



Overview of Cisco Modeling Labs

- [Cisco Modeling Labs, page 1](#)
- [Cisco Modeling Labs Server Components, page 2](#)
- [Cisco Modeling Labs Client, page 2](#)
- [Virtual Images, page 2](#)
- [Cisco Modeling Labs Component Requirements, page 3](#)
- [Cisco Modeling Labs Framework, page 5](#)

Cisco Modeling Labs

Cisco Modeling Labs is a scalable and extensible software platform that enables operators, engineers, network designers, and architects to design Cisco-based networks and run simulations using virtual versions of selected Cisco operating systems. Cisco Modeling Labs comprises the Cisco Modeling Labs server and the Cisco Modeling Labs client. Together, they provide a sandbox environment that facilitates the design, configuration, visualization, and simulation of network topologies quickly and efficiently.

- **Cisco Modeling Labs server**—A shared resource containing the capability to initiate topologies using installed virtual images.
- **Cisco Modeling Labs client**—A point-and-click GUI that simplifies topology creation and initial device configurations along with continuous updates, and permits access to the Cisco Modeling Labs server functionality.
- **Virtual Images**—Cisco Modeling Labs 1.0.1 includes a Cisco IOSv virtual image and an Ubuntu 14.04 cloud image. Additional Cisco virtual images are available for use. However, they must be installed separately. See the [Release Notes for Cisco Modeling Labs 1.0.1](#) for the most up-to-date list of supported virtual images.

Together, the virtual images and Ubuntu server provide a powerful platform for creating, modifying, and testing the virtual network scenarios.

Cisco Modeling Labs Server Components

The Cisco Modeling Labs server is available as:

- A Linux distribution that is bundled within the VMware Open Virtual Appliance (OVA) file for VMware ESXi. The bundle includes all the supporting files.
- A Linux distribution that is bundled with an ISO image file for bare metal environments. The bundle includes all the supporting files.

The Cisco Modeling Labs server is a shared resource used by end users to run backend functions, such as router bootstrap configurations, spinning up routers to operate with designated operating systems, and modifying and testing configurations.

Cisco Modeling Labs comprises a framework of components. The main components are:

- **OpenStack**—An open-source platform for creating and managing large groups of virtual servers in a cloud-computing configuration. It is used for node control, management, and networking.
- **AutoNetkit**—An automated configuration engine that uses templates to provide working router configurations based on user-supplied and default parameters for each virtual machine.
- **Services Topology Director**—Generates OpenStack calls for the creation of virtual machines and links based on the XML topology definition created by the Cisco Modeling Labs client. Additionally, it provides the bootstrap configuration, which can be auto-generated, generated manually, or imported.

Cisco Modeling Labs Client

The Cisco Modeling Labs client is a cross-platform user interface for creating and editing network designs, and simulating those network topologies on the Cisco Modeling Labs server. The Cisco Modeling Labs client offers the following benefits:

- The ability to quickly create and edit complex network topologies in a sandbox, using a graphical point-and-click editor.
- Access to the build, visualization, and launch functions available in the Cisco Modeling Labs server.

The Cisco Modeling Labs client enables you to interact directly with your running simulations from the user interface. The Cisco Modeling Labs client also provides the functionality to generate default router configurations before launching the topology simulation.

For further information on the Cisco Modeling Labs client, see [Using the Cisco Modeling Labs Client Overview](#).

Virtual Images

Cisco Modeling Labs 1.0.1 includes the Cisco IOSv 15.4(2)T virtual image and an Ubuntu 14.04 cloud image. The operation and syntax used with the virtual images are the same as a physical platform running the same software.

See the [Release Notes for Cisco Modeling Labs 1.0.1](#) for more information on Cisco IOSv virtual software supported features.

Cisco Modeling Labs Component Requirements

The following tables identify the minimum requirements for installing and operating the Cisco Modeling Labs Corporate Edition. For additional information, see the [Cisco Modeling Labs Corporate Edition Client Installation Guide, Release 1.0.1](#) and the [Cisco Modeling Labs Corporate Edition System Administrator Installation Guide, Release 1.0.1](#). These guides provide detailed information on platform requirements for installing and operating Cisco Modeling Labs Corporate Edition for system administrators and end users.

Table 1: Server Hardware Requirements

| Requirement | Description |
|--------------------------------------|---|
| Small Installation (Minimum) | Server with capacity to run base package of 15 IOSv nodes |
| Memory (RAM) | 16 GB |
| Disk Space | 1TB minimum |
| Processors | 4 CPU cores |
| Small and Medium Installation | Server with a capacity to run up to 50 nodes |
| Memory (RAM) | 128 GB |
| Disk Space | 1TB minimum |
| Processors | 16 CPU cores |
| Large Installation | Server with a capacity to run up to 100 nodes |
| Memory (RAM) | 256 GB |
| Disk Space | 1TB minimum |
| Processors | 40 CPU cores |

Table 2: Server Software Requirements

| Requirement | Description |
|----------------|--|
| VMware vSphere | One of the following: <ul style="list-style-type: none"> • Release 5.0U3 with VMware ESXi • Release 5.1 with VMware ESXi • Release 5.5 with VMware ESXi |

| Requirement | Description |
|-------------|--|
| Browser | <p>One of the following:</p> <ul style="list-style-type: none"> • Google Chrome Version 33.0 or later • Internet Explorer 10.0 or later • Mozilla Firefox 28.0 or later • Safari 7.0 or later <p>Note Internet Explorer is not supported for use with the AutoNetkit Visualization functionality and the User Workspace Management interface.</p> |

Table 3: Client Hardware Requirements

| Requirement | Description |
|------------------|--|
| Operating System | <p>Either of the following:</p> <ul style="list-style-type: none"> • Microsoft Windows <ul style="list-style-type: none"> ◦ Windows 7 or ◦ Windows 8 • Apple Mac OS X <ul style="list-style-type: none"> ◦ Mac OS X 10.8 or later |
| Memory (RAM) | 500 MB |
| Disk Space | 150 MB |

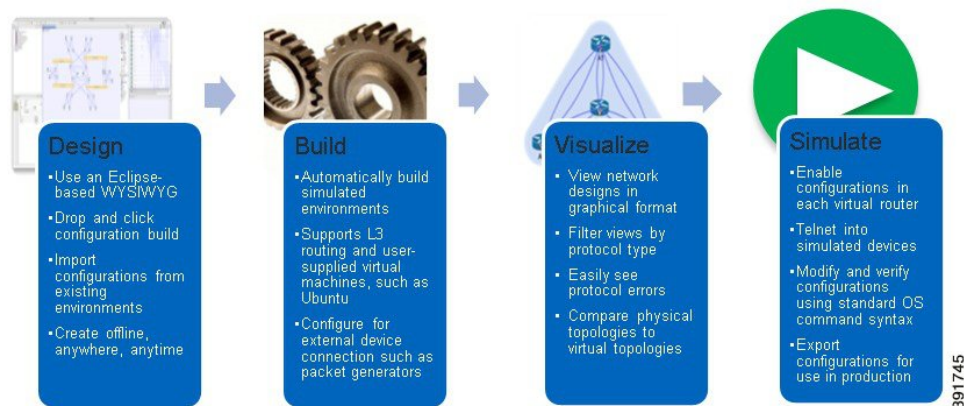
Table 4: Client Software Requirements

| Requirement | Description |
|--------------------------------|--|
| Java Runtime Environment (JRE) | <p>For Windows and Mac OS X, either of the following:</p> <ul style="list-style-type: none"> • Version 6 • Version 7 |

| Requirement | Description |
|-------------|--|
| Browser | <p>One of the following:</p> <ul style="list-style-type: none"> • Google Chrome Version 33.0 or later • Internet Explorer 10.0 or later • Mozilla Firefox 28.0 or later • Apple Safari 7.0 or later <p>Note Internet Explorer is not supported for use with the AutoNetKit Visualization functionality and the User Workspace Management interface.</p> |

Cisco Modeling Labs Framework

Figure 1: Cisco Modeling Labs Framework



Cisco Modeling Labs includes numerous features that enable you to create and simulate small and large network designs. This user guide is organized in a task-based format where the main features are grouped into four sections referred to as phases.

The following items describe each phase which should help you determine which section to refer to when using this guide:

- 1 Design**—This phase includes the tasks for creating a network topology. You use a blank canvas to create topologies from scratch or import existing network topologies. You can also view your topologies on a geographic map and adjust where and how interfaces are used on each device.
- 2 Build**—This phase includes the tasks associated with configuring routers, external connections, and servers, creating the required configurations, setting up interfaces, IP addressing, and routing protocols for the virtual routers. There are several ways to create these configurations. You can use the AutoNetKit functionality to set up the initial configuration or you can input your own configuration details. Whatever configurations you create in this phase will be the configurations that the Cisco Modeling Labs server will use when it initiates the node simulations.

- 3 **Visualization**—This phase is optional and operates only if you use AutoNetKit to create your configurations during the Build phase. It includes the tasks related to running visualization scenarios of your network design and configuration. It provides visual views of your topology whereby you can see how the nodes will interact with each other in specific circumstances including physical set up as well as with specific routing protocols such as ISIS and OSPF. It also supports MPLS and BGP.
- 4 **Simulation**—This phase includes the tasks for initiating the nodes and making them active. Once the nodes are operational, you can connect to the consoles using Telnet or SSH, as you would connect to a router console. You can run connectivity tests and modify configurations. This is where the power of the product is realized since you can modify and test configurations as if you were on actual physical devices. In this phase, you can also save your configurations and extract them for sharing with others or saving them and using them as reference when configuring the production network.