CHAPTER 6

Smart Licensing

Smart Licensing is a cloud-based approach to licensing. Cisco Smart Software Licensing helps you to procure, deploy, and manage licenses easily where devices self-register and report license consumption, removing the need for product activation keys (PAKs). It pools license entitlements in a single account and allows you to move licenses freely through the network, wherever you need them.

- Visibility into devices and software that you have purchased and deployed
- Automatic license activation
- Product simplicity with standard software offers, licensing platform, and policies
- Possibility of decreased operational costs

You, your chosen partners, and Cisco can view your hardware, software entitlements, and eventually services in the Cisco Smart Software Manager interface.

A Smart Software Licensed product, upon configuration and activation with a single token, will self-register, removing the need to go to a website and register product after product with PAKs. Instead of using PAKs or license files, Smart Software Licensing establishes a pool of software licenses or entitlements that can be used across in a flexible and automated manner. Pooling is particularly helpful with RMAs because it eliminates the need to re-host licenses. You may self manage license deployment easily and quickly in the Cisco Smart Software Manager (CSSM).

Through standard product offers, a standard license platform, and flexible contracts you will have a simplified, more productive experience with Cisco software.

Cisco Smart Software Manager (CSSM)

Cisco Smart Software Manager (CSSM) enables you to manage all of your Cisco Smart software licenses from one centralized website. With CSSM, you can organize and view your licenses in groups called virtual accounts. You can use CSSM to transfer the licenses between virtual accounts as needed.

CSSM can be accessed from the Cisco Software Central homepage at software.cisco.com under the Smart Licensing section.

Smart Licensing Deployment Modes

Smart Licensing comes in following modes and you may choose an appropriate mode based on your security requirements.

- Transfer usage over the Internet to the Cloud server directly from the devices to the cloud via HTTPs.

- Transfer files directly over the Internet to the Cloud server through an HTTPs proxy, either Smart Call Home Transport Gateway or off the shelf HTTPs proxy such as Apache.

- Use a customer internal collection device called the **Cisco Smart Software Satellite**. The Satellite periodically transmits the information into the cloud using periodic network synchronization. In this instance the only customer system or database transferring information to the cloud is the Satellite. The customer can control what is included in the collector database, which lends itself to higher security.

- Use the Satellite, but to transfer the collected files using manual synchronization at least once a month. In this model the system is not directly connected to the Cloud and an air gap exists between the customers network and the Cisco Cloud.

This topic contains the following sections:

Support for Permanent License Reservation (PLR)

If your devices cannot access the internet for security reasons, you can optionally request permanent licenses for each Prime Access Registrar. Permanent license reservation (PLR) is a set of capabilities that is designed for highly secure environments, where communication with outside environment is impossible.

Permanent licenses do not require periodic access to the License Authority. Like PAK licenses, you can purchase a license and install the license key for Prime Access Registrar. You can easily switch between regular smart licensing mode and PLR mode. Prime Access Registrar can operate normally without ongoing communication with either the CSSM or the Smart Software Satellite (on-site collector).

A single "Universal" license PID that authorizes all possible product functionalities will be available, including an unlimited quantity of counted licenses as well.

Support for Specific License Reservation (SLR)

At a high level, Specific License Reservation (SLR) is an enforced licensing model that is similar to node locked licensing. When you activate Prime Access Registrar, there is one-time manual exchange of information with the CSSM as part of product authorization and configuration. No further interaction with the CSSM or Smart Software Satellite is required.

The main difference between PLR and SLR is, SLR allows you to select the required licenses, whereas with PLR it is a single license that activates all the functionalities of the product.

For SLR, all the licenses that are present for smart account are applicable.

Enabling PLR/SLR

Following are the steps to enable PLR/SLR for Prime Access Registrar:

Step 1 Run the following commands:

```
license smart reservation
license smart reservation request
```

The product displays an ASCII text string that securely represents the product UDI, a short sequence number, and a short hash. The length of this string varies depending on the product and its UDI, but must be minimized and cannot exceed 32 characters.

Step 2   Log in to the CSSM, navigate to the appropriate page in the appropriate Virtual Account, and enter the ASCII text string.

For PLR, the CSSM performs a validity check to ensure:

- The Smart Account is authorized for PLR

- There are enough available "unlimited" permanent licenses to authorize consumption

- Inclusion of the Smart Account Export Compliance authorization status

Upon successful validity check for PLR, the CSSM displays a short ASCII text string. The string will be securely tied to the UDI, that identifies the Smart Account and the Export Control Status. This must not exceed 64 characters, ideal length is 32 characters or less.

For SLR, the CSSM performs a validity check to ensure that there are enough available perpetual entitlements in the Virtual Account for the product (PID). It displays a list of those perpetual entitlements so that you can permanently reserve or allocate any of these licenses (with quantity, wherever appropriate) with the specific product instance (UDI) being registered. If no perpetual entitlements are available for the product, CSSM displays an appropriate error message.

Upon successful validity check for SLR, the CSSM displays a response ASCII text string to register the product and serial number to the Virtual Account as a PLR instance, and "lock" its license consumption in the CSSM. The response string may be several thousand characters, depending on the number of entitlements reserved. The ASCII string is locked to the product serial number and is valid only on that serial number. It will include the entitlement tags, quantities of the reserved entitlements, and a signature. This authorization string is essentially a node-locked license file.

Step 3   The user enters the ASCII text string into the product with an exec command such as:

```
License smart reservation install <string>.
```

Where, <string> is the authorization code generated by the CSSM.

The product is now ready for operation.

CLI Commands for PLR/SLR

Table 6-1 displays the list of CLI commands applicable for PLR/SLR.

Prerequisites:

- Ensure that the smart licensing is enabled before running the reservation commands.

- Ensure that the appropriate PLR or SLR licenses are selected using the CLI commands before running the smart licensing commands.

- Restart Prime Access Registrar after running any smart licensing or license selection commands in CLI.

Table 6-1   CLI Commands for PLR/SLR

CLI Command	Description

`license smart reservation`
 	
`no license smart reservation`
	Enables/disables license reservation feature.

`license smart reservation request`	Prints the "Reservation Request Code" that must be pasted into the portal to start the reservation process.
`license smart reservation install <authorization code>`	Enters the "Reservation Authorization Code" into the device to complete the process.
`license smart reservation return`	Prints the "Reservation Return Code" that must be pasted into the portal to return licenses and delete product instance. Uses the authorization code previously installed
`license smart reservation return authorization <authorization code>`	Prints the "Reservation Return Code" that must be pasted into the portal to return licenses and delete product instance. Uses the authorization code from the command line. An extra authorization is not necessary for license smart reservation return authorization code.
`license smart reservation cancel`	Cancels a reservation that is in progress and allows entitlement changes

Smart Licensing Configuration

Following steps are involved in Smart Licensing:

1. Creating a Smart Account
2. Ordering Cisco Prime Access Registrar Licenses
3. Registering Prime Access Registrar with CSSM

Creating a Smart Account

A Customer Smart Account provides the repository for Smart enabled products and enables Users to manage Cisco Licenses. Once they are deposited, Users can activate licenses, monitor license usage and track Cisco purchases. Your Smart Account can be managed by the Customer directly or a Channel Partner or authorized party. All Customers will need to create a Customer Smart Account to fully utilize the license management features of their smart enabled products. The creation of your Customer Smart Account is a one-time setup activity using Training Resources for Customers, Partners, Distributors, B2B.

You can create your Smart Account and virtual accounts as needed at Cisco Software Central (CSC) https://software.cisco.com/software/company/smartaccounts/home#accountcreation-account using the reference link http://www.cisco.com/c/en/us/buy/smart-accounts.html

After the Customer Smart Account Request has been submitted and the Account Domain Identifier has been approved (if edited), the Creator will receive an email notification informing them that they will need to complete the Customer Smart Account setup in the CSC.

Ordering Cisco Prime Access Registrar Licenses

The process of purchasing Prime Access Registrar licenses remains the same. Existing and newly-purchased licenses can be migrated to Smart Accounts. For enabling Smart Licensing in Prime Access Registrar and migrating traditional licenses to smart licenses follow the instructions mentioned in the *Cisco Prime Access Registrar 9.1 Installation Guide*.

Adding Licenses to Smart Account

After the licenses have been purchased, you must contact the Cisco Global Licensing Operations team by email, using the template as shown below, with appropriate information to request the migration of your license entitlements to the customer's smart portal. Note that this migration may take up to 72 hours. You must continue using right-to-use (RTU) licensing until the license migration is complete.

Email template

To: Licensing@cisco.com

Subject: Smart License Migration for Wireless Controllers

Email Text:

Cisco.com ID: <xyz>

Request: Migrate the following Prime Access Registrar licenses to smart licensing.

Smart account domain ID (domain in the form of "xyz.com"): <xyz>

Smart virtual account name: <xyz>

Serial numbers of the devices on which the licenses were purchased (for non-adder licenses): <xyz>

Number of adder licenses and SKUs that were purchased: <#>

PO/SO number:<xyz>

Virtual accounts are sub accounts that you can create inside your company's smart account to virtually separate different entities within organization. Virtual account creation is optional. More information regarding virtual accounts can be found in the General Smart Licensing Question and Answers at: https://www.cisco.com/c/en/us/buy/smart-accounts/software-licensing.html

Registering Prime Access Registrar with CSSM

A token is required to register the Prime Access Registrar product. Registration tokens are stored in the Product Instance Registration Token Table that is associated with your smart account. Once the product is registered, the registration token is no longer necessary and can be revoked and removed from the table. Registration tokens can be valid from 1 to 365 days.

You can create a registration token in the CSSM. Follow the instructions as explained in https://www.cisco.com/c/en/us/buy/smart-accounts/software-manager.html.

You must register the token created in Smart Account with Prime Access Registrar as explained below:

1. Register ID from smart account:

This is done by default with:

```
http://173.37.145.8/its/service/oddce/services/DDCEService
```

Use the following command to register the license using a token ID that was generated in the CSSM system:

```
license smart register <ID token>
```

Example

```
[root@ar-lnx-vm017 bin]# ./aregcmd -L
Cisco Prime Access Registrar 9.1.0.0 Configuration Utility
Copyright (C) 1995-2017 by Cisco Systems, Inc.  All rights reserved.
Cluster:
User: admin
Passphrase:
Logging in to localhost
Enter a new passphrase:
Warning: Passphrase length should be atleast 8 characters
Confirm new passphrase:

[ //localhost ]
    LicenseInfo = PAR-TPS 9.1(100TPS:)
    Radius/
    Administrators/

Server 'Radius' is Running, its health is 10 out of 10

--> license smart register idtoken
YTZiN2JiYTMtNjNlNy00NWY3LWI3YTQtYjQ0OWZlNmU1MTgzLTE1MTU5MTQ0%0ANDkwOTF8VHlKR0ZRZEFPWUJKUmR
OZVJ0RFdjbjJFVlhINW5HT2pJU1RvaWlu%0AVEx2ND0%3D%0A
```

Note If you switch from satellite account to smart account, you need to give the call home destination URL of smart account for registration.

2. Register ID from smart satellite account using callhome URL as shown in the example below:

```
--> callhome destination address http
http://<Call home URL>
```

Use the following command to register the license using a token ID that was generated in the CSSM system:

```
license smart register <ID token>
```

Example

```
[root@ar-lnx-vm017 bin]# ./aregcmd -L
Cisco Prime Access Registrar 9.1.0.0 Configuration Utility
```

```
Copyright (C) 1995-2019 by Cisco Systems, Inc.  All rights reserved.
Cluster:
User: admin
Passphrase:
Logging in to localhost
Enter a new passphrase:
Warning: Passphrase length should be atleast 8 characters
Confirm new passphrase:

[ //localhost ]
    LicenseInfo = PAR-TPS 9.1(100TPS:)
    Radius/
    Administrators/

Server 'Radius' is Running, its health is 10 out of 10


--> callhome destination address http
http://10.197.95.174/Transportgateway/services/DeviceRequestHandler

--> license smart register idtoken
YTZiN2JiYTMtNjNlNy00NWY3LWI3YTQtYjQ0OWZlNmU1MTgzLTE1MTU5MTQ0%0ANDkwOTF8VHlKR0ZRZEFPWUJKUmR
OZVJ0RFdjbjJFVlhINW5HT2pJU1RvaWlu%0AVEx2ND0%3D%0A
```