Smart Licensing

This chapter describes the smart licensing configuration on Cisco NCS 1014.

Understanding Smart Licensing

Smart Licensing is a cloud-based, software license management solution that enables you to automate time-consuming, manual licensing tasks. The solution allows you to easily track the status of your license and software usage trends.

Smart Licensing helps you simplify three core functions:

- **Purchasing**: The software that you have installed in your network can be registered, without Product Activation Keys (PAKs).
- **Management**: You can automatically track activations against your license entitlements. Also, there is no need to install the license file on every node. You can create license pools (logical grouping of licenses) to reflect your organization structure. Smart Licensing offers you Cisco Smart Software Manager, a centralized portal that enables you to manage all your Cisco software licenses from one centralized website.
- **Reporting**: Through the portal, Smart Licensing offers an integrated view of the licenses you have purchased and what has been deployed in your network. You can use this data to make better purchasing decisions, based on your consumption.

Smart Licensing Features

- Your device initiates a call home and requests the licenses it needs.
- Pooled licenses - Licenses are company account-specific, and can be used with any compatible device in your company. You can activate or deactivate different types of licenses on the device without actually installing a license file on the device.
- Licenses are stored securely on Cisco servers.

- Licenses can be moved between product instances without license transfer. This greatly simplifies the reassignment of a software license as part of the Return Material Authorization (RMA) process.
- It provides a complete view of all the Smart Software Licenses used in the network using a consolidated usage report of software licenses and devices in one easy-to-use portal.

Cisco Smart Account

Cisco Smart Account is an account where all products enabled for Smart Licensing are deposited. Cisco Smart Account allows you to manage and activate your licenses to devices, monitor license use, and track Cisco license purchases. Through transparent access, you have a real-time view into your Smart Licensing products. IT administrators can manage licenses and account users within your organization's Smart Account through the Smart Software Manager.

When creating a Smart Account, you must have the authority to represent the requesting organization. After you submit the request, it goes through a brief approval process. Access http://software.cisco.com to learn about, set up, or manage Smart Accounts.

Cisco Smart Software Manager enables you to manage all your Cisco Smart software licenses from one centralized website. With Cisco Smart Software Manager, you organize and view your licenses in groups called virtual accounts (collections of licenses and product instances). Use the Cisco Smart Software Manager to do the following tasks:

- Create, manage, or view virtual accounts.
- Create and manage Product Instance ID Tokens.
- Transfer licenses between virtual accounts or view licenses.
- Transfer, remove, or view product instances.
- Run reports against your virtual accounts.
- Modify your email notification settings.
- View overall account information.

Virtual Accounts

A Virtual Account exists as a subaccount tithing the Smart Account. Virtual Accounts are a customer-defined structure based on organizational layout, business function, geography, or any defined hierarchy. They are created and maintained by the Smart Account administrator. Smart Licencing allows you to create multiple license pools or virtual accounts within the Smart Software Manager portal. Using the Virtual Accounts option that you can aggregate licenses into discrete bundles that are associated with a cost center so that one section of an organization cannot use the licenses of another section of the organization. For example, if you segregate your company into different geographic regions, you can create a virtual account for each region to hold the licenses and product instances for that region.

All new licenses and product instances are placed in the default virtual account in the Smart Software Manager, unless you specify a different one during the order process. After you access the default account, you may choose to transfer them to any other account, provided you have the required access permissions.

Use the Smart Software Manager portal to create license pools or transfer licenses.

Product Instance ID Tokens

ID tokens are stored in the Product Instance ID Token Table that is associated with your enterprise account. ID tokens can be valid 1–365 days.

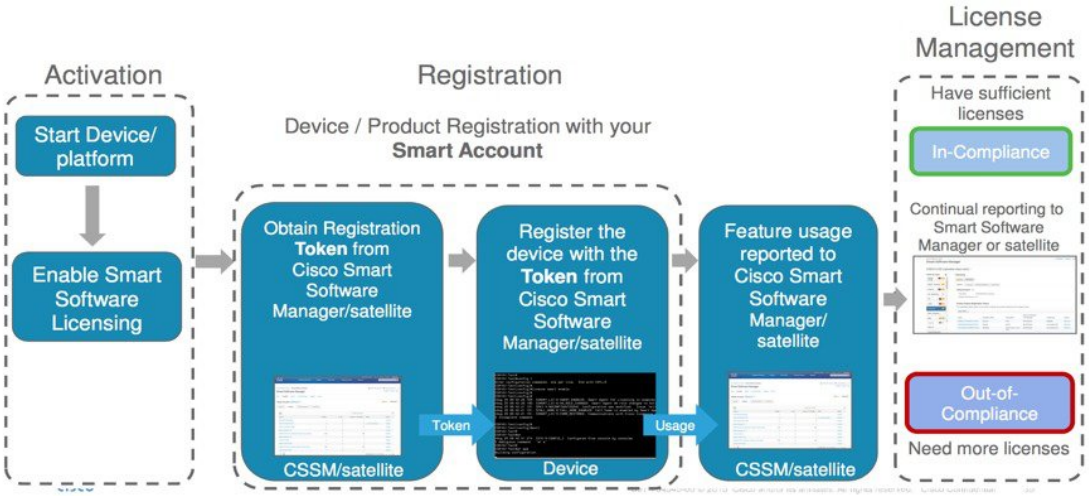
Product Instances

A product instance is an individual device with a unique device identifier (UDI) that is registered using a product instance ID token (or ID token). You can register any number of instances of a product with a single ID token. Each product instance can have one or more licenses residing in the same virtual account. Product instances must periodically connect to the Cisco Smart Software Manager servers during a specific renewal period. If you remove the product instance, its licenses are released and made available within the virtual account.

Smart Licensing Work Flow

The following figure depicts a working model of smart licensing that involves a three-step procedure.

Figure 1: Smart Licensing Work Flow



Create an ID Token

To create a new token using Cisco Smart Software Manager, perform the following tasks:

Before you begin

Procedure

Step 1 Log in to the Cisco Smart Software Manager.

https://software.cisco.com/software/csws/ws/platform/home#SmartLicensing-Inventory

Step 2 Click the **Inventory** tab, and select your virtual account from the **Virtual Account** drop-down list.

Step 3 Click the **General** tab, and click **New Token**.

The **Create ID Token** window is displayed.

Step 4 Enter the token description. Specify the number of days the token must be active.

Step 5 Check the **Allow export-controlled functionality on the products registered with this token** check box.

Step 6 Click **Create ID Token**.

Step 7 Copy the token and register NCS1014 with the same token ID.

An example of the token ID: YzY2ZjYyNjktY2NlOS00NTc4LWIxNTAtMjZkNmNiNzMxMTY1LTE2NjAzNjQ3%0ANzY4Njl8ZVJSckxKN2pFV2tIeHVoMUkxbGxTazFDVm9kc1B5MGlHQmlFWUJi%0Ac3VNRT0%3D%0A

Smart Licensing Transport Modes

Smart Licensing software management solution enables you to choose from one of the three transport modes, Cisco Smart Licensing Utility(CSLU), Smart Transport or Offline modes. This is in addition to the existing Call-Home mode. The default transport mode is CSLU, but you can change the mode to Call-Home, Smart Transport or Offline mode.

The following transport modes are available for you to choose now:

- Call-Home
- Smart
- CSLU
- Offline

Configure Callhome

You can use the Call Home to connect to the CSSM. To configure callhome, perform the following steps:

Procedure

Step 1 Use this sample configuration to enable call home mode settings.

Example:

```
RP/0/RP0/CPU0:ios#call-home
RP/0/RP0/CPU0:ios(config-call-home)#service active
RP/0/RP0/CPU0:ios(config-call-home)#contact smart-licensing
RP/0/RP0/CPU0:ios(config-call-home)#profile CiscoTAC-1
RP/0/RP0/CPU0:ios(config-call-home-profile)#active
RP/0/RP0/CPU0:ios(config-call-home-profile)#destination address http
https://tools.cisco.com/its/service/oddce/services/DDCEService
RP/0/RP0/CPU0:ios(config-call-home-profile)#reporting smart-call-home-data
RP/0/RP0/CPU0:ios(config-call-home-profile)#reporting smart-licensing-data
RP/0/RP0/CPU0:ios(config-call-home-profile)#destination transport-method email disable
RP/0/RP0/CPU0:ios(config-call-home-profile)#destination transport-method http
RP/0/RP0/CPU0:ios(config-call-home-profile)#commit
RP/0/RP0/CPU0:ios(config-call-home-profile)#end
```

Step 2 Use this sample configuration to enable a domine name server.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#domain name cisco.com
```

```
RP/0/RP0/CPU0:ios(config)#domain name-server 64.102.6.247
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 3 Use this sample configuration to enable CRL Configuration.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#crypto ca trustpoint Trustpool crl optional
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 4 Use this sample configuration to enable Call Home as transport mode.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#License smart transport callhome
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Verify whether the Callhome is Configured.

```
RP/0/RP0/CPU0:ios#show license all
Transport:  Type: Callhome
```

Step 5 Use this sample configuration to establish trust using id-token.

Example:

```
license smart trust idtoken Zesdf3243u48329fdfhsfhsfkjs1233j4h1j1j4j41n
```

Configure Smart Transport

You can use the smart transport as an alternative option to Call Home, to connect to the CSSM. To configure smart transport, perform the following steps:

Procedure

Step 1 Use this sample configure "Smart" proxy and "hostname"

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#license smart proxy port 80
RP/0/RP0/CPU0:ios(config)#license smart proxy hostname proxy.esl.cisco.com
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 2 Use this sample configuration to enable CRL Configuration.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#crypto ca trustpoint Trustpool crl optional
```

```
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 3 Use this sample configuration to enable Call Home.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#License smart transport smart
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Verify whether Smart Transport is Configured.

```
RP/0/RP0/CPU0:ios#show license all
Transport:
  Type: Smart
  URL: https://smartreceiver.cisco.com/licservice/license
  Proxy:
    Address: proxy.esl.cisco.com
    Port: 80
    Username: <empty>
    Password: <empty>
  VRF:
    Not Supported
```

Step 4 Use this sample configuration to establish trust using id-token.

Example:

```
license smart trust idtoken Zesdf3243u48329fdfhsfhsfkjs1233j4h1j1j4j41n
```

Configure CSLU

You can configure CSLU as one of the transport modes. CSLU is the default mode for software licensing policy. To configure CSLU, perform the following steps:

Procedure

Step 1 Use the **license smart url cslu http://<cslu-local>:8182/cslu/v1/pi** command to configure the CSLU URL.

Example:

In this sample configuration, the **10.127.59.44** is the CSLU URL that the on-premise server provided. This URL changes for each on-premise servers.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#license smart url cslu http://10.127.59.44:8182/cslu/v1/pi
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 2 Use this sample configuration to enable CRL Configuration.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#crypto ca trustpoint Trustpool crl optional
```

```
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 3 Use the **license smart transport cslu** command to enable CSLU.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#license smart transport cslu
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 4 Use the **show license all** command to verify the CSLU configuration.

Example:

The sample output shows the configuration transport type with the on-prem server address.

```
RP/0/RP0/CPU0:ios#show license all
Transport:
  Type: cslu
  Cslu address: http://10.127.59.44:8182/cslu/v1/pi
  Proxy:
    Not Configured
  VRF:
    Not Supported
```

Step 5 (Optional) Use the **license smart trust idtoken** <*token-id*> command to establish trust using id-token.

Example:

The command uses **Zesdf3243u48329fdfhsfhsfkjs1233j4h1j1j4j41n** as a sample token id.

```
RP/0/RP0/CPU0:ios#license smart trust idtoken Zesdf3243u48329fdfhsfhsfkjs1233j4h1j1j4j41n
```

Step 6 Use the **license smart sync all** command to send the license usage reports to server and receive the compliance status for the licenses consumed by the node.

Example:

```
RP/0/RP0/CPU0:ios#license smart sync all
Tue Aug 26 13:03:28.287 IST
```

Note
If you are using on-prem version 9-202407 or later, this command retrieves the on-prem account details and the compliance information.

The device uses CSLU transport for license communications, and all required trust relationships are established.

What to do next

- Review device status in Cisco Smart Software Manager.
- Ensure device reports successful license communication

Configure Offline

You can configure Offline as one of the options. To configure Offline, perform the following steps:

Procedure

Step 1 Use this sample configuration to disable transport.

Example:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#License smart transport off
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

Step 2 Use this sample configuration to save the report.

Example:

```
RP/0/RP0/CPU0:ios#license smart save usage unreported /misc1/disk1/usage.txt
```

Step 3 Use this sample configuration to import the acknowledgment report.

Example:

```
RP/0/RP0/CPU0:ios#license smart import /misc/disk1/ACK_usage.txt
```

Reserve Specific Licenses for NCS 1014

Specific License Reservation (SLR) lets you reserve a license for your product instance from the CSSM. To reserve specific licenses for NCS 1014, perform the following steps:

Procedure

Step 1 Generate the request code using the **license smart mfg reservation request** local command.

Example:

```
RP/0/RP0/CPU0:iso#license smart mfg reservation request local
Thu Jul 19 13:33:47.241 UTC

Enter this request code in the Cisco Smart Software Manager portal:
CB-ZNCS1014-SA:FCB2546B08T-BBTQDthRu-BA
```

Step 2 Use the generated code and generate the authorization code through Cisco Smart Software Manager.

Step 3 Enter the **run** command to launch the iso XR Linux bash shell.

Example:

```
RP/0/RP0/CPU0:iso#run

RP/0/RP0/CPU0:Jul 19 13:35:20.236: run_cmd[67213]: %INFRA-INFRA_MSG.5-RUN_LOGIN : User Cisco logged
 into shell from con0/RP0/CP0
```

Step 4 Create a file using the **vim** *file name* command.

Example:

```
[node0_RP0_CPU0:~]$vim smart1
```

Step 5 Copy the authorization code in the file and type **:wq** to save and exit the file.

Step 6 Use the **exit** command to exit the shell.

Example:

```
[node0_RP0_CPU0:~]$exit
logout
RP/0/RP0/CPU0:Jul 19 13:45:21.146 UTC run-cmd[67213] %INFRA_MSG-5-LOGOUT : User cisco logged out of
 shell from con0/RP0/CPU0
```

Step 7 Install the authorization code using the **license smart reservation install file** command.

Example:

```
RP/0/RP0/CPU0:iso#license smart reservation install file /disk0:/smart1
Thu Jul 19 13:46:22.877 UTC
Last Confirmation code 8572aa81
```

Note
You can verify the number of reservations in the Cisco smart software manger portal and can view the product instance name changed to a UDI.

Step 8 Verify the udi using the **show license udi** command.

Example:

```
RP/0/RP0/CPU0:iso#show license udi
Thu Jul 19 13:43:19.731 UTC
UDI: PID:NCS1014-SA,SN:FCB2546B08T
```

Step 9 Verify the license reservation using the command **show license status**.

Example:

```
RP/0/RP0/CPU0:P2A_DT_08#show license status
Thu Jul 19 15:45:27.137 UTC

Smart Licensing is ENABLED

Utility:
  Status: DISABLED
License Reservation is ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Transport Off


License Authorization:
  Status: AUTHORIZED - RESERVED on Jul 19 2022 15:21:24 UTC

Export Authorization Key:
  Features Authorized:
    <none>
```

```
Miscellaneous:
  Custom Id: <empty>
```

Smart Licensing for QXP Line Card

Table 1: Feature History

Feature Name	Release Information	Feature Description
Smart Licensing for QXP Line Card	Cisco IOS XR Release 24.3.1	Now the NCS1K4-QXP-L-K9 supports the smart licensing feature. It enables you to automate the time-consuming manual licensing tasks and allows you to easily track the status of your license and software usage trends.

The NCS1K4-QXP-L-K9 now supports Smart Licensing, allowing you to manage licenses and monitor usage trends with ease.

Table 2: License Entitlements for NCS1K4-QXP-L-K9

Display Name in CSSM Server	Description
S_N1K4_LIC_TRK	NCS 1K4 Smart License QDDTXP Trunk
NCS1014_ESS_TXP_RTU	Essential Tier Transponder RTU
NCS1014_ESS_TXP_SIA	Essentials Subscription Transponder SIA

Smart licensing for EDFA2 line card

Table 3: Feature History

Feature Name	Release Information	Feature Description
Smart Licensing using Policy on EDFA2 Line Card	Cisco IOS XR Release 25.1.1	Cisco Smart Licensing Using Policy (SLP) streamlines the licensing process for Cisco IOS XR products. You no longer need to register your device during installation, and there is no evaluation license state or period. Support for Smart Licensing using Policy is now extended to NCS1014-EDFA2 line card

The NCS1K14-EDFA2 line card supports Smart Licensing, allowing you to manage licenses and monitor usage trends with ease. Table 4: Licenses and usage consumption pattern, on page 11 lists the licenses available for the EDFA2 line card.

Table 4: Licenses and usage consumption pattern

License Name	Description	Consumption Pattern
ESS-EDFA-RTU	Essential Tier EDFA RTU	One license per EDFA card
ESS-EDFA-SIA	Essentials Subscription EDFA SIA	One license per EDFA card for 3 years