

Cisco License Manager 3.2.6

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Cisco® License Manager automates Cisco IOS® Software activation and license management for a wide range of Cisco platforms running Cisco IOS Software as well as other operating systems.

Product Overview

Cisco License Manager is a secure client/server-based application to manage Cisco IOS Software activation and license management for a wide range of Cisco platforms running Cisco IOS Software, as well as other operating systems. It automates the workflow associated with Cisco IOS Software activation through its intuitive, easy-to-use GUI and scales for large network deployments. Cisco License Manager automatically discovers the network and builds an inventory of licensed features deployed in the network by securely communicating with network devices running Cisco IOS Software. Alternatively, Cisco License Manager can import the list of network devices from a .csv file or CiscoWorks LAN Management Solution (LMS), and you can add them manually.

Using Cisco License Manager, you can perform network wide software activation in three simple steps:

1. You can add the Product Authorization Keys (PAKs) for the licensed software features you have purchased from Cisco in Cisco License Manager. Cisco License Manager automatically obtains SKUs for the features authorized by the PAKs by securely interacting with the Cisco.com license portal.
2. Using the wizard-based GUI, Cisco License Manager guides you to securely obtain licenses for selected devices from the license server on Cisco.com.
3. You can deploy the obtained licenses through an intuitive, wizard-based GUI to activate the software features. Cisco License Manager can obtain licenses even for pre-deployed or offline devices by simply adding those devices using their Unique Device Identifier (UDI) instead of their IP address.

The advanced reporting capabilities in Cisco License Manager help you know exactly which software features you have purchased, how many licenses you have obtained, and which licenses are not yet deployed. It also aids in audit compliance through its licensing reports, indicating proof of license. Cisco License Manager helps you save costs by identifying a list of licenses that are deployed on network devices but are not needed there.

Cisco License Manager assists in failure recovery by deploying licenses stored in its database or by retrieving and then deploying all the licenses for a device from the license server on Cisco.com. Cisco License Manager provides the capability to back up its database and configuration files, and restore them later.

Cisco License Manager resides at the customer premises and has access to the customer network; it needs Internet connectivity to Cisco.com for many of its features. It also supports two-stage license deployment for isolated networks, where customers can move Cisco License Manager to a network domain with Internet connectivity and obtain and save licenses to its database, by securely communicating with the license server on Cisco.com. Cisco License Manager can then be moved back to the original isolated network domain, to deploy

previously obtained licenses to network devices. Figure 1 illustrates how Cisco License Manager should be deployed in a typical scenario.

Figure 1. Cisco License Manager Typical Deployment Scenario

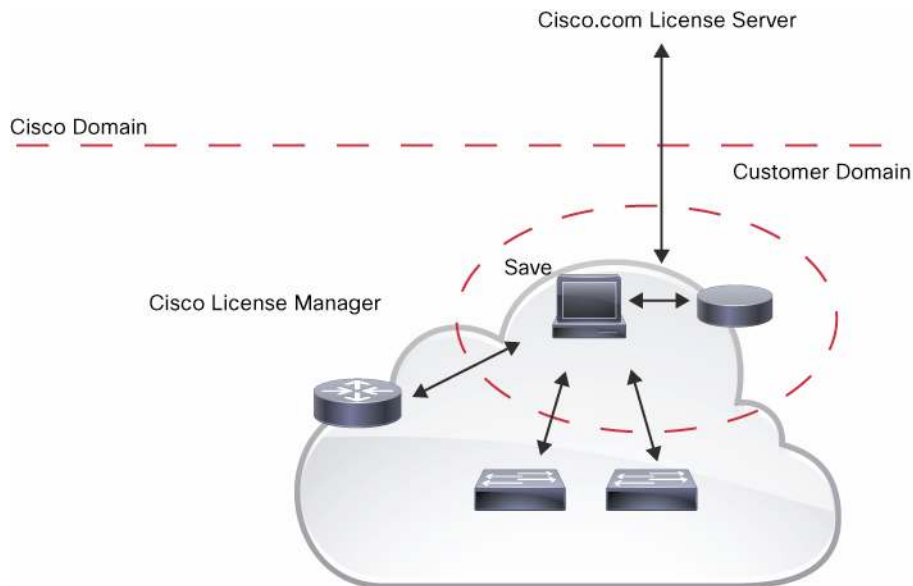
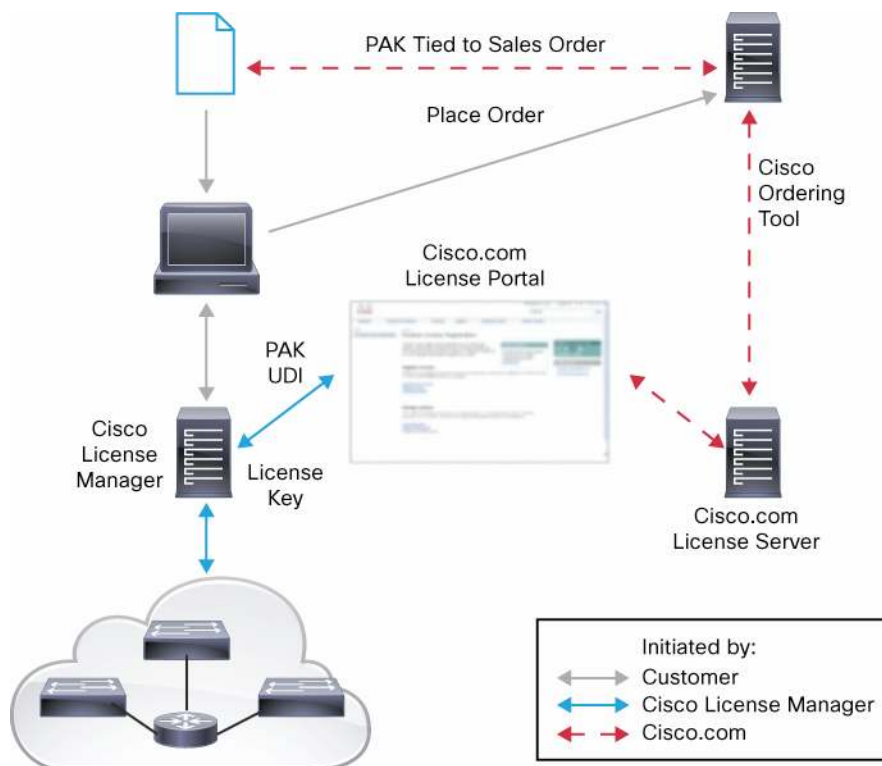


Figure 2 shows the most common Cisco IOS Software activation workflow with Cisco License Manager.

Figure 2. Software Activation Workflow with Cisco License Manager



Cisco License Manager's features include:

- Intuitive and easy-to-use GUI
- Automated periodic discovery
- Importing device inventory from CiscoWorks LAN Management Solution (LMS) 3.1 and later or a .csv file.
- Enhanced device and PAK search capabilities and management
- Return Materials Authorization (RMA) license transfer functionality
- An up-to-date inventory of deployed licensed features on the network, maintained through notifications and optional polling
- Licenses obtained through secure connectivity with the license server on Cisco.com
- Rapid license deployment
- Securely support isolated networks through proxies and two-stage license deployment
- Simple license transfers from one device to another
- Agent-less device communication through Secure Shell (SSH) Protocol or Telnet
- Improved detailed license reporting that helps with audit compliance
- Enhanced security with role-based access control and per user Access Control Lists (ACLs) for the managed network devices and PAKs
- Completely automated license management through a simple write-once, run-again rule-based policy interface
- Faster failure recovery by deploying licenses from the database or retrieving all licenses for a given device from the license server on Cisco.com
- Troubleshooting capabilities and X.733-based alerts
- Support for customer provided Oracle database for increased scalability and integration with existing database processes and procedures
- (New) Multi-threaded TFTP file transfers between CLM server and device introduced as part of CLM 3.2.6 release

Key Features and Benefits

Cisco License Manager 3.2.6 helps users increase productivity, reduces the complexity of licensing, protects your investment, provides faster failure recovery and enhanced security, and assists in audit compliance, among other benefits.

Increased Productivity

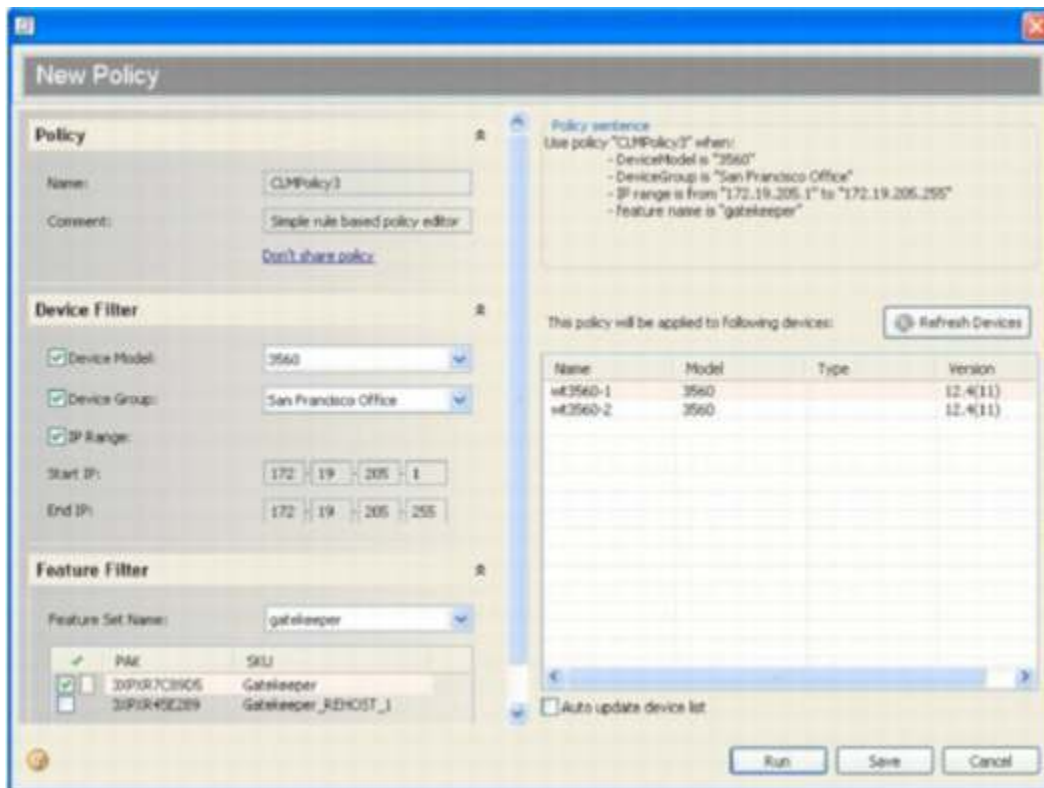
Some Cisco IOS Software-based devices, such as Cisco Catalyst® 3750-E and 3560-E Series Switches, need license keys to activate software features on them. These license keys are locked to a device and can be obtained from the Cisco Product Registration portal on Cisco.com by specifying the UDI of a device and the PAKs supplied by Cisco. The license keys can be deployed on the associated devices using the Cisco IOS Software Command-Line Interface (CLI).

This software activation workflow consists of multiple manual steps and may not scale well for network wide deployments. You can automate this workflow and accelerate the license-deployment process using Cisco License Manager's intuitive GUI (Figure 3). It scales to large networks and can support up to 20,000 devices with

the included database and higher, when connected to an external Oracle database. Cisco License Manager can significantly reduce the time for large-scale license deployment with a deployment speed of 250 licenses per minute, and it enables you to rapidly roll out new services based on these licensed features.

Cisco License Manager provides a simple, rule-based policy language to completely automate software activation and license management, enabling write-once, run-again capabilities. You can create simple rule-based policies using common device attributes such as device model, device group, and IP address range and assign a PAK to this policy. You can then execute that predefined policy on an on-demand basis, and Cisco License Manager will automatically obtain and deploy appropriate licenses to the managed devices, matching against the rules in the policy. This is very helpful in scenarios where new devices are provisioned on a periodic basis.

Figure 3. Policy-Based License Management Interface of Cisco License Manager



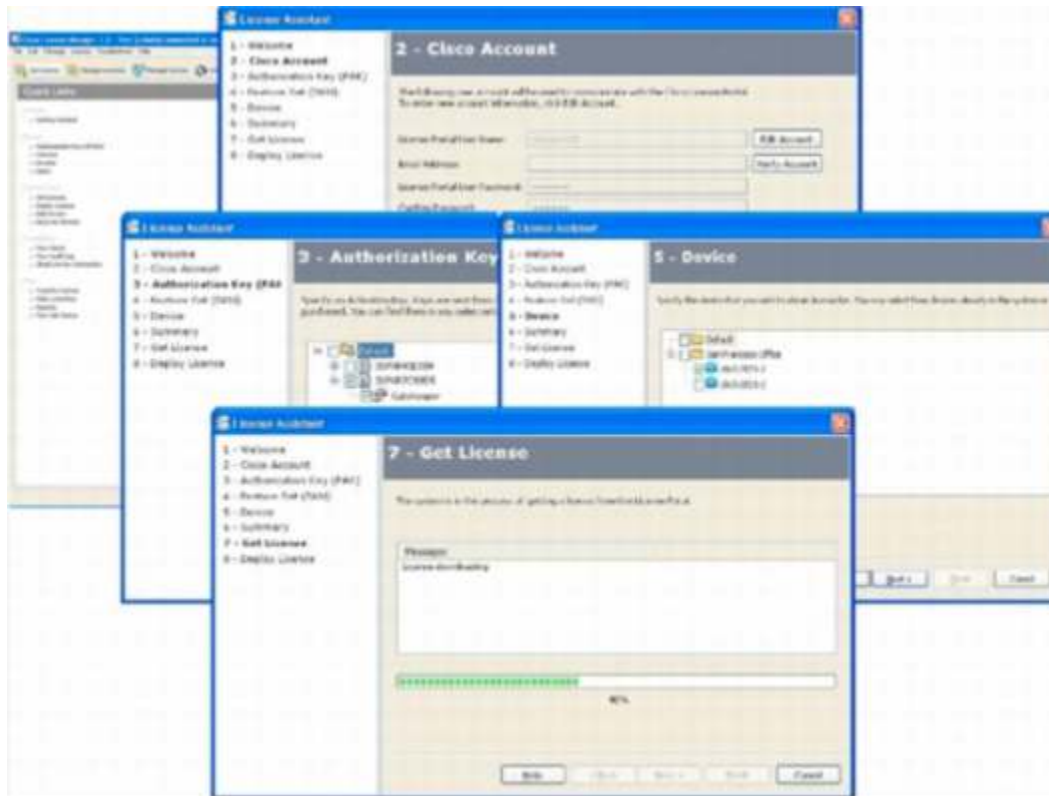
Cisco License Manager facilitates collaboration by allowing policies created by one user to be shared with other users.

Reduced Complexity

Cisco License Manager is a simple-to-install and easy-to-use application that automates the Cisco IOS Software activation process. It can automatically discover the complete network using customer-supplied parameters. Cisco License Manager securely communicates with the devices running Cisco IOS Software to build an advanced inventory of all licensed features deployed in the network and provide detailed license reports. You simply need to add the PAKs received from Cisco for the software features you have purchased, and the Cisco License Manager wizard-based GUI guides you through the process of associating the features to network devices and vice versa, and automatically obtains the licenses by securely interacting with backend systems on Cisco.com (Figure 4).

Please note that Cisco License Manager communicates to backend systems on Cisco.com only when you initiate Download PAK Info, Obtain License, and Resend License operations. It does not send any customer network information to Cisco backend systems except the device UDI, which is required for obtaining licenses.

Figure 4. Cisco License Manager Wizard to Obtain a License from Cisco.com



For isolated networks, the licenses obtained from the license server on Cisco.com can be deployed later using a simple wizard-based GUI. You can always obtain and install licenses in a single step if Cisco License Manager has connectivity to both network devices and the Internet. In addition, Cisco License Manager can work with proxies to communicate with Cisco.com.

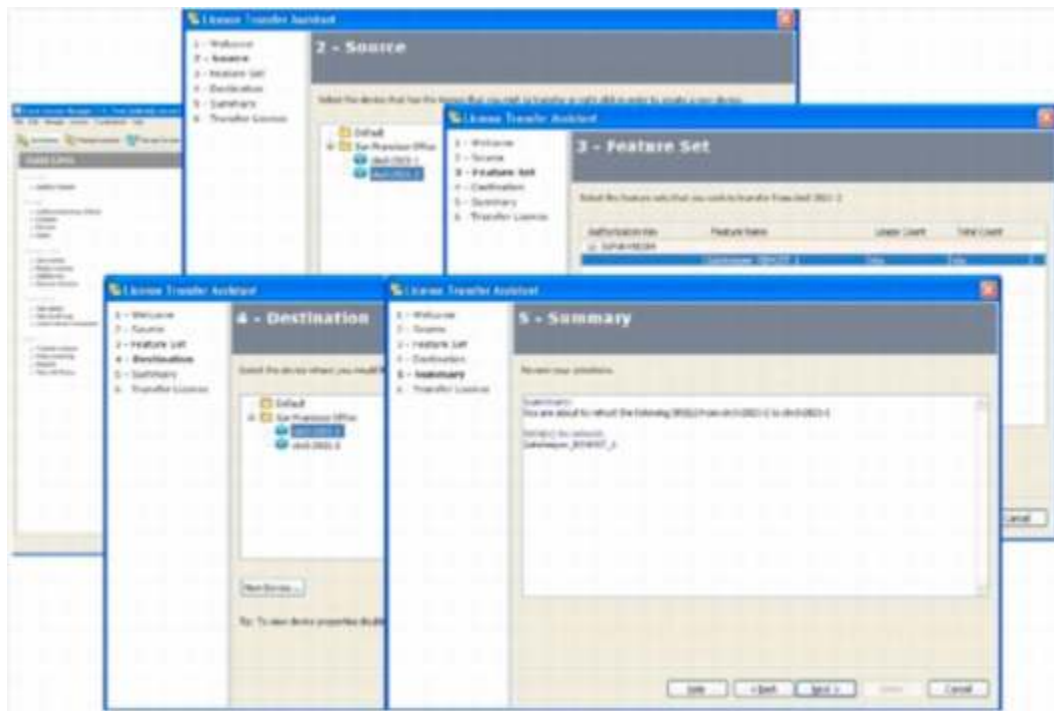
Cisco License Manager does not require any agent configuration on the devices before it can manage licenses on them. It can securely manage licenses on devices using SSH and the CLI. In addition, Cisco License Manager can communicate with embedded license agents on devices using XML over HTTPS.

Using Cisco License Manager advanced reports, you can quickly find out how many features you have purchased, how many licenses you have, and how many licenses have not been deployed. Cisco License Manager compares the licensable features for a given device with the feature licenses already installed on that device and reports any feature licenses that are not needed and can be redeployed somewhere else, resulting in cost savings. Cisco License Manager has improved software asset management and can help you report when your managed assets are at end of sale or end of life, or if there is a PSIRT advisory active against them.

You may want to move premium licensed features from one device to another for reasons such as a change in network topology. Once you select the source and destination devices, Cisco License Manager simplifies this

procedure by securely obtaining re-host permission from Cisco.com, revoking the license from the source device, and obtaining and installing the transferred license to the destination device, as well as installing a temporary license for the feature being transferred, to give you enough time to migrate all connections or traffic to the destination device (Figure 5).

Figure 5. Cisco License Manager Simplifies Transferring Licenses



Investment Protection

Cisco License Manager supports Cisco IOS Software activation for all hardware platforms, and you do not need to train your operations staff for multiple applications. Cisco License Manager has added support for additional Cisco products in this release and improved performance and search capabilities. A single installation of Cisco License Manager 3.2.6 can support up to 20,000 devices with the embedded database. Cisco License Manager can also integrate with a customer provided, Oracle 11 database for greater scalability.

Faster Failure Recovery

In the case where the license keys on the device are accidentally lost or corrupted due to storage failure, the network downtime can be prolonged because the services based on these licensed features cannot be enabled. You can significantly reduce this downtime by deploying licenses stored in the Cisco License Manager database using the intuitive GUI. If the device was not managed through Cisco License Manager before failure and the license keys were not backed up, you can quickly add that device to Cisco License Manager, retrieve all licenses for that device from the license server on Cisco.com, and then deploy them automatically. The Cisco License Manager administrator can also backup and restore the database and configuration files.

Cisco License Manager provides detailed troubleshooting and diagnostic capabilities to identify the root cause of connectivity failure to devices and the Cisco.com license server. Cisco License Manager listens to events from the devices and presents these alerts using industry-standard X.733-based severities.

Enhanced Security

The Cisco License Manager user-security model supports role-based access control and provides the following five user profiles:

- **Administrator:** Can access all functionality
- **Inventory Manager:** Can update inventory, device access information, and all functionality available to roles below it
- **PAK Manager:** Can view and manage PAKs and all functionality available to roles below it
- **License Manager:** Can obtain and deploy licenses and all functionality available to roles below it
- **Reports Manager:** Can only view and generate license reports

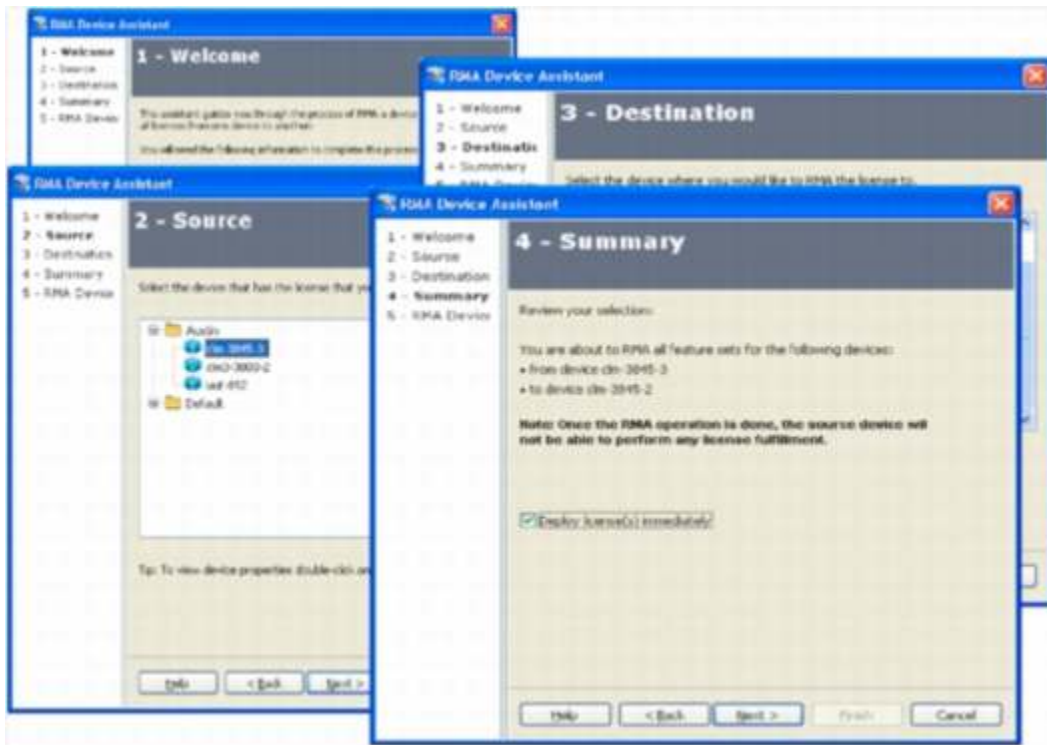
Cisco License Manager also provides an ability to limit access to managed devices and PAKs by using Access Control Lists (ACLs) for each user. Using managed device ACLs, service providers can allow their end customers to access the Cisco License Manager server and manage licenses or generate licensing reports only.

Aids Audit Compliance

Cisco License Manager Reports help your business comply with various auditing regulations, such as the Sarbanes-Oxley Act, which requires that you have proof of licensing for all products that you have purchased. Cisco License Manager keeps its license inventory in sync with what is deployed on the network through notifications and optional periodic polling.

In addition, in case of a return materials authorization, you may accidentally have a license discrepancy because you forgot to return the failed device, and now both the failed and the replacement device are using the licensed feature though you paid only for one, and therefore you fail the audit. Cisco License Manager supports the RMA license transfer functionality and allows users to transfer licenses from a failed device that is being returned through the RMA process to a new device, and provides an RMA discrepancy report that interacts with the Cisco.com license server to detect this discrepancy across your network.

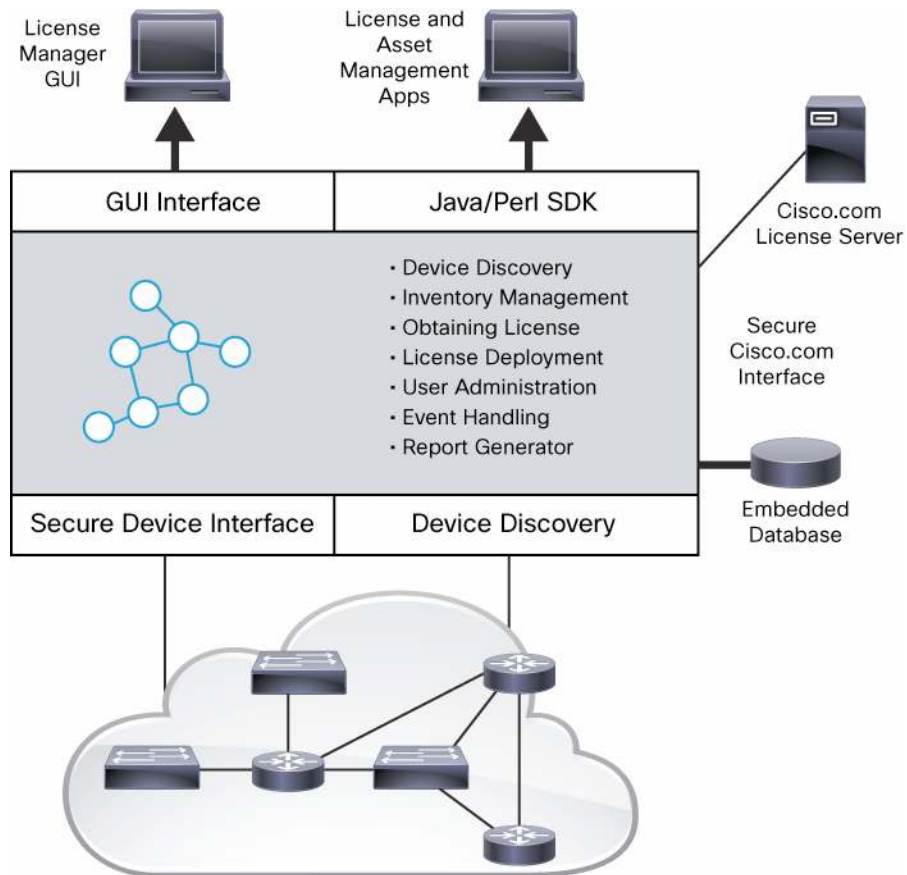
Figure 6. Cisco License Manager Wizard to RMA License Transfer Functionality



Product Architecture

Cisco License Manager is a Java-based client/server application. It uses open standards-based protocols (SSH, Telnet, HTTP, HTTPS, and XML) to securely communicate to the license server on Cisco.com as well as devices running Cisco IOS Software to manage Cisco IOS Software activation and licenses. It includes a high-performance embedded database to store information about users, PAKs, managed devices, and licenses; and it scales up to 20,000 devices. For higher scalability you can connect Cisco License Manager to an Oracle 11 database that you provide. Cisco License Manager provides an easy-to-use GUI for integration with existing license and asset management software (Figure 7).

Figure 7. Cisco License Manager Architecture



Product Specifications

Table 1 provides product specifications for Cisco License Manager 3.2.6.

Table 1. Product Specifications

Product Parameter	Specification
Product compatibility	<ul style="list-style-type: none"> • Cisco 1900, 2900, 3900 Series Integrated Services Routers G2 (modular)—Cisco IOS Software Release 15.0(1) • Cisco Aggregation Services Router 1001 (ASR1001)—Cisco IOS Software Release XE 3.3.0S • Cisco ACE Application Control Engine Module—Software release 3.0.0A1(3) • Cisco Catalyst 6500 Series Firewall Services Module—Software release 3.1 • Cisco ME 3600X Series Ethernet Access Switches—Cisco IOS XE Release 15.3(2)S • Cisco ME 3800X Series Ethernet Access Switches—Cisco IOS XE Release 15.3(2)S • Cisco Unity® Express Network Modules—Software release 7.1.1 and later • Enhanced EtherSwitch® Service Modules for Integrated Services Routers (ISRs)—Cisco IOS Release 12.2(52)SE • Cisco ASR 901 Aggregation Services Routers—Cisco IOS XE Release 15.3(2)S • Cisco ASR 903 Aggregation Services Routers—Cisco IOS XE Release 3.11.0S • Cisco ASR 9000 Aggregation Services Routers—Cisco IOS XR Software release 3.9 • Cisco Application eXtension Platform (AXP)—Software release 1.5 • Cisco uBR10000 Series Universal Broadband Routers—Cisco IOS Software Release 12.2(33)SCC • Cisco uBR10012 Performance Routing Engine 5—Cisco IOS Release SCH1/SCH • Enhanced EtherSwitch Service Modules for ISRs starting at release 12.2(52)SE • Cisco Catalyst 4500E Series Supervisor Engine7-E—Cisco IOS Software Release XE 3.1.1SG • Cisco Catalyst 3750-E/X Series Switches—Cisco IOS Software Release 13.0(35)SE • Cisco Catalyst 3560-E/X Series Switches—Cisco IOS Software Release 13.0(35)SE • Cisco Catalyst Blade Server (CBS) 3100 Series Switches—Cisco IOS Software Release 13.0(35)SE onwards • Cisco 2811, 2821, 2851, 3825, and 3845 Integrated Services Routers (modular)—Cisco IOS Software Release 12.4(15)XY • Cisco 1861 Integrated Services Router—Cisco IOS Software Release 12.4(11)XW • Cisco C860 and C880 Integrated Services Routers (fixed)—Cisco IOS Software Release 12.4(15)XZ • Cisco 3Gbps Wideband Shared Port Adapter—Cisco IOS Software Release SCH1/SCH • Cisco Unified Communications 500 Series for Small Business—Cisco IOS Software Release 12.4(11)XW6 • Cisco Intrusion Prevention System Advanced Integration Module—Cisco IPS Software Release 6.0(4) • Cisco XR 12000 Series Routers—Cisco IOS XR Software Release 3.6 • Cisco MDS 9000 Family of Multilayer Switches—Cisco SAN-OS Release 3.3.x and Cisco MDS 9000 NX-OS Version 4.1.1 • Cisco RFGW-DS384—Cisco IOS Release 15.0(02)SQA2, 15.0(02)SQA and Cisco IOS Release 15.0(2)SQB1 • Cisco Nexus 3000 family—Cisco Nexus 3000 NX-OS Version 5.0(3) • Cisco Nexus 5000 family—Cisco Nexus 5000 NX-OS Version 5.1 • Cisco Nexus 7000 Family of Multilayer Switches—Cisco Nexus 7000 NX-OS Version 5.0
OS compatibility	<ul style="list-style-type: none"> • Windows Server 2003 R2 Standard Edition, 32 bit • Windows Server 2008 R2 Enterprise Edition, 64 bit • Windows XP Professional, 32 bit • Windows 7 Professional, 32 and 64 bit • Solaris 10 • Red Hat Linux Enterprise 5
Java compatibility	JRE 1.6
Protocols	<ul style="list-style-type: none"> • SSH • Telnet • TFTP rev. 2 (RFC 1350) • HTTP • HTTPS • XML • Syslog

Product Parameter	Specification
Features and functions	Auto-discovery, inventory of deployed licensed features on the network, license fulfillment from the license server on Cisco.com, two-stage license deployment to securely support isolated networks, simple license transfers between devices, agent-less device communication through SSH/Telnet, improved detailed license reporting, quick failure recovery by providing an ability to deploy licenses from the database or retrieve and deploy all licenses for a given device from the license server on Cisco.com, backup and restore of database and configuration files, enhanced security with role-based access control and ACLs for each user for the managed devices, simple rule-based policy interface for completely automated license management, troubleshooting capabilities including X.733-based alerts, RMA license transfer

System Capacity

Table 2 lists the system capacity for Cisco License Manager 3.2.6.

Table 2. Cisco License Manager 3.2.6 System Capacity

System Parameter	Capacity
Number of supported devices with included database	20,000
Number of concurrent clients	50 (both GUI-and SDK-based clients)

System Requirements

Cisco License Manager can be installed on less powerful machines such as laptops if the number of managed devices is small and there are no concurrent clients. Tables 3 and 4 list the system requirements for Cisco License Manager 3.2.6.

Table 3. System Requirements (Server or Client and Server on the Same Machine)

Description	Specification
Number of managed devices with included database	20,000
Disk space	20 GB
Hardware	<ul style="list-style-type: none"> • Intel Core 2 Quad or equivalent CPU-based • Sun UltraSPARC T1/T2 or equivalent CPU-based
Memory	4 GB minimum
Software	<ul style="list-style-type: none"> • Windows Server 2003 R2 Standard Edition, 32 bit • Windows Server 2008 R2 Enterprise Edition, 64 bit • Windows XP Professional, 32 bit • Windows 7 Professional, 32 and 64 bit • Solaris 10 • Red Hat Linux Enterprise 5

Table 4. System Requirements (Client-Only)

Description	Specification
Number of managed devices with included database	20,000
Disk space	500 MB
Hardware	<ul style="list-style-type: none"> • Pentium 3 1.0 GHz or equivalent CPU-based machine • Sun UltraSPARC IIIi or equivalent CPU-based
Memory	1 GB minimum

Description	Specification
Software	<ul style="list-style-type: none"> • Windows Server 2003 R2 Standard Edition, 32 bit • Windows Server 2008 and 2008 R2 Enterprise Edition, 64 bit • Windows XP Professional, 32 bit • Windows 7 Professional, 32 and 64 bit • Solaris 10 • Red Hat Linux Enterprise 5
Java requirements	Java Runtime Environment JRE 1.6.0_26

Table 5. Ordering Information

Description	Specification
Cisco License Manager 3.2.6 client and server software	Available only by download from http://software.cisco.com/download/type.html?mdfid=280841731&softwareid=282885668

Service and Support

Cisco offers a wide range of service programs to accelerate customer success. These innovative service programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you to protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, see [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

For More Information

For more information about Cisco License Manager, visit <http://www.cisco.com/go/clm>, contact your local Cisco sales representative, or send an email to the product marketing group at ask-clm-pm@cisco.com.



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