Compare Different Licensing Types and Features

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Introduction

This document describes differences between Traditional, Smart Licensing, and Smart Licensing with Policy on Cisco IOS® XE Routing Platforms.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Hands-on experience in Cisco IOS XE devices.
- Basic understanding of the licensing models in Cisco IOS XE is recommended.
- Experience with Cisco License Central portal.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

For Cisco IOS XE devices, there are 3 licensing models. Based on the platform, there are some optional and mandatory licensing models that are used.

For the Cisco IOS XE physical routers/platforms (ASR1K, ISR4K, ISR1K and CAT8K) the licensing model adoption is:

- Traditional Licensing was the first/default licensing scheme in Cisco IOS XE versions since 3.7S up to 16.9.8.
- Smart Licensing was introduced on version 16.5.1, used as default in 16.10.1 up to 17.3.1 version.
- Smart Licensing Using Policy (SLP) was introduced and used as default from 17.3.2 and later releases.

In this document, the acronym SL is used for Smart Licensing and SLP for Smart Licensing Using Policy.

Note: SLP was introduced on 17.4.1 for cat8000v and C1100 Terminal Services Gateways. For more details, refer to Smart Licensing Using Policy for Cisco Enterprise Routing Platforms. For other Cisco IOS XE platforms, the release notes of the specific model can be referred to.

Traditional Licensing

By late 2025, the traditional and smart licensing models are considered legacy and deprecated schemes as the last code it can be used is in End Of Support status. The only fully supported model is SLP.

In traditional licensing, a .lic extension file that contains a Product Authorization Key (PAK) is used. The file has to be installed in the device in order to be entitled to use the licensed features.This license scheme has limitations:

- The license is node-locked to the hardware.
- Management can be difficult in case of changes and accounting.
- Constant entitlement verifications are needed.

Smart Licensing

To improve the licenses for management and accounting, Smart Licensing was developed.
SL model is flexible as the licenses are not node-locked to the hardware. Transfer a license from one device to another is simpler. SL established the licenses pool system, in the case that a device in the organization requires a license it can be requested and consumed. The licenses can be divided in virtual pools and monitored from a centralized portal always updated.

Based on the Smart Licensing way of activation, there are some challenges that have to be overcome such as:

- Permanent communication with Cisco License Central required.
- Smart License Reservation is needed in the cases of air gapped network or Internet isolated devices.
- On-prem satellite deployment (not mandatory) cost increase.
- Features can become unavailable if the communication with Cisco License Central is lost and/or the device is not registered.

Smart Licensing using Policy

SLP provides another level of flexibility as each license is considered independent. The device now does not require permanent communication with Cisco License Central to have the license in compliance. For most of the common features, it has a Day Zero frictionless deployment.

Some concepts and terminology changed between SL and SLP. This table compares the deployment types per license scheme. The table can be used as a reference to check the SL and SLP documentation.

Supported Deployments

Supported Deployments	**Traditional Licensing**	**Smart Licensing**	**Smart Licensing Using Policy**
Direct Internet access	Hardware local license install	Communication directly with Cisco License Central	Communication directly with Cisco License Central
On-Premises	Hardware local license install	Communication with Cisco License Central On-Prem	Communication with Cisco License Central On-Prem plus Cisco Smart Licensing Utility (CSLU)
Air-gapped networks	Hardware local license install	Cisco License Central On-Prem, Specific License Reservation, Permanent License Reservation	Cisco License Central On-Prem, CSLU, transport-off

Differences and Similarities between Licensing Models

Notes	Traditional Licensing	Smart Licensing	Smart Licensing Using Policy
Product Instance	No Cisco License Central	Hostname displayed in Cisco License Central	Hostname is no longer displayed on Cisco License Central and License UDI is displayed instead. 17.8.1 to include License UDI and hostname.
Relationship with Cisco License Central	No Cisco License Central	Registers with Cisco License Central	Creates a trust relationship with Cisco License Central
Day 0 (Licensing deployment)	If no license file is installed, features are not available.	No licensing available without registration. Enforced licenses features cannot be used until licenses are authorized after registration with Cisco License Central. Some features permit evaluation period.	Licenses are enabled by default. Only export-restricted licenses such as HSECK9 require an authorization code before use. Compliance is still required but not mandatory for the initial deployment.
Report to Cisco License Central	Does not communicate with Cisco License Central	SL does not report license usage to Cisco License Central. Instead, it authorizes license requests sent by the router.	RUM reports are used as proof of license usage and uploaded to Cisco License Central
Communication method	Does not communicate with Cisco License Central	Call-Home	Call-Home or SmartReceiver

Acronyms used in SLP

- CSLU - Cisco Smart License Utility
- Cisco License Central
- PI - Product Instance (Physical Product-instance or virtual Cisco IOS XE software instance)
- RUM - Resource Usage Measurement
- SA - Smart Account
- SLAC - Smart License Authorization Code
- VA - Virtual Account

Acronyms used in SL

- Cisco License Central

- PI - Product Instance (Physical Product-instance or virtual Cisco IOS XE software instance)
- PLR - Permanent License Reservation
- SLR - Specific License Reservation
- SA - Smart Account
- SL - Smart Licensing
- VA - Virtual Account

Acronyms used in Traditional Licensing

- FLA - Federal License Authorization
- PAK - Product Authorization Code
- RTU - Right To Use

Related Information

- Cisco Smart Licensing Using Policy for Cisco Enterprise Routing Platforms
- Cisco Smart Licensing Guide for Cisco Enterprise Routing Platforms (Quickstart Guide)
- Cisco Smart Licensing
- Cisco Technical Support & Downloads