Software Licensing in Cisco ONS 15454 MSTP

Cisco® has introduced tremendous flexibility into dense wavelength-division multiplexing (DWDM) networks by enhancing the Cisco ONS 15454 Multiservice Transport Platform (MSTP) with multidegree reconfigurable optical add-drop multiplexers (ROADMs) and the Cisco ONS 15454 Any Rate Muxponder Card. The modules are feature comprehensive, and can support a wide range of applications and configurations. To help you take advantage of such flexibility at lower capital expenditure (CapEx) on your network, Cisco provides a licensing model for some modules, as described in individual module datasheets.

This type of software licensing reduces entry costs, with a “pay as you grow” approach for customers. The model allows you to upgrade your hardware and software capacity by using a license key. You need not complete a return materials authorization (RMA) to add new hardware. You can purchase the upgrade, have it electronically delivered, and use the license key to provide increased capacity.

Each module of MSTP that supports licensing has a part number that includes the full set of functions. The other part number for the module supports licenses offering only basic functions, and is upgradable with a software license that enables the feature you want. As part of the licensing process, you must accept terms and conditions set forth in the end-user license agreement. New or upgraded Cisco devices should be registered and must have a product authorization key (PAK) to obtain licenses from Cisco. The following sections of this document describe the various aspects of managing licenses in MSTP, including the way licenses are handled during steps of the product lifecycle:

- Types of Licenses
- Initial Product Purchase
- License Upgrade
- License Transfer Between Devices
- Rebooting a Device
- Upgrade Scenarios
- Cisco Software Licensing Components

Types of Licenses

If no permanent licenses are installed on a device, the evaluation license is automatically activated when you try to provision the port or feature that is licensed. If a permanent license is already installed on the card, by default the permanent license is used. In that case, if you want to use an evaluation license, you must change the priority for that license using Cisco Transport Controller (CTC). If an evaluation license is in use and a permanent license is installed after that, the permanent license takes higher priority and will be in use until the device is reloaded.

Permanent Licenses

Permanent licenses are perpetual; that is, they do not have any usage period associated with them. Once permanent licenses are installed, they provide all the permissions needed to access features in the software image. All permanent licenses are associated with the module’s Unique Device Identifier (UDI) and are validated by the Cisco licensing infrastructure during software installation. Once a permanent license is installed, you do not need to upgrade for subsequent releases.

Temporary Licenses

Temporary licenses are limited to a specific usage period (for example, 60 days). When the temporary license period expires, equipment raises a critical alarm. This alarm cannot be suppressed until the proper license is applied. However, the device will continue to operate normally until reloaded. After the reload, the device will default to the base functionality. Only the actual time that the temporary license is enabled counts towards the license duration. There are two types of temporary licenses:

- **Built-in licenses for emergencies**

  To avoid network downtime in the event of device failure when the replaced device does not have the same licenses as the failed device, you can use a built-in license (an evaluation license) in the software image. You must go to the Cisco Product License Registration portal to obtain a permanent RMA replacement license. The TEMP-LIC condition is raised on the card when the temporary license is in use.

- **Built-in evaluation licenses**

  Evaluation licenses are also temporary. An evaluation license enables the full functionality supported by the device. You must go to the Cisco Product License Registration portal prior to the expiration of the evaluation license to upgrade the license status.

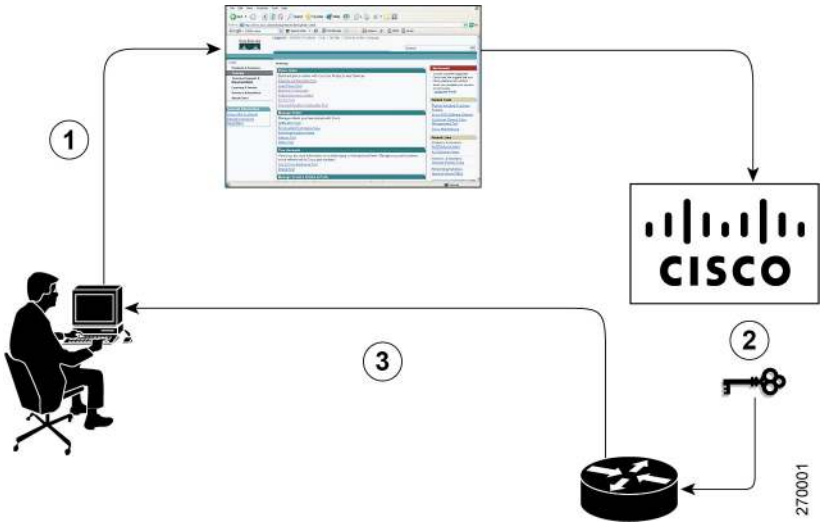
Initial Product Purchase

Cisco MSTP software has traditionally been covered by a right-to-use license, with one license associated with each device. When a customer begins using a Cisco product, the usage automatically constitutes acceptance of the license agreement and validates the license for that customer; device licenses are nontransferable between end-user customers.

The workflow for preinstalled licensing involves these steps (as illustrated in Figure 1).

1. You place an order for a Cisco device through the Cisco sales ordering tool.
2. Manufacturing information technology systems pick up the order information and build the device. The manufacturing systems also retrieve a license key for the device being assembled by contacting a license server and then installing the code on the device. The device is shipped to you.
3. You install and configure the device, and place the device in production. There is no requirement to activate or register the software prior to use. A new device is ready for deployment upon receipt.

Figure 1. Preinstalled License Workflow

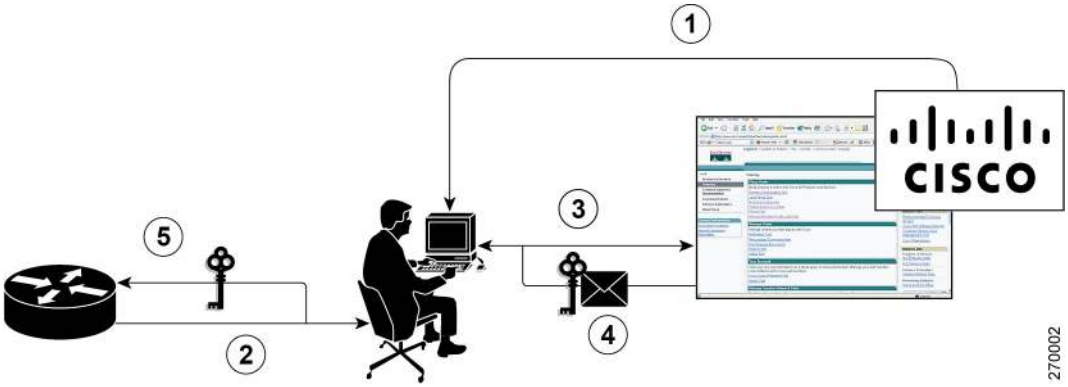


License Upgrade

The license upgrade process workflow for manual license fulfillment involves these steps (as shown in Figure 2).

1. You purchase the required PAK for the desired type of license. Some licenses do not require a PAK, but they might need a contract instead.
2. You obtain the UDI from the device.
3. You enter the UDI and PAK into the Cisco Product License Registration portal. If it is a contract license, follow the links to non-PAK-based licenses and submit the UDI of the device. The portal retrieves the SKUs associated with the PAK. You then select the SKU and enter the UDI, a unique and unchangeable identifier of the device where the license should be installed. A license key is then emailed to you, and you use that key to install the license.
4. You install the license file returned from the license portal to the device by using CTC. This needs to be done from Release 9.4 onwards for Cisco ONS 15454 MSTP.

Figure 2. License Upgrade Workflow for Manual License Fulfillment



License Transfer Between Devices

Cisco supports two scenarios to transfer licenses between devices:

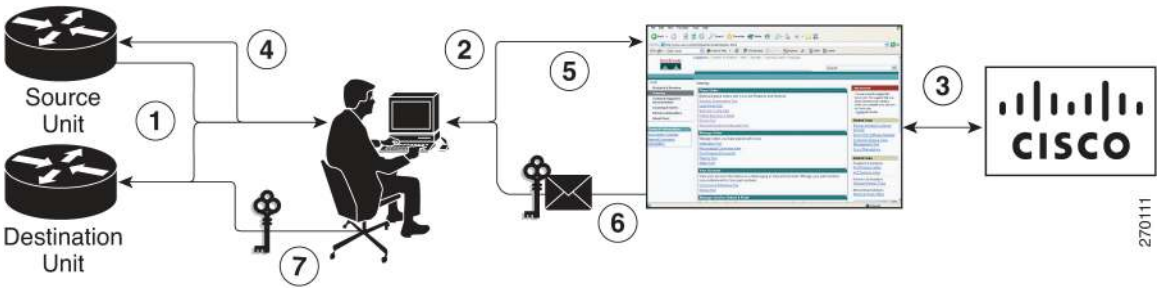
- In the first scenario, both the source and destination devices are active and functional. The license is revoked on the source device, and a new permanent license is issued for the destination device.
- In the second scenario, one of the devices is unavailable. The license from the failed device is transferred to the RMA or to the replaced device by using the RMA License Transfer process on the Cisco Product License Registration portal.

These scenarios are described in the following sections.

License Transfer Between Two Working Devices

Cisco supports fully automated, customer-initiated, no-questions-asked transfer of licenses. Transferring a license between two working devices is accomplished by using a process known as rehosting. The rehosting process transfers a license from one UDI to another by revoking the license from the source device and installing it on a new device (Figure 3). You perform a license transfer (rehosting) by using the Cisco Product License Registration portal.

Figure 3. License Transfer Workflow Between Two Working Devices



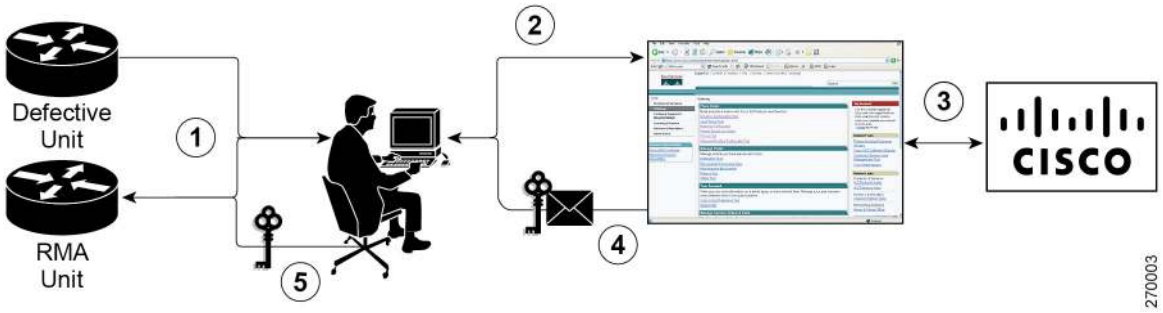
The following workflow is for a license transfer process between working devices.

1. You obtain the UDI and device credentials from the source and destination devices by using CTC. On the Product License Registration portal on Cisco.com, you enter the source device credentials and the UDI into the license transfer portal tool.
2. The portal displays licenses that can be transferred from the source device. Select the licenses that need to be transferred. A permission ticked is issued. You can use this permission ticket to start the rehost process by using CTC.
3. You apply the permissions ticket to the source device by using the license revoke command. The source device then provides a rehost ticket indicating proof of revocation. A 60-day grace period license is also installed on the device to allow enough time to transfer the licenses to the destination device.
4. You enter the rehost ticket into the license transfer portal tool on Cisco.com along with the destination device UDI.
5. You receive the license key through email.
6. You install the license key on the destination device.

License Transfer Between a Failed and a Working Device

Before you can transfer a software license from a failed device to a new device, you must enter UDI information from both devices into the Cisco Product License Registration portal. The portal issues the RMA replacement licenses (Figure 4). If you need assistance to obtain a license, contact Cisco technical support at www.cisco.com/cisco/web/support/index.html.

Figure 4. License Transfer Workflow for RMA Replacement Licenses



The RMA replacement license process involves these steps.

1. You obtain the UDI of the defective and RMA devices.
2. You enter the UDI into the RMA License portal tool on Cisco.com.
3. The license portal determines licenses associated with the defective device.
4. You install the new license on the new device.

Rebooting a Device

Rebooting a device is licensing transparent. Once a device is rebooted, the software on the device recognizes the licenses installed on the device and enables the corresponding functionality. No user intervention is required.

Upgrade Scenarios

If you are upgrading from a release (for example, 9.3) in which software did not support licensing validation, to a release that supports licensing validation, the licensed device (module or card) validates licenses for existing circuits, ports, and features and upon license expiration, raises an alarm. The evaluation license is available by default on release upgrade, to avoid causing immediate service disruption.

Cisco Software Licensing Components

Cisco Product License Registration Portal

Use the Cisco Product License Registration portal at www.cisco.com/go/license to perform these licensing operations:

- Get a license through PAK registration
- Register for a RMA replacement license
- Manage a license (look up a license and upload a rehost ticket)
- Migrate a license

You must have a Cisco.com account before you can access the portal.

Product Authorization Key (PAK)

Interaction with the Cisco licensing portals might require a PAK, which is provided when you order and purchase the right to use a feature set for a particular platform. The PAK serves as a receipt and is an important component in the process to obtain and upgrade a license. You can also purchase a bulk PAK to fulfill multiple licenses on a device.

Unique Device Identifier (UDI)

Cisco software performs license verification checks by comparing a stored UDI – a unique and unchangeable identifier assigned to all Cisco hardware devices – with the UDI of the device. The UDI has two main components: the product number and the serial number. The UDI is printed on a label located on the back of most Cisco hardware devices and can be displayed by using the software.

Cisco ONS 15454 MSTP Software License Validation

Cisco software licensing uses a system of validation keys for deploying licensed feature sets. You obtain the license key by using the Cisco licensing portal. The portal issues a license key for a specific feature set, and the license is locked to the device UDI.

Software End-User License Agreement

As part of the licensing process, you must accept terms and conditions set forth in the end-user license agreement. You implicitly accept the agreement when you first use a new device. However, you must explicitly accept the agreement before a feature set can be activated for evaluation and extension temporary licenses. You can read the terms and conditions of the end-user license agreement at www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html.

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