



## **User Guide for Cisco License Manager**

Release 2.1

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*User Guide for Cisco License Manager*

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## Preface

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This preface explains the audience, purpose, and organization of the *User Guide for Cisco License Manager*. It also defines the conventions that are used to present instructions and information.

## Audience

The *User Guide for Cisco License Manager* is designed for system administrators using Cisco License Manager who install and configure internetworking software and who are familiar with Cisco IOS software. This guide is mainly for server administrators, but includes some information for operators who are installing a Cisco License Manager client on their machines.

## Purpose

The *User Guide for Cisco License Manager* provides detailed information about installing Cisco License Manager, getting started using Cisco License Manager, post installation administrative tasks, frequently asked questions, and troubleshooting procedures. For additional information on related documentation, see the [“Product Documentation” section on page 3](#).

## Organization

The *User Guide for Cisco License Manager* is organized as follows:

- [Chapter 1, “Overview of Cisco License Manager,”](#) gives an overview of Cisco License Manager.
- [Chapter 2, “Understanding the GUI,”](#) helps you understand and navigate the graphical user interface (GUI).
- [Chapter 3, “Preparing for Installation,”](#) explains the preparations and requirements necessary to install Cisco License Manager.
- [Chapter 4, “Installing Cisco License Manager,”](#) provides information about installing the Cisco License Manager GUI.
- [Chapter 5, “Getting Started Using Cisco License Manager,”](#) describes the initial setup of Cisco License Manager and provides an overview of recommended steps for quickly adding users and devices and obtaining and deploying licenses.
- [Chapter 6, “Performing Administrative Tasks,”](#) provides information about administrative tasks.

- [Chapter 7, “Inventory Management Tasks,”](#) provides information about managing your inventory with Cisco License Manager.
- [Chapter 8, “License Management Tasks,”](#) provides information about managing your licenses with Cisco License Manager.
- [Chapter 9, “Postinstallation Administrative Tasks,”](#) provides information about administrator post installation tasks.
- [Appendix A, “FAQs and Troubleshooting,”](#) answers frequently asked questions (FAQs) and offers troubleshooting tips.

## Conventions

This document uses the conventions listed in [Table 1](#).

**Table 1**      **Table Conventions**

Item	Convention
Commands and keywords	<b>boldface font</b>
Variables for which you supply values	<i>italic font</i>
Displayed session and system information	screen font
Information you enter	<b>boldface screen font</b>
Menu items and button names	<b>boldface font</b>
Selecting a menu item	<b>Option &gt; Network Preferences</b>



### Note

Means *reader take note*. Notes contain helpful suggestions or references to material not contained in the publication.



### Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



### Tip

Means the following information will help you solve a problem.



### Timesaver

Means the described action saves time. You can save time by performing the action described in the paragraph.

# Product Documentation


**Note**

We sometimes update the printed and electronic documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates.

The following table lists the Cisco License Manager Release 2.1 documentation.

**Table 2**      **Product Documentation**

Document	Location
<i>Home page for Cisco License Manager documentation (all releases)</i>	On Cisco.com at <a href="http://www.cisco.com/en/US/products/ps7138/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps7138/tsd_products_support_series_home.html</a>
<i>Release Notes for Cisco License Manager Release 2.1</i>	On Cisco.com at <a href="http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/2.1_RN/lm_rn2.1.html">http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/2.1_RN/lm_rn2.1.html</a>
<i>Finding Documentation for Cisco License Manager Release 2.1</i>	<ul style="list-style-type: none"> <li>• Adobe Acrobat PDF on SDK CD</li> <li>• On Cisco.com at <a href="http://www.cisco.com/en/US/products/ps7138/products_documentation_roadmap09186a00808f7c00.html">http://www.cisco.com/en/US/products/ps7138/products_documentation_roadmap09186a00808f7c00.html</a> (in HTML and PDF format)</li> </ul>
<i>User Guide for Cisco License Manager Release 2.1</i>	On Cisco.com at <a href="http://www.cisco.com/application/pdf/en/US/docs/net_mgmt/license_manager/lm_2.1/2.1_Users_Guide/ugclm.pdf">http://www.cisco.com/application/pdf/en/US/docs/net_mgmt/license_manager/lm_2.1/2.1_Users_Guide/ugclm.pdf</a>
<i>Java API Reference Guide for Cisco License Manager Release 2.1</i>	<ul style="list-style-type: none"> <li>• Adobe Acrobat PDF on SDK CD</li> <li>• On Cisco.com at               <ul style="list-style-type: none"> <li>– <a href="http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Java_API/java.pdf">http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Java_API/java.pdf</a> (in PDF format)</li> <li>– <a href="http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Java_API/java.pdf">http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Java_API/java.pdf</a> (in HTML format)</li> </ul> </li> </ul>
<i>Perl API Reference Guide for Cisco License Manager Release 2.1</i>	<ul style="list-style-type: none"> <li>• Adobe Acrobat PDF on SDK CD</li> <li>• On Cisco.com at               <ul style="list-style-type: none"> <li>– <a href="http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Perl_API/perl.pdf">http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Perl_API/perl.pdf</a> (in PDF format)</li> <li>– <a href="http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Perl_API/perl.pdf">http://www.cisco.com/en/US/docs/net_mgmt/license_manager/lm_2.1/Perl_API/perl.pdf</a> (in HTML format)</li> </ul> </li> </ul>
Online Help	In the user interface, click <b>Help</b> to display help in a separate window.

# Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>



# CHAPTER 1

## Overview of Cisco License Manager

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This chapter provides overview information about Cisco License Manager and includes the following sections:

- [Introduction, page 1-1](#)
- [Features, page 1-2](#)
- [Cisco Software Licensing Methodology, page 1-2](#)
- [Cisco License Manager License Fulfillment Process, page 1-3](#)
- [License Acquisition, page 1-4](#)
- [Overview of Licensing, page 1-4](#)
- [User Authentication, page 1-5](#)
- [Role-Based User Management, page 1-5](#)
- [Device Discovery, page 1-6](#)
- [Stackable Devices, page 1-7](#)

## Introduction

Cisco License Manager is a software application that assists you in obtaining licenses from Cisco, deploying the licenses to the Cisco devices in your network, discovering the devices, and managing and viewing your inventory of licenses and devices. Cisco License Manager is used with Cisco devices that require Cisco licensing. New or upgraded Cisco devices should be registered, and a product authorization key (PAK) must be provided to obtain licenses from Cisco.

This application provides the following two external interfaces, which enable you to perform several licensing tasks from a central location:

- **Application Programming Interface (API)**—A programmatic interface that enables client programs to invoke functions implemented on the back-end server, allowing you to integrate Cisco License Manager into your systems. You can also use the API to write custom programs to perform your licensing tasks using either Java or Perl.
- **Graphical User Interface (GUI)**—A standalone Java application that provides an end-user interface used to invoke functions implemented on the back-end server.



### Note

You can use the Cisco IOS command-line interface (CLI) to license your devices. Refer to your device documentation for more information.

# Features

Cisco License Manager features are as follows:

- Intuitive and easy to use GUI.
- Keep an up-to-date inventory of deployed licensed features on the network through notifications and optional polling.
- Simplify license transfers from one device to another.
- Agent-less device communication using SSH or Telnet.
- Improved detailed license reporting helps with audit compliance.
- Full-functionality Java and Perl SDK.
- Enhanced security with role-based access control and per-user access control lists for the managed network devices and PAKs.
- Completely automated license management through a simple rule-based policy interface.
- Troubleshooting capabilities and X.733 based alerts.

## Cisco Software Licensing Methodology

Cisco IOS Software has traditionally been covered by a right-to-use license, with one license associated with each device. When a customer began using a Cisco product, the usage automatically constituted acceptance of the license agreement and validated the license for that customer - device licenses are nontransferable between end-user customers.

While this practice made it relatively easy to deploy and begin using the Cisco product, it had implications for tracking hardware and software systems, adding service features, updating and upgrading images, and transferring licenses. Customers increasingly request simpler ways to manage these tasks.

### Automated Deployment

Deploying and managing new licenses has largely been a manual process. Users with large numbers of devices are requesting an automated license management mechanism to save time and improve productivity.

### Simplified Upgrades

Adding new functionality can be complicated. Customers need simpler ways of purchasing new software images and additional capabilities to minimize the time required to:

- Fully test new software systems
- Deploy new software images to all affected devices
- Accurately configure every instance of the new software
- Closely monitor changed systems

### Improving Consistency

Multiple software images deployed throughout an infrastructure can create complexity and service inconsistencies. With multiple images - often on similar device types - managing upgrades, patches, and refreshes can be difficult. By making software licensing more consistent, users can improve delivery of network services in locations such as enterprise branches and wiring closets.

### Improved Tracking of License Status

When a person in charge of a device moved or left a company, the known status of existing licenses and feature sets often went with him or her. Licenses often end up on different devices than those on which they were originally installed. With the ability to track license deployments, businesses have full knowledge of how software is used and can avoid paying for extra licenses.

### Minimizing the Risk of Noncompliance and Fraud

There is a growing emphasis on software audits in order to meet compliance requirements, yet tracking installed licenses can be difficult. In addition, counterfeit hardware and software are becoming more common. In recent months, Cisco has identified a growing incidence of counterfeit equipment and copied software - and changed its licensing approach to minimize the risk to users.

Using Return Material Authorization (RMA) as example, a customer may accidentally have a license discrepancy due to accidentally not returning a failed device. Now both the failed and replacement devices are using the licensed feature though the customer has only paid for one device. This situation might cause the customer to fail an audit.

Cisco License Manager provides an RMA discrepancy report that interacts with the Cisco.com license server to detect this discrepancy across the customer network.

**Note**

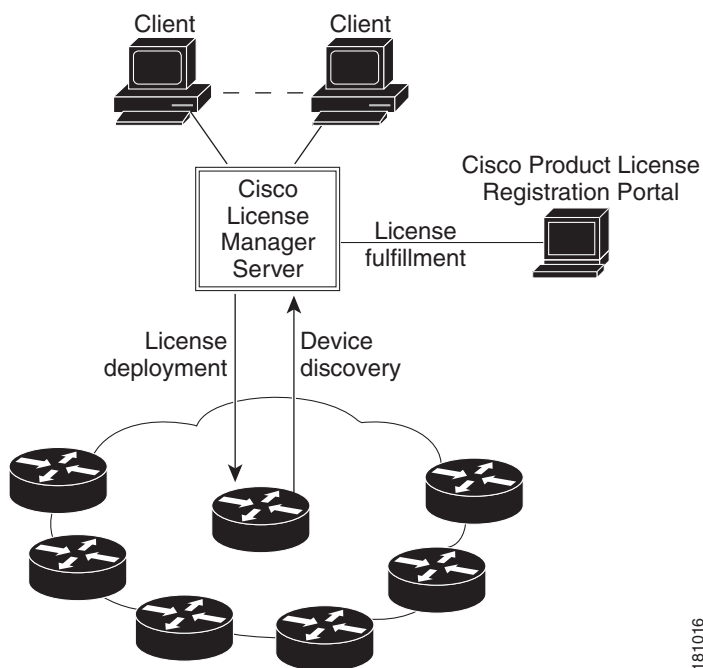
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[http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN\\_.html](http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html)

## Cisco License Manager License Fulfillment Process

Cisco License Manager is implemented using a client/server model that enables you to perform licensing tasks from a central location without having to manually log on to Cisco.com to perform device licensing tasks. The client program can run either on the same host with the server or from a remote host. Multiple instances of the client program can interact with the same server. The client program invokes methods provided by the back-end server through the Java Remote Method Invocation (RMI) mechanism.

The following figure shows how Cisco License Manager works with the licensing infrastructure (called the Cisco Product License Registration Portal) on Cisco.com for license generation, fulfillment, and support. Using the Cisco IOS license agent on your Cisco device, Cisco License Manager helps you avoid having to perform command-line interface (CLI) commands on each Cisco device and performs all license requests from a central location. Cisco License Manager can manage licenses using SSH and Telnet even when the license agent is not configured on the devices.

Ensure that you are a registered user of Cisco.com and that your user profile is updated with your e-mail address and Cisco.com contact information. You will use the client interface to access the Cisco License Manager server.

**Figure 1-1 License Fulfillment Process Using Cisco License Manager**

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## License Acquisition

Licenses are generated by the Cisco Product License Registration Portal (the Cisco license server) on Cisco.com. Cisco License Manager contains a license acquisition component that handles the license requests and provide a means of transporting these requests to and from Cisco.com.

The license acquisition component interfaces with Cisco.com. It handles queries related to license acquisition, upgrade, license transfer, license resend, and license migration from Cisco.com. The transport mechanism between the Cisco license server and license acquisition component is HTTPS.

The license acquisition component provides the external interface that converts external requests into a sequence of interface calls to Cisco.com and returns the proper data object back to the calling components.

This component provides both single-request and bulk-request APIs. It initiates an HTTPS connection with the Cisco license server at the beginning of the request and releases the connection at the end of the request.

## Overview of Licensing

A license file is a file created by the Cisco Product License Registration Portal (the software licensing tool on Cisco.com) that unlocks a product and its features. License files contain a license key (a string of alphanumeric characters).

The licensing process consists of the following steps:

1. Purchase Cisco devices or software upgrades and receive a product authorization key (PAK).



2. Collect the PAK and unique device identifier (UDI) information for the devices you need to register.
3. Enter your device information in Cisco License Manager (see the [“Manage Devices” section on page 7-1](#)).
4. Cisco License Manager passes the UDIs and PAKs to the Cisco Product License Registration Portal on Cisco.com.
5. Cisco Product License Registration Portal e-mails you a license file. The license file enables Cisco License Manager to obtain information about the number of licenses, features, and SKUs supported.
6. Enter the license information and deploy the license to your device (see the [“Deploy a License” section on page 8-6](#)).

**Note**

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Internet connectivity from your device to Cisco is not required.

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If your devices are located in an isolated network, you can take Cisco License Manager outside the firewall and use it to acquire licenses and then bring it back inside the firewall to perform your license deployments. For more details, see the [“Troubleshooting Tips” section on page A-VII](#).

## User Authentication

User authentication (login and logout) is implemented in Cisco License Manager. Once you are logged in to the application, your privileges are based on the role associated with your username.

User authentication implements the following functions:

- Managing user accounts and profiles
- Managing the user’s view of the inventory

If you are the default root user (administrator) or have an administrator role, you can create or delete user accounts. No other users can perform those functions. The root user password is created during setup, and you can modify it through the user interface. If you forget the administrator password, you must reinstall Cisco License Manager to reset the password.

Cisco License Manager supports role-based user management for granular access to resources and application functionality. The user’s access to certain procedures is dependent on that user’s role as defined in his or her user profile.

## Role-Based User Management

Cisco License Manager supports the following role-based user management for granular access to resources and features:

- Administrator
- Inventory management
- PAK management
- License management
- Report management

The following table summarizes the tasks and features each role can perform:

Task/Feature	Administrator	Inventory Management	PAK Management	License Management	Report Management
Add, remove, and discover devices (on demand)	Yes	No	No	No	No
Inventory updates (periodic and on demand)	Yes	Yes	No	No	No
Add, remove, and change device authentication information (username and password)	Yes	Yes	No	No	No
Add, remove, and view PAKs	Yes	Yes	Yes	No	No
Obtain and deploy licenses	Yes	Yes	Yes	Yes	No
Resend and transfer licenses	Yes	Yes	Yes	Yes	No
Create and view policies	Yes	Yes	Yes	Yes	No
View information about managed devices	Yes	Yes	Yes	Yes	Yes
Generate and view various Cisco License Manager reports	Yes	Yes	Yes	Yes	Yes

## Device Discovery

Cisco License Manager can perform a quick discovery of any devices in your network. Cisco License Manager performs the following tasks when you choose to discover your network devices:

1. Determines the IP-accessible IP addresses within the subnet.
2. Uses user-defined transport methods (HTTP, Telnet, or SSH) to determine if those devices support Cisco licensing.
3. Retrieves information from the devices (UDI, hostname, and feature data).
4. Retrieves license information from the devices.
5. Synchronizes the Cisco License Manager inventory with any updated information from the devices.

The amount of time it takes to discover devices depends on your network connection.

### How Cisco License Manager Communicates with Devices

To collect device license information, Cisco License Manager uses two methods:

- **Discovery**—The discovery method performs a ping to discover all IP-accessible devices and then uses HTTP/HTTPS, Telnet, or SSH to talk to a device to determine if it supports Cisco licensing. After discovering a Cisco license supported device, Cisco License Manager uses the configured transport method to retrieve license information from the device and then stores the device and license information in its inventory. Cisco License Manager disallows other discovery operations if a discovery operation is already in progress. Discovery is for initial device creation but can be used to rediscover devices as well.

- Device polling—The device-polling method assumes that devices are already in the Cisco License Manager inventory. Cisco License Manager retrieves an updated list of devices for all Cisco license supported devices. It then uses the configured transport (HTTP/HTTPS, Telnet, or SSH) with an IP address and retrieves all the license information from the device. When all the licenses have been retrieved from the device, they are compared with the information from the inventory, and the inventory is updated if necessary.

To synchronize device license information, you can use device polling, which allows Cisco License Manager to update the license information.

Updating license information happens only between Cisco License Manager and devices (not between Cisco License Manager and Cisco.com).

Cisco License Manager supports HTTP-based notifications (for HTTP/HTTPS transport methods) or system logging notifications (for Telnet or SSH transport methods) when a license is installed, cleared, annotated, or revoked. Any of these notifications triggers synchronization of the license. Event-based notification to retrieve license information is not supported in this release.



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You must configure Cisco devices to send and receive notification to and from Cisco License Manager. For a summary of how to configure your Cisco device to notify Cisco License Manager, see the [“Configure Your Cisco Device to Authenticate Cisco License Manager” section on page 5-4](#). For detailed information about how to configure your Cisco device, see your device documentation.

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## Stackable Devices

Cisco License Manager handles the discovery and display of stackable devices by creating a master and any member devices that share an IP address. A stackable device is a device containing the Cisco Stackmaker MIB. Cisco License Manager uses the IP address to connect to the master device, collect the UDI information, and poll the license.

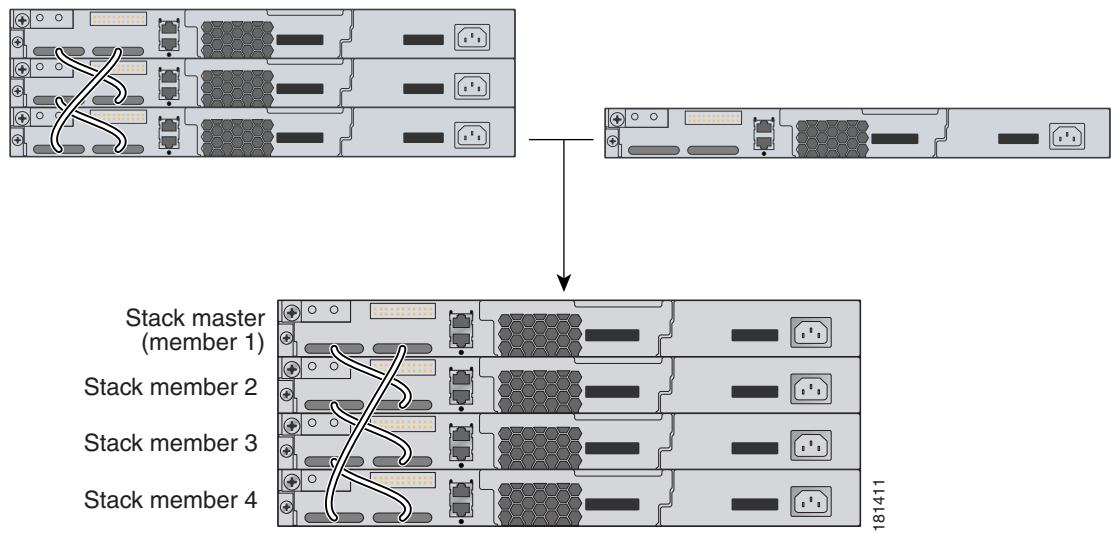
When you are setting up stackable devices, we recommend that you use the hostname as the device name.

A stackable device is displayed in Cisco License Manager as a master device with subdevices appearing as member devices in a branch extending from the master device.

During polling, Cisco License Manager polls an entire stack. This can be a time-consuming event. The length of time is based on the number of devices.

You can click a master and deploy licenses to it. There is no particular sequence for deployment to the stackable devices. The master device dispatches the licenses to its subdevices sequentially according to the arrival and order of the licenses; therefore, it takes additional time to dispatch all the licenses to the devices in the stack.

The following figure shows an existing stack that adds another member and the resulting stack. If the stack master goes down or is taken out of service, Cisco License Manager may not be aware of this action. You would have to delete the stack master, and then the entire stack would be deleted. Use discovery to recreate the updated stack. As a result, one of the stack members becomes the master and the other becomes the member.





## CHAPTER 2

# Understanding the GUI

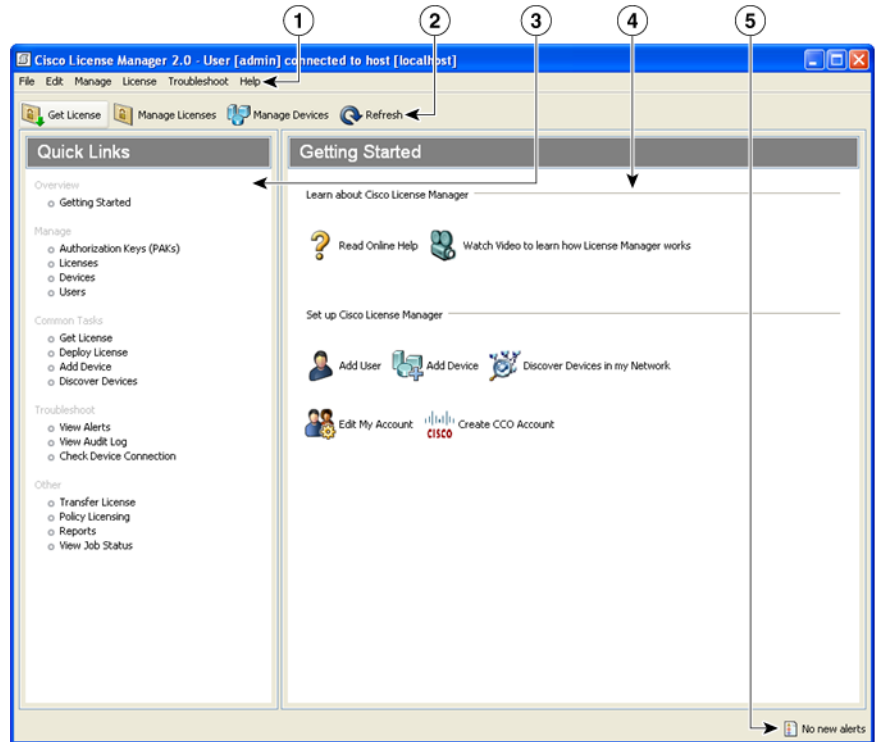
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This chapter provides information to help you understand and navigate the graphical user interface (GUI) and includes the following sections:

- [GUI Main Areas, page 2-1](#)
- [Navigating in Cisco License Manager, page 2-14](#)
- [Time Displays, page 2-15](#)

## GUI Main Areas

Cisco License Manager simplifies license management by offering an intuitive GUI, alternate options for discovering devices, views of licensing information, and comprehensive online help. [Figure 2-1](#) The following illustration shows the main areas of the Cisco License Manager GUI.

**Figure 2-1 Main Areas of Cisco License Manager GUI**

<b>1</b>	Menu Bar	<b>4</b>	Content Area pane
<b>2</b>	Toolbar	<b>5</b>	Status area
<b>3</b>	Quick Links navigational pane		

Configuration options are available from either the menu bar or the toolbar and from the Quick Links navigational pane.

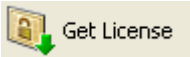


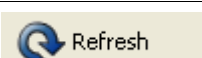
The following sections provide information about the various areas of the main GUI window:

- [Menu Bar and Toolbar, page 2-2](#)
- [Quick Links Navigational Pane, page 2-3](#)
- [Content Area Pane, page 2-4](#)
- [Status Area, page 2-14](#)

## Menu Bar and Toolbar

The menu bar and toolbar provide access to common tasks used within Cisco License Manager. All the tools on the toolbar can be accessed from the drop-down menus on the menu bar. [Table 2-1](#) provides details about the toolbar icons, tasks, and equivalent menu bar options.

**Table 2-1 Cisco License Manager Toolbar Descriptions**

Toolbar Icon	Task Performed	Equivalent Menu Bar Option
 Get License	Launches the Get License Assistant in a dialog box.	<b>License &gt; Get License</b>
 Manage Licenses	Opens the Manage Licenses information in the Content Area pane.	<b>Manage &gt; Manage Licenses</b>
 Manage Devices	Opens the Manage Devices information in the Content Area pane.	<b>Manage &gt; Manage Devices</b>
 Refresh	Refreshes all the screens in the Main Window.	<b>Edit &gt; Refresh</b>

## Quick Links Navigational Pane

The Quick Links navigational pane contains convenient action links to common procedures. The quick links are divided into four groups: Manage, Common Tasks, Troubleshoot, and Other. The following table provides details about the procedures available in the Quick Links navigational pane.

Quick Link	Action
<b>Overview</b>	
Getting Started	Displays the Getting Started information in the Content Area pane. Perform this task if you are new to the Cisco License Manager application and want to get started quickly on the basic tasks.
<b>Manage Quick Links</b>	
Authorization Keys (PAKs)	Displays the Manage Authorization Keys (PAKs) information in the Content Area pane. Perform this task if you want to manage the PAKs, view PAKs, or add a new PAK.
Licenses	Displays the Manage Licenses information in the Content Area pane. Perform this task if you want to manage the licenses, view licenses, or annotate and deploy licenses.
Devices	Displays the Manage Devices information in the Content Area pane. Perform this task if you want to manage the devices and device groups, view device properties, add devices, or edit devices.
Users	Displays the Manage Users information in the Content Area pane. Perform this task if you want to manage the users, view user information, add or delete users, or change user roles.  <b>Note</b> Only an administrator can add and delete users and change user roles.
<b>Common Tasks Quick Links</b>	
Get License	Launches the Get License Assistant. Use this assistant when you have a PAK and need to retrieve a license from the Cisco Product License Registration Portal.

Quick Link	Action
Deploy License	Displays the Deploy Licenses information in the Content Area pane. Perform this task if you have undeployed licenses in your system. This can happen if you have retrieved one or more licenses from the Cisco Product License Registration Portal but have not deployed those licenses.
Add Device	Opens the New Device dialog box, enabling you to add a new device. Also displays the Manage Devices information in the Content Area pane. Perform this task by entering the IP address if you want Cisco License Manager to learn about a device in your network. You can choose to enter the device information manually.
Discover Devices	Launches the Discover Device Assistant. Use this assistant when you want Cisco License Manager to search your network for all devices.
<b>Troubleshoot Quick Links</b>	
View Alerts	Displays the Alerts Monitor dialog box. Perform this task if you want to look at the alerts or notifications that have been sent out by the devices since you logged in.
View Audit Log	Displays the audit trail of all past activities.
Check Device Connection	Displays the Select Device dialog box. Perform this task if you want to check the connection for a particular device.
Check System Connections	Displays the Check System Connections dialog box. Perform this task if you want to check all available system connections.
<b>Other Quick Links</b>	
Transfer License	Launches the Transfer License Assistant. Use this assistant when you want to transfer licenses from one device to another.
Policy Licensing	Displays the Automatic Licensing information in the Content Area pane. Perform this task if you want to perform policy licensing, such as selecting stock-keeping units (SKUs) and devices to obtain and deploy licenses.
Reports	Displays the Report Manager dialog box. Perform this task if you want to generate and view HTML reports.
View Job Status	Displays the View Job Status dialog box. Perform this task if you want to view and manage server jobs (service requests). This task also allows you to view job status and to cancel jobs.

The quick links are enabled or disabled according to the user's role (ADMIN, INVENTORYMGR, PAKMGR, LICENSEMGR, and REPORTMGR).

## Content Area Pane

The Content Area pane is a dynamic work area in the GUI main window. This work area changes depending on the task you are performing. For example, when you want to manage the devices, the content area changes to a Manage Devices pane and includes device information.

The Content Area pane changes to the following when certain tasks are selected:



- [Manage PAKs Explorer, page 2-5](#)
- [Manage Licenses Explorer, page 2-7](#)
- [Manage Devices Explorer, page 2-9](#)
- [Manage Users Explorer, page 2-12](#)
- [Deploy Licences Explorer, page 2-12](#)
- [Policy Licensing Explorer, page 2-13](#)
- [Getting Started Explorer, page 2-14](#)

## Manage PAKs Explorer

The Manage Authorization Keys (PAKs) explorer appears in the Content Area pane when you click Manage PAKs in the Quick Links pane or you choose **Manage > Authorization Keys (PAKs)** from the menu bar.

Use the Manage PAKs explorer to select PAKs. You can

- Add, delete, and manage PAKs.
- View the PAK and SKU properties.
- Get licenses.
- Create, delete, and rename folders.
- Organize PAKs into folders.
- Select folders, PAKs, or SKUs.
- Refresh the contents of a folder.
- Assign access control to the PAKs.

The information in this window is presented in a tree form, where the first tree level is a list of folders. When this level is expanded, you see the PAKs in the folder and the associated SKUs under the PAKs.

Field	Description
Folder/PAK/SKU	Contains either a default or created folder, corresponding PAKs, and SKUs that correspond to each PAK.
Feature Names	Feature name of the SKU.
Ordered	Quantity of licenses ordered.
Available	Quantity of licenses available for obtainment.

We recommend that you create folders in which to store and view the PAK information. How you organize PAKs will depend on your needs. For example, you can organize PAKs by feature, region, or work site.

The Manage PAKs explorer contains a folder named Default. If you do not create other PAK folders, your data is stored in the Default folder.

## PAK Properties

The PAK/SKU Properties dialog box appears when you select a PAK in the Manage PAKs explorer pane, right-click, and choose **Properties**.

**Tip**

If you choose more than one PAK, you can scroll through the PAK properties by clicking the **Prev** and **Next** buttons in the PAKs Properties dialog box.

Use this window to change a PAK display name, display PAK information, and list the stock-keeping units (SKUs) associated with a PAK. The window is divided into three sections: PAK Properties, Download Information, and SKU Table.

The following table describes the fields of the PAK/SKU Properties dialog box:

Field	Description
<b>PAK Properties</b>	
PAK Display Name	Display name for the PAK. Can be named something unique to identify it in the Manage PAKs explorer.  For information about naming rules, see the <a href="#">“Understand Naming Rules” section on page 9-8</a> .
PAK Name	PAK identification that comes with each product. Can be viewed with any serial number lookup tool.
PAK Type	Type of PAK obtained from the Cisco Product License Registration Portal. Value could be SINGLE or PARTIAL.  If the PAK Type is single fulfillment (SF), all the SKUs for this PAK are grouped as one. For example, if you specify any SKU, all SKUs are selected. Therefore, if a license is obtained for a device, all the SKUs will be licensed to the device specified.  If the PAK Type is partial fulfillment (PF), each of the SKUs for this PAK are treated as individual licenses. For example, if you specify one of these SKUs, only that SKU is selected. Therefore, if a license is obtained for a device, that one SKU will be licensed to the device specified.
<b>Download Information</b>	
Date	Date and time that the PAK was last downloaded. Time comes from the server system.
Status	Status of last download. Value is always 0 (not polled).
By User	Username of the person who initiated the download.
<b>SKU Table</b>	
SKU Name	An identification, usually alphanumeric, of a particular product that allows it to be tracked for inventory purposes. Usually maps to license features.
Description	Cisco device description assigned by the Cisco Product License Registration Portal. Includes SKU name and type.
Type	Defines what type of PAK information is displayed. Value will always be Feature.
Ordered Qty	Number of licenses purchased.
Available Qty	Number of licenses available for deployment.
Feature Name	Cisco IOS feature description.

## Manage Licenses Explorer

The Manage Licenses explorer appears in the Content Area pane when you click Manage Licenses in the Quick Links pane or you choose **Manage > Manage Licenses** from the menu bar.

Use the Manage Licenses explorer to manage the operations for licenses and license lines. You can

- View the licenses by device or PAK.
- View the device properties.
- View the license properties.
- Get, resend, or poll licenses.
- Refresh the contents of a device group.
- Check device connectivity.
- View the PAK and SKU properties.
- Refresh the contents of a PAK folder.



### Note

You must have at least a License Management role to access this window.

The information in this window is presented in a tree form, where the first tree level is a list of folders. You can expand this level.

Field	Description
Group/Device	If you choose to View By Device, it shows the device group, devices, subdevices, license, and license lines. If you choose to View By PAK, it shows the folder, PAK, SKU, license, and license lines.
Deploy Status	Shows the deployment status of the license set and license lines (deployed or undeployed).
Type	Shows the license line type. It can be Evaluation, Extension, Permanent, Trial, Paid Subscription, Extension Subscription, Evaluation Subscription, or Unknown.
State	Shows the license line state, which can be Active In-use, Active Not In-use, Inactive, Allocated, Available, or Unknown.
Device Name	Device name for which the license line is obtained or deployed.
PAK Name	Shows any PAK that is associated with the license line.
SKU Name	Shows any SKU that is associated with the license line.

## License Properties

The License Properties dialog box appears when you select a license in the Manage Licenses explorer and either right-click and select **Properties** from the drop-down menu or click the **Properties** button at the bottom of the pane.

Use the License Properties dialog box to view license line or license set properties. You can

- View license line information.
- View license set information.

The Back and Next buttons are disabled when there is only a single license selected in the Manage Licenses pane.

### License Line Tab

The License Line tab displays read-only license line information.

Field	Description
<b>License Line Tab</b>	
Feature Name	Cisco IOS feature name.
Status	Shows the deployment status of the license set and license lines (deployed or undeployed).
State	Shows the state of the license line, which can be Active In-use, Active Not In-use, Inactive, Allocated, Available, or Unknown.
Type	Shows the license line type. It can be Evaluation, Extension, Permanent, Trial, Paid Subscription, Extension Subscription, Evaluation Subscription, and Unknown.
Time To Expire	Shows the number of days before this license expires.
Additional License Information	Provides additional license information related to the type, such as count and expiry information.
<b>General Tab</b>	
License Line ID	License line identifier.
Device UDI	Device unique identifier.
Device Name	Name of associated Device.
Feature Name	Cisco IOS feature description.
Feature Version	The version of the feature.
PAK	PAK identified with product or upgrade.
SKU Name	SKU identifier.
<b>Deploy Status Tab</b>	
Deploy Status	Shows the deployment status of the license set and license lines (deployed or undeployed).
Deploy By	Username of the person who deployed this license.
Deploy Date	Date deployed.
<b>Cisl Info Tab</b>	
Storage Name	The storage name in the device where the license line is stored. This data is directly retrieved from the device during license polling.
Storage Index	The storage index number in the device where the license line is stored. This data is directly retrieved from the device during license polling.
Annotation	User-defined text.
<b>Additional Info</b>	
Expire Information	Indicates how much time is left on the license. An Expire in/at field indicates how much time is left/expiration date.

Field	Description
Usage Information	Indicates the Total Usage and Usage Left.
Count Information	Indicates the Total Count and Usage Count.

### License Set Tab

The License Set tab displays read-only license set information.

Field	Description
<b>License Set Details</b>	
PAK	PAK identified with product or upgrade.
Device ID	Unique device identifier.
<b>Installation Information</b>	
Obtain Status	Current state (unknown, obtained).
Obtain By	Username of the person who obtained this license.
Obtain Date	Date obtained.
Deploy Status	Shows the deployment status of the license set and license lines (deployed, undeployed, or partially deployed).

## Manage Devices Explorer

The Manage Devices explorer appears in the Content Area pane when you click Manage Devices in the Quick Links pane or you choose **Manage > Manage Devices** from the menu bar.

Use the Manage Devices explorer to select devices for license management. You can

- Add, delete, or manage devices.
- View the device properties.
- Get, resend, or poll licenses.
- Create, delete, and rename device groups.
- Organize devices into device groups.
- Select device groups, devices, or subdevices.
- Assign access control to the devices.
- Refresh the contents of a device group.



#### Note

You must have at least an Administrator role to add and delete devices. You must have at least an Inventory Management role to edit devices.

The information in this window is presented in a tree form, where the first tree level is a list of device groups. When this level is expanded, you see the devices in the group and the associated subdevices.

Field	Description
Group/Device	Contains Device Group, whether default group or created group, and corresponding devices.
Hostname	Router hostname.
Reachable	A check icon is shown if the device is connected and reachable. An error icon is shown if the device is not connected.
Expired Licenses	A warning icon is shown to indicate that this device has expired licenses.

We recommend that you create device groups in which to store and view the device information. How you organize devices will depend on your needs.

The Manage Devices explorer contains a folder named Default. If you do not create other device group folders, your data is stored in the Default folder.

## Device Properties

The Device Properties dialog box appears when you select a device in the Manage Devices explorer, right-click and select **Properties** from the drop-down menu.

Use the Device Properties dialog box to view and change device properties. You can

- View device license information, such as licensable features and license status.
- View device connection information.
- Modify the device name, IP address, and hostname.
- View the latest polling information.



### Note

You must have a Inventory Management role to edit fields in this dialog box. If you do not, you can only view the information.

The Back and Next buttons are disabled when there is only a single device selected in the Device Records drop-down.

### License Tab

The License tab displays read-only license information. The License tab shows a tree table of the features associated with the device. All features of the same name are presented under the same tree node.

Field	Description
Feature	Cisco IOS feature name.
Status	State of license deployment (deployed or undeployed).
State	Shows the state of the license line, which can be Active In-use, Active Not In-used, Inactive, Allocated, Available, or Unknown.

Field	Description
Type	Shows the license line type. It can be Evaluation, Extension, Permanent, Trial, Paid Subscription, Extension Subscription, Evaluation Subscription, or Unknown.
Additional License Info.	Additional information about the license, such as Total Usage, etc.

#### Connection Information Tab

The Connection Information tab displays all the information necessary for the device connection. Some fields are read-only, and some fields can be edited by a user with at least an Inventory Management role.

Field	Description
<b>Connection Information</b>	
Device Name	User display name.
UDI	Cisco-wide identifier that contains product ID, serial number, and version.
IP Address	Device IP address.
Host name	Hostname of the device or router.
Device Model	Device model type.
Device State	The State of the device can be Connect, Cannot Authenticate, Cannot Connect, Cannot Ping or Unknown.
Software Version	Version of the device software.
<b>Polling Information</b>	
Polling Status	State of device polling.
Polling By	Username of the person who initiated the poll.
Polling Date	Date and time the device was last polled (reflects server time).

#### Connection Method Tab(s)

Each Connection Method Tab shows the transport information for the device. Devices may have up to 4 transports. A Connection Method Tab will be available for each transport configured when the device was added to the configuration.

The fields in this tab are read-only. The authentication information and the Connection Method cannot be changed.

<b>Connection(1 to 4)</b>	
Connection Method	Method used to communicate with the device (HTTP, HTTPS, Telnet, or SSH).
Device User Name	Enter your username based on the authentication method that is on your device.
Device Password	Enter your user password to be used for authentication.
Enable Password	Enter the enable password.
License Agent Version	License agent version that is used.

## Manage Users Explorer

The Manage Users explorer appears in the Content Area pane when you click Manage Users in the Quick Links pane or you choose **Manage > Manage Users** from the menu bar.

Use the Manage Users explorer to select users. You can

- Add and delete users.
- Edit a user's role.
- Edit user information, such as username, password, e-mail address, Cisco authentication, and license options.

**Note**

Only a user with an Administrator role can manage other users. All users are able to edit their own information.

The following information is presented in this window:

Field	Description
ID	Username.
Role	Role currently assigned to the user.

## Deploy Licences Explorer

The Deploy Licenses explorer appears in the Content Area pane when you click **Deploy License** in the Quick Links pane or you choose **License > Deploy License** from the menu bar.

Use the Deploy Licenses explorer to manage the operations for licenses and license lines. You can

- View the licenses by device or PAK.
- View the license properties.
- Get, resend, or poll licenses.
- Deploy licenses.
- Refresh the contents of a device group.
- Check device connectivity.
- Refresh the contents of a PAK folder.

**Note**

You must have at least a License Management role to access this window.

The information in this window is presented in a tree form, where the first tree level is a list of folders. You can expand this level.



Field	Description
Group/Device	Depending on the view selected, shows either device group, devices, subdevices, license, and license lines or the folder, PAK, SKU, license, and license lines.
Deploy Status	State of license deployment (deployed, undeployed, or pending).
Type	License line type. It can be permanent, evaluation, extension, or unknown.
State	State of the license line, which is either active or inactive.
Device Name	Name provided during device setup.
PAK Name	PAK identified with product or upgrade.
SKU Name	SKU identifier.
Show Deployed Licenses	Indicates whether deployed license lines are shown in the pane. If checked, the pane shows both deployed and undeployed license lines. If not checked, the pane shows only undeployed license lines.

## Policy Licensing Explorer

The Policy Licensing explorer appears in the Content Area pane when you click Policy Licensing in the Quick Links pane or you choose **License > Policy Licensing** from the menu bar.

Use the Policy Licensing explorer to manage the policies for devices. You can

- View existing policies.
- Add or delete policies.
- Run policies.



### Note

You must have at least a License Management role to access and edit this explorer.

The following information is presented in this explorer:

Field	Description
Policy Name	Name of the policy.
Description	User-provided description of the policy.
Author	Username of the person who created the policy.
Executed At	Timestamp indicating when the policy was last executed.
Executed By	Username of the person who executed the policy.
Job ID	ID of the job request. This can be cross-referenced with the jobs that appear in View Job Status.

These columns can be moved around and also sorted.

## Getting Started Explorer

The Getting Started explorer appears in the Content Area pane when you click Getting Started in the Quick Links pane or you choose **Help > Getting Started** from the menu bar.

Use the Getting Started explorer to get acquainted with Cisco License Manager, get help, or perform common tasks. You can

- Read online help.
- Watch a video to learn how Cisco License Manager works.
- Add a user.
- Add a device.
- Discover devices in your network.
- Edit your account.
- Create a Cisco.com account.



### Note

If you are running Cisco License Manager on the Solaris platform, the embedded HTML browser is not used. A Mozilla browser is used to view the online help and reports. Verify that the Mozilla browser is present on your path.

## Status Area

The status area of the main window provides a quick alert status. If there are critical or major alerts that you have not viewed, a New Alert icon appears in the bottom right corner of the main window. You can right-click the icon and clear the alert. If there are no critical or major alerts, a No New Alerts icon appears in the same corner.

To view further information about an alert, select **Troubleshoot > View Alerts** or click **View Alerts** in the Quick Links pane.



### Note

See the [“View Alerts” section on page 6-4](#) for further information about viewing alerts.

## Navigating in Cisco License Manager

To select objects in the Content Area pane:

Action	Result
Click the plus sign (+) or the minus sign (–) next to a folder or device group.	Depends on its current status (open or closed). Click the plus sign (+) to open the folder or device group and display its contents. Click the minus sign (–) to close the folder or device group.
Double-click a folder or other element (device or PAK).	Opens the folder or displays the element properties in the properties pane.

Action	Result
Right-click a folder or other element.	Displays menu options. May update the properties pane or display a new window, depending on the selection.
Click a column name.	Sorts column data.
Double-click an element.	Opens the element properties window.

## Time Displays

It is recommended that the first time you log in, you check the current local time on the server where Cisco License Manager resides. If you need to reset the time, see your server documentation for instructions. Cisco License Manager displays all date and time information using the server as its source on which it is installed.





## CHAPTER 3

# Preparing for Installation

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This chapter explains the preparations and requirements necessary for installation of Cisco License Manager and includes the following sections:

- [Installation Considerations, page 3-1](#)
- [System Requirements, page 3-2](#)
- [Required Preparations for Installation, page 3-4](#)

## Installation Considerations

Cisco License Manager is implemented using a client/server model. You can install the Cisco License Manager GUI using one of the two following configurations:

- Client and server packages installed on one host—This is the recommended and easiest configuration. Use this configuration if only one client workstation will be running most of time.
- Client and server packages installed on separate hosts—This configuration is used if multiple client workstations will be running simultaneously. In this configuration, installing the client and server packages on separate hosts provides better performance.



### Caution

Firewalls are not allowed between a Cisco License Manager server and a client workstation. If a firewall is present, it blocks the Java Remote Message Protocol (JRMP) and the nonprivileged ports higher than 1024 and causes the server and client workstation to be unable to communicate.

If there is firewall and you want to punch a hole in the firewall to allow the communication, complete the following:

- If the firewall is between Cisco License Manager server and Cisco License Product Registration Portal, you should permit HTTPS protocol in the firewall to allow the communication across the firewall.
- If the firewall is between Cisco License Manager server and Cisco devices, you should permit HTTP and HTTPS protocol on port 80 and 8080 in the firewall to allow the communication across the firewall. Also if you want the Cisco License Manager server to communicate with devices using the CLI as well, you should permit Telnet and ssh protocol in the firewall.

These steps are based on the assumption that you are using the default ports. If you are using different ports, use those values instead of the default port values.

Two installation packages are provided with Cisco License Manager:

- Server package—Zip file containing the Java JAR files (clm-server.jar and clm-common.jar) needed to start the Cisco License Manager services and run the utilities (backup, restore, import, export, setup, and server).
- Client package—Zip file containing the Java JAR files (clm-ui.jar and clm-common.jar) needed to run the Cisco License Manager client.

Both the client and server packages have Java Runtime Environment (JRE) 1.5 libraries.

## System Requirements

This section contains information about the following system requirements:

- [Server Requirements, page 3-2](#)
- [Client Workstation Requirements, page 3-3](#)
- [Network and Port Requirements, page 3-3](#)

## Server Requirements

The following table provides details of the recommended software and hardware requirements for the Cisco License Manager server. These recommended requirements support the maximum data capacity (30,000 Cisco devices in the network). Also use these requirements if you are installing the server and client on the same host.

**Table 3-1** *Server Recommended Software and Hardware Requirements*

Requirement Type	Requirement	Recommended Requirements at Maximum Capacity (30,000 Devices)
Processor	x86-based processor, 500-MHz minimum SPARC platform-based processor, 250-MHz minimum	Intel Pentium 4 3.2 GHz or equivalent CPU-based Sun UltraSPARC IIIi or equivalent CPU-based
Software	Operating system <ul style="list-style-type: none"><li>• Windows XP with Service Pack 2 or later</li><li>• Windows 2003 Server</li><li>• Solaris 10</li><li>• Linux: RedHat 5.0</li></ul>	Same
RAM	1 GB	2 GB
Disk	200 MB	10 GB

## Client Workstation Requirements

The following table provides details of the recommended software and hardware requirements for the Cisco License Manager client workstation.

**Table 3-2** *Client Workstation Recommended Software and Hardware Requirements*

Requirement Type	Minimum Requirements	Recommended Requirement
Processor	x86-based processor, 500-MHz minimum SPARC platform-based processor, 250-MHz minimum	Intel Pentium 4 3.2 GHz or equivalent CPU-based machine Sun UltraSPARC IIIi or equivalent CPU-based machine
Software	Operating system <ul style="list-style-type: none"><li>Windows XP with Service Pack 2 or later</li><li>Windows 2003 Server</li><li>Solaris 10</li><li>Linux: RedHat 5.0</li></ul>	Same as Minimum Requirements
RAM	512 MB	1 GB
Disk	100 MB	100 MB

## Network and Port Requirements

Your network must meet the following requirements before you begin deploying Cisco License Manager:

- Your Cisco device must be running a specific version of Cisco IOS software. Refer to *Release Notes for Cisco License Manager Release 2.1* for specific device support and Cisco IOS software version support information for Cisco License Manager.
- Your Cisco device must be configured to accept Cisco License Manager requests. For device notification to work successfully, the Cisco License Manager hostname must exist in the Domain Name System (DNS), or the device must have the Cisco License Manager hostname and IP address configured to receive messages.
- The computer running as the Cisco License Manager server must be able to use HTTP or HTTPS.
- Gateway devices between the Cisco License Manager server and other network devices must permit communication over the ports needed to support the specific request. Cisco License Manager uses default ports for events between Cisco devices and the Cisco License Manager server (port 80) and between the Cisco License Manager server and client (port 1099). If necessary, you can change these settings to a different port during the installation setup. See the [“Install Cisco License Manager Using the Installation GUI” section on page 4-2](#) for information about changing the port settings.

- If your installation configuration has the server on one machine and numerous clients on separate machines, each client machine must be able to communicate with the server.

## Required Preparations for Installation

Before you begin the installation of Cisco License Manager, complete the following checklist of installation preparation tasks:

Check	Preparation Task
	1. Verify that the person performing the installation has administrative privileges on the server host and client workstations.
	2. Set up a device certificate file. If you are using SSL <sup>1</sup> -enabled devices, you need a certificate file. For detailed information about your device certificate file, refer to your Cisco device documentation.
	3. Verify that you have a Cisco.com account. If you do not, you may register for one online at <a href="http://www.cisco.com">http://www.cisco.com</a> . This enables Cisco.com to authenticate you before providing you with a license.
	4. Confirm your simple mail transfer protocol (SMTP) e-mail server account.
	5. Verify that the Cisco License Manager hostname exists in the DNS or that the Cisco device has the Cisco License Manager hostname and IP address configured to receive messages. This helps ensure that device notification will work successfully.
	6. Determine which configuration you will implement with Cisco License Manager. For more information, see the “ <a href="#">Installation Considerations</a> ” section on page 3-1.
	7. Verify that there is a valid connection from the Cisco License Manager server to Cisco.com.
	8. Verify that you have network connectivity between the server and the client.
	9. Before installing Cisco License Manager on Windows XP/2003, verify that port 514 on the server is available. If it is not available, you will receive a warning during the installation and the syslog listener of Cisco License Manager will not be launched.

1. SSL = Secure Socket Layer



### Note

Perform these tasks before you proceed with the installation. If these tasks are not completed, you may encounter problems and have to reinstall or run the setup program.





## CHAPTER 4

# Installing Cisco License Manager


---

This chapter provides information about installing the Cisco License Manager graphical user interface (GUI) and contains the following information:

- [Download the Cisco License Manager Software Packages, page 4-1](#)
- [Install the Cisco License Manager Application, page 4-2](#)
- [Verify Your Installation, page 4-9](#)
- [Migrate to Cisco License Manager Release 2.1, page 4-9](#)
- [Uninstall Cisco License Manager, page 4-10](#)
- [Reinstall Cisco License Manager, page 4-11](#)

## Download the Cisco License Manager Software Packages

To download the software packages for Cisco License Manager, complete the following steps:

- 
- Step 1** From the appropriate server host or client workstation, access <http://www.cisco.com/go/clm> and click **Download Software**.
-  **Note** This software is also available in the Software Download area on Cisco.com. To access this area on Cisco.com, you must be a registered Cisco.com user.
- 
- Step 2** Click the zip file to download it to the appropriate host or workstation.
- Step 3** Verify the software and image information and click **Next**.
- Step 4** To accept the Software Download Rules and begin the software download, click **Accept**.
- Step 5** Download and save the Cisco License Manager zip file to your host or workstation. This zip file includes both the server and client package.
- Cisco License Manager is free. There is no charge to download, install, or use it.
- Step 6** Locate the saved file on the host or workstation and unzip the file to your local drive or disk.
-

# Install the Cisco License Manager Application

You can install the Cisco License Manager GUI application using one of the following methods:

- [Install Cisco License Manager Using the Installation GUI, page 4-2](#)
- [Install Cisco License Manager Using a CLI Script, page 4-7](#)

**Note**

For a Windows platform, only a user with an Administrator role can install the application. For a Solaris platform, only the root can install the application.

## Install Cisco License Manager Using the Installation GUI

To install Cisco License Manager on the host or workstation using the installation GUI, complete the following steps:

**Note**

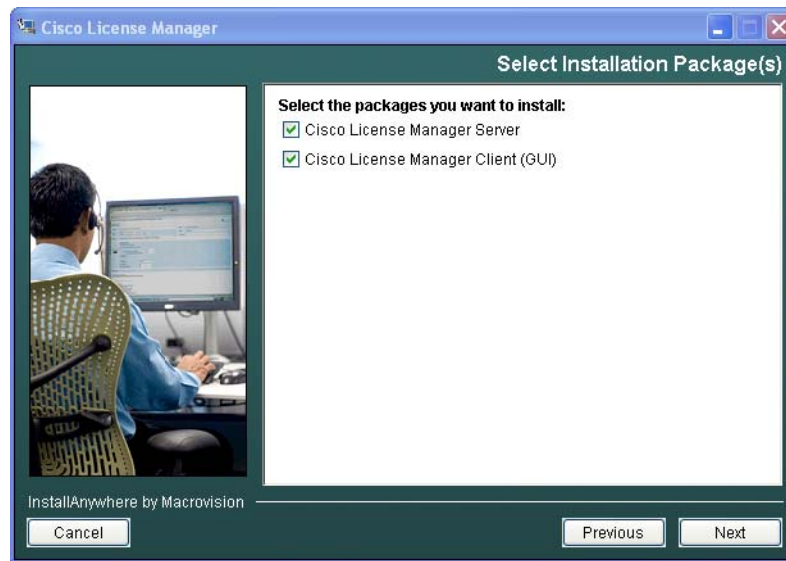
Before you begin the installation, complete the tasks in the [“Required Preparations for Installation” section on page 3-4](#).

- 
- Step 1** Navigate to the folder where you unzipped the Cisco License Manager file.
- Step 2** Double-click **clm\_installer.bat** to start the installation program. A welcome message appears.
- Step 3** Click **Next**.

**Note**

Throughout the installation, if you want to change something on a previous screen, click **Previous**. Click **Cancel** to stop the installation.

- Step 4** Review the license agreement and indicate your agreement by selecting the appropriate radio button. After you choose to accept the terms of the license agreement, click **Next**.
- Step 5** Select the options you want to install:
- a. To install both the server and client packages, click **Next**. All check boxes should be checked.
  - b. To install only the server package, uncheck Cisco License Manager Client and click **Next**. The Cisco License Manager Server check box should be the only one checked.
  - c. To install only the client package, uncheck Cisco License Manager Server and click **Next**. The Cisco License Manager Client check box should be the only one checked.

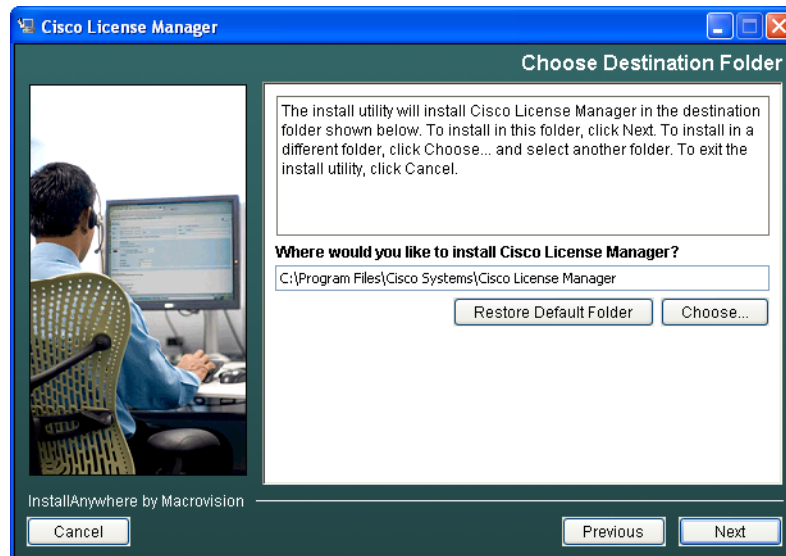


**Step 6** To choose the default installation directory, click **Next**.

To choose a different installation directory location, click **Choose** to navigate to the desired location. Select the appropriate directory and click **Next**.



**Note** If you made a mistake while choosing a different directory, click **Restore Default Folder** and the default installation directory is restored.

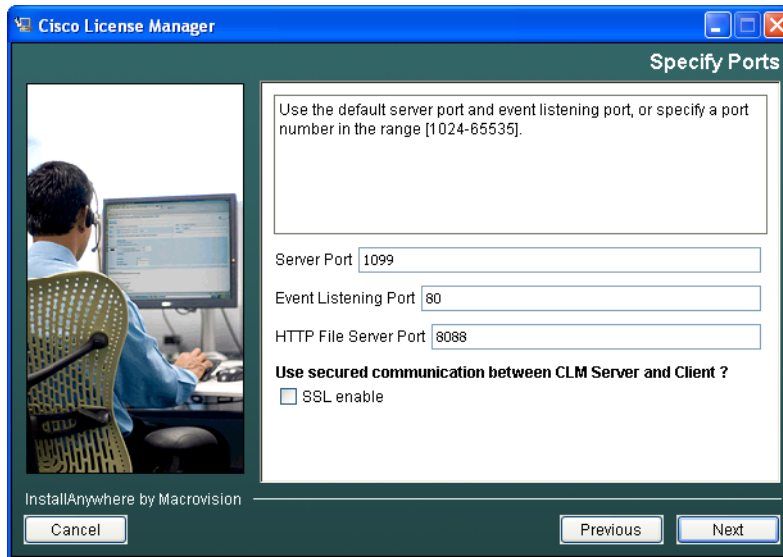


**Step 7** If you selected to install the client package only, proceed to [Step 12](#). If you are installing the server or the combined server and client configuration, continue with the next step.

**Step 8** If you want to change the server port, event listening port, and the HTTP file server port, enter port numbers within the range from 1024 to 65535. Enter nothing if you want to accept the default port settings.

To use secured communication between the Cisco License Manager server and the client, check **SSL enable**.

Click **Next**.

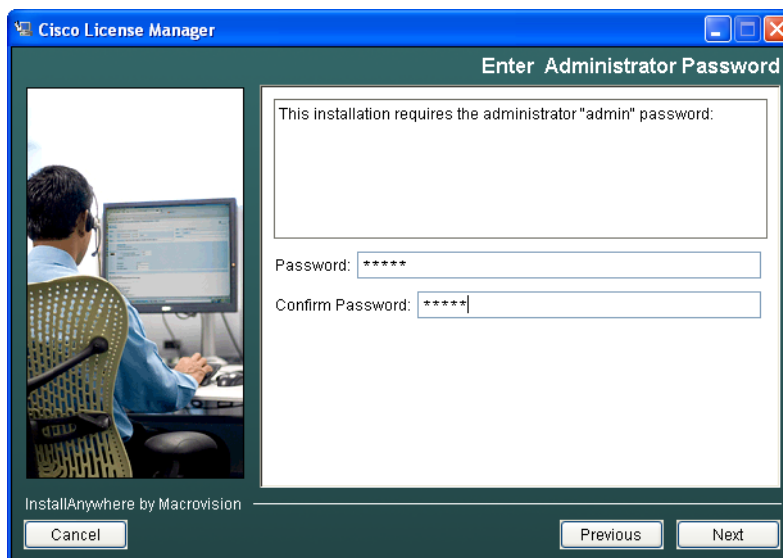


The server listens to the TCP/IP port to receive service requests from the client program and to receive events from the Cisco devices in the network.

**Step 9** If you have SSL-enabled Cisco devices and want Cisco License Manager to communicate with those devices, click **Yes**. Choose a certificate file for SSL authentication between Cisco License Manager and the Cisco devices by clicking **Choose**, navigating to the certificate file location, and clicking **Next**.

If you do not have SSL-enabled Cisco devices, click **No** and **Next**.

**Step 10** Enter the administrator password in the Password field. Reenter the password in the Confirm Password field. If these match, click **Next**.

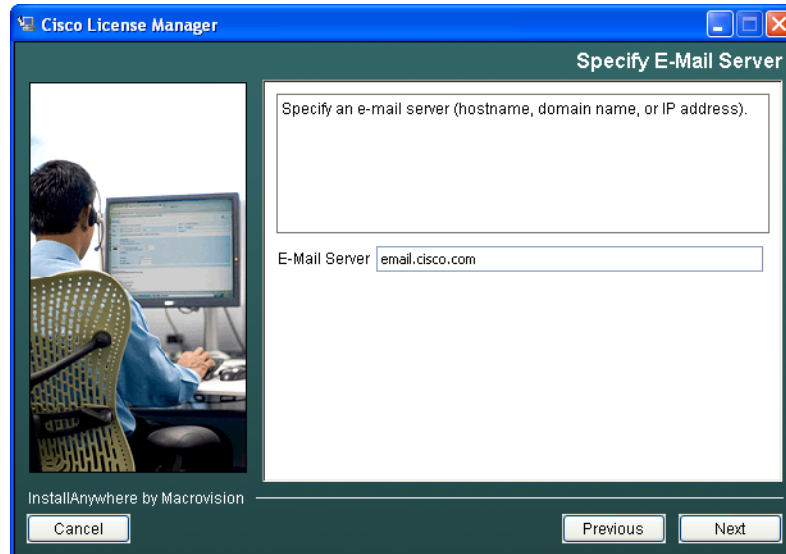


**Tip**

Remember to store your administrator password in a safe place. If you cannot remember your password, you will have to reinstall Cisco License Manager.

See the [“Understand Naming Rules” section on page 9-8](#) for password limitations and naming conventions.

- Step 11** Enter your SMTP e-mail server using either the IP address or the hostname and domain name, and click **Next**. Example: my\_mail\_server.domain.com.



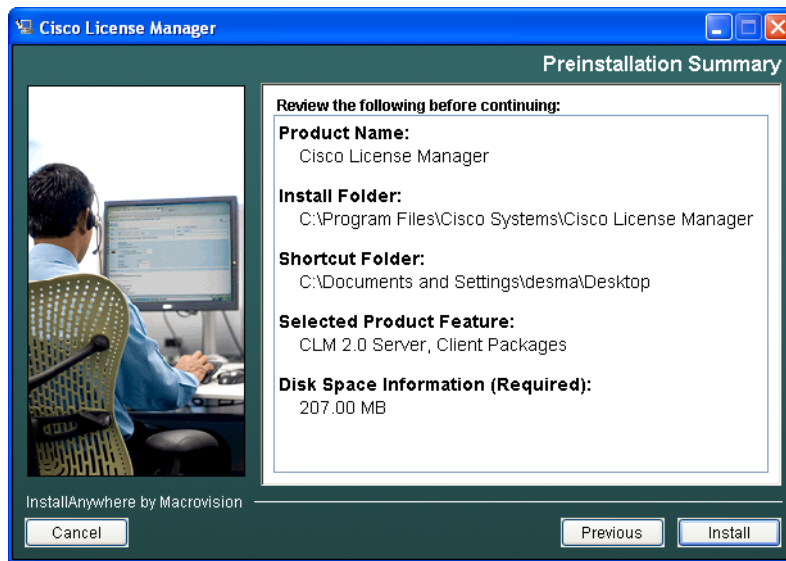
You may see a message stating that your e-mail server cannot be reached. If you want to continue, click **OK**. If you want to reenter the e-mail server, click **Previous** and reenter a server name.

**Tip**

If your e-mail server cannot be reached, try one of the following troubleshooting actions:

- Verify the spelling of the e-mail server name.
- Try to ping the e-mail server using another program to see if it is reachable.
- Skip this step and update the e-mail server after the installation. See the [“Install the Cisco License Manager Application” section on page 4-2](#)

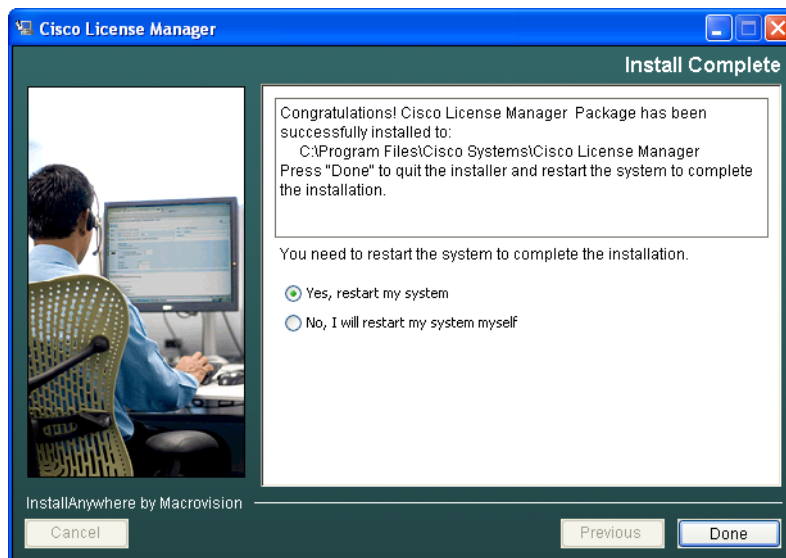
- Step 12** Review the preinstallation summary information and click **Install** to confirm the installation selections you have made. If you need to reenter install information, click **Previous**.



**Step 13** Select one of the options:

- Click **Yes, restart my system** to restart the system and complete the installation.
- Click **No, I will restart my system myself** if you want to restart later.

In order to complete the installation, you need to restart your system.



**Step 14** Click **Done** to complete the installation and exit the program.

## Install Cisco License Manager Using a CLI Script

You can install Cisco License Manager using a CLI script. You can use the program defaults in the script, or you can customize the installation script as necessary. This is often called a silent installation. To install Cisco License Manager on the host or workstation using a CLI script, complete the following steps:



### Note

Before you begin the installation, complete the tasks in the [“Required Preparations for Installation” section on page 3-4](#).

**Step 1** Navigate to the folder where you unzipped the Cisco License Manager file.

**Step 2** Locate the **install.properties** file. This file includes program defaults (as described in the table below). To customize any of these defaults, you must edit the file and then save a copy to the host or workstation.



### Note

It is not necessary to rename the file, but be sure to keep the \*.properties extension if you do so.

**Step 3** At the command line, enter

```
clm_installer.bat -f c:\directory1\directory2\custom_installer_name.properties
```

where *custom\_installername.properties* is the name of the customized install.properties file with the absolute path if the file is not located in the same directory as the clm\_installer.bat file. If you are using the program defaults in the file, use the default name.

The installation runs using your customized properties file. When it is complete, a message appears.

### Installation Properties File Defaults and Descriptions

The installation properties file includes program defaults, as described in following table. To customize any of these values, you must edit the file and then perform the installation after replacing the defaults with your specified values.

Parameter	Description	Default
INSTALLER_UI	Sets the mode for installation.	Silent
USER_INSTALL_DIR	Directory in which to install Cisco License Manager. <sup>1</sup> The root folder path must be smaller than 180 bytes or an error message is returned.	C:\Program Files\Cisco Systems\Cisco License Manager
isServerPackageSelected	Selects the server package to install: <ul style="list-style-type: none"> <li>1 = Install server package</li> <li>0 = Do not install server package</li> </ul> Only 1 and 0 are accepted by the installation tool.	1 (equivalent to true)

Parameter	Description	Default
isClientPackageSelected	Selects the client package to install: <ul style="list-style-type: none"> <li>1 = Install client package</li> <li>0 = Do not install client package</li> </ul> Only 1 and 0 are accepted by the installation tool.	1 (equivalent to true)
SERVER_PORT	Sets the port that Cisco License Manager uses. Valid port value range is from 1024 to 65535.	1024
EVENT_PORT	Sets the port on which to listen to events. Valid port value range is from 1024 to 65535.	80
DEVICE_K9_IMAGE_RESULT	Sets whether your SSL-enabled Cisco devices are to allowed to communicate with Cisco License Manager. Values are yes and no.	No
DEVICE_CERTIFICATE_FOLDER	Navigates to the folder in which the device certificate is stored. <sup>1</sup>	C:\
DEVICE_CERTIFICATE_FILE	Certificate file for all device authentication.	device.cer
ADMIN_PASSWORD	Sets the administrative password.	password
RE_ADMIN_PASSWORD	Confirms the administrative password.	password
EMAIL_RESULT	Sets the SMTP e-mail server hostname or IP address to use for activity.	No default
HTTP_FILE_SERVER_PORT	Sets the port for file transfer between Cisco License Manager and the device.	8080
CLM_SSL_ENABLE	<ul style="list-style-type: none"> <li>1 = Enable SSL between the Cisco License Manager server and the GUI client.</li> <li>0 = Disable SSL between the Cisco License Manager server and the GUI client.</li> </ul>	0 (disable SSL)

1. Use two backslashes ( \ ) as the file path separator instead of using only a single backslash, \, when entering the absolute file path in USER\_INSTALL\_DIR and DEVICE\_CERTIFICATE\_FOLDER entries. For example: C:\Program Files\Cisco Systems\Cisco License Manager

### Installation Properties File Example

The following is an example of an install.properties file.

```

INSTALLER_UI=silent
USER_INSTALL_DIR=C:\\Program files\\Cisco Systems\\Cisco License Manager
isServerPackageSelected=0
isClientPackageSelected=1
SERVER_PORT=1024
EVENT_PORT=8888
DEVICE_K9_IMAGE_RESULT=Yes
DEVICE_CERTIFICATE_FOLDER=C:\\certificate
DEVICE_CERTIFICATE_FILE=device.cer
ADMIN_PASSWORD=adminxyz
RE_ADMIN_PASSWORD=adminxyz
EMAIL_RESULT=myemail_server.xyz.com
HTTP_FILE_SERVER_PORT=8080
CLM_SSL_ENABLE=off

```



## Verify Your Installation

After your installation is complete, start Cisco License Manager to verify that it has been installed successfully. To verify your installation, complete the following steps:

- 
- Step 1** Click the task bar **Start** menu and select **Programs > Cisco Systems > Cisco License Manager** to start Cisco License Manager client.
- The application opens and displays the login window.
- Step 2** Log in using the administrator password you provided during installation.
- For details on logging in, see the “[Log In](#)” section on page 5-6. If you cannot log in, see the “[Troubleshooting Tips](#)” section on page A-VII for some helpful information.
- Step 3** Continue to [Chapter 5, “Getting Started Using Cisco License Manager”](#) for details on what to do before you begin adding users or devices.
- 

## Migrate to Cisco License Manager Release 2.1

To migrate from Cisco License Manager to Release 2.0 to Cisco License Manager to Release 2.1, complete the following steps:

- 
- Step 1** Download the Cisco License Manager software packages, as described in the “[Download the Cisco License Manager Software Packages](#)” section on page 4-1, and copy it to the system that currently has Release 2.0 installed.
- Step 2** Create a copy of the clm20\_db\_backup.zip file from the downloaded Cisco License Manager software package and move the copy to the %CLM\_HOME%\ directory.
- Step 3** Unzip the clm20\_db\_backup.zip file.
- Step 4** Go to %CLM\_HOME%\clm20\_db\_backup directory and run the following CLI command:

```
runDBExport.bat <adminpassword> <db_backup_directory_path>
```

where <adminpassword> is the administrator's password and <db\_backup\_directory\_path> is the output directory to be created on the system. This file stores Cisco License Manager Release 2.0 version data file, which will be used as the input file for the Cisco License Manager Release migration utility (clm\_db\_migrate.bat).



**Note** Device Login Names, Device Login Passwords, Confirm Passwords for each method, and Enable Passwords will not be migrated from CLM 2.0 to CLM 2.1.

---

- Step 5** Once this process is complete, close all related Cisco License Manager windows.
- Step 6** Stop the Cisco License Manager server by executing the %CLM\_HOME%\bin\clm\_stop.bat <server\_port> command or by using the **Stop CLM** icon in Release 2.0.
- Step 7** Navigate to the folder where you unzipped the Cisco License Manager file.
- Step 8** Double-click **clm\_installer.bat** to start the migration process. A dialog box appears notifying you that you are migrating from Cisco License Manager Release 2.0 to Release 2.1.

**Step 9** Click **Next**.



**Note** Throughout the migration, if you want to change something on a previous screen, click **Previous**. Click **Cancel** to stop the migration.

**Step 10** In order to continue with the migration, enter the administrator's password and click **Next**.

**Step 11** Click **Install**. A dialog box will display all of the components being installed.

**Step 12** Select one of the options:

- Click **Yes, restart my system** to restart the system and complete the migration.
- Click **No, I will restart my system myself** if you want to restart later.

In order to complete the migration, you need to restart your system.

**Step 13** Click **Done** to complete the installation which exits the program. If you chose to restart your system, it will restart at this time.

**Step 14** To migrate the data from the previous release, open a command window and run the following command:

```
CLM_HOME_Directory_Home\bin\clm_db_migrate.bat <adminpassword>
<db_backup_directory_path>
```



**Note** All utility commands (**clm\_db\_migrate.bat**, **clm\_import.bat**, **clm\_export.bat**, **clm\_backup.bat**, **clm\_restore.bat**, etc) must be run from the CLM\_HOME\bin directory.

**Step 15** Log in to Cisco License Manager and poll licenses for all devices. This action updates both the license and device status for all the devices.

## Uninstall Cisco License Manager

To uninstall Cisco License Manager, complete the following steps:



**Tip** We recommend that you back up Cisco License Manager before uninstalling or upgrading.



**Note** For a Windows platform, only a user with an Administrator role can uninstall the application. For a Solaris platform, only the root can uninstall the application.

**Step 1** Close all Cisco License Manager command and GUI windows and stop the Cisco License Manager server.



**Caution** If you do not close these windows, the Cisco License Manager package will not uninstall completely. Any files that are referenced by open windows are not removed during the uninstallation.

- Step 2** From a Windows platform, select **Start > All Programs > Cisco License Manager > Uninstall**.
- Step 3** From a Solaris platform, run `$CLM_HOME/bin/runUninstallCiscoLicenseManager`.
- 

## Reinstall Cisco License Manager

If you want to reinstall Cisco License Manager, you must uninstall the current application first and restart your system to ensure that any Cisco License Manager files left after the uninstallation have been removed.

**Tip**

---

We recommend that you back up Cisco License Manager before uninstalling or upgrading.

---

To reinstall Cisco License Manager, complete the following steps:

- 
- Step 1** Run uninstallation if you have not already done so. See the [“Uninstall Cisco License Manager” section on page 4-10](#).
- Step 2** Restart your computer.
- Step 3** Install Cisco License Manager. See the [“Install the Cisco License Manager Application” section on page 4-2](#) for installation procedures.
-





## CHAPTER 5

# Getting Started Using Cisco License Manager

---

This chapter provides information about the initial setup of Cisco License Manager and an overview of recommended steps to quickly add users and devices and obtain and deploy licenses. This chapter contains the following sections:

- [Before You Begin, page 5-1](#)
- [Getting Started Flowcharts, page 5-2](#)
- [Getting Started Checklist, page 5-3](#)
- [Configure Your Cisco Devices, page 5-4](#)
- [Log In, page 5-6](#)

## Before You Begin

Before you use Cisco License Manager to acquire, deploy, and centrally track and manage your Cisco licenses, you should do the following:

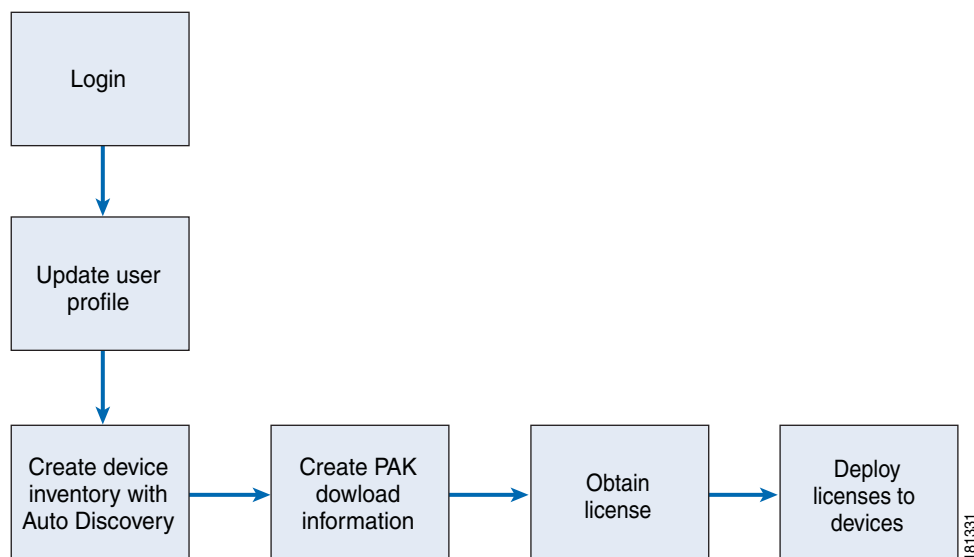
1. Verify that you have completed the checklist in the [“Required Preparations for Installation” section on page 3-4](#).
2. Install and configure Cisco License Manager.
3. Verify that your e-mail address and Cisco.com account username and password are correct in your user profile. This information is used to receive e-mails from Cisco.com. See the [“Edit a User’s Profile Information” section on page 6-2](#) for detailed instructions.
4. Configure your Cisco devices to allow Cisco License Manager to manage Cisco licenses using the **ip http server**, **license agent listener**, and **ip http authentication** CLI commands for enabling or disabling device authorization. For a summary of these commands, see [“Configure Your Cisco Device to Authenticate Cisco License Manager” section on page 5-4](#). For detailed documentation on how to enable the Cisco License Agent on your device, see your Cisco IOS or device documentation. If license agent is not enabled on the devices, Cisco License Manager can still manage licenses using Telnet or ssh.
5. If you are running Cisco License Manager on the Solaris platform, the embedded HTML browser is not used. A Mozilla browser is used to view the online help and reports. Verify that the Mozilla browser is present on your path.

# Getting Started Flowcharts

There are many features that make Cisco License Manager an easy tool for planning and managing your device licenses.

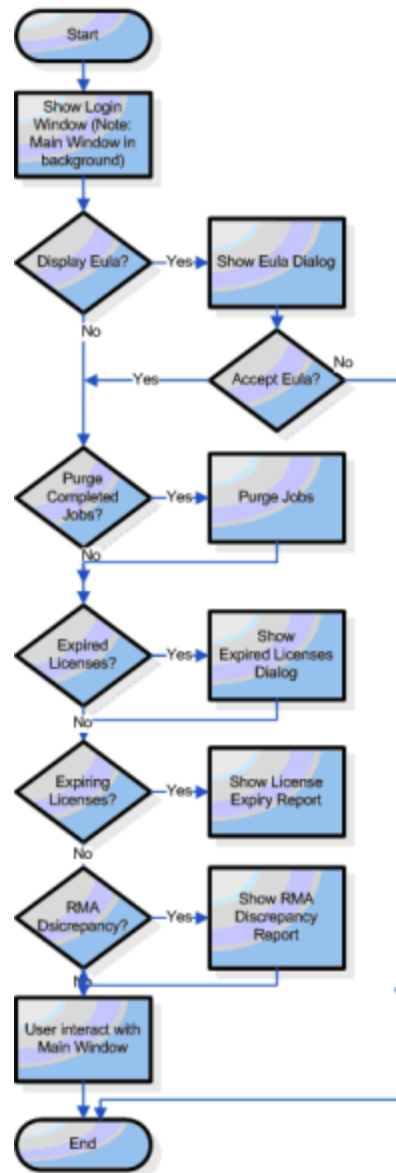
If you prefer to skip some optional steps so that you can use the product quickly, see [Figure 5-1](#). If you follow this flowchart, you will not be able to customize group or folder names. If you use all the Cisco License Manager features, see [Figure 5-2](#) for a flowchart that includes creating customized group and device folder names.

**Figure 5-1**      **Quick Start Flowchart**



To find out how to get started, see the flowchart in [Figure 5-2](#). This flowchart references all the features of Cisco License Manager. Note that not all tasks that appear in the flowchart are required; for example, creating device groups is optional.

Figure 5-2 Getting Started Flowchart



## Getting Started Checklist

Use the following sequence of tasks to learn how to use Cisco License Manager. This is a quick-start section designed to allow you to add a device quickly and deploy it. If you want to group your devices and PAKs, you may want to plan and set up your device groups and PAK folders first.

Check	Task
	1. <a href="#">Before You Begin, page 5-1</a>
	2. <a href="#">Log In, page 5-6</a>
	3. <a href="#">Add Cisco Devices to Your Inventory, page 7-1</a>
	4. <a href="#">Update Device Information, page 7-14</a>
	5. <a href="#">Add a PAK, page 7-17</a>
	6. <a href="#">Download PAK Information, page 7-23</a>
	7. <a href="#">Get a License Using License Assistant, page 8-2</a>
	8. <a href="#">View License Properties, page 8-13</a>
	9. <a href="#">Deploy a License, page 8-6</a>

## Configure Your Cisco Devices

The following sections will help determine how to configure your Cisco devices to work with Cisco License Manager:

- [Configure Your Cisco Device to Authenticate Cisco License Manager, page 5-4](#)
- [Configure Your Device License Agent, page 5-5](#)
- [Authentication Methods, page 5-5](#)

## Configure Your Cisco Device to Authenticate Cisco License Manager

Cisco License Manager communicates with devices using HTTP/HTTPS, Telnet, or ssh (ssh v2 only). If Telnet or ssh is chosen as the connection method, use the **logging <server IP address>** command to configure the Cisco devices for direct notification to Cisco License Manager.

If you are using HTTP/HTTPS as your connection method, you must enable your device to recognize Cisco License Manager and enable Cisco License Manager to authenticate your device. These optional steps are necessary only if you want to use authentication on your device.

1. Configure the device to always use HTTP to authenticate incoming requests using the **ip http server** command. This is to enable the HTTP server on the Cisco IOS software, which is required by the License Agent.
2. Configure the License Agent using the **license agent listener http plaintext /lic-agent authenticate** command. (See [“Configure Your Device License Agent” section on page 5-5.](#))
3. Specify a particular authentication method for the HTTP server to use using the **ip http authentication** command.

For detailed information about these commands, see your Cisco IOS software documentation. For a description of the authentication methods, see [“Authentication Methods” section on page 5-5.](#)



## Configure Your Device License Agent

To receive license-related notifications and alerts from your device, enter the following at the command line prompt:

```
license agent notify http://userpc01:80/clm/servlet/notify_URL_in_propsfile user password
```

The URL should correspond to what is set up in the target Cisco License Manager server. You can copy the value from NOTIFY\_URL in the clm.properties file and replace the hostname portion of the URL with the Cisco License Manager server IP address.

## Authentication Methods

There are three methods by which you can authenticate your Cisco devices:

- Enable password (enable)
- Local username and password (local)
- Authentication, authorization, and accounting (AAA) network security services

The **ip http authentication** command enables you to specify a particular authentication method for HTTP server users. The HTTP server uses the enable password method to authenticate a user at privilege level 15. Using the **ip http authentication** command, you can specify enable, local, or AAA HTTP server user authentication.

For example:

```
ip http authentication ?
```

where ? is one of the following:

Method	Description	Notes
aaa	Use AAA access control methods.	If the device is set up to use AAA to authenticate an HTTP request, enter the AAA username and password.
enable	Use enable passwords.	If the device is set up to use enable password to authenticate an HTTP request, you can leave the username blank and enter the enable password.
local	Use local username and passwords.	If the device is set up to use local username and password to authenticate an HTTP request, enter the local username and password.

The corresponding username and password pairs that you configure on a router are used during device creation or discovery in Cisco License Manager, and the information is placed in the inventory. You can also add usernames and passwords in the Edit Password List window when you use the Discover Device feature.

# Log In

After the installation setup, only the administrator can log into Cisco License Manager using the administrator username and password specified during setup. Once logged in to Cisco License Manager, the administrator can create other user accounts. To set up access for other users, see [“Manage Users” section on page 6-1](#).



Tip

To set up the administrator’s profile or access for other users, see [“Edit a User’s Profile Information” section on page 6-2](#).



Note

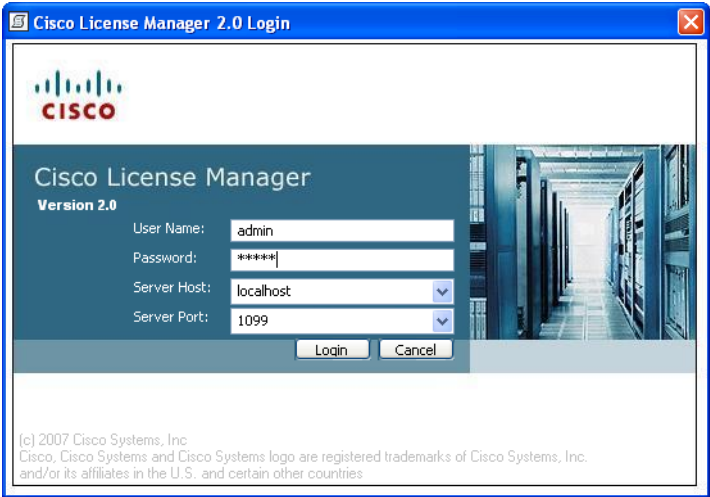
The GUI supports up to 5 simultaneous users. Cisco License Manager times out after 60 minutes.

To log into Cisco License Manager, complete the following steps:

- Step 1

To log into the GUI in the Windows platform, go to **Start > All Programs > Cisco License Manager > CLM Client**. To log into the GUI in the Solaris platform, launch the `$CLM_HOME/bin/clm_ui.sh` command.

The Login window appears.



- Step 2

Enter information in the following fields and click **OK**.

Field	Description
User Name	User’s login name.
Password	User’s password.
Server Host	IP address or fully qualified name of server. Can be left blank if client is working from server host. Default is localhost.
Server Port	Port where CLM Server can be accessed. Port default is set to 1099. Port is set during setup.

Once your username and password are accepted, the Cisco License Manager end-user license agreement (EULA) for the Cisco devices appears.



**Note** If you are the administrator and need to change the port after installation, run the **\$CISCO\_LM\_HOME\bin\runSetup.bat** program. If you are an operator, contact your administrator for details.

**Step 3** Select your acceptance or nonacceptance of the devices license agreement. If you choose not to accept the license agreement, the Cisco License Manager application terminates. If you choose “I agree,” you will be prompted with the EULA for Device window each time you log in to Cisco License Manager.

Once you have accepted the license agreement, the Cisco License Manager main window appears.



**Note** Before you can receive license information from Cisco.com, you must add the required contact information to the administrator user profile. Go to **Tools > User Manager**, and see [“Manage Users” section on page 6-1](#) for detailed instructions.

**Step 4** When you log in, a Purge Jobs dialog box may appear. If you want to purge all completed jobs from the View Job Status dialog box, click **Yes**. Once purged, these jobs cannot be retrieved.





## CHAPTER 6

# Performing Administrative Tasks

---

This chapter provides information about administrative tasks and includes the following sections:

- [Manage Users, page 6-1](#)
- [View Alerts, page 6-4](#)
- [View Job Status, page 6-6](#)
- [View Logs, page 6-8](#)
- [View Errors, page 6-9](#)
- [Use Report Manager, page 6-10](#)
- [Set Cisco License Manager Options, page 6-15](#)

## Manage Users

The user management portion of Cisco License Manager controls the authentication and authorization of its functions.

The default user (administrator) is created during the installation setup. Only a user with an Administrator role can add, delete, and edit other users. The administrator (admin) cannot be deleted.

This section provides the following information about user management:

- [Add a New User, page 6-1](#)
- [Edit a User's Profile Information, page 6-2](#)
- [Edit a User's Role, page 6-4](#)
- [Delete a User, page 6-4](#)

## Add a New User

A user who has an Administrator role can add new user accounts. For valid characters and guidelines for entering data, see [“Understand Naming Rules” section on page 9-8](#).



### Note

Only a user with an Administrator role can add or delete a user. If you do not have an Administrator role, you can edit your own information but not another user's information.

To add a new user, complete the following steps:

- Step 1** Select **Manage > Manage Users** or click **Users** in the Quick Links pane.  
The Manage Users explorer appears in the Content Area pane.
- Step 2** Click **New User**.  
The New User dialog box appears.
- Step 3** Add any of the following information and click **OK**.

Field	Description
User ID	Username. <b>Note</b> Username and User ID are the same.
Password	Cisco License Manager password.
Confirm Password	Confirm Cisco License Manager password.
Assign Role	Choose one of the following roles: <ul style="list-style-type: none"><li>• Administrator</li><li>• Inventory Management</li><li>• PAK Management</li><li>• License Management</li><li>• Report Management</li></ul>

## Edit a User's Profile Information

You can change your own user information, including your user password for Cisco License Manager and for your Cisco login. If you are a user with an administrator role, you can edit other users' profile as well. If you do not have an Administrator role, you cannot change other user users' information. For valid characters and guidelines for entering data, see [“Understand Naming Rules” section on page 9-8](#).



### Tip

Before any user can receive license information, the user must register and have a valid Cisco.com user ID. Each user *must* add his or her Cisco.com user ID, password, and e-mail address to his or her user profile for Cisco License Manager to work properly.



### Note

Only a user with an Administrator role can add or delete a user. If you do not have an Administrator role, you can edit your own information but not another user's information.

To add information to an existing user profile, complete the following steps:

- Step 1** Select **Manage > Manage Users** or click **Users** in the Quick Links pane.  
The Manage Users explorer appears in the Content Area pane.
- Step 2** Select the appropriate user and click **Edit Info**.  
The Edit User Information dialog box appears.
- Step 3** Change any of the following information and click **OK**.

Field	Description
<b>User Information</b>	
User ID	Username. <b>Note</b> This field cannot be changed. Username and User ID are the same.
Password	Cisco License Manager password.
Confirm Password	Confirm Cisco License Manager password.
First Name	User's first name (optional).
Last Name	User's last name (optional).
Company Name	User's company name (optional).
<b>Email Notification</b>	
Email Address	Valid e-mail address used for Cisco.com access.
Notification by Email	Allow e-mail from Cisco License Manager to user's e-mail (optional).
<b>Cisco Authentication</b>	
Cisco Username	Valid Cisco.com username.
Cisco Password	Cisco user password.
Confirm Cisco Password	Confirm Cisco user password.
<b>License Options</b>	
Show Expired/Expiring Licenses	Will display the expired and expiring licenses for the specified user upon user logon.
Days to Expire	Specifies the time in days of the licenses for the server to return. The server will return those licenses set to expire before the time specified.

## Edit a User's Role

A user with an Administrator role can edit another user's role. For more information see the [“Role-Based User Management” section on page 1-5](#).

**Note**

If a user's role is changed while the user is logged in to Cisco License Manager, the system logs the user out of Cisco License Manager.

To edit a user's role, complete the following steps:

- 
- Step 1** Select **Manage > Manage Users** or click **Users** in the Quick Links pane.  
The Manage Users explorer appears in the Content Area pane.
- Step 2** Select the appropriate user and click **Edit Role**. The Edit User Role dialog box appears.
- Step 3** Select the new role to be assigned to the user from the options and click **OK**.
- 

## Delete a User

A user with an Administrator role can delete user accounts.

**Note**

Only a user with an Administrator role can add or delete a user. If you do not have an Administrator role, you can edit your own information but not another user's information. If there is only one user, it must have an Administrator role.

To delete a user, complete the following steps:

- 
- Step 1** Select **Manage > Manage Users** or click **Users** in the Quick Links pane.  
The Manage Users explorer appears in the Content Area pane.
- Step 2** Select the appropriate user and click **Delete User**.  
The Delete User dialog box appears.
- Step 3** To confirm your user deletion, click **Yes**. If you do not want to delete the user, click **No**.
- 

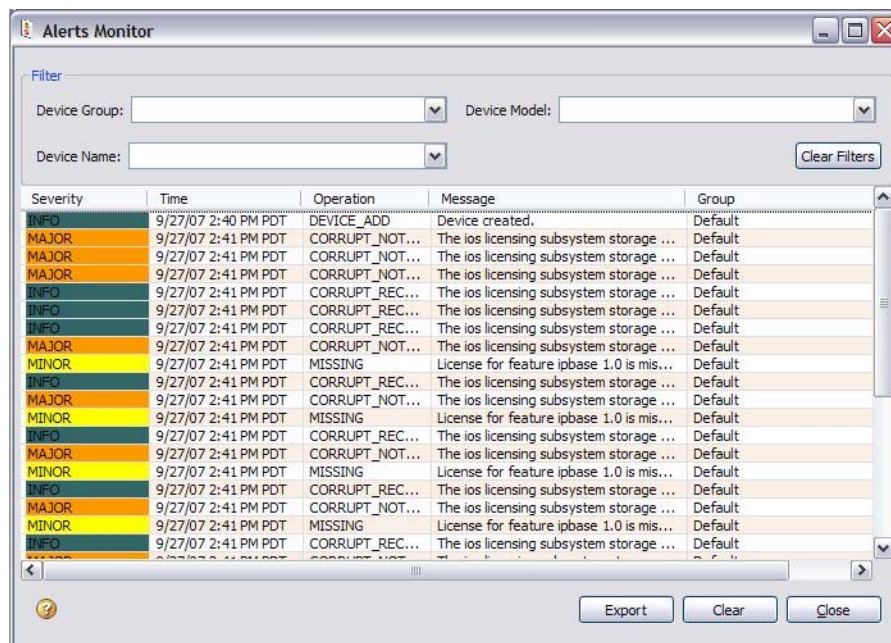
## View Alerts

View the notifications (alerts) that your Cisco devices send about license information. For example, an alert is sent if a corrupt license is identified. The alerts that appear in the Alerts Monitor dialog box are the ones that have been received during your current login session.



To view, filter, export or clear alerts, complete the following steps:

- Step 1** Select **Troubleshoot > View Alerts** or click **View Alerts** in the Quick Links pane. The Alerts Monitor dialog box appears.



The following table provides details about the Alerts Monitor dialog box:

Field	Description
<b>Filter</b>	
Device Group	Choose the appropriate device group for filter.
Device Name	Choose the appropriate device name for filter.
Device Model	Choose the appropriate device model for filter.
Clear Filters	Click the button to refresh the filters.
<b>Alerts Monitor Table</b>	
Severity	Color-coded with the severity: <ul style="list-style-type: none"> <li>• Critical—Red</li> <li>• Major—Orange</li> <li>• Minor—Yellow</li> <li>• Warning—Teal</li> <li>• Informational—Green</li> </ul>
Time	Date and time at which the alert occurred.
Operation	Unicast message.
Message	Information on system status.
Group	Device group.

- Step 2** To filter the alerts, choose the appropriate device group, device name, or device model from the drop-down menus. You can choose just one way to filter, or you can choose something from each drop-down menu. The contents of these filters populate based on information present in your Cisco License Manager database. For example, you will only be allowed to filter on device names that are currently in your inventory.




---

**Note** To clear the filters and restart your filtering process, click **Clear Filters**.

---

- Step 3** To export the alerts to a .csv file, click **Export**, browse to the location where you want to save the file and click **Save**.

- Step 4** To clear the alert flag from the main window status bar, click **Clear**.




---

**Note** Clicking **Clear** will not clear the individual alerts. It simply classifies the alerts as being read and changes the alerts icon back to **No new Alerts**.

---

- Step 5** To close the dialog box, click **Close**.
- 

## View Job Status

The Cisco License Manager server maintains a list of server jobs. For each server job, the job ID, request comments string, creation date and time, status of the request (such as complete or not complete), and returned status are shown. The returned status provides the error code and error message for each item in the request. This view is updated periodically.

When a job is pending, you can view the progress status.

The asynchronous server requests are discover device, poll license, download PAK information, obtain license, deploy licenses, annotate licenses, and execute policies.

To view the jobs, complete the following steps:

- 
- Step 1** Select **Manage > View Job Status** or click **View Job Status** in the Quick Links pane.

The View Job Status dialog box appears.

**View Job Status**

Abort Delete Refresh Check License Portal

Creation Time	Job ID	User	Can Retry	Job Status	% Compl...	Request Comment	Function Name
<input type="checkbox"/> Mon Sep 10 17:13:46 CDT 2007	reqId-118946242692373	admin		Complete-Success	100		asyncDownloadPAKInfo
<input type="checkbox"/> Mon Sep 10 17:14:36 CDT 2007	reqId-118946247622079	admin		Complete-Success	100		asyncObtainLicense
<input type="checkbox"/> Mon Sep 10 17:48:37 CDT 2007	reqId-118946451742681	admin		Complete-Success	100		asyncPollDeviceLicenseI...

**ID Status**


Status Code:  Job ID:

Status Message:

**ID Status Item Table**

ID	Status Code	Status Message	Detailed Message

The following table provides details about the View Job Status dialog box:

Field	Description
<b>View Job Status Table</b>	
Creation Time	Date and time at which the request was entered.
Job ID	Job identifier for the message.
User	Username of the person who initiated the operation.
Can Retry	A check mark appears if the failed operation can be retried.
Job Status	Status of the job (Complete-Success, Pending, Complete-Error).
	 <b>Note</b> If the job status is Complete-Success, the operation completed with no errors. If the job status is Complete-Error, the operation completed, but there were errors on some items.
% Complete	The percentage of the job that is completed.
Request Comment	A term to describe the function name.
Function Name	The function name of the operation.
<b>ID Status</b>	
Status Code	The overall status of the operation (Success or an error code).
Status Message	The overall error message if the code is not Success.
Job ID	A unique string that represents the asynchronous function.
<b>ID Status Item Table</b>	
ID	ID of the individual device, license, or PAK that is involved.
Status Code	Status of the individual operation (Success or None zero error code).

Field	Description
Status Message	Individual error message if the status code is not Success.
Detailed Message	Extra error messages provided by the server, if necessary.

- Step 2** To view the progress of a job, highlight the job, right-click, and choose **View Progress**.
- Step 3** If a job has failed, highlight the job, right-click, and choose **Retry Failed Items**.
- Step 4** To cancel one or more jobs, check the check box next to the job and click **Abort**.
- Step 5** To remove one or more jobs, check the check box next to the job and click **Delete**.
- Step 6** To refresh the View Job Status dialog box, click **Refresh**.
- Step 7** To check the Cisco Product License Registration Portal connection, click **Check License Portal**.

### Status Error Levels

Cisco License Manager provides two status levels:

- Overall operation status—Provides status on bulk requests such as polling, annotating, obtaining, and deploying licenses. Status may be shown for one or more devices. If the bulk operation completes, the status reads Complete. The operation then provides individual status results that are listed in the ID Status Item table.
- Individual operation status—Provides status on the individual results of a bulk request. Job requests are assigned an ID (for example, reqID1157740568514) and can be viewed by selecting the row. Individual operations can return errors even if the bulk operation status is successful. Be sure to always check the individual status.

The two levels of status are displayed in the status ID as follows:

Bulk operation status:Individual result status

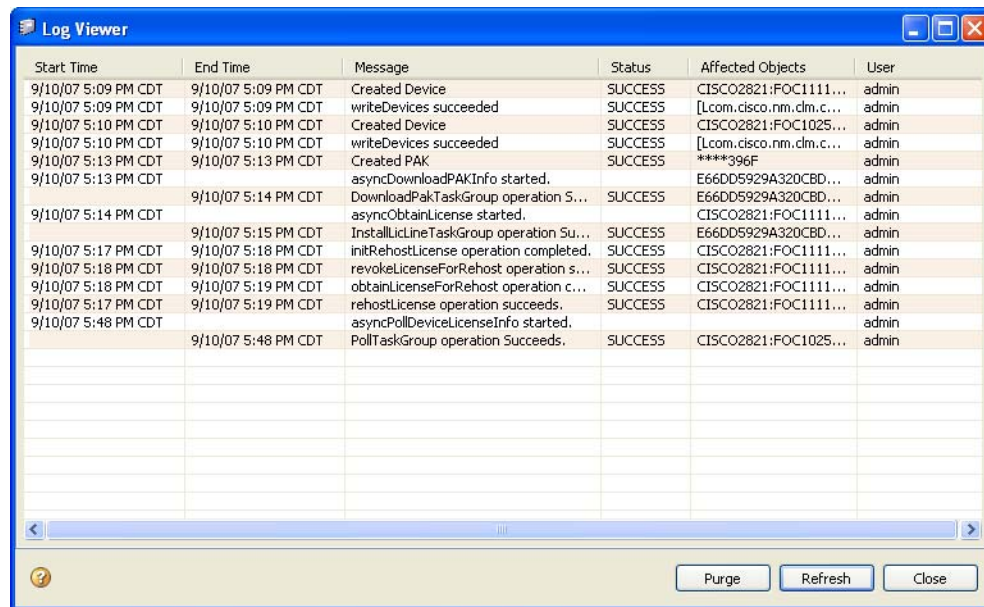
For example, `Complete-Success` might display when a polling operation has completed. This status message indicates that the polling operation was successful and there are no individual item errors. If the top-level status is `Complete-Error`, the operation has completed, but there are individual item errors. In viewing the individual messages, you might find that the poll result included an error in reaching a device. That would happen because individual results of an action are not marked at the operation level; only the status of the request as a whole is marked.

## View Logs

View the logs if you want to look at the audit trail of all past activities. The logs allow you to view the last *n* entries in the audit trail.

To view, refresh, and purge the logs, complete the following steps:

- Step 1** Select **Troubleshoot > View Audit Log** or click **View Audit Log** in the Quick Links pane. The Log Viewer dialog box appears.



The following table provides details about the Log Viewer dialog box:

Field	Description
Start Time	Start time of the task.
End Time	End time of the task.
Message	Task performed.
Status	Status of task (success or failure).
Affected Objects	Objects that were affected by the task.
User	User who performed the task.

- Step 2** Double-click a log to view the log details.
- Step 3** Click a column heading to sort the logs by the heading title.
- Step 4** To purge the logs from the Log Viewer dialog box, click **Purge**. This action removes any logs in excess of 2,000.
- Step 5** To refresh the dialog box and retrieve new entries from the server, click **Refresh**. This dialog box does not automatically refresh with new data. You have to request that data by clicking **Refresh**.

## View Errors

The Cisco License Manager Error dialog box appears when an error occurs within Cisco License Manager. The following table provides information about the fields located in this dialog box:

Field	Description
<b>Status</b>	
Error Code	Server-assigned error code.
Fault	Translation of the error code.
Detailed Message	Detailed error message regarding this error, if provided by the Cisco License Manager server.
Possible Cause	Possible reason for the error.
Possible Remedy	Possible solution to remove the error or problem.
<b>Item Status</b>	
Index	Represents the order of the status items, starting with 1.
Item ID	PAK ID
Error Code	Server-assigned error code.
Fault	Translation of the error code.
Detailed Message	Detailed error message regarding this error, if provided by the Cisco License Manager server.
Possible Cause	Possible reason for the error.
Possible Remedy	Possible solution to remove the error or problem.

## Use Report Manager

This section discusses the reports you can use to monitor and track license information for all devices in your inventory. Reports can be displayed in HTML or plain text format. Reports cannot be saved, only viewed from the reports window. The following reports are available in Report Manager:

- **Audit Trail Report**—Provides an audit trail of Cisco License Manager operations and can be used to track the usage of Cisco License Manager.
- **Device Summary Report**—Provides summary information about your device licenses. This report can be used to identify licensable features on your devices and check to see if those features are activated by license.
- **License Discrepancy Report**—Provides details about license discrepancies between your devices and the Cisco License Manager database. This report can be used to identify licenses that are deployed and cleared without using Cisco License Manager.
- **License Expiry Report**—Provides license expiry information for your devices. This report can be used to identify devices with software features that have expired or that expire at a future date.
- **Redeployable License Report**—Provides details about redeployable licenses on your devices. These licenses may not be applicable to the devices for which they are deployed. You can rehost these licenses to devices that support the software features.
- **RMA Discrepancy Report**—Provides details about devices that show as being returned through the RMA process but are still operational on your network. If you need further assistance with your RMA, please contact your Cisco support representative.

- **Undeployed License Report**—Provides details about undeployed licenses in your Cisco License Manager database. These licenses have been obtained but not deployed. This report can be used to identify to which devices in the inventory the licenses can be applied.

**Note**

You can run reports using the application programming interface (API) if you purchase the Cisco License Manager software development kit (SDK). For more information about the SDK, see <http://www.cisco.com/go/clm>.

This section contains the following information about using Report Manager:

- [Report Types, page 6-11](#)
- [Generate, View, Print, and Export a Report, page 6-13](#)

## Report Types

This section provides details about the following reports:

- [Audit Trail Report, page 6-11](#)
- [Device Summary Report, page 6-11](#)
- [License Discrepancy Report, page 6-12](#)
- [License Expiry Report, page 6-12](#)
- [Redeployable License Report, page 6-12](#)
- [RMA Discrepancy Report, page 6-13](#)
- [Undeployed License Report, page 6-13](#)

### Audit Trail Report

The Audit Trail Report contains an audit trail of Cisco License Manager operations and can be used to track the usage of Cisco License Manager.

The Audit Trail Report contains the following information:

- Audit trail ID
- User
- Start time
- End time
- Operation
- Status message
- Affected device

### Device Summary Report

The Device Summary Report contains all the device and license information in the current database.

The Device Summary Report contains the following information:

- Device ID

- Hostname
- IP address
- UDI
- State
- Licensable features

## License Discrepancy Report

The License Discrepancy Report lists discrepancies between the Cisco License Manager license inventory and the actual licenses deployed in the network. For example, if you deployed licenses to your network through the API, they would not exist in the Cisco License Manager license inventory until polling occurred.

The License Discrepancy Report contains the following information:

- Device ID
- UDI
- License line ID
- Feature names
- Activation state

## License Expiry Report

The License Expiry Report provides license expiry information for your devices. This report can be used to identify devices with software features that have expired or that expire at a future date.

The License Expiry Report contains the following information:

- Device ID
- Model
- Hostname
- IP address
- UDI
- State
- Licensable features

## Redeployable License Report

The Redeployable License Report compares the licensed features supported by the device with the feature licenses installed on the device. Any feature license that is deployed on the device but is not being used by that device can be deployed elsewhere.

The Redeployable License Report comprises contains the following information:

- Device ID
- UDI
- License line ID



- Feature name
- Status

## RMA Discrepancy Report

The RMA Discrepancy Report provides details about devices that are shown as being returned through the RMA process but are still operational on your network. If you need further assistance with your RMA, please contact your Cisco support representative.

The RMA Discrepancy Report contains the following information:

- Device ID
- Model
- Hostname
- IP address
- UDI
- State
- Licensable features

## Undeployed License Report

The Undeployed License Report lists all the licenses that users have obtained but not yet deployed and shows to which devices in inventory the license can apply. Undeployed status can mean that a license was never installed or that it was installed, but later cleared.

The Undeployed License Report contains the following information:

- Device ID
- UDI
- Undeployed license information
  - License line ID
  - Feature name

For example, if you needed to deploy some advanced IP services on a device, you would use this report and find the licenses that might fit that need. You could then go into the PAK folder, locate the license, and deploy it on the device. If you want to deploy a license on a different device, you can rehost that license and put it on another device.

## Generate, View, Print, and Export a Report

Generate and view a report so that you can monitor and track license information for all devices in your inventory.

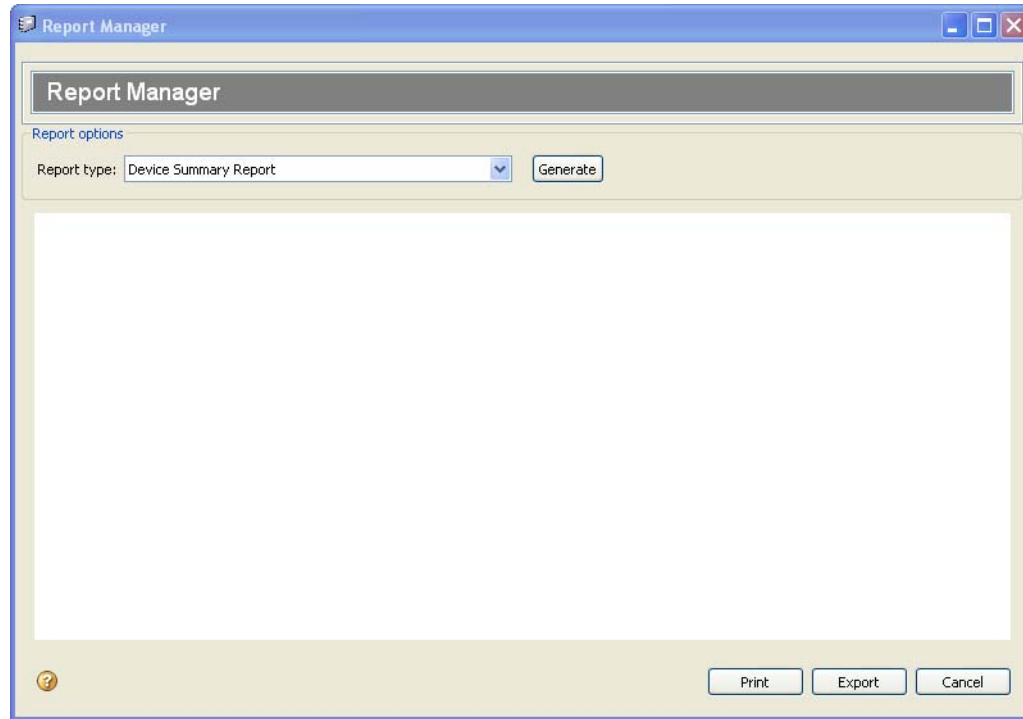
To generate and view a report, complete the following steps:

**Step 1** Select **Reports** in the Quick Links pane.



**Note** The first report listed will begin generating immediately without any selected filters. This may take some time.

The Report Manager dialog box appears showing the first report generated.



**Step 2** If you would like to generate this report with filters or generate a different report, choose your report type from the drop-down list.

**Step 3** Click **Generate**.

The dialog box appears, providing you with selections specific to that report.

**Step 4** Set your filters:

- To filter by device model, select the device model from the Device Model drop-down list.
- To filter by device group, select the device group from the Device Group drop-down list.
- To filter by IP address range, select the IP Range check box and type in the Start IP address and the End IP address.



**Note** The Audit Trail Report does not have any filters.

**Tip**

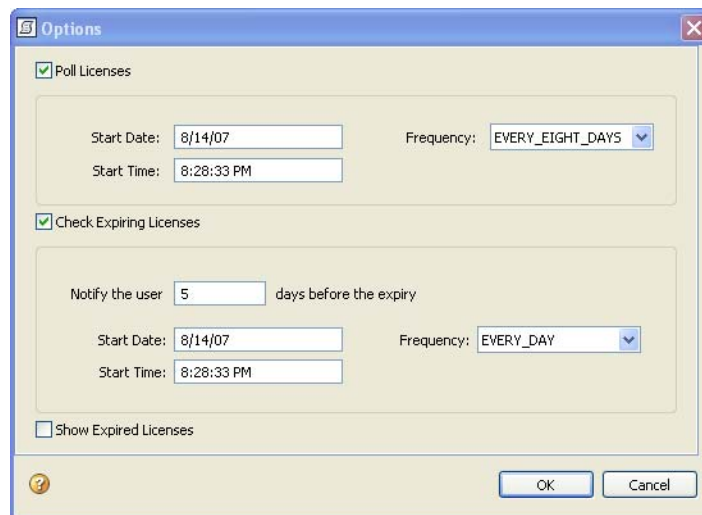
If you have large quantity of devices in the inventory, generating reports may take very long time. Also the report may be too large for you to browse effectively. In such case, use report filters to generate smaller reports, one at a time.

- Step 5** Click **Continue**. The report appears in the Report Manager dialog box.
- Step 6** To print the report, click **Print**. Set your printer options and click **Print**.
- Step 7** To export the report, click **Export**. Browse to the file destination. Type your filename. Choose your file type (.html, .csv, or .txt). Click **Save**.
- Step 8** To toggle between reports that you have generated, choose the report from the drop-down list. The date the report was generated will appear in the dialog box so that you can determine if the report is out of date.

## Set Cisco License Manager Options

Use the Options feature to set the frequency of Cisco License Manager polling licenses and check for expiring licenses. To set the options, complete the following steps:

- Step 1** Select **Edit > Options**.
- The Options dialog box appears.



- Step 2** If you want to set the options for polling licenses:
- Check the Poll Licenses check box.
  - Enter the start date.
  - Enter the start time.

- From the Frequency drop-down list, select the frequency of the license polling.



---

**Note** Enter dates using the mm/dd/yyyy format. Enter times using the hh:mm am/pm format.

---

**Step 3** If you want to set the options for checking for expiring licenses:

- Check the Check Expiring Licenses check box.
- Enter the number of days prior to license expiration that you want to be notified.
- Enter the start date.
- Enter the start time.
- From the Frequency drop-down list, select the frequency of the license polling.

**Step 4** Activate the Show Expired Licenses check box if you want to be notified of expired licenses each time you log in to Cisco License Manager.

**Step 5** Click **OK**.

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## CHAPTER 7

# Inventory Management Tasks

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This chapter provides information about managing your inventory with Cisco License Manager and contains the following sections:

- [Manage Devices, page 7-1](#)
- [Manage PAKs, page 7-16](#)

## Manage Devices

This section provides the following information about managing devices:

- [Add Cisco Devices to Your Inventory, page 7-1](#)
- [Delete a Device, page 7-8](#)
- [Manage Devices Using Device Groups, page 7-8](#)
- [Find a Device, page 7-11](#)
- [View Device Properties, page 7-12](#)
- [Update Device Information, page 7-14](#)
- [Assign an Access Control List to Device Groups and Devices, page 7-15](#)
- [Check Device Connectivity, page 7-15](#)

## Add Cisco Devices to Your Inventory

There are several ways to add devices to the Cisco License Manager database:

- [Discover Devices Using the Discover Device Assistant, page 7-2](#)
- [Add a Device Using the GUI, page 7-5](#)



### Note

For Cisco License Manager to work properly, you must enter a device name and either the device IP address or the unique device identifier (UDI). If you enter the IP address, licensing will work successfully.

## Discover Devices Using the Discover Device Assistant

You can discover devices in a specific network using the Discover Device Assistant. You can also create a new device group and collect license information on those devices during the same discovery process. You can use discovery to synchronize device license information instead of using device polling.

While a discovery operation is in progress, no other discovery operations can be started.

When you add a device using the IP address, the UDI and Device ID parameters are automatically added into the database.

**Caution**

A discovery will overwrite any out-of-date or manually entered data, except for the device display name.

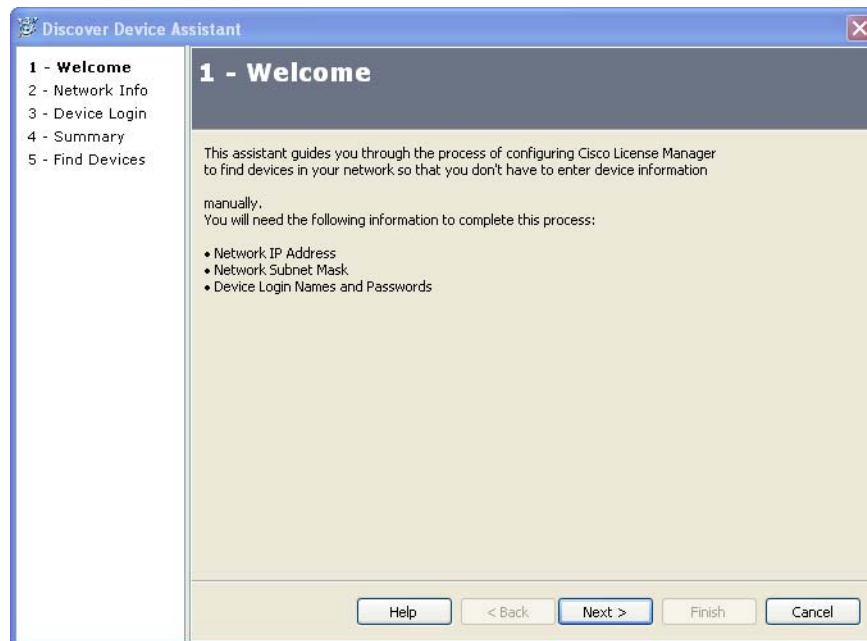
**Tip**

Before you get started, make sure that you have the network IP address, network subnet mask, and device login names and passwords available.

To discover a device using the Discover Device Assistant, complete the following steps:

**Step 1** In the Quick Links pane, click **Discover Devices**.

The Welcome screen of the Discover Devices Assistant appears. The assistant guides you through the necessary steps to discover the Cisco devices in your network.



**Step 2** Click **Next**.

The Network Info screen appears.

**Step 3** Enter the following information:

Field	Description
Network	The IP address of the network on which you want to discover devices; for example, 172.0.0.0. <b>Note</b> If the information turns red, that portion of the network address is not valid.
Subnet Mask	Defines which portion of the address is used to identify the network and which denotes the hosts.

**Step 4** Choose your discovery methods from the drop-down menus. Your choices are HTTP, HTTPS, SSH, and Telnet. Cisco License Manager tries the choices in the order in which you select them until the operation is successful.



**Note** HTTP and HTTPS are the quickest discovery methods. Telnet is the slowest discovery method and is not secure. The most secure discovery method is ssh.

**Step 5** Choose a device group for the new devices from the **Add To Group** drop-down menu.



**Note** This drop-down menu includes a list of existing device groups to which to add your devices. Newly discovered devices appear in the Default device group unless you create a new device group before you discover devices. To create a new device group, see the [“Add a Device Group” section on page 7-9](#).

**Step 6** Click **Next**.

The Device Login screen appears.

**Step 7** To provide login information for the devices in the network:

- Click **Add Device Login**. The Add Device Login dialog box appears.
- Enter the device login name and device login password, and confirm the password.
- Click **Save**.



**Note** The total number of entries for device login names is ten.



**Note** To edit or view an entry, double-click the entry. To delete any device login information, select the entry and click **Delete**.

**Step 8** To provide enable password information for the devices in the network:

- Click **Add Enable Password**. The Enable Password dialog box appears.
- Enter the enable password.

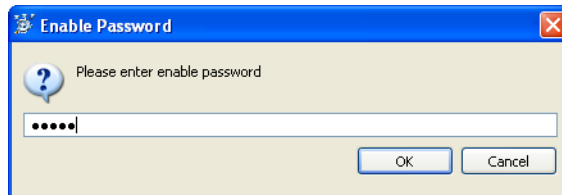


- Click **OK**.

**Note**

The Enabled Passwords table on the Device Login screen appears only if you select ssh or Telnet as the discovery method.

The total number of entries for enabling passwords is ten.



- Step 9** After you have entered the device login and enable password information, click **Next**. The Summary screen appears.
- Step 10** Verify that the information is correct and click **Next**. If it is not correct, click **Back** and correct the information. The Find Devices screen appears and Cisco License Manager begins searching for Cisco devices in your network.
- Step 11** Once the process is complete and a list of discovered devices appears, click **Finish**. The device status appears in the View Alert dialog box.

## Add a Device Using the GUI

You must add your Cisco devices to the Cisco License Manager inventory before you can request a PAK license file. To add a new device, complete the following steps:

**Tip**

When you add a device using the IP address, the UDI and Device ID parameters are automatically added into the database. If you add the device using only the UDI, the Device ID is automatically added into the inventory.

- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane. The Manage Devices explorer appears in the Content Area.
- Step 2** Select an existing device group folder to which you want to add a new device. Make sure to select a folder that makes sense to you so that you can easily locate and retrieve device and license information at a later date.
- Step 3** With the device group folder selected, right-click and select **New Device**. The New Device dialog box appears.

**Step 4** Enter the following in the New Devices window:

Field	Description
Device Name	Descriptive device name, which you can assign. <b>Note</b> If no device name is assigned, the host-name or device UDI will be used.
IP Address	IP address of the device.
UDI	Unique device identifier. Cisco-wide identifier that contains product ID, serial number, and version (optional). <b>Note</b> Cisco License Manager uses a different UDI format from the UDI found on the device. The format of UDI in the Cisco License Manager inventory is <PID>:<VID>:<SN>. If you create a device using the UDI, it must be entered using this format.
Transport Method	An ordered list of transport methods. The device will try methods 1, 2, 3, and 4 in order.  The approved transport methods are HTTP, HTTPS, SSH, or Telnet.
Poll License Information	Synchronizes the information in the device inventory with the device (optional).



**Tip**

The UDI can be discovered during device discovery, so it may not have to be entered manually. If you enter the UDI manually, ensure that you use the required format. Ensure that you poll your device so that this information can be added into the device's inventory.

**Note**

For Cisco License Manager to work properly, you must enter the device IP address or UDI. For licensing to work successfully, a device IP address must be present.

- Step 5** You can click **OK** now if you wish to add the device without entering login information for that device. If the operation is successful, the device appears in the device group folder you selected. If it is unsuccessful, an error message appears.
- Step 6** Or, if you wish to edit the login information for the newly added device, click the **Edit Login Information** button and the Edit Login Information dialogue box will appear.

- Step 7** Enter the following in the Edit Login Information window:

Field	Description
Login Names	List of names of the users logging in to the device (optional unless the device requires authentication).
Login Passwords	Passwords required for the listed users to access to the device (optional unless device requires authentication).
Re-Enter Device Passwords	Confirmation of password (optional unless device requires authentication).
Enable Passwords	Passwords required for access to the device when using SSH or Telnet.
Re-Enter Enable Passwords	Confirmation of password.

- You may now click the **Add Device Login Information** button to add the login information to the device configuration.
- Or you may select a login or series of log-ins from the list and click **Delete** to disable and remove them from the device configuration.

- You may also click the **Add Enable Passwords** button to save the enable passwords to the device configuration.
- Or you may select a series of passwords from the list and click **Delete** to disable and remove them from the device configuration.

**Step 8** Click **Cancel** to disregard the changes indicated and return to the New Device dialogue box. Or click **OK** to save the changes to the device configuration.

## Delete a Device

To delete a device, complete the following steps:



### Caution

This action completely removes the device from the inventory and from all associated device groups.

**Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.

The Manage Devices explorer appears in the Content Area.

**Step 2** Select the device you want to delete.

**Step 3** Right-click on the selected device and click **Delete**.

A Delete Device dialog box appears.

**Step 4** If you want to delete the device, click **Yes**. If you do not, click **No**.

## Manage Devices Using Device Groups

Use device groups to organize devices according to a scheme that is meaningful to you. For example, you can organize devices by feature, region, or work site. A device can be present in more than one device group. If you do not want to create device groups, you must use the default device group, Default. Device groups can contain any number of devices.

Device group tasks are as follows:

- [Add a Device Group, page 7-9](#)
- [Rename a Device Group, page 7-9](#)
- [Delete a Device Group, page 7-9](#)
- [Refresh the Device Group, page 7-10](#)
- [Add a Device to an Existing Device Group, page 7-10](#)
- [Remove a Device from a Device Group, page 7-10](#)
- [Move a Device to a Different Device Group, page 7-11](#)

## Add a Device Group

To add a new device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Click the **New Group** button or select **Manage > New Device Group**.  
The New Group dialog box appears.
- Step 3** Enter the name of your new device group in the dialog box and click **OK**.  
Your new device group name appears in the Manage Devices explorer.



**Note** For details about naming device groups, see the [“Allowable Characters for Names and Descriptions” section on page 9-9](#).

---

## Rename a Device Group

To rename a device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Right-click the device group and select **Rename Group**.  
The Rename Group dialog box appears.
- Step 3** Enter the device group’s new name.
- Step 4** Click **OK**.  
Your new device group name appears in the Manage Devices explorer.



**Note** For details about naming device groups, see the [“Allowable Characters for Names and Descriptions” section on page 9-9](#).

---

## Delete a Device Group

To delete a device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Right-click the device group and select **Delete**.

The Delete Group dialog box appears.

- Step 3** If you want to delete the device group, click **Yes**. If you do not, click **No**.



**Note** If a device that is located in the device group you are deleting does not belong to any other device group, it will be moved to the default device group.

## Refresh the Device Group

You can refresh the contents of an existing device group by selecting the device group. Right-click to select **Refresh**.

The folder redisplay with updated contents.

## Add a Device to an Existing Device Group

Adding a device to an existing device group creates a copy of the device that will be placed in the device group you choose. This operation allows you to store devices in more than one device group. For example, you could create a feature-based device group and a group based on a specific work site.

To add a device to an existing device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Right-click the device and select **Add to Group**.  
The Select Group dialog box appears.
- Step 3** From the drop-down list, select the device group to which you would like to add the device.
- Step 4** Click **OK**.
- 

## Remove a Device from a Device Group

Devices are removed only from the selected device group and not from other device groups they may be in.

To remove a device from a device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Right-click the device and select **Remove from Group**.  
The Remove from Group dialog box appears.
- Step 3** If you want to remove the device from the device group, click **Yes**. If you do not, click **No**.

**Note**

In order to remove a device from a device group, it must be part of another device group.

## Move a Device to a Different Device Group

You can move a device from one device group into another device group. Moving a device from one device group to another removes the device from the original device group.

To move a device to another device group, complete the following steps:

- 
- Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.  
The Manage Devices explorer appears in the Content Area.
- Step 2** Right-click the device and select **Move to Group**.  
The Move to Group dialog box appears.
- Step 3** From the drop-down list, select the device group to which you would like to move this device.
- Step 4** Click **OK**.
- 

## Find a Device

Use the Find feature to locate a PAK or device. To find a PAK or device, complete the following steps:

- 
- Step 1** Click **Edit > Find**.  
The Find a PAK/Device dialog box appears.



- Step 2** To find a PAK, check the Find PAK check box. Type in the PAK name or ID.
- Step 3** To find a device, check the Find Device check box. Type in the information you want to search for and choose device name, IP address, hostname, or UDI.
- Step 4** If you want to match the case exactly, select **Match Case**.
- Step 5** If you want to wrap the search text, select **Wrap Search**.

**Step 6** Click **Find**.

## View Device Properties

Each device has properties associated with it.

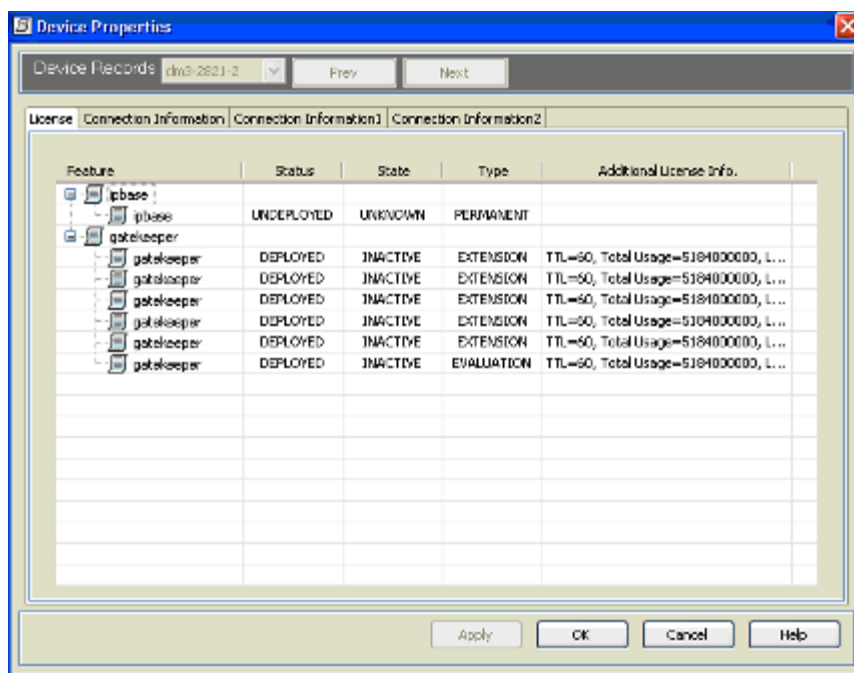
Complete the following procedures to view device properties:

**Step 1** Select **Manage > Manage Devices** or click **Devices** in the Quick Links pane.

The Manage Devices explorer appears in the Content Area.

**Step 2** Right-click the device and select **Properties**.

The Device Properties dialog box appears.



**Step 3** To view the device's license information, select the License tab. The information on this tab is read-only.



**Note**

For further information about the fields in the Device Properties dialog box, see the [“View Device Properties”](#) section on page 7-12.

To view connector information, select the Connection Information tab.



The Connection Information dialogue box appears.

The screenshot shows the 'Device Properties' dialog box with the 'Connection Information' tab selected. The 'Device Records' dropdown is set to 'dm3-2621-1'. The 'Connection Information' section contains the following fields:

Device Name:	dm3-2621-1	Device Model:	Device Model
UDI:	CISCO2621-POC10254031	Device State:	DEV_CONNECT
IP Address:	172.19.205.102	Software Version:	1.2.3.4
Host name:	dm3-2621-1		
License Agent Version:	2.0		

The 'Polling Information' section contains the following fields:

Polling Status:	SUCCESS
Polling By:	admin
Polling Date:	Tue Dec 11 15:03:06

At the bottom of the dialog are buttons for 'Apply', 'OK', 'Cancel', and 'Help'.

**Step 4** To change the Device Name, IP Address, or Host Name on the Connector Information tab, enter the new information, and click **Apply**.

**Step 5** To check the properties for a feature, right-click the feature and select Properties. The Feature Properties dialogue box appears. The information on this tab is read-only.

The screenshot shows the 'Feature Properties' dialog box with the 'General' tab selected. The 'General Information' section contains the following fields:

Feature Name:	
Feature Version:	

The 'Usage Information' section contains the following fields:

Total Usage:		Usage Left:	
--------------	--	-------------	--

The 'Count Information' section contains the following fields:

Total Count:		Usage Count:	
--------------	--	--------------	--

At the bottom of the dialog are buttons for 'OK' and 'Cancel'.

**Step 6** To close the Feature Properties dialog box, click **OK** or **Cancel**.

- [illegible]



The XR Slots tab is only available when view the properties of XR Devices.

- Step 8** To close the XR Slots dialog box, click **OK** or **Cancel**.
- Step 9** To close the Device Properties dialog box, click **OK** or **Cancel**.

Use Poll Licenses to collect up-to-date information (such as license expiry) on existing Cisco devices and to synchronize the information in the device inventory.

Cisco License Manager synchronizes licenses using two methods:

- GUI—Use **Poll Licenses** to update the license information.
- API—Use the PollDevicesLicenseInfo call to provide the list of devices.

To learn more about license polling, see the [“Poll Licenses”](#) section on page 8-7.

To update device information, complete the following steps:

- ## User Guide for Cisco License Manager

The Poll Licenses dialog box appears.

**Step 3** Click **Yes**.

A status window appears. If you get errors, verify that your device UDI and IP address are entered correctly.

**Step 4** Once the process is complete, a confirmation window appears. Click **OK** to close the window.

Status messages for device polling appear in the View Job Status dialog box. For information on viewing job status, see the [“View Job Status” section on page 6-6](#).

---

## Assign an Access Control List to Device Groups and Devices

The Edit Access Control List dialog box appears when you select a device or device group, right-click, and choose **Assign Access Control List**.

Use this dialog box to assign user access to devices or device groups. Only a user with an Administrator role can change the access list.

This dialog box displays a list of Cisco License Manager usernames, each with a check box in front of it. If the box is checked, the user has access to the devices and device groups. If it is unchecked, the user does not have access.

If no username is checked and **Allow None** is checked, only a user utilizing the Administrator role is allowed access to the devices and device groups. If **Allow None** is not checked, all users are allowed access to the devices and device groups.

## Check Device Connectivity

Use the Check Device Connection feature to check for connectivity between Cisco License Manager and a device using the current configuration method (HTTP, SSH, or Telnet).

To check device connectivity, complete the following steps:

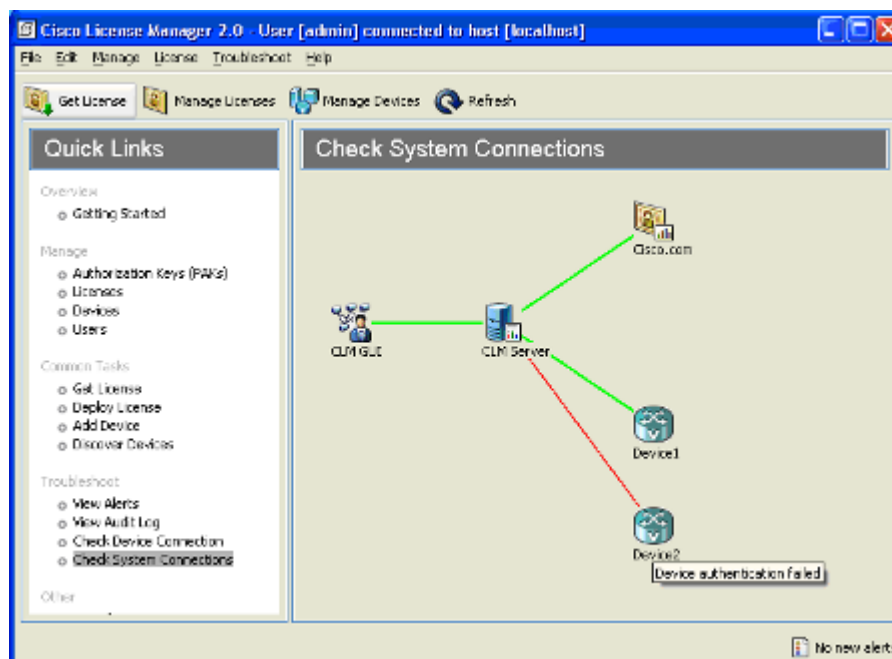
---

**Step 1** To check device connection, either

- Click **Troubleshoot > Check Device Connection** or **Check Device Connection** in the Quick Links pane. The Select Device dialog box appears. Select the device you want to check and click **OK**.

or

- Right-click the device and select **Check Device**. The Check Device dialog box appears. Click **Yes**. The Check System Connections window appears.

**Note**

From Manage Devices, you may select one or more devices to bring up Check System Connections. The graphic indicates the connections from CLM Server to each selected device. A green link represents a successful check of the connection by the CLM Server. A red link shows that the indication connection could not be verified by the CLM Server.

**Step 2**

Once the connection has been checked, a popup window appears stating the results of the task. Click **Close**.

## Manage PAKs

This section provides the following information about managing PAKs:

- [Add a PAK, page 7-17](#)
- [Delete a PAK, page 7-18](#)
- [Manage PAKS Using Folders, page 7-18](#)
- [Find a PAK, page 7-21](#)
- [View PAK Properties, page 7-22](#)
- [Download PAK Information, page 7-23](#)
- [Assign an Access Control List to PAKs, page 7-23](#)

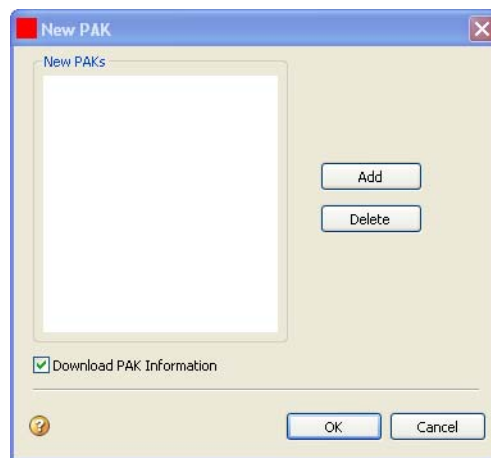
## Add a PAK

To deploy a license to a device, you must provide a valid PAK so that a license can be obtained from Cisco.com for the device. To add a new PAK, complete the following steps:

**Tip**

Before you do this, be sure to enter your Cisco.com password in your user profile.

- Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.
- The Manage PAKs explorer appears in the Content Area.
- Step 2** Select an existing PAK folder to which you want to add a new PAK.
- Make sure to select a folder that makes sense to you so that you can easily locate and retrieve PAK and SKU information later.
- Step 3** With the folder selected, right-click and choose **New PAK**.
- The New PAK dialog box appears.



- Step 4** Check the **Download PAK Information** check box if you want the PAK information to be downloaded when you add the new PAK.
- Step 5** Click **Add**. The New PAK Name dialog box appears.
- Step 6** Enter the PAK name and click **OK**. The new PAK appears in the New PAKs pane of the New PAK dialog box.

**Note**

You should have received your PAK with your shipment or from Cisco via e-mail if you ordered software upgrades. If you want to add more PAKs, repeat Steps 3 and 4.

- Step 7** Verify the new PAKs as they appear in the New PAKs pane of the New PAK dialog box and click **OK**.
- Step 8** Enter the PAK from the device and click **OK**.
- The PAK appears in the folder you selected.

## Delete a PAK

You cannot delete a PAK that has licenses associated with it. To delete a PAK, complete the following steps:

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Select <b>Manage &gt; Manage Authorization Keys (PAK)</b> or click <b>Authorization Keys (PAKs)</b> in the Quick Links pane.<br>The Manage PAKs explorer appears in the Content Area. |
| <b>Step 2</b> | Select an existing PAK that you want to delete.   |
| <b>Step 3</b> | Right-click and select <b>Delete</b> .<br>The Delete PAK dialog box appears.  |
| <b>Step 4</b> | Click <b>Yes</b> to confirm the deletion of this PAK.<br>The PAK is removed from the folder.  |
- 

## Manage PAKS Using Folders

Use folders to organize PAKs by any method that is convenient and logical to you. Folder management tasks are as follows:

- [Add a PAK Folder, page 7-18](#)
- [Rename a PAK Folder, page 7-19](#)
- [Delete a PAK Folder, page 7-19](#)
- [Refresh the PAK Folder, page 7-20](#)
- [Add a PAK to an Existing Folder, page 7-20](#)
- [Remove a PAK from a Folder, page 7-20](#)
- [Move a PAK to a Different Folder, page 7-21](#)

### Add a PAK Folder

To add a new PAK folder, complete the following steps:

**Timesaver**

---

You can skip this procedure if you want to use the Default PAK folder.

---

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Select <b>Manage &gt; Manage Authorization Keys (PAK)</b> or click <b>Authorization Keys (PAKs)</b> in the Quick Links pane.<br>The Manage PAKs explorer appears in the Content Area. |
| <b>Step 2</b> | Click the <b>New Folder</b> button.   |

The New Folder dialog box appears.

**Step 3** Enter the name of your new PAK folder in the dialog box and click **OK**.

Your new PAK folder name appears in the Manage PAKs explorer.



**Note** For details about naming PAK folders, see the [“Allowable Characters for Names and Descriptions”](#) section on page 9-9.

## Rename a PAK Folder

To rename a PAK folder, complete the following steps:

**Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.

The Manage PAKs explorer appears in the Content Area.

**Step 2** Right-click the PAK folder and select **Rename Folder**.

The Rename Folder dialog box appears.

**Step 3** Enter the folder's new name.

**Step 4** Click **OK**.

Your new PAK folder name appears in the Manage PAKs explorer.



**Note** For details about naming device groups, see the [“Allowable Characters for Names and Descriptions”](#) section on page 9-9.

## Delete a PAK Folder

To delete a PAK folder, complete the following steps:

**Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.

The Manage PAKs explorer appears in the Content Area.

**Step 2** Right-click the PAK folder and select **Delete**.

The Delete Folder dialog box appears.

**Step 3** If you want to delete the PAK folder, click **Yes**. If you do not, click **No**.

**Note**

If the folder you are deleting contains a PAK that does not belong to another folder, the PAK will be moved to the default folder.

## Refresh the PAK Folder

You can refresh the contents of an existing PAK folder by selecting the folder. Right-click to select **Refresh**.

The folder redisplay with updated contents.

## Add a PAK to an Existing Folder

Adding a PAK to an existing folder creates a copy of the PAK that will be placed in the folder you choose. This operation allows you to store PAKs in more than one folder. For example, you could create a feature-based PAK folder and a folder based on a specific work site.

To add a PAK to an existing PAK folder, complete the following steps:

- 
- Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.
- The Manage PAKs explorer appears in the Content Area.
- Step 2** Right-click the PAK and select **Add to Folder**.
- The Select Folder dialog box appears.
- Step 3** From the drop-down list, select the PAK folder to which you would like to add the PAK.
- Step 4** Click **OK**.
- 

## Remove a PAK from a Folder

You can move a PAK from one folder into another folder. Moving a PAK from one folder to another removes the PAK from the original folder.

Complete the following steps to move a PAK to another PAK folder:

- 
- Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.
- The Manage PAKs explorer appears in the Content Area.
- Step 2** Right-click the PAK and select **Move to Folder**.
- The Move to Folder dialog box appears.
- Step 3** From the drop-down list, select the PAK folder to which you would like to move this PAK.



- Step 4** Click **OK**.
- 

## Move a PAK to a Different Folder

You can move a PAK from one folder into another folder. Moving a PAK from one folder to another removes the PAK from the original folder.

Complete the following steps to move a PAK to another PAK folder:

- Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.
- The Manage PAKs explorer appears in the Content Area.
- Step 2** Right-click the PAK and select **Move to Folder**.
- The Move to Folder dialog box appears.
- Step 3** From the drop-down list, select the PAK folder to which you would like to move this PAK.
- Step 4** Click **OK**.
- 

## Find a PAK

Use the Find feature to locate a PAK or device. To find a PAK or device, complete the following steps:

- Step 1** Click **Edit > Find**.
- The Find a PAK/Device dialog box appears.



- Step 2** To find a PAK, check the Find PAK check box. Type in the PAK name or ID.
- Step 3** To find a device, check the Find Device check box. Type in the information you want to search for and choose device name, IP address, hostname, or UDI.
- Step 4** If you want to match the case exactly, select **Match Case**.
- Step 5** If you want to wrap the search text, select **Wrap Search**.

**Step 6** Click **Find**.

## View PAK Properties

Each PAK has properties associated with it.

Complete the following procedures to view PAK properties:

**Step 1** Select **Manage > Manage Authorization Keys (PAK)** or click **Authorization Keys (PAKs)** in the Quick Links pane.

The Manage PAKs explorer appears in the Content Area.

**Step 2** Right-click the PAK and select **Properties**.

The PAK/SKU Properties dialog box appears.

SKU Name	Description	Type	Order...	Availa...	Feature Name
CMR-VOIP-008-1C	Cisco mid-range router ...	Feature	20	10	Feature 1
					Feature 2
					Feature 3
					Feature 4
CMR-VOIP-009-1C	Cisco high-range router ...	Feature	50	10	Cisco Voice over IP v1.2
CMR-VOIP-010-1C	Cisco high-range router ...	Feature	30	10	Cisco Voice over IP v1.3
CMR-VOIP-011-1C	Cisco high-range router ...	Feature	30	10	Cisco Voice over IP v1.3
CMR-VOIP-012-1C	Cisco high-range router ...	Feature	30	10	Cisco Voice over IP v1.3
CMR-VOIP-013-1C	Cisco high-range router ...	Feature	30	10	Cisco Voice over IP v1.3
CMR-VOIP-014-1C	Cisco high-range router ...	Feature	30	10	Cisco Voice over IP v1.3

The only properties field that is not read-only is the PAK Display Name.



**Note** For further information about the fields in the PAK Properties dialog box, see the [“View PAK Properties”](#) section on page 7-22.

**Step 3** To change the PAK Display Name, enter the new information and click **Apply**.

- Step 4** To close the PAK/SKU Properties dialog box, click **OK** or **Cancel**.
- 

## Download PAK Information

Some Cisco products require you to enter a PAK to receive a license key. You can use Cisco License Manager to enter your PAK, register your product, and obtain the license key instead of going directly to Cisco.com. Then you can manage your licenses from your desktop and deploy them at your convenience.

**Tip**

Before you do this, be sure to enter your Cisco.com password in your user profile.

---

To download the PAK information, enter your PAK string in the Add PAK window. Cisco License Manager accesses Cisco.com and receives the PAK information, which contains a list of SKUs. You can then continue the steps to obtain a license.

To download PAK information, complete the following steps:

- Step 1** Click an existing PAK folder and right-click **New PAK**.

**Note**

If you need to download PAK information for an existing PAK, select the PAK, right-click, and click **Download PAK Info**.

---

- Step 2** Click **Add**, enter the PAK, and click **OK**.

- Step 3** Be sure the **Download PAK** button is selected. It should already have a check box selected. Click **OK**. The download begins, and a Request Status window displays status.

**Tip**

If you receive an error, ensure that your user profile is updated with your e-mail address and Cisco.com password. Then reselect the PAK and click **Download PAK Info**.

---

- Step 4** Click **OK** to close the status window.

- Step 5** To view the status of the request, select the View Jobs link in the Quick Links pane.

- Step 6** To close the status message, click the **X** in the upper right portion of the tab.
- 

## Assign an Access Control List to PAKs

The Edit Access Control List window appears when you select a PAK, right-click, and choose **Assign Access Control List**.

Use this dialog box to assign user access to PAKs. Only a user with an Administrator role or a PAK owner can change the access list.

This dialog box displays a list of Cisco License Manager usernames, each with a check box in front of it. If the box is checked, the user has access to the PAKs. If it is unchecked, the user does not have access.



## CHAPTER 8

# License Management Tasks

---

This chapter provides information about managing your licenses with Cisco License Manager and contains the following sections:

- [Manage Licenses, page 8-1](#)
- [Manage Policies, page 8-15](#)

## Manage Licenses

This section provides the following information about managing licenses:

- [Get a License Using License Assistant, page 8-2](#)
- [Delete a License, page 8-6](#)
- [Deploy a License, page 8-6](#)
- [Poll Licenses, page 8-7](#)
- [Resend Licenses, page 8-7](#)
- [Transfer a License Using Transfer License Assistant, page 8-8](#)
- [Annotate a License, page 8-12](#)
- [View License Properties, page 8-13](#)
- [View Expired Licenses, page 8-14](#)
- [View Expiring Licenses, page 8-14](#)
- [View License Notifications, page 8-14](#)
- [Check License Portal, page 8-15](#)

## Get a License Using License Assistant

When you invoke the Get License feature, you retrieve license information from the Cisco Product License Registration Portal and then assign it to a device in your inventory.

Getting licenses is a lengthy operation. The time required depends on many factors, including these:

- Network connection speed
- Device location
- Cisco.com license server performance
- Number of licenses you are obtaining

To see the status of your license request, click **View Job Status** under the Quick Links pane. For more information about viewing job status, see the [“View Job Status” section on page 6-6](#).

**Tip**

Before you get started, make sure that you have a license portal account, PAK, and device IP address or hostname available.

**Note**

If you close the dialog box during this task, it will continue to run the task in the background. To view the job status, click **View Job Status** in the Quick Links pane.

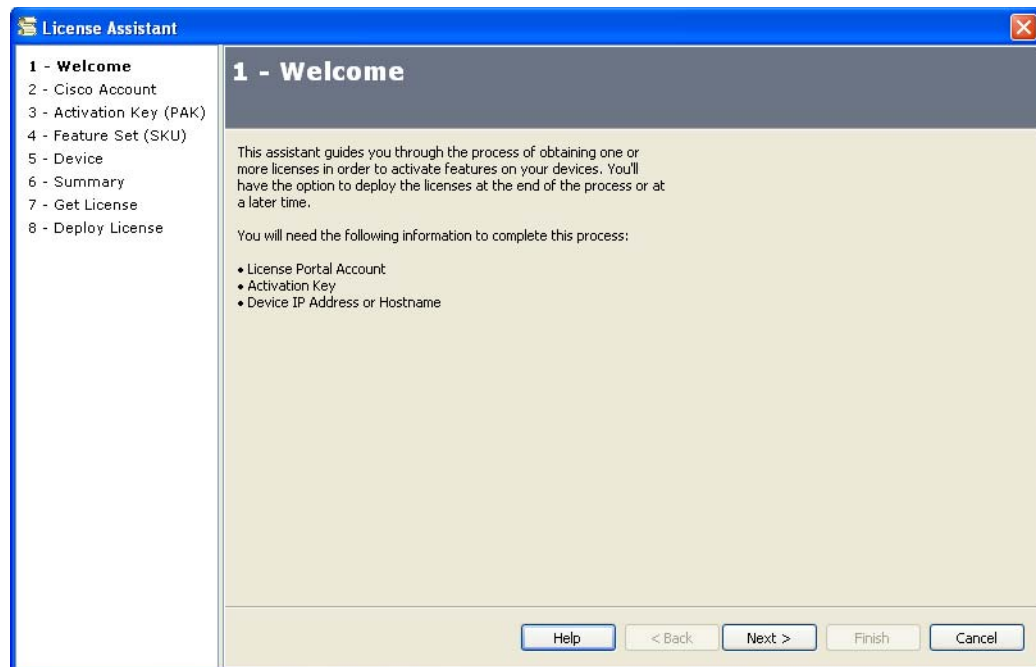
To get a license using the License Assistant, complete the following steps:

**Step 1**

Start the License Assistant by one of the following methods:

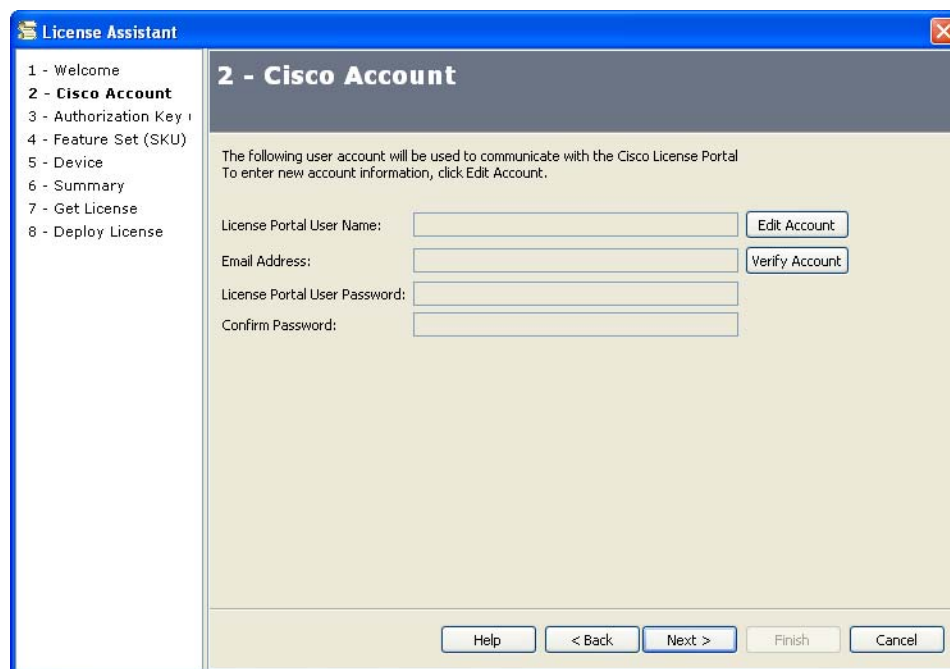
- Click **Get License** in the Quick Links pane.
- Select a PAK, SKU, or device. Right-click and choose **Get Licenses**.
- Select **License > Get License**.

The Welcome screen of the License Assistant appears. The assistant guides you through the necessary steps to get licenses.



**Step 2** Click **Next**.

The Cisco Account screen appears and is populated with your user account information.

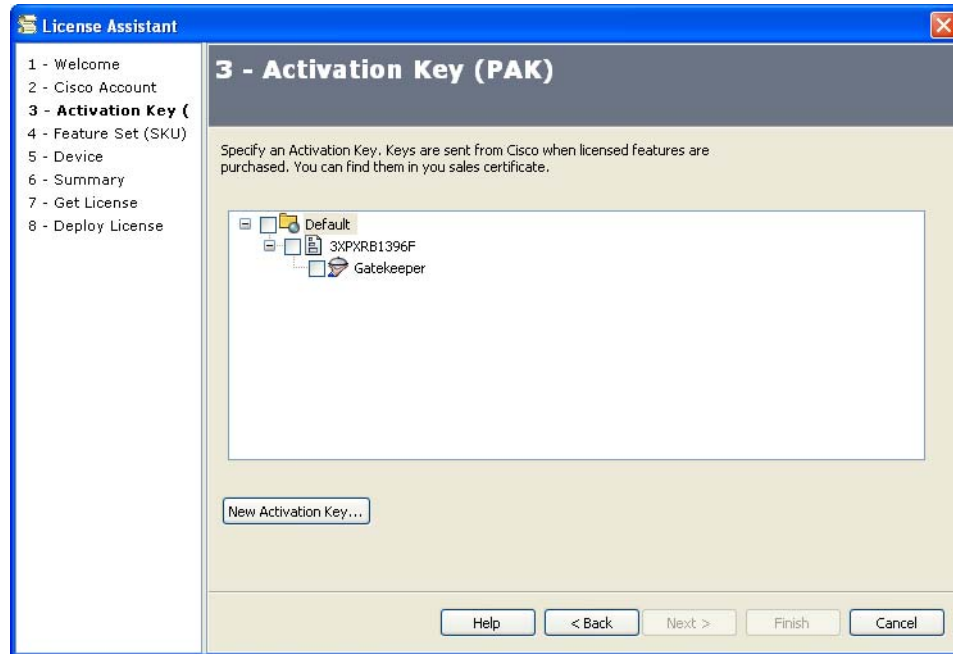


**Step 3** To change the information, click **Edit Account**. Entering any new information will change your user profile.

**Step 4** If you are changing your information or have a new account, click **Verify Account** to verify the new account. Cisco License Manager will verify your Cisco License Product Registration Portal username and password.

**Step 5** Click **Next**.

The Activation Key (PAK) screen appears.



**Step 6** Select the PAK for which you need the license information.

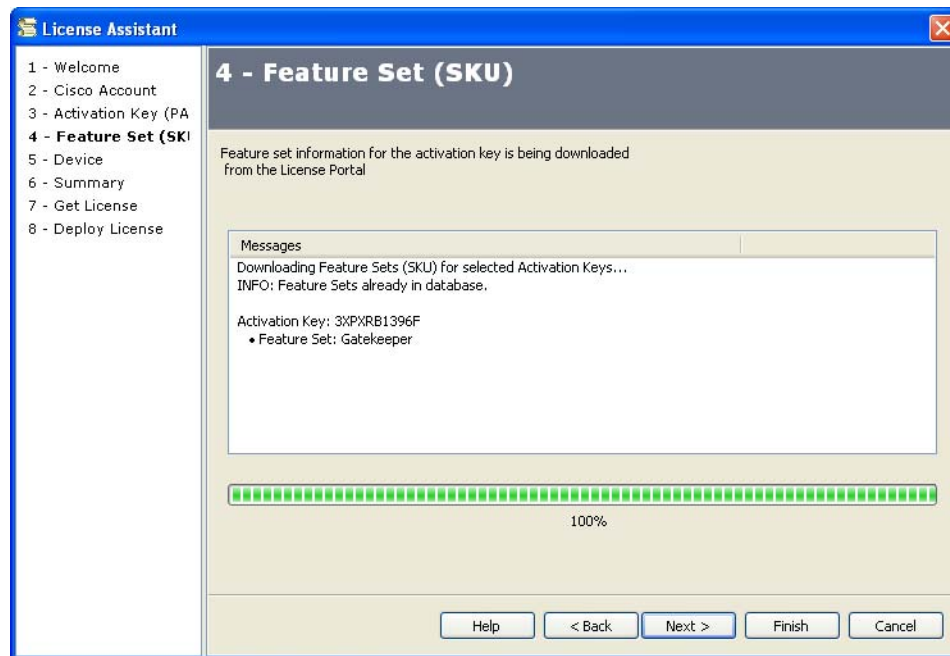


**Note** To add a new PAK at this time, click **New Activation Key** and enter the new PAK information.

**Step 7** Click **Next**.

The Feature Set (SKU) screen appears, and the PAKs are being downloaded.





**Step 8** Click **Next**.

The Device screen appears.



**Note** You cannot cancel this process but must wait until it completes in order to continue.

**Step 9** Select the Device for which you need to obtain the license.

**Note**

To add a new device at this time, click **New Device** and enter the new device information. If you exit the assistant at this point, the downloaded feature sets are kept in the database.

**Step 10** Click **Next**.

The Summary screen appears.

**Step 11** Verify that the information is correct and click **Next**. If it is not correct, click **Back** and correct the information. If you want to deploy your licenses immediately, activate the **Deploy License(s) Immediately** check box. If you choose not to deploy your licenses immediately, the license will be obtained and stored in the Cisco License Manager inventory with an undeployed status.

The Get License screen appears, and Cisco License Manager begins getting the information from the Cisco License Product Registration Portal.

**Note**

If you have already obtained the license once, a warning appears preventing you from accidentally reobtaining the same license.

**Step 12** Once the process is complete and a list of licenses appears, click **Next**. If you choose not to deploy the licenses immediately, click **Finish**.**Step 13** If you chose to deploy the licenses immediately, the License Assistant begins deploying them. Click **Next** when that process is finished.**Note**

If you have already deployed the licenses, a warning appears asking if you want to redeploy the licenses.

**Step 14** The Deploy License screen appears, providing a summary of the devices that were successfully deployed. Click **Finish**.

## Delete a License

Cisco License Manager deletes only licenses when performing a resend or transfer or after it receives a device license revocation notification. When the devices are polled, license information is synchronized with the device inventory, and the missing licenses are marked as undeployed and not deleted.


## Deploy a License

Cisco License Manager uses HTTP/HTTPS, Telnet, or SSH to deploy licenses. The Cisco IOS license agent supports HTTP or HTTPS. The license is delivered in XML format. Use the Deploy License feature to send a license to a device.

**Note**

A user with at least a License Management role can deploy licenses.

To deploy licenses, complete the following steps:

- 
- Step 1** Select **License > Deploy License** or click **Deploy License** in the Quick Links pane.  
The Deploy Licenses explorer appears in the Content Area showing a list of undeployed licenses.
-  **Note** You can choose to View by Device or View by PAK. The default is set to View by Device.
- 
- Step 2** Select the device for which you want to deploy licenses or select an individual license. The Deploy button becomes active.
- Step 3** Click **Deploy**.  
The Deploy License dialog box appears.
- Step 4** Click **OK**.
- Step 5** A status dialog box appears while the request is being processed. When it reaches 100%, click **OK**.
- 

## Poll Licenses

For information and procedures about polling licenses, see the [“Update Device Information” section on page 7-14](#). You can also use the License Assistant to poll licenses.

## Resend Licenses

The resending operation retrieves all licenses that were previously obtained from the Cisco Product License Registration Portal and deploys them to the device. You can use license resend to fix a corrupted license.



### Caution

Performing this operation may result in a duplicate license on the device.

The following describes the license resend process:

1. After you select a device that requires resending of licenses, Cisco License Manager obtains a set of licenses for this device from the Cisco Product License Registration Portal.
2. Cisco Product License Registration Portal sends all previously obtained licenses for this device to Cisco License Manager.
3. Cisco License Manager deploys the licenses to the device.

To resend a license, complete the following steps:

- 
- Step 1** Select the device for which you want to resend the license.
- Step 2** Right-click and choose **Resend License**.  
The Resend License dialog box appears.
- Step 3** If you want to redeploy the license, select that option.

- Step 4** Click **OK**.
- Step 5** A status dialog box appears. Click **OK**.
- 

## Transfer a License Using Transfer License Assistant

The transferring operation enables you to move an obtained undeployed license or a deployed license from a source device to a destination device. An example of transferring might be updating from a demonstration license to an extension license. License transfer requires permission from the Cisco Product License Registration Portal. Use license transfer

- To transfer the license from one device to another.
- When you have purchased a specific feature (such as IP) for a device but have not used it.
- When you have purchased several licenses for a feature but you now need to move some of them from the device that you just received from Cisco to another device.

The following describes the transfer process:

1. After you have selected a SKU and source device to transfer to a destination device, Cisco License Manager obtains a transfer permission ticket from the Cisco Product License Registration Portal.
2. Cisco License Manager uses this permission ticket to get a transfer ticket from the source device.
3. Cisco License Manager uses this transfer ticket to get a new license for the destination device from the Cisco Product License Registration Portal.
4. Cisco License Manager takes this transfer ticket (along with the UDIs of the source and destination devices) and gets permission from the Cisco Product License Registration Portal to revoke the deployed license from the source device. It then obtains a new license for the destination device.
5. Cisco License Manager deploys this new license to the destination device.

**Tip**

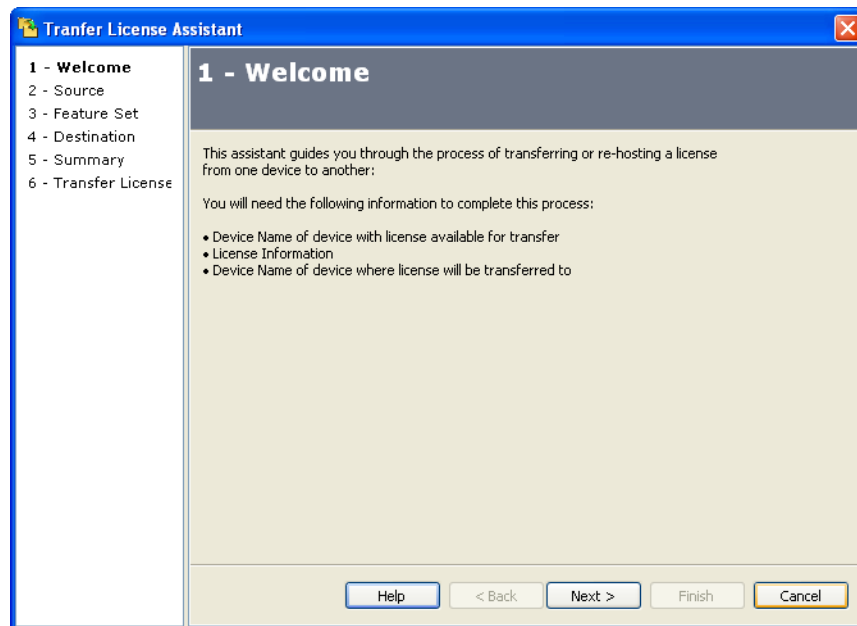
Before you get started, make sure that you have the license name of both the source and destination devices, as well as the license information.

---

To transfer a license, complete the following steps:

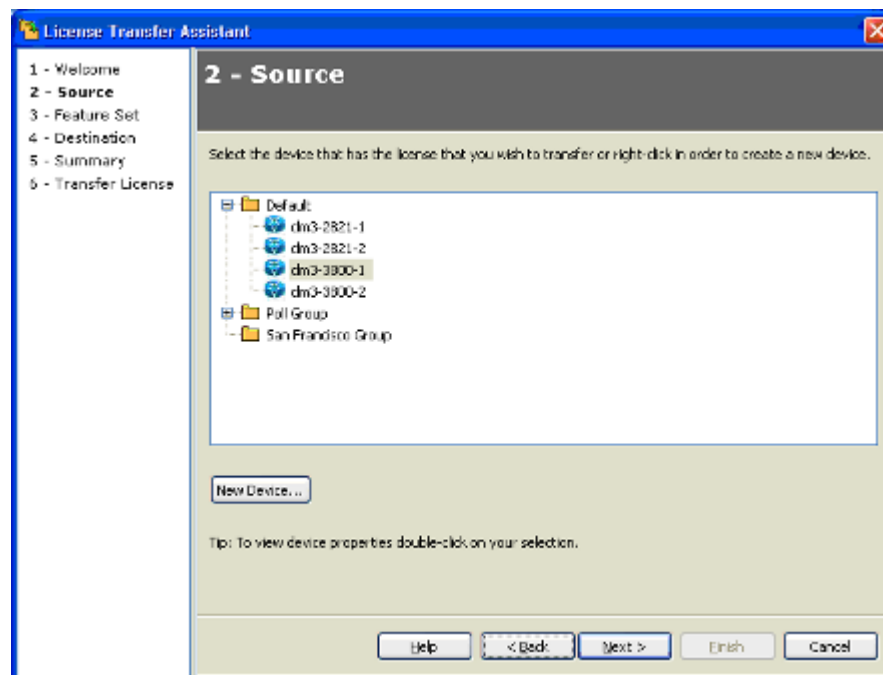
- Step 1** Click **Transfer License** in the Quick Links pane or select **License > Transfer License** to start the License Transfer Assistant.

The Welcome screen of the License Transfer Assistant appears. The assistant guides you through the necessary steps to transfer licenses.



**Step 2** Click **Next**.

The Source screen appears.



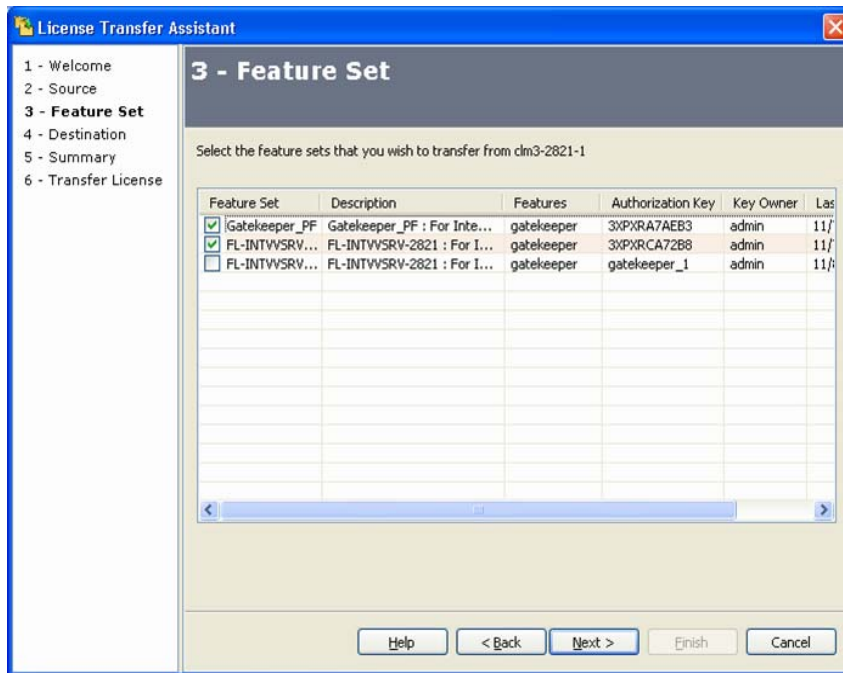
**Step 3** Select the source device; that is, the device that has the license that you want to transfer to another device.

**Note**

- To add a new device, click **New Device** and follow the procedures. For an at-a-glance view of the device properties, double-click the device.
- Only devices which have the REVOKE capability in at least one platform are displayed.

**Step 4** Click **Next**.

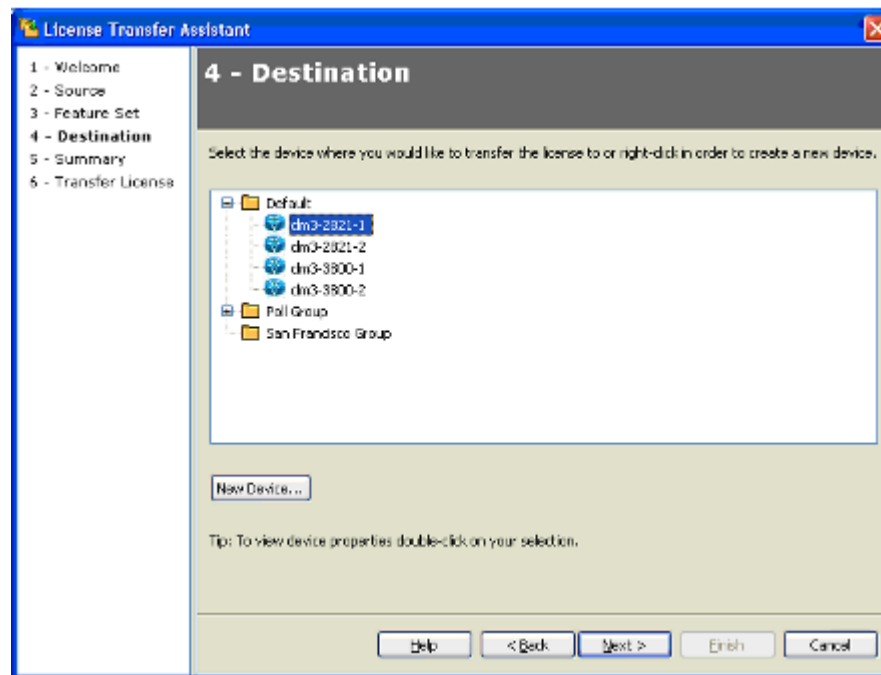
The Feature Set screen appears.

**Step 5** Select one or more feature sets that you wish to transfer to the destination device. For feature sets with Counted SKUs, you must specify a Rehost Quantity.**Note**

For an at-a-glance view of the SKU properties, double-click the feature set.

**Step 6** Click **Next**.

The Destination screen appears.

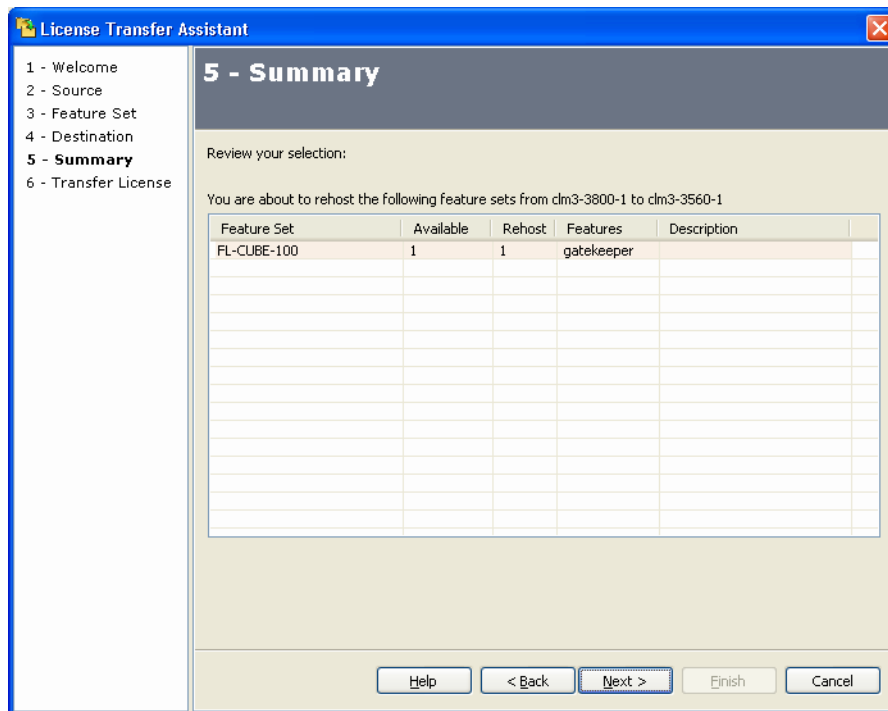


**Step 7** Select the destination device; that is, the device to which the license is to be transferred.



**Note** To add a new device, click **New Device** and follow the procedures. For an at-a-glance view of the device properties, double-click the device.

**Step 8** Click **Next**.  
The Summary screen appears.



- Step 9** Verify that the information is correct and click **Next**. If it is not correct, click **Back** and correct the information.

The Transfer License screen appears and Cisco License Manager begins transferring the information from the Cisco License Product Registration Portal.

- Step 10** Click **Finish**.

If the transfer is successful, a message appears confirming success. The license associated with the SKU that you selected has been transferred to the destination device. If the transfer fails, an error message appears.

## Annotate a License

Annotating a license adds special text to licenses that can be helpful when you want to select specific devices. To annotate a license, complete the following steps:

- Step 1** Select **Manage > Manage License** or click **Licenses** in the Quick Links pane.  
The Manage Licenses explorer appears in the Content Area.
- Step 2** Select the device or license you want to annotate. The Annotate button becomes active.
- Step 3** Click **Annotate**.  
The Annotate License dialog box appears.
- Step 4** Enter any comments in the Request Comments field. The text you entered will appear in the status messages for this license.



- Step 5** Enter the text you want to attach to these licenses and click **OK**.
- Step 6** A status dialog box appears while the request is being processed.
- Step 7** When it reaches 100%, a dialog box will pop up stating that the operation was successful. Click **OK** to close the dialog box.

## View License Properties

Each license has properties associated with it.

Complete the following procedures to view the license properties:

- Step 1** Right-click the license and select **Properties**.  
The License Properties dialog box appears.

Feature Name	Status	State	Type	Typed License Information
lbase	DEPLOYED	INACTIVE	PERMANENT	
lbase	UNDEPLOYED	UNKNOWN	EXTENSION	Usage Left is 90 days 0 hrs 0 mins
lbase	UNDEPLOYED	INACTIVE	EVALUATION	Usage Left is 90 days 0 hrs 0 mins
gatekeeper	UNDEPLOYED	INACTIVE	PAID SUBSCRIPTION	Expire at Jan 26, 2008 12:00 AM
gatekeeper	DEPLOYED	ACTIVE	EVALUATION SUBSCRIPTION	Expire at Jan 30, 2008 12:00 AM

- Step 2** To view the license line information, select the License Line tab. The information on this tab is read-only.



**Note** For further information about the fields in the License Properties dialog box, see the [“View License Properties”](#) section on page 8-13.

- Step 3** To view the license set information, select the License Set tab. The information on this tab is read-only.
- Step 4** To close the License Properties dialog box, click **OK** or **Cancel**.

## View Expired Licenses

The Expired Licenses dialog box appears if there are expired licenses when you log in to Cisco License Manager.

The Expired Licenses dialog box displays the following:

Field	Description
Feature Name	Cisco IOS feature name.
UDI	Cisco-wide identifier that contains product ID, serial number, and version.

## View Expiring Licenses

The Expiring Licenses dialog box appears if there are any licenses close to their expiration when you log in to Cisco License Manager.

The Expiring Licenses dialog box displays the following:

Field	Description
Feature Name	Cisco IOS feature name.
UDI	Cisco-wide identifier that contains product ID, serial number, and version.
Days to Expire	Time in days before license expires.

## View License Notifications

When a license operation occurs on a device, the device sends the following notifications, and Cisco License Manager displays them in the Alerts Monitor dialog box:

- License expiration
- License corruption
- License missing
- License cleared
- License revoked
- License installed
- License annotated
- License agent being turned off
- License expired
- License expiring
- License request failed
- License not enforced

- EULA accepted
- Install expired license
- Storage corrupted and unrecoverable
- Storage corrupted and recovered
- Agent listen

To view these notifications in the Alerts Monitor dialog box, click **View Alerts** from the quick Links pane or select **Troubleshoot > View Alerts**.

## Check License Portal

Use the Check License Portal feature to check for connectivity between Cisco License Manager and the Cisco Product License Registration Portal. The Cisco.com username and password are also checked in the process.

**Note**

Before you perform this task, verify that your Cisco.com account information is present in your user profile. For more information about editing your user profile, see the [“Edit a User’s Profile Information” section on page 6-2](#).

To check portal connectivity, complete the following steps:

**Step 1** Click **Troubleshoot > Check License Portal**.

A status window appears showing either that it completed successfully or that an error occurred.

**Step 2** Click **OK**.

## Manage Policies

The purpose of policy management is to create, modify, delete, view, and run policies. Policies are used to get licenses (from SKUs) and deploy the licenses to devices based on the user-specified criteria. Policies provide an automated process that scans your network and will add feature sets to your specified devices.

**Note**

You must have at least a License Management role to create, modify, delete, view, or run a policy. You will not see a PAK if you are not the owner of the PAK or in the PAK's access control list (ACL), even if you have an Administrator role. For you to see a list of all available PAKs, the owner of the PAKs must add you to each PAK's ACL list.

This section contains the following information about managing policies:

- [Add a Policy, page 8-16](#)
- [Edit and View a Policy, page 8-17](#)
- [Delete a Policy, page 8-17](#)

- ## Add a Policy

To add a policy, complete the following steps:

- The New Policy dialog box appears.

[illegible]

- 

- "The maximum length of policy name depends on the length of the user name who creates the policy. The total length of user name and policy name together must not exceed 63 characters.
- If you click **Run** at this time, the policy will save but the policy cannot run because it has not been configured.

- Step 5** Choose to share the policy so that it is visible by all users with at least a License Management role.

**Note**

If you choose to share the policy, users with access to it can delete the policy or change any filters for that policy.

- 
- Step 6** Click the down arrows to open up the Device Filter section of the dialog box.
- Step 7** Choose how you would like the policy to be filtered. You can choose one or more of the following:
- Check the **Device Model** check box and choose the device model from the drop-down list.
  - Check the **Device Group** check box and choose the device group from the drop-down list.
  - Check the **IP Range** check box and type in the Start IP and End IP addresses for your filter.
- Step 8** Click the down arrows to open up the Feature Filter section of the dialog box.
- Step 9** From the drop-down list, select the feature set name for your feature filter. The available feature sets will be displayed below that drop-down list.
- Step 10** Choose the features you would like to have in your policy by checking the appropriate check box. The devices to which the policy will be applied appear on the right side of the New Policy dialog box.
- Step 11** To automatically update this device list based on the devices that are added to your network, select **Auto Update Device List**. To update the device list manually, click **Refresh Devices**.
- Step 12** To save the policy, click **Save**
- Step 13** To save and immediately run the policy, click **Run**.
- 

## Edit and View a Policy

You can view a policy to see what filters are set, as well as edit any filters.

To view and edit a policy, complete the following steps:

- 
- Step 1** Choose one or more policies from the Policy Licensing explorer by checking the check box next to the policy.
- Step 2** Click **View**.
- The Edit Policy dialog box appears. At the top of the dialog box, it shows what policy you are viewing. If you have selected to view more than one policy, click **Prev** or **Next** to scroll through the policies.
- Step 3** Make the appropriate changes to the policy filters and click **Save**.
- Step 4** To run the policy within the New Policy dialog box, click **Run**.
- 

## Delete a Policy

You can delete a policy.

To delete a policy, complete the following steps:

- 
- Step 1** Choose the policy from the Policy Licensing explorer by checking the check box next to the policy.
- Step 2** Click **Delete**.
- A dialog box appears asking for confirmation.
- Step 3** Click **OK**.
- 

## Run a Policy

You can run one or more policies at a time from the Policy Licensing explorer pane.

To run a policy, complete the following steps:

- 
- Step 1** Choose one or more policies from the Policy Licensing explorer by checking the check box next to the policy.
- Step 2** Click **Run**.
- If you have selected more than one policy, they will run sequentially based on how they are listed in the Policy Licensing explorer pane.
- Step 3** Click **OK**.
-



# CHAPTER 9

## Postinstallation Administrative Tasks

---

This section provides information about administrator postinstallation tasks. Only administrators can perform these tasks. This chapter contains the following sections:

- [Back Up and Restore, page 9-1](#)
- [Import and Export, page 9-5](#)
- [Run the Setup Program, page 9-7](#)
- [Stop or Restart the Server, page 9-8](#)
- [Understand Naming Rules, page 9-8](#)



**Tip**

---

Only the Cisco License Manager Server package provides the following utilities: import and export, backup and restore, setup, device authentication updates, and Cisco License Manager Server programs.

---

## Back Up and Restore

Cisco License Manager provides a utility for backing up and restoring inventory data and server configuration files. This section provides the following information:

- [Understanding the Backup and Restore Utilities, page 9-1](#)
- [Back Up Cisco License Manager, page 9-2](#)
- [Restore Cisco License Manager, page 9-3](#)
- [Multihost Cisco License Manager Backup and Restore, page 9-3](#)

## Understanding the Backup and Restore Utilities

Cisco License Manager performs the following sequence of events during the backup operation:

1. Stops the Cisco License Manager server.
2. Backs up all data files from the environment directory and saves them to an archival location.
3. Copies the properties files.
4. Restarts the Cisco License Manager server.

Cisco License Manager performs the following sequence of events during the restore operation:

1. Stops the Cisco License Manager server.

2. Restores all inventory files and saves them to the data directory.
3. Restores the properties files to the conf directory.
4. Restarts the Cisco License Manager server.

## Back Up Cisco License Manager

Cisco License Manager provides an administrator-only utility that backs up the database data and server configuration files. These backup files are used when you need to restore a previous database and configuration. Periodic backups are recommended.

The backup utility is located in `$CISCO_LM_HOME/bin/clm_backup.bat`.

You can back up the files to a specific directory. For example, you can back up the files to the `C:\` directory, or you can choose a specific directory such as `C:\program files\cisco systems\clm_backup`.

**Note**

Verify that your server is running before you initiate the backup procedure.

To back up the database data and server configuration files, complete the following steps:

**Step 1** Log in to the Cisco License Manager server.

**Step 2** For a Windows platform, type the following from a DOS command window:

```
$CISCO_LM_HOME/bin/clm_backup.bat <password> <absolute_backup_directory_path>
```

The *password* parameter is the Cisco License Manager administrator password. The *absolute\_backup\_directory\_path* is the location where the backup files are to be stored.

**Note**

This utility can be run only by the administrator.

When the batch script has run, a completion message appears.

**Step 3** For a Solaris platform, type the following from a command window:

```
$CISCO_LM_HOME/bin/clm_backup.sh <password> <absolute_backup_directory_path>
```

The *password* parameter is the Cisco License Manager administrator password. The *absolute\_backup\_directory\_path* is the location where the backup files are to be stored.

**Note**

This utility can be run only by the administrator.

When the batch script has run, a completion message appears.



## Restore Cisco License Manager

Cisco License Manager provides an administrator-only utility that restores the database data and server configuration files. The files used in the restore utility are created when you back up the Cisco License Manager server.

The restore utility is located in `$CISCO_LM_HOME\bin\clm_restore.bat`.



### Note

Verify that your server is running before you initiate the restore procedure.

To restore the database data and server configuration files, complete the following steps:

**Step 1** Log in to the Cisco License Manager server.

**Step 2** For a Windows platform, type the following from a DOS command window:

```
$CISCO_LM_HOME\bin\clm_restore.bat <password> <absolute_backup_directory_path>
```

The *password* parameter is the Cisco License Manager administrator password. The *absolute\_backup\_directory\_path* is the location where the back up files are stored.



### Note

This utility can be run only by the administrator.

When the batch script has run, a completion message appears.

**Step 3** For a Solaris platform, type the following from a command window:

```
$CISCO_LM_HOME/bin/clm_restore.sh <password> <absolute_backup_directory_path>
```

The *password* parameter is the Cisco License Manager administrator password. The *absolute\_backup\_directory\_path* is the location where the backup files are to be stored.



### Note

This utility can be run only by the administrator.

When the batch script has run, a completion message appears.

## Multihost Cisco License Manager Backup and Restore

In environments where moving equipment or hosts from isolated network domains is restricted, Cisco License Manager may be deployed on two hosts—one on the isolated network (ex: *Cisco License Manager server 1*) and the second one in the network domain with Internet connectivity (ex: *Cisco License Manager server 2*). Cisco License Manager installed in the isolated network (*Cisco License Manager server 1*) has connectivity to network devices and discovers Cisco devices with licensing capability and builds an inventory of licenses in the network. Then the customer can back up the Cisco License Manager database using the following script:

```
clm_backup.bat <password> <absolute_backup_directory_path>
```

Where *password* is the Cisco License Manager administrator password and *absolute\_backup\_directory\_path* is the location where the backup files will be stored

If IP address information is considered sensitive due to security concerns, invoke the following command to mask IP addresses during the backup.

```
clm_backup.bat <password> <absolute_backup_directory_path> -mask ipaddr
```

To backup all data on an isolated Cisco License Manager Server and restore it on a domain Cisco License Manager Server, complete the following steps:

---

**Step 1** Log in to the isolated Cisco License Manager host (**C:\CLMServer1**).

**Step 2** For a Windows platform, type the following from a DOS command window:

```
clm_backup.bat cisco C:\CLMServer1 -mask ipaddr
```




---

**Note** This utility can be run only by the administrator.

---

When the batch script has run, a completion message appears.

**Step 3** Copy this database file to physical media and take it to the domain Cisco License Manager host (**C:\CLMServer2**).

Restore its database using the database backup from the isolated host with the following:

```
clm_restore.bat <password> <absolute_backup_directory_path> <-mask hostInfo>
```

The *password* parameter is the Cisco License Manager administrator password. The *absolute\_backup\_directory\_path* is the location where the backup files are to be stored.

For example, the following script restores Cisco License Manager from the backup stored at C:\CLMServer1:

```
clm_restore.bat cisco C:\CLMServer1 -mask hostInfo
```




---

**Note** This utility can be run only by the administrator.

---

When the batch script has run, a completion message appears.

**Step 4** Restart the Cisco License Manager server.

Now, Cisco License Manager server 2 (**C:\CLMServer2**) has information about all devices in the isolated network and their unique device identifiers (UDIs).

**Step 5** Connect to the license server on the Cisco Website from Cisco License Manager server 2 and obtain and save the licenses associated with the isolated network.

**Step 6** Back up the database on Cisco License Manager server 2 using the following command:

```
clm_backup.bat cisco C:\CLMServer2
```

**Step 7** Take a copy of this database on physical media to the isolated network and restore Cisco License Manager server 1's (**C:\CLMServer1**) database using the database backup of Cisco License Manager server 2 with the following command:

```
clm_restore.bat cisco C:\CLMServer2 -mask hostInfo -mask ipaddr
```

When the batch script has run, a completion message appears.

---

#### Related Topics

- [“Back Up Cisco License Manager” section on page 9-2](#)
- [“Restore Cisco License Manager” section on page 9-3](#)

# Import and Export

Cisco License Manager stores device and license information in its database. You can use the Cisco License Manager user interface to discover devices and collect license information, or you can use the import utility to copy this information into Cisco License Manager from a schema file.

You can also use the export utility to create an XML file that contains device and license inventory to use with another application. The import XML schema file is located in `$CISCO_LM_HOME\conf\clm_inventory.xsd`.



## Note

Cisco License Manager uses a different unique device identifier (UDI) format from the UDI found on the device. The format of UDI in the Cisco License Manager inventory is `<PID>:<VID>:<SN>`. If you create a device using the UDI, it must be in this format.

- [Import into Cisco License Manager, page 9-5](#)
- [Import CiscoWork Devices into Cisco License Manager, page 9-6](#)
- [Export Data from Cisco License Manager, page 9-7](#)
- [Cisco License Manager Import/Export Schema, page 9-7](#)

## Import into Cisco License Manager

The import utility is a batch script that creates Cisco License Manager inventory objects using an XML file.

The import utility is `$CISCO_LM_HOME/bin/clm_import.bat`.

### Usage:

```
clm_import.bat <adminpassword> {-email absolute_file_path}
```

```
clm_import.bat <adminpassword>
```

where

- *adminpassword* is the Cisco License Manager administrator password
- If the e-mail option is specified, the second argument is a filepath which you create when you receive the .lic file sent to your email by the Cisco Product License Registration Portal. Copy the contents of the .lic file to a new file on the system and pass the new file path as the second argument to `clm_import.bat` utility.
- If only *adminpassword* is specified, `clm_import` utility reads the export xml file from `$CISCO_LM_HOME/bin/ClmExport.xml`. This export XML file, `ClmExport.xml`, was created by the `clm_export` utility.

### Examples:

- Import all Cisco License Manager data from the file *ClmInvExport.xml*.

```
clm_import.bat adminpassword
```

- Import the license file received from the Cisco Product License Registration Portal named *clm.xml*.

```
clm_import.bat adminpassword -email c:\clm.xml
```


**Note**

After running the Cisco License Manager import script, log into the GUI and poll licenses for all the imported devices. This action updates both the license and device status for all the imported devices.

## Import CiscoWork Devices into Cisco License Manager

The import utility is a batch script that imports CiscoWork devices into Cisco License Manager inventory.


**Note**

Before running this import utility, the CiscoWork system must have system environment **DCRCLIFILE** set up there already. Otherwise, an error message *LMS environment DCRCLIFILE is not set up yet. Please set this environment variable before running this utility.* is returned.

If CLM and CiscoWork solutions are on same machine, run the script:

```
%INSTALL_DIR%/bin directory
```

If CLM and CiscoWork solution are on different machines, use the zip file:

```
%INSTALL_DIR%/tool/LMS.zip
```

Then:

- a. Copy the zip file to the CiscoWork system
- b. Unzip the folder, which creates the *LMS* directory
- c. Go to the subdirectory *bin*
- d. Run the import utility **runLMSDeviceImport.bat** (On Solaris and Linux: **runLMSDeviceImport.sh**)

**Usage:**

```
runLMSDeviceImport.bat <lms_install_dir> <lms_repository_user_name>  
                        <CLM_admin_password> <CLM_server_host> <CLM_server_port_number>
```

where

- lms\_install\_dir is the directory of CiscoWork solution.
- lms\_repository\_user\_name is the CiscoWork repository username.
- CLM\_admin\_password is the Cisco License Manager administrator password
- CLM\_server\_host is CLM server host name.
- CLM\_server\_port\_number is CLM Server rmi port number

**Example:**

```
runLMSDeviceImport.bat c:/ciscowork_dir lms_root clm_admin clm_server1 1099
```

## Export Data from Cisco License Manager

Cisco License Manager can export Cisco License Manager data and save it to an XML file. The export utility is a script that creates an XML file stored on `$CLM_HOME/bin/ClmExport.xml` that lists the Cisco License Manager inventory. The export utility is `$CISCO_LM_HOME/bin/clm_export.bat` for a Windows platform and `clm_export.sh` for a Solaris platform.

### Usage:

```
clm_export.bat <adminpassword>
```

where

- *adminpassword* is the Cisco License Manager administrator password

### Examples:

- Export all Cisco License Manager data to the file *ClmExport.xml*.

```
clm_export.bat adminpassword
```

## Cisco License Manager Import/Export Schema

Use the import/export schema file structure to create files for Cisco License Manager import and export. You can use the import utility to populate your database with the file information.

The import XML schema file is located in `$CISCO_LM_HOME\conf\clm_inventory.xsd`.

## Run the Setup Program

You can run the setup program to update any of the installation options. We strongly recommend that you run this program if you elected to run the silent installation or if you were unable to answer any of the questions during the installation. The silent installation uses the command-line interface (CLI).

To run the setup program, complete the following steps:

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | To run the setup program from a Windows platform, select <b>Start &gt; All Programs &gt; Cisco License Manager &gt; CLM Server &gt; Configure Server</b> . To run the setup program from a Linux or Solaris platform, run the batch script <code>\$CLM_HOME/bin/clm_Setup.sh</code> . |
| <b>Step 2</b> | Enter the administrator password and click <b>Next</b> .  |
| <b>Step 3</b> | You can change any of the following options: <ul style="list-style-type: none"><li>• Server or event listening port</li><li>• Device communication protocol</li><li>• E-mail service</li><li>• Administrator password</li><li>• HTTP file server port</li><li>• SSL enable</li></ul>  |

- Step 4** Enter the required information and click **Done**.
- 

## Stop or Restart the Server

Before you can log into Cisco License Manager, the server must be running. After installation, the server is automatically started.

Complete the following steps to restart or stop the server.

- 
- Step 1** To stop the Cisco License Manager server using the Windows platform, choose **Start > All Programs > Cisco License Manager > CLM Server > Stop Server**.
- Step 2** To start the Cisco License Manager server using the Windows platform, choose **Start > All Programs > Cisco License Manager > CLM Server > Start Server**.
- Step 3** To stop the Cisco License Manager server using the Solaris platform, run the following command:  
`$CLM_HOME/bin/clm_stop.sh`
- Step 4** To start the Cisco License Manager server using the Solaris platform, run the following command:  
`$CLM_HOME/bin/clm_start.sh`
- 

## Understand Naming Rules

This section contains the following information about naming rules:

- [Naming Rules, page 9-8](#)
- [Allowable Characters for Names and Descriptions, page 9-9](#)

## Naming Rules

The following table lists the rules for usernames, passwords, and other user information. These rules apply to users configured using **Manage > Manage Users** and to users configured by using the API **login** command.



**Note**

---

The same rules apply to a folder name, device group, device ID, and PAK ID.

---

Type	Rules
Username	<ul style="list-style-type: none"> <li>1 to 64 ASCII characters in the range from x021 to x07A</li> <li>Case sensitive</li> </ul>
User Password	<ul style="list-style-type: none"> <li>1 to 64 ASCII characters in the range from x021 to x07A</li> <li>Case sensitive</li> </ul>
First Name	<ul style="list-style-type: none"> <li>No length limit</li> </ul>
Last Name	<ul style="list-style-type: none"> <li>Case sensitive</li> </ul>
Company Name	<ul style="list-style-type: none"> <li>Any alphanumeric character and the underscore</li> </ul>
E-mail Address	Valid e-mail address is required for Cisco.com access. To configure this in User Manager, see the <a href="#">“Manage Users” section on page 6-1</a> )
Cisco Username	Must contain at least one letter and no spaces. May contain numbers.
Cisco Password	<p>Strong passwords have the following characteristics:</p> <ul style="list-style-type: none"> <li>Contain both uppercase and lowercase characters (for example, a–z, A–Z)</li> <li>Contain digits and punctuation characters as well as letters (for example, 0–9, !@#%&amp;^*()_+!~ =\` { } [ ] : ; ' &lt; &gt; ? , . /)</li> <li>Are at least five alphanumeric characters long</li> <li>Are not a word in any language, and are not slang, dialect, or jargon</li> <li>Are not based on personal information, names of family members, and so forth</li> </ul>

## Allowable Characters for Names and Descriptions

The following table lists the allowable characters for device, PAK, and other names and descriptions in most dialog boxes.



### Note

A device name can be displayed differently from the hostname. When adding devices, users can customize device names in Cisco License Manager. When a device is discovered, the hostname is used. The device name is local to Cisco License Manager.

The length limit for most fields is 64 characters (range from hexadecimal 21 to 7A).

Character Description	Characters
Alphanumeric—uppercase and lower case	A–Z, a–z, 0–9
Asterisk	*
Colon (Do not use for usernames.)	:

Character Description	Characters
Comma (Do not use for usernames.)	,
Dollar sign	\$
Full stop (period)	.
Equals	=
Exclamation point	!
Hyphen, dash, minus sign	-
Left and right curly brace	{ }
Left and right parenthesis	( )
Left and right square bracket	[ ]
Low line (underscore)	_
Percent sign	%
Question mark	?
Semicolon	;
Solidus (forward slash)	/
Space (Do not use for usernames.)	
Tilde <sup>1</sup>	~
Vertical line <sup>1</sup>	

1. Tildes and vertical lines are not permitted for PAK folder names.


**Note**

Do not use the Enter key in any description fields.





# APPENDIX **A**

## FAQs and Troubleshooting

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This appendix provides frequently asked questions (FAQs) and troubleshooting tips.

- [FAQs, page A-I](#)
- [Troubleshooting Tips, page A-VII](#)

### FAQs

The following FAQs contain information about installation, getting started, and operational issues using the Cisco License Manager graphical user interface (GUI).

- [Installation, page A-I](#)
- [Getting Started, page A-II](#)
- [Cisco License Manager Server, page A-II](#)
- [Devices, page A-III](#)
- [Error Messages at Installation, page A-IV](#)
- [Log Files and Error Messages, page A-V](#)
- [Logging In, page A-V](#)
- [PAK and Licenses, page A-V](#)
- [System Setup, page A-VI](#)

### Installation

- Q.** What Windows Registry keys are added during installation?
- A.** Depending on which packages you install, Cisco License Manager Client and Cisco License Manager Server may be installed.
- 
- Q.** How do I find out what e-mail server to use for the installation?
- A.** If you are using a mail program, check the profile settings for the server name. You can add the e-mail server during the installation, or you can add it after the installation by running the setup program.
-

- Q.** During the installation I am asked if I have Cisco devices that support SSL to communicate with Cisco License Manager. How do I find out more about SSL and my options for choosing a certificate file?
- A.** Secure Socket Layer (SSL) is an application-level protocol that enables secure transfers of data through privacy, authentication, and data integrity. It relies upon certificates, public keys, and private keys.

Certificates are similar to digital ID cards. They prove the identity of the server to clients. Certificates are issued by certificate authorities (CAs) such as VeriSign and Thawte. Each certificate includes the name of the authority that issued it, the name of the entity to which the certificate was issued, the entity's public key, and time stamps that indicate the certificate's expiration date.

Public and private keys are the ciphers used to encrypt and decrypt information. The public key is freely shared, but the private key is never given out. Each pair of public and private keys works together: data encrypted with the public key can only be decrypted with the private key.

Before configuring the SSL device, you must have a certificate and keys for the server. You can use the files you received from the CA, copy the keys and certificate from an existing secure server, use default keys and certificates preloaded in the device, or generate your own keys and certificates. See your device or Cisco IOS software documentation for more details.

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## Getting Started

- Q.** Do I have to be a registered user of Cisco.com to use Cisco License Manager?
- A.** Yes. A valid Cisco.com user ID is required so that license information can be e-mailed to you. Go to <http://www.cisco.com> and click **Register**. Remember to add the Cisco.com account information to each user's profile to enable licensing to work properly.
- 

- Q.** Whom do I contact if my PAK or license does not work?
- A.** Ensure that your connection to Cisco.com is working. You may need to request a replacement PAK. This could happen if
- You have a faulty PAK number.
  - Your shipment did not contain a PAK number.
  - You have lost your PAK number.
- Contact your account team for assistance.
- 

- Q.** Can I set up a backup to run at a scheduled time?
- A.** You can create a cron job in Windows to schedule a backup of Cisco License Manager. The program does not include a scheduling feature.
- 

## Cisco License Manager Server

- Q.** I want to clean up the database without reinstalling. How do I do this?

- A.** Stop the Cisco License Manager Server and then delete all the files under \$CISCO\_LM\_HOME/data.

## Devices

- Q.** How do I discover a device?

- A.** There are two methods of discovering a device:

- [Discover Devices Using the Discover Device Assistant, page 7-2](#)
- [Add a Device Using the GUI, page 7-5](#)

Another method, adding a device manually using the API, requires you to purchase the Cisco License Manager software developers kit (SDK), available on <http://www.cisco.com/go/clm>.

---

- Q.** How do I make a stackable switch device accessible to Cisco License Manager?

- A.** Add stackable devices to the Cisco License Manager database using Discover Device. For more information on how stackable devices are discovered and viewed, see the [Configure Your Cisco Device to Authenticate Cisco License Manager, page 5-4](#) and the Catalyst 3750-E and 356-E software documentation.
- 

- Q.** Some of my device-licensable features are not accessible. How can I make them accessible?

- A.** Make sure that the features are marked Deployed in the properties pane. See the [“Deploy a License” section on page 8-6](#).
- 

- Q.** Why am I not receiving license notifications from my Cisco devices that are License Agent-enabled?

- A.** Ensure that your Cisco device is configured properly by checking the following:

- Cisco License Manager URL host (if more than one Cisco License Manager host is in use).  
Run Discover Device again to reset the notification URL in the device or change the configuration on the device. See the Catalyst 3750-E and Catalyst 356-E software documentation.
  - From the device, ping the Cisco License Manager host IP address to ensure that it is reachable from the device.
  - Ensure that no firewall exists between the Cisco License Manager client program and the server. A firewall may block the notification sent from the Cisco License Manager server to the client program.
- 

- Q.** I am unable to discover devices or poll devices. What can I do to fix this?

- A.** Do the following:

- Add device authentication when running discovery if authentication is enabled.
- Ensure that the device has its License Agent enabled with config “License Agent listener...” or change the discovery method to Telnet or SSH.

- Ensure that the subnet is accessible to Cisco License Manager.
- 

**Q.** How do I know if the objects are written to the database correctly?

**A.** Stop the Cisco License Manager Server and then run the **clm\_dumpdb** utility to find out if the right information is stored in database.

```
clm_dumpdb <dbdir> <object>
```

where

<dbdir> is the directory where the db file is located

<object> is one of the following:

- device
  - pak
  - license
  - licenseline
  - group
  - folder
- 

**Q.** I have Cisco devices that are connected using Telnet or SSH as the connection method. Why am I not received the license notifications from these devices?

**A.** Verify that you have the logging command configured on your device: **logging <Cisco License Manager server IP address>**. Also, verify that the Cisco License Manager server's IP address is accessible from the device.

---

**Q.** Why do I get error while polling or deploying licenses on devices that are connected through Telnet/SSH?

**A.** Verify that the IP address of the Cisco License Manager server has not changed. If the IP address has changed, stop and restart the Cisco License Manager server.

---

## Error Messages at Installation

**Q.** I get a message telling me that there may be errors in my installation and client setup. What do I do?

**A.** Ensure that your user profile contains the required information for Cisco authentication.

---

**Q.** I see some error messages from the GUI/SDK. How do I know if this is inventory related?

**A.** Inspect the /log/clm.log file to see if there are any entries containing "ERROR inventory ...."

## Log Files and Error Messages

- Q.** What log files are available for troubleshooting?
- A.** Several log files are located in the log directory: `clm.log`, `log`, `clm_ui.log`, and the installation log, `Cisco License Manager Installlog.log`.
- 

- Q.** Where can I view error message for the error code?
- A.** In `$CISCO_LM_HOME/conf/ClmErrorMessages.properties`.

## Logging In

- Q.** Can several users be logged in at the same time?
- A.** Yes, with different usernames.
- 

- Q.** Can multiple users manage the same device at the same time?
- A.** It depends on the operation. Cisco License Manager locks the device during discovery and other processes that could result in changes.
- 

- Q.** I am unable to connect and log in to the Cisco License Manager server. What should I do?
- A.** Try these tasks in the following order:
1. Ensure that the username and password are correct.
  2. Replace the hostname with an IP address or vice versa.
  3. Ensure that the port is the same used by the server.
  4. Ensure that no firewall exists between the server and client programs.
- 
- Q.** Why is my GUI client no longer connected to the Cisco License Manager server and unable to complete an operation?
- A.** The following may have occurred:
- The server is down. See the [“Stop or Restart the Server” section on page 9-8](#).
  - Another user has logged in with the same user ID. Create a new user account for multiple-user access. See the [“Manage Users” section on page 6-1](#).
  - Your login session has terminated. This could happen when a user’s account is deleted, a user’s privileges have changed, or the login session has expired.

## PAK and Licenses

- Q.** Where can I find the product authorization key (PAK) that I need to enter into Cisco License Manager?

- A.** The PAK is located on the purchase order document shipped with your device hardware. It is an 11-character alphanumeric key. If you do not have a PAK, contact your account team or channel partner.

- Q.** Whom do I contact if my PAK key or license does not work?

- A.** Ensure that your connection to Cisco.com is working. You may have to request a replacement PAK. This could happen if

- You have a faulty PAK number.
- Your shipment did not contain a PAK number.
- You have lost your PAK number.

Contact your account team for assistance.

- Q.** Can I search for a device or PAK?

- A.** See the “Find a Device” section on page 7-11 or the “Find a PAK” section on page 7-21.

- Q.** I am unable to download PAK information. What is wrong, and how do I fix it?

- A.** Ensure that the following information is correct in the User Manager window:

- User’s e-mail address.
- Cisco.com username and password. Go to <http://www.cisco.com> to register.

- Q.** I am unable to download license information. What is wrong, and how do I fix it?

- A.** Check to see if you can download PAK information. Then ensure that the following information is correct in the User Manager window:

- User’s e-mail address
- Cisco.com username and password

## System Setup

- Q.** Which ports and protocols does Cisco License Manager use?

- A.** Cisco License Manager uses the following ports:

Port Number	Protocol/Name	Description	Default Value and Options
1099	TCP/rmregistry	Client uses this port number to send requests to and receive responses from the Cisco License Manager server.	1099. User-defined range from 1024 to 65535.

Port Number	Protocol/Name	Description	Default Value and Options
80	HTTP	Used for notification between the Cisco License Manager and the device.	80. User-defined range from 1024 to 65535.
8088	HTTP file server	Used by Cisco License Manager to upload/download files to devices that are connected using Telnet/SSH.	8088. User-defined range from 1024 to 65535.

- Q.** Do I need to be a registered user of Cisco.com to use Cisco License Manager?
- A.** Yes. This is required. Go to <http://www.cisco.com> and click **Register**. Then ensure that your Cisco.com password is entered into your user profile using the User Manager.

- Q.** How can I get information about the Cisco License Manager software version?
- A.** Select **Help > About Cisco License Manager** for information about your software version.

- Q.** If there is a firewall between my devices and Cisco.com, how can I use Cisco License Manager to obtain and deploy licenses?
- A.** Bring your Cisco License Manager Server inside the firewall to create your device inventory. Then take the Cisco License Manager Server outside the firewall to obtain the licenses. Bring the Cisco License Manager Server back inside the firewall to deploy the licenses.

## Troubleshooting Tips

Use the following troubleshooting tips for installation, getting started, or uninstallation scenarios.

- [\\$CISCO\\_LM\\_HOMEInstallation Is Stopped with Resource Folder Error, page A-VIII](#)
- [Error Messages, page A-VIII](#)
- [Cannot Log In, page A-VIII](#)
- [Need to Send Logs, page A-VIII](#)
- [Adding E-Mail Server Information After Installation, page A-IX](#)
- [Cannot Reach Cisco.com, page A-IX](#)

## \$CISCO\_LM\_HOME Installation Is Stopped with Resource Folder Error

**Symptom** The installation was stopped by a `Resource Folder is Not Found` error message.

**Possible Cause** You ran the installer from within the WinZip application.

**Recommended Action** Extract all WinZip Cisco License Manager files to a file folder before running the installer.

---

## Error Messages

**Symptom** I received error messages during installation and cannot remember what they said or if I needed to do something after completing the installation.

**Possible Cause** A minor error may have occurred.

**Recommended Action** Check the installation log, `$Cisco_Install_Home$/log/Cisco_License_Manager_InstallLog.log`.

---

## Cannot Log In

**Symptom** User cannot log into the system.

**Possible Cause** The Cisco License Manager server is not up or you entered an invalid user account in the login window.

**Recommended Action**

1. Did you run the installation program?  
If no, run the installation program. If yes, continue to the next step.
  2. Do you know the administrator password or any user account passwords?  
If no, see the [“Reinstall Cisco License Manager” section on page 4-11](#).
- 

## Need to Send Logs

**Symptom** I need to send log information to my account team or channel partner.

**Recommended Action** Send your `$CISCO_LM_HOME/conf/clm.properties` file to your customer service representative. All log files are in the `$CISCO_LM_HOME/log` directory.

---



## Adding E-Mail Server Information After Installation

**Symptom** I skipped entering my e-mail server during installation because it was not reachable or I did not have that information at the time. How do I set my e-mail server after the installation has completed?

**Recommended Action** Ensure that Cisco License Manager server is running. If it is not running, restart it. Then run **Cisco License Manager Setup** to enter the e-mail server. Enter **No** for all questions until you get to “Do you want to reconfigure the E-mail Service?” Answer **Yes**. Then enter the IP address or hostname (including domain name) and click **Next**. Answer **No** to the remaining questions. Click **Done** when the Setup Complete window appears.

---

## Cannot Reach Cisco.com

**Symptom** I am trying to poll or obtain a license from Cisco.com, but it is not working.

### Possible Cause

- a. Your user information and Cisco.com authentication information might have been entered incorrectly.
- b. The Cisco Product License Registration Portal is down. The response message indicates the root cause of the error.

### Recommended Action

- a. Enter your Cisco.com authentication information into your profile using **Tools > User Manager**.
  - b. Retry your request. Check to ensure that your network can reach Cisco.com using an Internet browser.
  - c. Report the problem with the Cisco Product License Registration Portal to your customer service representative.
-

