admin User\), on page 7](#)
- [CML Server \(Admin User\), on page 9](#)
- [Connectivity, on page 18](#)
- [Using the VM Control Tool \(Admin User\), on page 19](#)
- [Cisco Modeling Labs Licenses \(Admin User\), on page 23](#)
- [Node Resources, on page 24](#)
- [Cluster Configuration and Defaults, on page 36](#)
- [Documentation, on page 36](#)

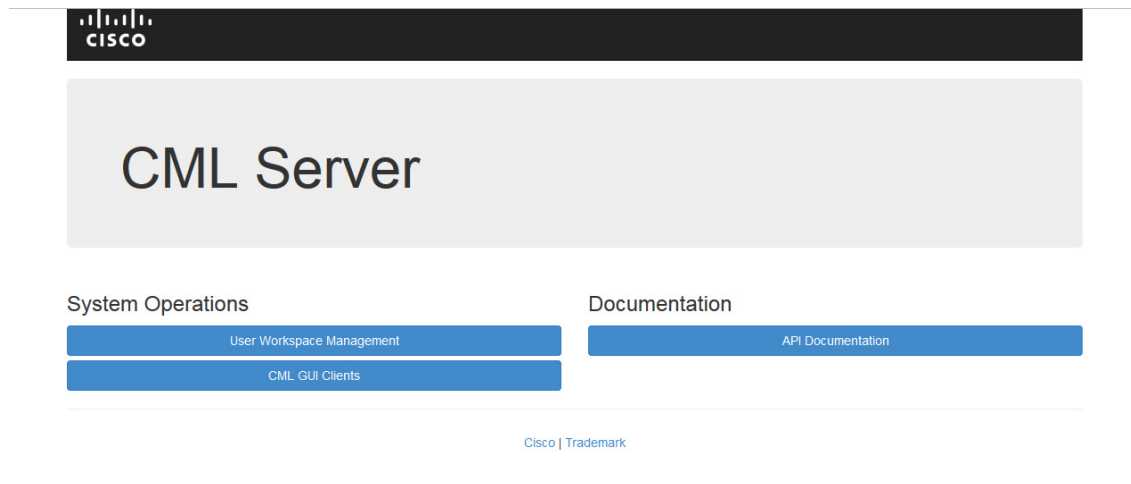
## Access the User Workspace Management Interface

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



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**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 `uwadmin` and the password `password`.

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

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

Figure 2: User Workspace Management Overview

UWM Styles uwadmin

**Overview**

Release	CML-CORE	AutoNetkit	AutoNetkit-Cisco	Topology Visualization Engine	Live Network Collection Engine
1.3.156	0.10.29.12	0.23.5	0.23.9	0.17.27	0.11.6

**System tools**

cml

CPU	5.13%	8x Intel(R) Xeon(R) CPU E5-2680 v3 @ 2.50GHz
RAM (MB)	13.93%	6,533.32 / 46,914.96
Disk usage (GB)	17.61%	12.29 / 69.80

**Resource usage of simulations**  Resource usage by projects

Instances / recommended capacity	0.00%	0 / 24
VCPUs / recommended capacity	0.00%	0 / 24
VRAM (MB) / recommended capacity	0.00%	0 / 93701

**Simulations**

No active simulations

UWM 0.10.29.12 CML | © 2016 Cisco Systems, Inc. | Trademark Generated at: 2017-01-26 15:57:19

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# 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
<b>Overview</b>	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.
<b>Projects</b>	Allows you to import and export projects. You can also add new projects, enable, disable, modify, and delete current projects.
<b>Users</b>	Allows you add new users, enable, disable, modify, and delete current users.
<b>CML Server</b>	Under System Configuration, you can set configuration parameters. Under System Status, you can collect, view and download system status information.
<b>Connectivity</b>	Allows you to add and delete L2 Flat IP, L3 Snat IP, and Management IP allocations for projects.
<b>VM Control</b>	Allows you to delete nodes, networks, ports and IP allocations, as well as disable some host services when problems are encountered.
<b>Licenses</b>	Allows you to manage product licenses on the system.
<b>Node Resources</b>	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.
<b>Repositories</b>	Allows you to add, delete, and refresh files from Git repositories.
<b>Documentation</b>	Allows you to access STD and UWM API documentation.

**Table 2: Available Functions for Non-Administrator Users**

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

Function	Description
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

Overview

My simulations

Project simulations

**Projects**

Users

CML Server

Connectivity

VM Control

Licenses

Node resources

Repositories

Documentation

## Create Project

Projects / Create

### General Settings

**Name**

**Description**

**Expires**

**Enabled**

### Project Quotas

**Instances**

**RAM (MB)**

**VCPUS**

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**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

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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 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
<b>Add</b>	Creates a new user account.
<b>Enable</b>	Enables a selected user account.
<b>Disable</b>	Disables a selected user account.
<b>Modify</b>	Modifies details for a selected user account.
<b>Delete</b>	Deletes a selected user account.

## Create a User

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



**Note** A **Project** should be created for each intended user of the CML server. It is not recommended to *add* users to an already existing **Project**. Keep in mind that the `uwmadmin` user cannot start simulations.

**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**

The screenshot shows the 'Create user' form in the User Workspace Management interface. The form is titled 'Create user' and is located under the 'Users / Create' path. The form fields are as follows:

- Username:** MyProject- NewGuy (with an Add (+) icon)
- Password:** (masked with dots)
- Password again:** (masked with dots)
- Email:** unset
- Project:** MyProject (dropdown menu)
- Role:** \_member\_ (dropdown menu)
- Expires:** never (with a calendar icon)
- Enabled:**
- SSH public key:** unset

At the bottom of the form, there are two buttons: 'Create' and 'Cancel'.

The footer of the page contains the following information:

- UWM 0.10.35.37
- CML | © 2017 Cisco Systems, Inc. | Trademark
- Generated at: 2018-06-05 13:38:15

**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.

### System Configuration

Within the User Workspace Management interface, navigate to **CML Server > System Configuration**. Under **System Configuration**, you will find settings that pertain to the Cisco Modeling Labs server, and network settings for simulation connectivity.



**Note** The hostname, management IP, and system (INT) network of the CML server cannot be modified after deployment.

**Table 3: System Configuration Controls**

Tab Name	Description
<b>Remote Connections</b>	Settings for NTP, HTTP(S) proxy, docker registry, and nameservers.
<b>Hardware</b>	<b>Enable / Disable</b> ( <b>Disable</b> is the default) RAM management features.
<b>Shared Networks</b>	Connect and configure simulation <code>flat</code> networks to access external virtual or physical environments.
<b>L3 SNAT</b>	NAT connection for nodes running inside a simulation to external resources.
<b>Service Ports</b>	Default TCP port number allocation for system resources and simulation node access.
<b>Users</b>	<b>Enable / Disable</b> ( <b>Enable</b> is the default) the primary user <code>guest</code> (default) or modify user information, including <code>uwadmin</code> user password system-wide user restrictions.
<b>Simulation Details</b>	<b>Enable / Disable</b> ( <b>Disable</b> is the default) Serial port timeout setting.
<b>Cluster</b> (optional)	Cluster tab is visible only when the CML server has been deployed as a <b>Cluster Controller</b> during First Boot configuration. The <b>Cluster</b> option can only be enabled during initial deployment.  <b>Activate / De-Activate</b> compute nodes or modify its management IP address when <code>static</code> IP address has been enabled on the CML management interface.

## 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 6: System Tools Options**

The screenshot displays the User Workspace Management (UWM) interface. The top navigation bar shows 'UWM' and 'uwmadmin'. The main content area is titled 'System Tools' and features four primary options: 'Display statistics' (represented by a bar chart icon), 'Check health status' (represented by a heart icon), 'System operation check' (represented by a server rack icon), and 'Download system logs' (represented by a download arrow icon). A left-hand sidebar menu is visible, with 'System Tools' selected under the 'CML Server' dropdown. The footer contains version information 'UWM 0.10.35.37', copyright 'CML | © 2017 Cisco Systems, Inc. | Trademark', and a timestamp 'Generated at: 2018-06-05 19:24:38'.

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 4: System Statistics

Area	Description															
<p><b>Statistics</b></p>	<p>Lists the memory usage history per day, week and month and their average and maximum usage stats.</p> <p><b>Statistics</b></p> <p>System / Statistics</p> <table border="1"> <thead> <tr> <th>Memory usage history</th> <th>Average</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Last month</td> <td>50.77%</td> <td>99.77%</td> </tr> <tr> <td>Last week</td> <td>65.39%</td> <td>99.77%</td> </tr> <tr> <td>Last day</td> <td>71.50%</td> <td>85.09%</td> </tr> </tbody> </table>	Memory usage history	Average	Max	Last month	50.77%	99.77%	Last week	65.39%	99.77%	Last day	71.50%	85.09%			
Memory usage history	Average	Max														
Last month	50.77%	99.77%														
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Last day	71.50%	85.09%														
<p><b>Projects and Users</b></p>	<p>Lists the number of current projects and users.</p> <p><b>Projects and users</b></p> <table border="1"> <tbody> <tr> <td>Number of projects</td> <td>11</td> </tr> <tr> <td>Number of users</td> <td>13</td> </tr> </tbody> </table>	Number of projects	11	Number of users	13											
Number of projects	11															
Number of users	13															
<p><b>Simulations</b></p>	<p>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.</p> <p><b>Simulations</b></p> <table border="1"> <thead> <tr> <th>Active</th> <th>Simulations</th> <th>Nodes</th> </tr> </thead> <tbody> <tr> <td>In last month</td> <td>253</td> <td>1687</td> </tr> <tr> <td>In last week</td> <td>94</td> <td>821</td> </tr> <tr> <td>In last day</td> <td>42</td> <td>565</td> </tr> <tr> <td>Now</td> <td>2</td> <td>76</td> </tr> </tbody> </table> <p>There are two further categories:</p>	Active	Simulations	Nodes	In last month	253	1687	In last week	94	821	In last day	42	565	Now	2	76
Active	Simulations	Nodes														
In last month	253	1687														
In last week	94	821														
In last day	42	565														
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Area	Description																																										
<b>Subtype Usage in Simulations</b>	<p data-bbox="641 296 1308 323">Lists the subtypes and their average and maximum usage stats.</p> <p data-bbox="659 352 935 380">Subtype usage in simulations</p> <table border="1" data-bbox="659 394 1036 989"> <thead> <tr> <th data-bbox="667 401 737 428">Subtype</th> <th data-bbox="902 401 976 428">Average</th> <th data-bbox="992 401 1027 428">Max</th> </tr> </thead> <tbody> <tr> <td data-bbox="667 443 716 470">ASAv</td> <td data-bbox="919 443 959 470">0.26</td> <td data-bbox="1000 443 1016 470">2</td> </tr> <tr> <td data-bbox="667 485 753 512">CSR1000v</td> <td data-bbox="919 485 959 512">0.47</td> <td data-bbox="1000 485 1024 512">15</td> </tr> <tr> <td data-bbox="667 527 737 554">IOS XRv</td> <td data-bbox="919 527 959 554">0.50</td> <td data-bbox="1000 527 1016 554">8</td> </tr> <tr> <td data-bbox="667 569 716 596">IOSv</td> <td data-bbox="919 569 976 596">3.03</td> <td data-bbox="1000 569 1032 596">73</td> </tr> <tr> <td data-bbox="667 611 753 638">IOSvL2</td> <td data-bbox="919 611 959 638">0.61</td> <td data-bbox="1000 611 1024 638">12</td> </tr> <tr> <td data-bbox="667 653 737 680">jumphost</td> <td data-bbox="919 653 959 680">0.04</td> <td data-bbox="1000 653 1016 680">1</td> </tr> <tr> <td data-bbox="667 695 699 722">lxc</td> <td data-bbox="919 695 959 722">0.03</td> <td data-bbox="1000 695 1016 722">2</td> </tr> <tr> <td data-bbox="667 737 737 764">lxc-iperf</td> <td data-bbox="919 737 976 764">0.33</td> <td data-bbox="1000 737 1032 764">20</td> </tr> <tr> <td data-bbox="667 779 753 806">lxc-ostinato</td> <td data-bbox="919 779 959 806">0.05</td> <td data-bbox="1000 779 1016 806">3</td> </tr> <tr> <td data-bbox="667 821 737 848">mgmt-lxc</td> <td data-bbox="919 821 959 848">0.64</td> <td data-bbox="1000 821 1016 848">1</td> </tr> <tr> <td data-bbox="667 863 737 890">NX-OSv</td> <td data-bbox="919 863 976 890">0.33</td> <td data-bbox="1000 863 1016 890">3</td> </tr> <tr> <td data-bbox="667 905 724 932">server</td> <td data-bbox="919 905 959 932">0.26</td> <td data-bbox="1000 905 1016 932">3</td> </tr> <tr> <td data-bbox="667 947 886 974"><i>all</i> (nodes ran in a simulation)</td> <td data-bbox="919 947 959 974">6.54</td> <td data-bbox="1000 947 1032 974">81</td> </tr> </tbody> </table> <p data-bbox="1105 974 1122 999">41002</p>	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	<i>all</i> (nodes ran in a simulation)	6.54	81
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<b>Simulation/node Operation Failures</b>	<p data-bbox="641 1039 1471 1094">Lists the number of simulation/node failures for the last week, the last month, and the previous 24 hours.</p> <p data-bbox="651 1123 899 1150">Simulation/node operation failures</p> <table border="1" data-bbox="651 1157 1182 1283"> <thead> <tr> <th data-bbox="659 1163 737 1190"></th> <th data-bbox="745 1157 857 1184">Simulation launch</th> <th data-bbox="865 1157 1019 1184">Simulation termination</th> <th data-bbox="1027 1157 1122 1184">Node start</th> <th data-bbox="1130 1157 1182 1184">Node stop</th> </tr> </thead> <tbody> <tr> <td data-bbox="659 1190 737 1218">In last month</td> <td data-bbox="789 1190 813 1218">60</td> <td data-bbox="935 1190 943 1218">5</td> <td data-bbox="1052 1190 1076 1218">64</td> <td data-bbox="1130 1190 1154 1218">111</td> </tr> <tr> <td data-bbox="659 1224 737 1251">In last week</td> <td data-bbox="789 1224 797 1251">6</td> <td data-bbox="935 1224 943 1251">0</td> <td data-bbox="1052 1224 1060 1251">0</td> <td data-bbox="1130 1224 1138 1251">0</td> </tr> <tr> <td data-bbox="659 1257 737 1285">In last day</td> <td data-bbox="789 1257 797 1285">1</td> <td data-bbox="935 1257 943 1285">0</td> <td data-bbox="1052 1257 1060 1285">0</td> <td data-bbox="1130 1257 1138 1285">0</td> </tr> </tbody> </table> <p data-bbox="1198 1257 1214 1283">41003</p>		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																						
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In last month	60	5	64	111																																							
In last week	6	0	0	0																																							
In last day	1	0	0	0																																							

Area	Description																																				
AutoNetkit	<p>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 <b>Subtype Usage in Configured Topologies</b> lists the subtypes used in configuration requests along with their average and maximum usage stats.</p> <p><b>AutoNetkit</b></p> <p><b>Configs in last month</b> 128 (3 invalid topologies)  <b>Configs in last week</b> 23 (0 invalid topologies)  <b>Configs in last day</b> 6 (0 invalid topologies)</p> <p><b>Subtype usage in configured topologies</b></p> <table border="1"> <thead> <tr> <th>Subtype</th> <th>Average</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>ASAv</td> <td>0.40</td> <td>2</td> </tr> <tr> <td>CSR1000v</td> <td>0.91</td> <td>15</td> </tr> <tr> <td>IOS XRv</td> <td>0.48</td> <td>8</td> </tr> <tr> <td>IOSv</td> <td>4.42</td> <td>73</td> </tr> <tr> <td>IOSvL2</td> <td>0.93</td> <td>12</td> </tr> <tr> <td>lxc</td> <td>0.09</td> <td>2</td> </tr> <tr> <td>lxc-iperf</td> <td>0.46</td> <td>20</td> </tr> <tr> <td>lxc-ostinato</td> <td>0.20</td> <td>3</td> </tr> <tr> <td>NX-OSv</td> <td>0.42</td> <td>2</td> </tr> <tr> <td>server</td> <td>0.40</td> <td>2</td> </tr> <tr> <td>all (topology size)</td> <td>8.70</td> <td>80</td> </tr> </tbody> </table>	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
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IOSvL2	0.93	12																																			
lxc	0.09	2																																			
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NX-OSv	0.42	2																																			
server	0.40	2																																			
all (topology size)	8.70	80																																			

4/19/23

## 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**.

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

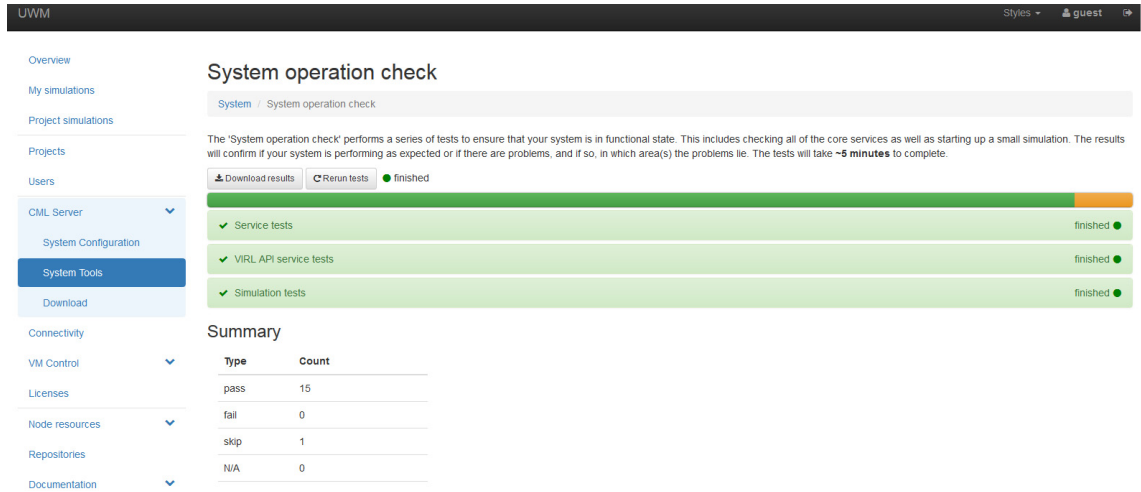
- **Check Again:** Allows you to run the health status check again.
- **Download:** Allows you to open or download the health status log file.
- **Display RAW Report:** Displays the health status log file to screen.

## 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**.

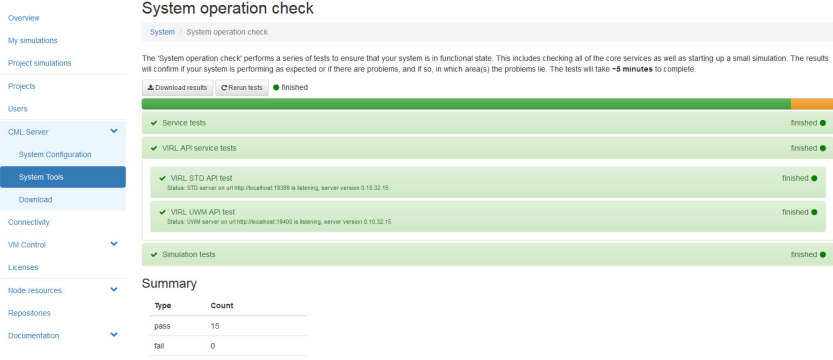
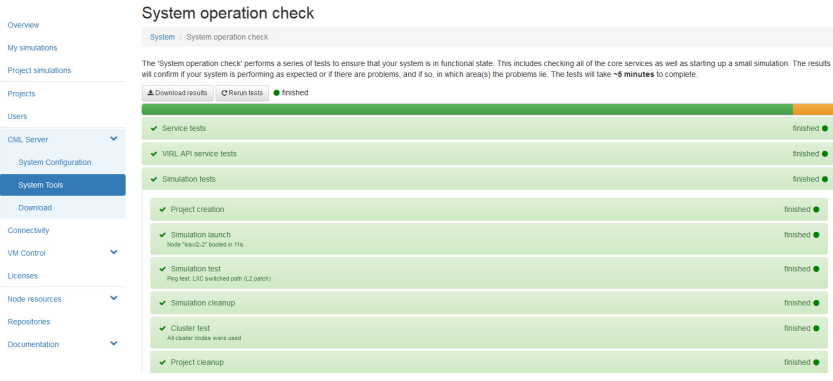
**Figure 7: System Operation Check**



The following areas are tested:

**Table 5: System Operation Check Tests**

Area	Description
Service	<p>Click each entry to view further details of the tests run.</p> <p>The detailed view shows the following tests:</p> <ul style="list-style-type: none"> <li>Service tests (finished)</li> <li>OpenStack authentication test (finished)</li> <li>OpenStack compute service test (finished)</li> <li>OpenStack identity service test (finished)</li> <li>OpenStack image service test (finished)</li> <li>OpenStack network service test (finished)</li> <li>OpenStack volume service test (Volume service feature is disabled) (finished)</li> <li>Docker Registry test (finished)</li> <li>Cluster multicast test (All nodes received test message) (finished)</li> </ul>

Area	Description						
<p><b>VIRL API Service</b></p>	<p>Click each entry to view further details of the tests run.</p>  <p>The 'System operation check' performs a series of tests to ensure that your system is in functional state. This includes 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 ~8 minutes to complete.</p> <p>Download results   Rerun tests   finished</p> <ul style="list-style-type: none"> <li>Service tests finished</li> <li>VIRL API service tests finished</li> <li>VIRL STD API test finished Status: STD server on url/http://localhost:19399 is listening, server version 0.10.32.15</li> <li>VIRL UVM API test finished Status: UVM server on url/http://localhost:19400 is listening, server version 0.10.32.15</li> <li>Simulation tests finished</li> </ul> <p>Summary</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>pass</td> <td>15</td> </tr> <tr> <td>fail</td> <td>0</td> </tr> </tbody> </table>	Type	Count	pass	15	fail	0
Type	Count						
pass	15						
fail	0						
<p><b>Simulation</b></p>	<p>Click each entry to view further details of the tests run.</p>  <p>The 'System operation check' performs a series of tests to ensure that your system is in functional state. This includes 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 ~8 minutes to complete.</p> <p>Download results   Rerun tests   finished</p> <ul style="list-style-type: none"> <li>Service tests finished</li> <li>VIRL API service tests finished</li> <li>Simulation tests finished</li> <li>Project creation finished</li> <li>Simulation launch finished Node 'sim-c2' booted in 11s</li> <li>Simulation test finished The test UIC switched path (L2 ports)</li> <li>Simulation cleanup finished</li> <li>Cluster test finished All cluster nodes were used</li> <li>Project cleanup finished</li> </ul>						

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 8: Files Available for Download

Category	File Name	Size
My simulations	CML-1.3.0-39-setup_32.exe	168.7 MB
Project simulations	CML-1.3.0-39-setup_64.exe	171.9 MB
Projects	CML-1.3.0-39.dmg	297.8 MB
Users	VIRL_CLIENTS-0.10.28.7-py2-none-any.rev_92f08dc.bin.whl	25.9 MB

Double-click the applicable file to download it.

### Cluster (Optional)

Figure 9: Cluster Management Controls

UWM Styles uwmadmin

Overview

My simulations

Project simulations

Projects

Users

CML Server

System Configuration

System Tools

Download

Cluster

Connectivity

VM Control

Licenses

Node resources

Documentation

## Cluster Management Controls

Hide 1 / Clear

Finished cluster jobs were cleared

Controls Status

ⓘ = Compute minion is not responding, host was probably taken down

Compute 1 DHCP release  No

Compute 2 DHCP release  No

Compute 3 DHCP release  No

Apply

UWM 0.10.35.37 CML | © 2017 Cisco Systems, Inc. | Trademark Generated at: 2018-05-18 20:07:02

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Table 6: CML Server Troubleshooting Tools

Tab Name	Description
Controls	Displays newly and previously discovered compute nodes. A <b>Power</b> icon is displayed next to any compute node that is unreachable or has been shutdown or forcefully removed.
Status	Displays status of all connected or previously connected compute nodes. <b>Minions</b> lists all <code>down</code> , <code>up</code> , and registered compute nodes in <code>json</code> format. <b>DHCP Leases</b> lists raw DHCP information, including the IP address that are assigned to a compute node and its lease time.

**Cluster Status:** The figure below shows the `compute1` node connected and ready. This node must be set to **Active** under **CML Server > System Management > Cluster**.

Figure 10: Compute Node 1 Status

## Cluster Management Controls

Controls

Status

### Minions

```
{
  "down": [],
  "up": [
    "compute1.compute.cluster"
  ]
}
```

### DHCP Leases

```
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.3.3

lease 172.16.10.1 {
  starts 5 2018/05/25 17:30:54;
  ends never;
  tstp never;
  cltt 5 2018/05/25 17:30:54;
  binding state active;
  next binding state free;
  rewind binding state free;
  hardware ethernet 00:50:56:8f:88:26;
  client-hostname "compute";
}
server-uid "\000\001\000\001"\233\000\252\000PV\217L1";
```

# Connectivity

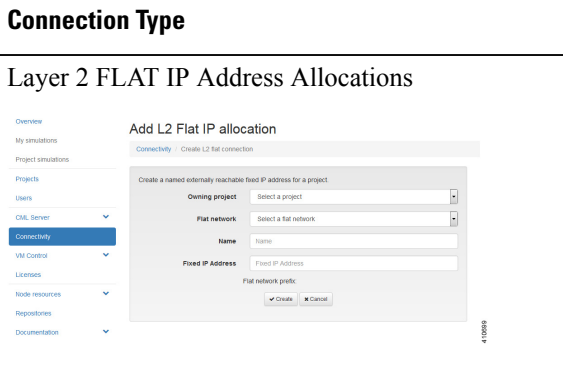
Within the **User Workspace Management** interface, the **Connectivity** page provides details on all OpenStack ports available on the external (FLAT and SNAT) and project management networks.

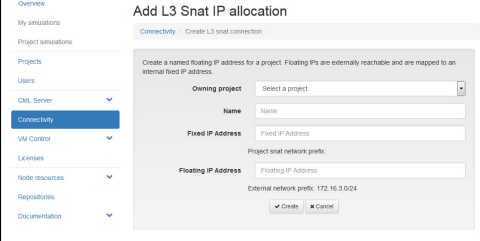
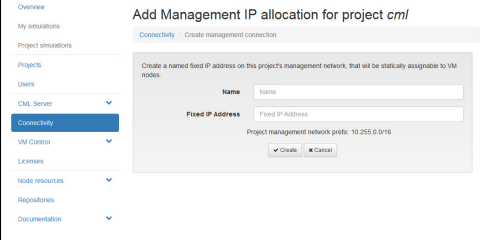
- L2 FLAT IP address allocations—Create an externally reachable fixed IP address for a project.
- L3 SNAT IP address allocations—Create a floating IP address for a project. Floating IPs are externally reachable and are mapped to an internal fixed IP address.
- Project Management IP address allocations—Create 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
	<b>Owning Project</b>	Choose a project from the drop-down list.
	<b>FLAT Network</b>	Choose a FLAT network from the drop-down list.
	<b>Name</b>	Enter a name for the new port connection.
	<b>Fixed IP address</b>	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
 <p>The screenshot shows the 'Add L3 Snat IP allocation' form. It includes a sidebar with navigation options like 'Overview', 'My simulations', 'Project simulations', 'Projects', 'Users', 'CMI, Server', 'Connectivity', 'VM Control', 'Licenses', 'Node resources', 'Repositories', and 'Documentation'. The main form has a title 'Add L3 Snat IP allocation' and a subtitle 'Connectivity &gt; Create L3 snat connection'. Below this is a description: 'Create a named floating IP address for a project. Floating IPs are externally reachable and are mapped to an internal fixed IP address.' The form contains fields for 'Owning project' (a dropdown menu), 'Name' (text input), 'Fixed IP Address' (text input), 'Project snat network prefix' (text input), and 'Floating IP Address' (text input). At the bottom, there is an 'External network prefix' (172.16.3.0/24) and 'Create' and 'Cancel' buttons.</p>	<b>Owning Project</b>	Choose a project from the drop-down list.
	<b>Name</b>	Enter a name for the new port connection.
	<b>Fixed IP Address</b>	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.
	<b>Floating IP Address</b>	Enter a custom IP address from the range defined by the prefix displayed, or to have an address automatically assigned, leave this field blank.
 <p>The screenshot shows the 'Add Management IP allocation for project cmi' form. It has a similar layout to the previous form. The title is 'Add Management IP allocation for project cmi' and the subtitle is 'Connectivity &gt; Create management connection'. The description reads: 'Create a named fixed IP address on this project's management network, that will be statically assignable to VM nodes.' The form includes fields for 'Name' (text input), 'Fixed IP Address' (text input), and 'Project management network prefix' (10.255.0.0/16). 'Create' and 'Cancel' buttons are at the bottom.</p>	<b>Name</b>	Enter a name for the new port connection.
	<b>Fixed IP Address</b>	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.

## 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 11: Nodes Page**

The screenshot shows the 'Nodes' page in the VM Control interface. On the left is a navigation sidebar with options like Overview, My simulations, Project simulations, Projects, Users, CML Server, Connectivity, VM Control (selected), Nodes (selected), Networks, Ports and Floating IPs, and Hosts. The main content area is titled 'Nodes' and features a yellow warning banner: 'WARNING: The VM Control panels are meant for troubleshooting purposes only and should not be used in normal workflows. Removing important resources may break your system.' Below the warning, there are two sections: 'Nodes of project guest' and 'Nodes of project hyerra'. Each section contains a table with columns for Name, Node host name, Status, and Options. The 'Nodes of project guest' table has four rows, all with 'ACTIVE' status. The 'Nodes of project hyerra' table has one row with 'ACTIVE' status. A 'Delete selected' button is present at the end of each table.

Nodes of project guest				
Name	Node host name	Status	Options	
<input type="checkbox"/> </guest-cml-12/endpoint>-<Controls-F2W1B1>-<london>	cml	● ACTIVE		
<input type="checkbox"/> </guest-cml-12/endpoint>-<Controls-F2W1B1>-<new-york>	cml	● ACTIVE		
<input type="checkbox"/> </guest-cml-12/endpoint>-<Controls-F2W1B1>-<paris>	cml	● ACTIVE		
<input type="checkbox"/> </guest-cml-12/endpoint>-<Controls-F2W1B1>-<san-francisco>	cml	● ACTIVE		

Nodes of project hyerra				
Name	Node host name	Status	Options	
<input type="checkbox"/> </hyerra/endpoint>-<70_nodes_topology-9defLa>-<losv-1>	cml	● ACTIVE		

410654

**Step 1** To delete a specific node:

- In the node list for the applicable project, check the corresponding check box.
- Click **Delete** in the **Options** column.  
The node is deleted.

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

- 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.

- 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 12: Networks Page

**Networks**

**WARNING:** The VM Control panels are meant for troubleshooting purposes only and should not be used in normal workflows. Removing important resources may break your system.

Networks of project *Cisco CML*

Show 10 entries

Name	Num. of ports	Status	Options
Cisco CML	2	ACTIVE	[Delete]
Cisco CML_snat	2	ACTIVE	[Delete]

Showing 1 to 2 of 2 entries

Previous 1 Next

Networks of project *MarkS*

Show 10 entries

Name	Num. of ports	Status	Options
MarkS	2	ACTIVE	[Delete]

410653

**Step 1**

To delete a specific network:

- In the network list for the applicable project, check the corresponding **Name** check box.
- Click **Delete** in the **Options** column.  
The network is deleted.

**Step 2**

To delete all the networks for a specific project:

- 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**.

- 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 13: Ports and Floating IPs Page

**Ports and Floating IPs**

**WARNING:** The VM Control panels are meant for troubleshooting purposes only and should not be used in normal workflows. Removing important resources may break your system.

Ports of network <guest-cml-12/endpoint>-<Controls-FzW1B1>-<london-to-new-york> Delete selected

Name	Status	Fixed IP Address	Options
<guest-cml-12/endpoint>-<Controls-FzW1B1>-<london>-<london-to-new-york>	ACTIVE	10.255.255.2	<span>Delete</span>
<guest-cml-12/endpoint>-<Controls-FzW1B1>-<new-york>-<london-to-new-york>	ACTIVE	10.255.255.1	<span>Delete</span>

Ports of network <guest-cml-12/endpoint>-<Controls-FzW1B1>-<london-to-paris> Delete selected

Name	Status	Fixed IP Address	Options
<guest-cml-12/endpoint>-<Controls-FzW1B1>-<london>-<london-to-paris>	ACTIVE	10.255.255.1	<span>Delete</span>
<guest-cml-12/endpoint>-<Controls-FzW1B1>-<paris>-<london-to-paris>	ACTIVE	10.255.255.2	<span>Delete</span>

Ports of network <guest-cml-12/endpoint>-<Controls-FzW1B1>-<london-to-san-francisco> Delete selected

**VM Control**

- Overview
- My simulations
- Project simulations
- Projects
- Users
- CML Server
- Connectivity
- VM Control**
  - Nodes
  - Networks
  - Ports and Floating IPs**
  - Hosts
- Licenses

410655

**Step 1**

To delete a specific port or floating IP:

- In the port or floating IP list for the applicable project, check the corresponding check box.
- 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:

- 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.

- 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 14: Hosts Page

**OpenStack Compute services and Network agents**

**WARNING:** The VM Control panels are meant for troubleshooting purposes only and should not be used in normal workflows. Removing important resources may break your system.

Host cml Enable maintenance mode

Name	Enabled	Alive	Last update	Options
cert	True	True	2016-03-01 16:36:36	<span>Delete</span>
compute	True	True	2016-03-01 16:36:38	<span>Delete</span>
conductor	True	True	2016-03-01 16:36:42	<span>Delete</span>
consoleauth	True	True	2016-03-01 16:36:40	<span>Delete</span>
dhcp-agent	True	True	2016-03-01 16:36:26	<span>Delete</span>
i3-agent	True	True	2016-03-01 16:36:27	<span>Delete</span>
linuxbridge-agent	True	True	2016-03-01 16:36:24	<span>Delete</span>
metadata-agent	True	True	2016-03-01 16:36:26	<span>Delete</span>
scheduler	True	True	2016-03-01 16:36:39	<span>Delete</span>

**VM Control**

- Overview
- My simulations
- Project simulations
- Projects
- Users
- CML Server
- Connectivity
- VM Control**
  - Nodes
  - Networks
  - Ports and Floating IPs
  - Hosts**
  - Licenses

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## VM Control Allocated Ports

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

**Figure 15: Allocated Ports Page**

IP Address	Port	Protocol	Username	Simulation	Node	Task
0.0.0.0	10000	tcp	guest	~jumphost	jumphost	tcp-forward
0.0.0.0	10001	tcp	testing	3_node_test-jQRPEF	~mgmt-lxc	lxc-management
0.0.0.0	10002	tcp	testing	mixed-Vwe8r6	~mgmt-lxc	lxc-management
0.0.0.0	10003	tcp	guest	mixed_4_nodes-x8YY09	~mgmt-lxc	lxc-management
0.0.0.0	10004	tcp	guest	40_nodes_mixed_topology-SUJQ29-JLu_HP	~mgmt-lxc	lxc-management

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## 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 16: Licenses Page**

License ID	Feature name	Node count	Expiry date	Remove license
20160224034240575	CML_CORPORATE	-	31-Mar-2016	<input type="button" value="Remove"/>
	CML_CISCO_VM_CAPACITY	15	31-Mar-2016	
20160224035659761	CML_CISCO_VM_CAPACITY	200	31-Mar-2016	<input type="button" value="Remove"/>
<b>Active node capacity (will drop on)</b>		215	31-Mar-2016	

**License verification results:**

Product licensing status is licensed as CML\_CORPORATE.  
 Product license expires in 30 days.  
 Licensed Cisco VM capacity is 215 nodes.

In case of unexpected license verification results, please consult the latest entries in the verification log below.

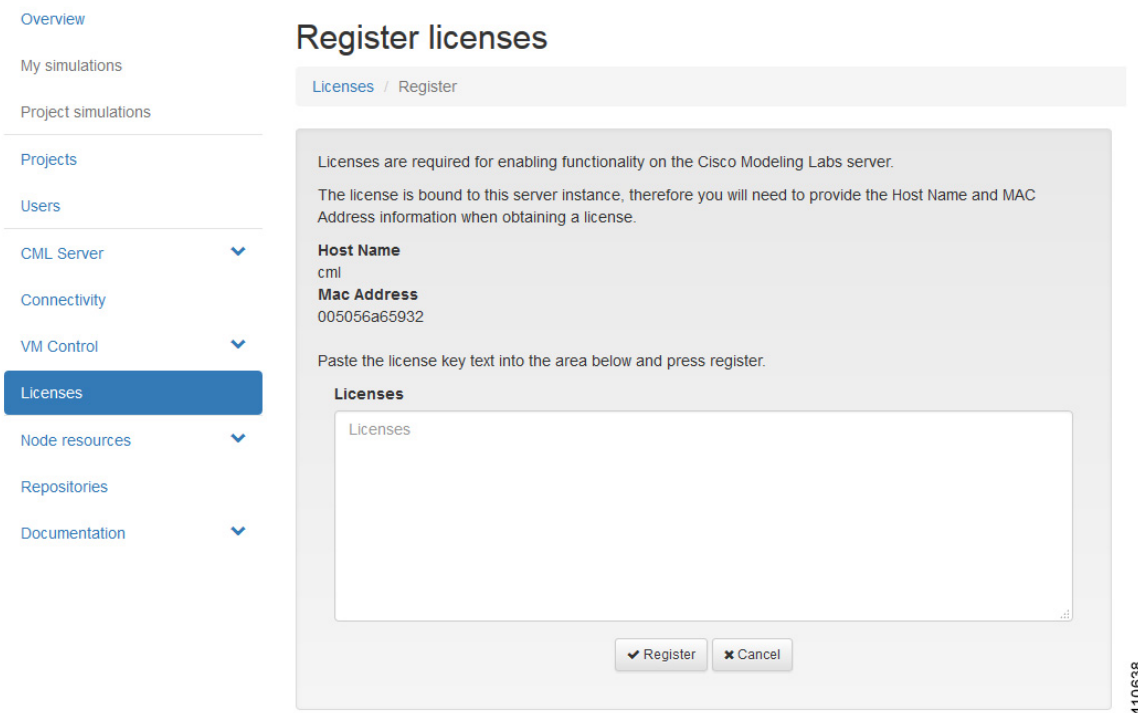
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## Register a Cisco Modeling Labs License

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 17: Register Licenses**



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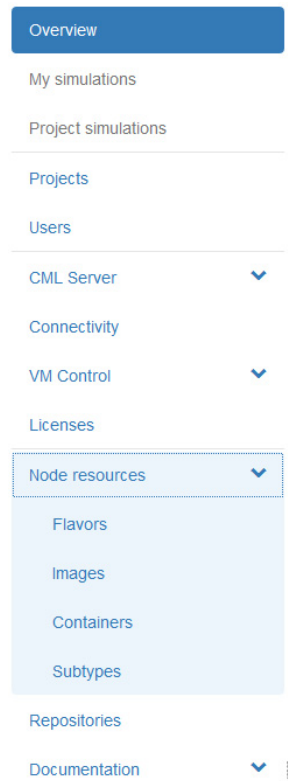
- Step 5** Copy and paste the license key from the .lic file into the **Licenses** text area.
- Step 6** Click **Register**. The license is applied.
- Step 7** Return to the **Licenses** page to view the newly registered license.

## 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 18: 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
<b>Add</b>	Creates a new flavor.
<b>Delete</b>	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 19: Create a Flavor

**Create Flavor**

Flavors / Create flavor

**Name**

**RAM (MB)**

**Virtual CPUs**

**Recommended Values**

Subtype	RAM (MB)	Virtual CPUs
ASAv	2048	1
CSR1000v	3072	1
CSR1000v-1	3072	1
generic	256	1
IOS XRv	3072	1
IOS XRv 9000	16384	4
IOSv	512	1

410625

- 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 1.5 includes the following images built into the Cisco Modeling Labs client:

- Cisco IOSv Software Release 15.6(3)T
- Cisco IOSv Layer 2 Switch Software Release 15.2 (03.2017)
- Cisco IOS XRv Software Release 6.1.3 CCO
- Linux server (Ubuntu 16.04.3 Cloud-init)
- Unmanaged switch

- Cisco ASAv Software Release 9.8.2

For the most up-to-date list of virtual images, see [Release Notes for Cisco Modeling Labs 1.5](#).

The following demo images are available from the FileExchange:

- Cisco IOS XRv 9000 Software Release 6.2.2 demo image
- Cisco CSR1000v Software Release 16.5.1b XE-based demo image
- Cisco NX-OSv 9000 Software Release 7.0.3.17.1 demo image

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

Operation	Description
<b>Add</b>	Creates a new virtual machine image.
<b>Modify</b>	Modifies details for a selected virtual machine image.
<b>Delete</b>	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 20: Create VM Image

410626

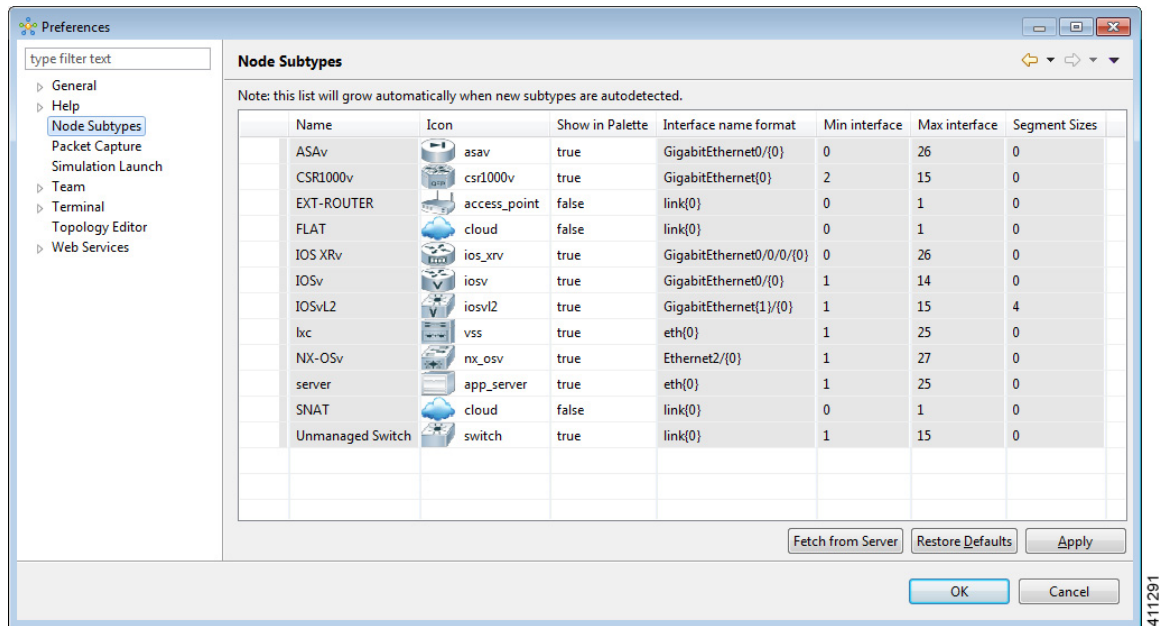
- Step 3** From the **Owning Project** drop-down list, choose the appropriate project for the new image.
- Step 4** Click the **Project Specific** check box if you want the new image to be private and only available to the owning project.
- Step 5** From the **Subtype** drop-down list, choose the appropriate 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 21: 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 uwadmin 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 22: Create Snapshot Icon

The screenshot shows the 'Simulation live\_visualization-vJzUTM details' page in the UWM interface. The 'Nodes' table is expanded to show details for 'iosv-1'. The 'Options' column for this node includes a 'Create snapshot' icon.

User	Project	Status	Started	Expires
guest-cml-12	guest	ACTIVE	2016-03-08 20:23:28	never

Node	Subtype	State	Management IPs	External Connections	Options
iosv-1	IOSv	ACTIVE	10.255.0.2	telnet://172.23.81.101:17292 telnet://172.23.81.101:17293	
iosv-2	IOSv	ACTIVE	10.255.0.3	telnet://172.23.81.101:17294 telnet://172.23.81.101:17295	
iosv-3	IOSv	ACTIVE	10.255.0.4	telnet://172.23.81.101:17296 telnet://172.23.81.101:17297	
iosv2-1	IOSvL2	ACTIVE	10.255.0.5	telnet://172.23.81.101:17298 telnet://172.23.81.101:17299	
iosv2-2	IOSvL2	ACTIVE	10.255.0.6	telnet://172.23.81.101:17300 telnet://172.23.81.101:17301	

411102

Project details for the newly created snapshot are displayed.

Figure 23: Newly Created Image Snapshot

The screenshot shows the 'Project image snapshot guest-IOSv-iosv-1 details' page. A green banner at the top indicates 'Saving snapshot of node "iosv-1" as image "guest-IOSv-iosv-1"...'. Below, the snapshot details are displayed:

```

Name
  guest-IOSv-iosv-1
OpenStack ID
  46a8647d-cbee-40f3-8fa7-e520f57531b
Project
  a3d9b4c352584cf959879e09ebcc9c
Updated
  2016-03-08 20:39:22.000000
Status
  queued
Size
  0.00 B (0)
Minimum Disk Size
  2 GB
Converted qcow2 image checksum
  None (every image is forced through conversion, even qcow2)
  
```

411103

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

Figure 24: Available Image Snapshots

Image	Release	Status	Created	Updated	Size	Options
guest-IOSv-iosv-1	-	active	2016-03-08 20:39:22	2016-03-08 20:39:41	122.12 MiB	
guest-server-server-1	14.04.2	active	2016-02-08 07:56:17	2016-02-08 07:56:34	1.01 GiB	

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

## 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:

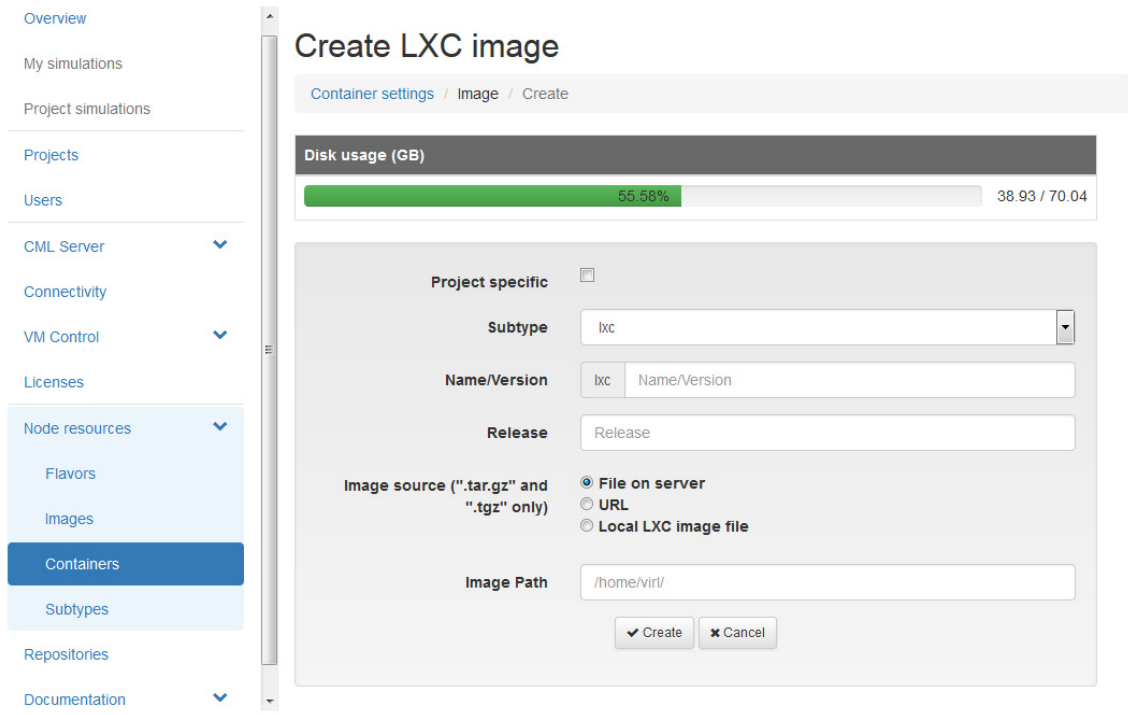
Operation	Description
<b>Add</b>	Create a new LXC image and/or LXC template.
<b>Modify</b>	Modify details for LXC images
<b>Delete</b>	Delete LXC images and templates as required.

### 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 25: Create an LXC Image



410627

- 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 26: Create a LXC Template**

410628

- 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
<b>Import</b>	Imports a subtype from a JSON file.
<b>Export</b>	Exports a subtype to a JSON file.
<b>Specialize</b>	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 7: 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.

Field	Description
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 <b>0</b> , <b>1</b> , <b>2</b> , <b>3</b> , and <b>4</b> .
Protocol for network CLI	Choose the type of console connection. Options are <b>Telnet</b> or <b>SSH</b> .
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.
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 <b>cdrom</b> , <b>disk</b> , <b>cloud-init</b> , <b>iso9660</b> , and <b>vfat</b> . For LXC subtypes, set to <b>lxc</b> .
ISO 9660 Level in cdrom Disk	Choose the ISO 9660 level in cdrom disk. Options are <b>2</b> , <b>3</b> , and <b>4</b> .
Name of file for config drive	Enter a name for the configuration drive file.
Virtual interface model	Choose a virtual interface model. Options are <b>e1000</b> , <b>virtio</b> , and <b>rtl8139</b> .
Main disk bus model	Choose a main disk bus model. Options are <b>ide</b> , <b>virtio</b> , and <b>scsi</b> .
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.

# Cluster Configuration and Defaults

The following configuration elements defined in the `/etc/settings.ini` file or via the User Workspace Management interface are used to define Cisco Modeling Labs OpenStack Cluster configurations.

**Table 8: Cluster Configuration Elements**

Parameter	Default	Description	
compute1_active	False	Specifies the absence or presence of the compute node 1 in the cluster.	Set to True for each available compute node (1 through 8).
compute2_active	False	Specifies the absence or presence of the compute node 2 in the cluster.	Set to True for each available compute node (1 through 8).
compute3_active	False	Specifies the absence or presence of the compute node 3 in the cluster.	Set to True for each available compute node (1 through 8).
compute4_active	False	Specifies the absence or presence of the compute node 4 in the cluster.	Set to True for each available compute node (1 through 8).
compute5_active	False	Specifies the absence or presence of the compute node 5 in the cluster.	Set to True for each available compute node (1 through 8).
compute6_active	False	Specifies the absence or presence of the compute node 6 in the cluster.	Set to True for each available compute node (1 through 8).
compute7_active	False	Specifies the absence or presence of the compute node 7 in the cluster.	Set to True for each available compute node (1 through 8).
compute8_active	False	Specifies the absence or presence of the compute node 8 in the cluster.	Set to True for each available compute node (1 through 8).

## 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**.

To access the STD API, click **STD API**. The **STD API** page is displayed.

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