



Smart Licensing

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Products or Functional Area	5G-PCF
Applicable Platform(s)	SMI
Feature Default Setting	Disabled - Configuration required
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First Introduced.	2020.02.0

Smart Software Licensing

Smart Licensing is a cloud-based approach to licensing that simplifies the purchase, deployment, and management of Cisco software assets. Entitlements are purchased through your Cisco account via Cisco

Commerce Workspace (CCW) and immediately deposited into your Virtual Account for usage. This eliminates the need to install license files on every device. Products that are smart enabled communicate directly to Cisco to report consumption. A single location is available to customers to manage Cisco software licenses — the Cisco Software Central (CSC). License ownership and consumption are readily available to help make better purchase decision based on consumption or business need. See <https://www.cisco.com/c/en/us/buy/smart-accounts/software-licensing.html> for more information about Cisco Smart Licensing.

Comparison Between Legacy Licensing and Smart Licensing

Cisco employs two types of license models - Legacy Licensing and Smart Software Licensing. Legacy Licensing consists of software activation by installing Product Activation Keys (PAK) on to the Cisco product. A Product Activation Key is a purchasable item, ordered in the same manner as other Cisco equipment and used to obtain license files for feature set on Cisco Products. Smart Software Licensing is a cloud-based licensing of the end-to-end platform by using a few tools that authorize and deliver license reporting. Smart Software Licensing functionality incorporated into Network Functions (NFs) completes the product registration and authorization.

Cisco Software Central

Cisco Software Central (CSC) enables the management of software licenses and Smart Account from a single portal. The interface allows you to activate your product, manage entitlements, and renew and upgrade software. A functioning Smart Account is required to complete the registration process. To access the Cisco Software Central, see <https://software.cisco.com>.

Smart Accounts/Virtual Accounts

A Smart Account provides a single location for all Smart-enabled products and entitlements. It helps speed procurement, deployment, and maintenance of Cisco Software. When creating a Smart Account, you must have the authority to represent the requesting organization. After submitting, the request goes through a brief approval process.

A Virtual Account exists as a subaccount within 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.

See <https://software.cisco.com> to learn about, set up, or manage Smart Accounts.

Request a Cisco Smart Account

A Cisco Smart Account is an account where all products enabled for Smart Licensing are deposited. A 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 Software Central.

1. In a browser window, enter the following URL:

`https://software.cisco.com`

2. Log in using your credentials, and then click **Request a Smart Account** in the **Administration** area.

The **Smart Account Request** window is displayed.

3. Under **Create Account**, select one of the following options:
 - **Yes, I have authority to represent my company and want to create the Smart Account** – If you select this option, you agree to authorization to create and manage product and service entitlements, users, and roles on behalf of your organization.
 - **No, the person specified below will create the account** – If you select this option, you must enter the email address of the person who will create the Smart Account.
4. Under **Account Information**:
 - a. Click **Edit** beside **Account Domain Identifier**.
 - b. In the **Edit Account Identifier** dialog box, enter the domain, and click **OK**. By default, the domain is based on the email address of the person creating the account and must belong to the company that will own this account.
 - c. Enter the **Account Name** (typically, the company name).
5. Click **Continue**.

The Smart Account request will be in pending status until it has been approved by the Account Domain Identifier. After approval, you will receive an email confirmation with instructions for completing the setup process.

PCF Smart Licensing

At present, the Smart Licensing feature supports application entitlement for online and offline licensing for all Cisco 5G applications (PCF and SMF). The application usage is unrestricted during all stages of licensing including Out of Compliance (OOC) and expired stages.



Note A 90-day evaluation period is granted for all licenses in use. Currently, the functionality and operation of the 5G applications is unrestricted even after the end of the evaluation period.

Software Tags and Entitlement Tags

Tags for the following software and entitlements have been created to identify, report, and enforce licenses.

Software Tags

Software tags uniquely identify each licensable software product or product suite on a device. The following software tags exist for the PCF.

Product Type / Description	Software Tag
Ultra Cloud Core - Policy Control Function (PCF), Base Minimum	regid.2020-04.com.cisco.PCF,1.0_a0b80e76-1cc3-4a0f-bbf5-c7a8dafa5f8

Entitlement Tags

The following entitlement tags identify licenses in use:

Product Type / Description	Entitlement Tag
Ultra Cloud Core - Policy Control Function (PCF), Base Minimum	regid.2020-04.com.cisco.PCF_BASE,1.0_60b1da6f-3832-4687-90c9-8879dc815a27



Note The license information is retained during software upgrades and rollback.

Configuring Smart Licensing

You can configure Smart Licensing after a new PCF deployment.

Users with Access to CSC

This section describes the procedure involved in configuring Smart Licensing for users with access to CSC portal from their internal environment.

Setting Up the Product and Entitlement in CSC

Before you begin, you need to set up your product and entitlement in the CSC. To set up your product and entitlement:

1. Log in to your CSC account.
2. Click **Add Product** and enter the following details.
 - **Product name** – Specify the name of the deployed product. For example, PCF.
 - **Primary PM CEC ID** – Specify the primary Project Manager's CEC ID for the deployed product.
 - **Dev Manager CEC ID** – Specify the Development Manager's CEC ID for the deployed product.
 - **Description (Optional)** – Specify a brief description of the deployed product.
 - **Product Type** – Specify the product type.
 - **Software ID Tag** – Specify the software ID Tag provided by the Cisco Account's team.
3. Click **Create**.
4. Select your product from the **Product/Entitlement Setup** grid.
5. Click **Entitlement** drop-down and select **Create New Entitlement**.
6. Select **New Entitlement** in **Add Entitlement** and enter the following details.
 - **Entitlement Name** – Specify the license entitlement name. For example, PCF_BASE.

- **Description** (Optional) – Specify a brief description about the license entitlement.
 - **Entitlement Tag** – Specify the entitlement tag provided by the Cisco Account's team.
 - **Entitlement Type** – Specify the type of license entitlement.
 - **Vendor String** – Specify the vendor name.
7. Click **Entitlement Allocation**.
 8. Click **Add Entitlement Allocation**.
 9. In **New License Allocation**, provide the following details:
 - **Product** – Select your product from the drop-down list.
 - **Entitlement** – Select your entitlement from the drop-down list.
 10. Click **Continue**.
 11. In **New License Allocation** window, provide the following details:
 - **Quantity** – Specify the number of licenses.
 - **License Type** – Specify the type of license.
 - **Expiring Date** – Specify the date of expiry for the license purchased.
 12. Click **Create**.
 13. Verify the status of Smart Licensing using the following command.

```
show license all
```

Example:

```
pcf# show license all

Smart Licensing Status
=====
Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 83 days, 0 hr, 15 min, 8 sec
  Last Communication Attempt: NONE

License Conversion:
  Automatic Conversion Enabled: true
  Status: NOT STARTED

Utility:
  Status: DISABLED

Transport:
  Type: CALLHOME

Evaluation Period:
  Evaluation Mode: In Use
```

```

Evaluation Period Remaining: 83 days, 0 hr, 15 min, 8 sec

License Usage
=====
License Authorization Status: EVALUATION MODE
Evaluation Period Remaining: 83 days, 0 hr, 15 min, 8 sec

UCC 5G PCF BASE (PCF_BASE)
Description: Ultra Cloud Core - Policy Control Function (PCF), Base Minimum
Count: 1
Version: 1.0
Status: EVAL MODE
Export status: RESTRICTED_NOTALLOWED
Feature Name: <empty>
Feature Description: <empty>

Product Information
=====
UDI: PID:PCF,SN:6GKJ20A-NMUWA7Y

Agent Version
=====
Smart Agent for Licensing: 3.0.13

```

Registering Smart Licensing

You need to register the product entitled to the license with CSC. To register, you need to generate an ID token from CSC.

1. Log in to your CSC account.
2. Click **General** > **New Token** and enter the following details:
 - **Description** – Specify a brief description about the ID token.
 - **Expires After** – Specify the number of days for the token to expire.
 - **Max. Number Users** – Specify the maximum number users.
3. Click **Create Token**.
4. Select **new ID token** in **Product Instance Registration Token**.
5. Click **Actions** > **Copy**.
6. Log in to PCF Ops Center CLI and paste the **ID token** using the following configuration:

```
license smart register idtoken
```

Example:

```
pcf# license smart register
Value for 'idtoken' (<string>): MTI2Y2F1NTAtOThkMi00YTALWE4M2QtOTNhNzNjNjY4ZmFiLTE2MTc4N
Tky%0AMTA5MDh8ck1jUHNwc3k1ZC9nWFFCSnVEcUp4QU1jTFoxOGxDTU5kQ3lpa25E%0Ab04wST0%3D%0A
pcf#
```

7. Verify the status of Smart Licensing using the following command.

```
show license all
```

Example:

```
pcf# show license all

Smart Licensing Status
=====
Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: Cisco Systems, Inc.
  Virtual Account: PCF-SMF
  Export-Controlled Functionality: Allowed
  Initial Registration: SUCCEEDED on Apr 15 05:45:07 2020 GMT
  Last Renewal Attempt: SUCCEEDED on Apr 15 05:45:07 2020 GMT
  Next Renewal Attempt: Oct 12 05:45:07 2020 GMT
  Registration Expires: Apr 15 05:40:31 2021 GMT

License Authorization:
  Status: AUTHORIZED on Apr 15 05:45:12 2020 GMT
  Last Communication Attempt: SUCCEEDED on Apr 15 05:45:12 2020 GMT
  Next Communication Attempt: May 15 05:45:12 2020 GMT
  Communication Deadline: Jul 14 05:40:40 2020 GMT

License Conversion:
  Automatic Conversion Enabled: true
  Status: NOT STARTED

Utility:
  Status: DISABLED

Transport:
  Type: CALLHOME

Evaluation Period:
  Evaluation Mode: Not In Use
  Evaluation Period Remaining: 83 days, 0 hr, 10 min, 43 sec

License Usage
=====
License Authorization Status: AUTHORIZED as of Apr 15 05:45:12 2020 GMT

UCC 5G PCF BASE (PCF_BASE)
  Description: Ultra Cloud Core - Policy Control Function (PCF), Base Minimum
  Count: 1
  Version: 1.0
  Status: AUTHORIZED
  Export status: RESTRICTED_ALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
=====
UDI: PID:PCF,SN:6GKJ20A-NMUWA7Y

Agent Version
=====
Smart Agent for Licensing: 3.0.13
```

NOTES:

- **license smart register** – Registers Smart Licensing with CSC.
- *idtoken* – Specifies the ID token generated from CSC.

Deregistering Smart Licensing

You can deregister the registered product from Smart Licensing if required.

1. Log in to PCF Ops Center CLI and use the following configuration:

```
license smart deregister
```

Example:

```
pcf# license smart deregister
pcf#
```

2. Verify the status of Smart Licensing using the following command.

```
show license all
```

Example:

```
pcf# show license all

Smart Licensing Status
=====
Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 83 days, 0 hr, 10 min, 43 sec
  Last Communication Attempt: NONE

License Conversion:
  Automatic Conversion Enabled: true
  Status: NOT STARTED

Utility:
  Status: DISABLED

Transport:
  Type: CALLHOME

Evaluation Period:
  Evaluation Mode: In Use
  Evaluation Period Remaining: 83 days, 0 hr, 10 min, 43 sec

License Usage
=====
License Authorization Status: EVALUATION MODE
  Evaluation Period Remaining: 83 days, 0 hr, 10 min, 43 sec

UCC 5G PCF BASE (PCF_BASE)
  Description: Ultra Cloud Core - Policy Control Function (PCF), Base Minimum
  Count: 1
  Version: 1.0
  Status: EVAL MODE
  Export status: RESTRICTED_NOTALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
=====
UDI: PID:PCF,SN:6GKJ20A-NMUWA7Y
```



```
Agent Version
=====
Smart Agent for Licensing: 3.0.13
```

```
pcf#
```

NOTES:

- **license smart deregister** – Deregisters Smart Licensing from CSC.

Users without Access to CSC

The Smart License Reservation feature – Perpetual Reservation – is reserved for customers without access to CSC from their internal environments. With this feature, Cisco allows customers to reserve licenses from their virtual account and tie them to their devices Unique Device Identifier (UDI). This enables customers to use their devices with reserved licenses in a disconnected mode.

The subsequent sections describe the procedure involved in reserving Smart License for users without access to CSC from their internal environment.

Enabling Smart License Reservation

You can enable Smart License reservation through PCF Ops Center CLI.

1. Log in to PCF Ops Center CLI and use the following configuration:

```
config terminal
license smart reservation
commit
end
```

NOTES:

- **license smart reservation** – Enables license reservation.

Generating Smart License Reservation Request Code

You can generate the Smart License reservation request code through PCF Ops Center CLI.

1. Log in to PCF Ops Center CLI and using the following configuration to enable the reservation:

```
config terminal
license smart reservation
commit
end
```

2. Use the following configuration to request a reservation code:

```
license smart reservation request
```

Example:

```
pcf# license smart reservation request
reservation-request-code CJ-ZPCF:6GKJ20A-NMUWA7Y-Ai75GxtBs-3B
pcf#
Message from confd-api-manager at 2020-04-15 05:51:37...
```

```
Global license change NotifyReservationInProgress reason code Success - Successful.
pcf#
```

NOTES:

- **license smart reservation** – Enables license reservation request code.
- **license smart reservation request** – Generates the license reservation request code.



Important You need to copy the generated license request code from the PCF Ops Center CLI.

Generating an Authorization Code from CSC

You can generate an authorization code from CSC using the license reservation request code.

1. Log in to your CSC account.
2. Click **License Reservation**.
3. Enter the Request Code: Paste the license reservation request code copied from the PCF Ops Center CLI in the **Reservation Request Code** text-box.
4. Select the Licenses: Click **Reserve a Specific License** radio-button and select *UCC 5G PCF BASE*.



Note In the **Reserve** text-box enter the value *1*.

5. Review your selection.
6. Click **Generate Authorization Code**.
7. Download the response file: The authorization code is generated and displayed on-screen. Click **Download as File** to download the authorization code.
8. Click **Close**.

Reserving Smart Licensing

You can reserve Smart License for the deployed product using the authorization code generated in CSC.

1. Log in to PCF Ops Center CLI and use the following configuration:

```
license smart reservation install
authorization_code
```

Example:

```
pcf# license smart reservation install
Value for 'key' (<string>):
<specificPLR><authorizationCode><flag>A</flag><version>C</version>
<piiid>35757dc6-2bdf-4fal-ba7e-4190f5b6ea22</piiid><timestamp>1586929992297</timestamp>
<entitlements><entitlement><tag>regid.2020-04.com.cisco.PCF_BASE,1.0_60b1da6f-3832-4687-90c9-8879dc815a27</tag>
<count>1</count><startDate>2020-Apr-08 UTC</startDate><endDate>2020-Oct-05 UTC</endDate>
<licenseType>TERM</licenseType><displayName>UCC 5G PCF BASE</displayName>
```

```
<tagDescription>Ultra Cloud Core - Policy Control Function (PCF), Base
Minimum</tagDescription>
<subscriptionID></subscriptionID></entitlement></entitlements></authorizationCode>
<signature>MEYCIQC/9v5lpgFoEk2l4cmIgjkk83g5Wkjzs09kQnsO8D0jRgIhAM+D6DRuimqhlTlfJoZwNteOfFKw6fHEY5CEf3+kPQj</signature>
<udi>P:PCF,S:6GKJ20A-NMUWA7Y</udi></specificPLR>
pcf#
```

2. Verify the status of smart licensing using the following command.

```
show license all
```

Example:

```
pcf# show license all
```

```
Smart Licensing Status
=====
Smart Licensing is ENABLED
License Reservation is ENABLED
```

Registration:

```
Status: REGISTERED - SPECIFIC LICENSE RESERVATION
Export-Controlled Functionality: Allowed
Initial Registration: SUCCEEDED on Wed Apr 15 05:53:31 GMT 2020
Last Renewal Attempt: None
```

License Authorization:

```
Status: AUTHORIZED - RESERVED on Wed Apr 15 05:53:31 GMT 2020
```

```
Utility:
Status: DISABLED
```

```
Transport:
Type: CALLHOME
```

```
Evaluation Period:
Evaluation Mode: Not In Use
Evaluation Period Remaining: 83 days, 0 hr, 5 min, 15 sec
```

```
License Usage
=====
```

License Authorization Status:

```
Status: AUTHORIZED - RESERVED on Wed Apr 15 05:53:31 GMT 2020
Last Communication Attempt: SUCCEEDED on Apr 15 05:53:31 2020 GMT
Next Communication Attempt: NONE
Communication Deadline: NONE
```

UCC 5G PCF BASE (PCF_BASE)

```
Description: Ultra Cloud Core - Policy Control Function (PCF), Base
Minimum
```

```
Count: 1
```

```
Version: 1.0
```

```
Status: AUTHORIZED
```

```
Export status: NOT RESTRICTED
Feature Name: <empty>
Feature Description: <empty>
Reservation:
```

```
Reservation Status: SPECIFIC INSTALLED
Total Reserved Count: 1
Term expiration: 2020-Oct-05 GMT
```

```
Product Information
```

```

=====
UDI: PID:PCF, SN:6GKJ2OA-NMUWA7Y

Agent Version
=====
Smart Agent for Licensing: 3.0.13

```

NOTES:

- **license smart reservation install** *authorization_code* – Installs a Smart License Authorization code.

Returning the Reserved License

You can return the reserved license to CSC if required. Use the following procedures to return the reserved license:

1. When the license reservation authorization code is installed in the PCF Ops Center.
 - a. Log in to the PCF Ops Center CLI and use the following configuration:

```
license smart reservation return
```

Example:

```
pcf# license smart reservation return
reservation-return-code CJ6m3k-RAvu6b-hMNmwf-mrdcko-NoSwKL-tF7orz-9aNtEu-yVjGAm-D6j
pcf#
```

- b. Copy the license reservation return code generated in PCF Ops Center CLI.
- c. Log in to your CSC account.
- d. Select your product instance from the list.
- e. Click **Actions > Remove**.
- f. Paste the license reservation return code in **Return Code** text-box.

NOTES:

- **license smart reservation return** – Returns a reserved Smart License.
2. When the license reservation authorization code is not installed in the PCF Ops Center.
 - a. Log in to the PCF Ops Center CLI and use the following configuration to generate the return code.

```
license smart reservation return
authorization_code
```

**Important**

Paste the license reservation authorization code generated in CSC to generate the return code.

- b. Log in to your CSC account.
- c. Select your product instance from the list.
- d. Click **Actions > Remove**.
- e. Paste the license reservation return code in **Return Code** text-box.

3. Verify the status of smart licensing using the following command.

```
show license all
```

Example:

```
pcf# show license all

Smart Licensing Status
=====
Smart Licensing is ENABLED
License Reservation is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 83 days, 0 hr, 5 min, 15 sec
  Last Communication Attempt: SUCCEEDED on Apr 15 05:53:31 2020 GMT
  Next Communication Attempt: NONE
  Communication Deadline: NONE

License Conversion:
  Automatic Conversion Enabled: true
  Status: NOT STARTED

Utility:
  Status: DISABLED

Transport:
  Type: CALLHOME

Evaluation Period:
  Evaluation Mode: In Use
  Evaluation Period Remaining: 83 days, 0 hr, 5 min, 15 sec

License Usage
=====
License Authorization Status: EVALUATION MODE
  Evaluation Period Remaining: 83 days, 0 hr, 5 min, 15 sec

UCC 5G PCF BASE (PCF_BASE)
  Description: Ultra Cloud Core - Policy Control Function (PCF), Base Minimum
  Count: 1
  Version: 1.0
  Status: EVAL MODE
  Export status: RESTRICTED_NOTALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
=====
UDI: PID:PCF,SN:6GKJ20A-NMUWA7Y

Agent Version
=====
Smart Agent for Licensing: 3.0.13

pcf#
```

Smart Licensing OA&M Support

This section describes operations, administration, and maintenance information for this feature.

Monitoring and Troubleshooting Smart Licensing

You can use the following show commands to display information about Smart Licensing in the PCF Ops Center.

```
show licesne [all | UDI | displaylevel | reservation | smart | status |  
summary | tech-support | usage]
```

NOTES:

- **all** – Displays an overview of Smart Licensing information that includes license status and, usage, product information, and Smart Agent version.
- **UDI** – Displays Unique Device Identifiers (UDI) details.
- **displaylevel** – Depth to display information.
- **reservation** – Displays Smart Licensing reservation information.
- **smart** – Displays Smart Licensing information.
- **status** – Displays the overall status of Smart Licensing.
- **summary** – Displays a summary of Smart Licensing.
- **tech-support** – Displays Smart Licensing debugging information.
- **usage** – Displays the license usage information for all the entitlements that are currently in use.