

Smart Licensing

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Products or Functional Area	SMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled - Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	Pre-2020.02.0

Feature Description

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. This traditional licensing does not need any online communication with the Cisco licensing server.

Smart Software Licensing is a cloud-based licensing of the end-to-end platform through the use of a few tools that authorize and deliver license reporting. Smart Software Licensing functionality incorporated into the NFs complete the product registration and authorization. SMF supports the Smart Software Licensing model.

Smart Licensing simplifies the purchase, deployment, and management of Cisco software assets. Entitlements are purchased through your Cisco account through Cisco Commerce Workspace (CCW) and immediately available in your Virtual Account for usage. This approach eliminates the need to install license files on every device. Smart-enabled products communicate directly to Cisco to report consumption. A single location—Cisco Software Central—is available for customers to manage Cisco software licenses. License ownership and consumption are readily available to help make a better purchase decision that is based on consumption or business need.

For more information on Cisco Smart Licensing, see https://www.cisco.com/c/en/us/buy/smart-accounts/software-licensing.html.

Cisco Software Central

Cisco Software Central (CSC) enables the management of software licenses and the smart account from a single portal. The CSC interface allows you to enable your product, manage entitlements, renew, and upgrade software. You need a functioning smart account to complete the registration process.

To access Cisco Software Central, see https://software.cisco.com.

Smart Accounts and Virtual Accounts

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

A Virtual Account exists as a sub-account within the smart account. Virtual Accounts are customer-defined based on the organizational layout, business function, geography, or any defined hierarchy. Smart account administrator creates and maintains the virtual accounts.

For information on setting up or managing the Smart Accounts, see https://software.cisco.com.

Requesting a Cisco Smart Account

A Cisco Smart Account is an account where smart licensing-enabled products are available. 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 the organization's smart account through Cisco Software Central. To create a Cisco Smart Account, perform the following steps:

Procedure

Step 1 Visit the following URL:

```
https://software.cisco.com
```

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

The **Smart Account Request** window appears.

Step 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 authorize to create and manage product and service entitlements, users, and roles, on behalf of the 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 creates the smart account.

Step 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).

Step 5 Click **Continue**.

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

SMF Smart Licensing

The Smart Licensing feature supports application entitlement for online and offline licensing for all 5G applications (PCF, SMF, and NRF). 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. The functionality and operation of the 5G applications is unrestricted even after the end of the evaluation period.

Software Tags and Entitlement Tags

This section describes the software and entitlement tags that are available to identify report, and enforce licenses.

Software Tags

Software tags, also known as product tags, are unique identifiers for the Smart Licensing system to identify each licensable software product or product suite on a device. The Smart client uses this tag for identification during the addition of smart product instance in Cisco Software Central (CSC).

The following software tags exist for the SMF.

Product Type and Description	Software Tag
Ultra Cloud Core - Session Management Function (SMF), Base Minimum	regid.2020-04.com.cisco.SMF,1.0_37ffdc21-3e95-4192-bcda-d3225b6590ce

Entitlement Tags

Entitlement tag is a part of the software that identifies the features in an image that are being used. These tags underlay the communication on usage and entitlements of software products that are installed on devices. The entitlement tag maps to both the product IDs (PID) license and the software image. Every Smart-enabled PID contains one or more entitlement tags.

The following entitlement tags identify licenses in use:

Product Type and Description	Entitlement Tag
Ultra Cloud Core - Session Management Function (SMF), Base Minimum	regid.2020-04.com.cisco.SMF_BASE,1.0_b49f5997-21aa-4d15-9606-0cff88729f69

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

Configuring Smart Licensing

You can configure Smart Licensing after the SMF deployment.

Users with Access to CSC

This section describes how to configure Smart Licensing if you have access to CSC portal from your 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 on to your CSC account.
2. Click **Add Product** and enter the following details:
   - **Product name**–Specify the name of the deployed product. For example, SMF.
   - **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 Accounts team.

3. Click **Create**.
4. Select your product from the **Product/Entitlement Setup** grid.
5. From the **Entitlement** drop-down list, 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, SMF_BASE.
   - **Description** (Optional)–Enter a brief description about the license entitlement.
   - **Entitlement Tag**–Specify the entitlement tag provided by the Cisco Accounts 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**, enter 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, enter 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 by using the following command.

    show license all

    Example:

```
SMF# 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: Smart Transport
   Registration URL: null
   Utility URL: null

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 SMF BASE (SMF_BASE)
  Description: Ultra Cloud Core - Session Management Function (SMF), Base Minimum
  Count: 1
  Version: 1.0
  Status: EVAL MODE
  Export status: RESTRICTED_NOTALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
===================
UDI: PID:SMF,SN:6GKJ2OA-NMUWA7Y

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

Registering Smart Licensing

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

1. Log on to your CSC account.
2. Click **General > New Token** and enter the following details:
   - **Description**–Provide 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 of users.
3. Click **Create Token**.
4. Select **New ID token** in **Product Instance Registration Token**.
5. Click **Actions > Copy**.

6. Log on to SMF Ops Center CLI and paste the **ID token** by using the following command.

   license smart register *idtoken*

   Example:

```
SMF# license smart register
Value for 'idtoken' (<string>): MTI2Y2FlNTAtOThkMi00YTAxLWE4M2QtOTNhNzNjNjY4ZmFiLTE2MTc4N
Tky%0AMTA5MDh8ck1jUHNwc3k1ZC9nWFFCSnVEcUp4QU1jTFoxOGxDTU5kQ3lpa25E%0Ab04wST0%3D%0A
SMF#
```

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

   show license all

   Example:

```
SMF# show license all

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

Registration:
  Status: REGISTERED
  Smart Account: Cisco Systems, Inc.
  Virtual Account: SMF-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: Smart Transport
   Registration URL: null
   Utility URL: null

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 SMF BASE (SMF_BASE)
  Description: Ultra Cloud Core - Session Management Function (SMF), Base Minimum
  Count: 1
  Version: 1.0
  Status: AUTHORIZED
  Export status: RESTRICTED_ALLOWED
```

```
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
===================
UDI: PID:SMF,SN:6GKJ2OA-NMUWA7Y

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

NOTES:

- **license smart register** : Register Smart Licensing with CSC.
- *idtoken* : Specify the ID token generated from CSC.

Deregistering Smart Licensing

To deregister Smart Licensing:

1. Log on to SMF Ops Center CLI and use the following command.

   `license smart deregister`

2. Verify the Smart Licensing status by using the following command:

   `show license all`

   Example:

```
SMF# 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: Smart Transport
   Registration URL: null
   Utility URL: null

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 SMF BASE (SMF_BASE)
  Description: Ultra Cloud Core - Session Management Function (SMF), Base Minimum
  Count: 1
  Version: 1.0
  Status: EVAL MODE
  Export status: RESTRICTED_NOTALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
===================
UDI: PID:SMF,SN:6GKJ2OA-NMUWA7Y

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

SMF#
```

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). Smart License Reservation 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

To enable Smart License reservation through SMF Ops Center CLI:

Log on to SMF Ops Center CLI and use the following configuration.

```
config
   license smart reservation
   commit
   exit
```

NOTES:

license smart reservation : Enable license reservation.

Generating Smart License Reservation Request Code



Note Before generating the Smart License reservation request code, complete the Enabling Smart License Reservation procedure.

To generate the Smart License reservation request code, use the following command:

license smart reservation request

Example:

```
SMF# license smart reservation request
reservation-request-code CJ-ZSMF:6GKJ2OA-NMUWA7Y-Ai75GxtBs-3B
SMF#
Message from confd-api-manager at 2020-04-15 05:51:37...
Global license change NotifyReservationInProgress reason code Success - Successful.
SMF#
```

NOTES:

- **license smart reservation** : Enable license reservation request code.
- **license smart reservation request** : Generate the license reservation request code.

Important You must copy the generated license request code from the SMF Ops Center CLI.

Generating an Authorization Code from CSC

To generate an authorization code from CSC using the license reservation request code:

1. Log on to your CSC account.
2. Click **License Reservation** .
3. Copy the request code from the SMF Ops Center CLI and paste the request code in the **Reservation Request Code** text-box.
4. Click **Reserve a Specific License** option and select *UCC 5G SMF BASE*.

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

5. Review your selection.
6. Click **Generate Authorization Code**.
7. The authorization code is generated and displayed on-screen. Either click **Copy to Clipboard** or **Download as File** to download the authorization code.
8. Click **Close**.

Reserving Smart Licensing

There are two methods available to reserve the Smart License:

- Key-based: Using the copied clipboard content of the authorization code directly from the CSC.
- URL-based: Using the downloaded file containing the authorization code from CSC, saved on the local server.

To reserve Smart License for the deployed product:

1. Log on to SMF Ops Center CLI and enter the following command.

   Key-based:

   license smart reservation install *authorization_code*

   Example:

   SMF# license smart reservation install

```
Value for 'key' (<string>):
<specificPLR><authorizationCode><flag>A</flag><version>C</version>
<piid>35757dc6-2bdf-4fa1-ba7e-4190f5b6ea22</piid><timestamp>1586929992297</timestamp>
<entitlements><entitlement><tag>regid.2020-04.com.cisco.SMF_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 SMF BASE</displayName>
<tagDescription>Ultra Cloud Core - Session Management Function (SMF), Base
Minimum</tagDescription>
<subscriptionID></subscriptionID></entitlement></entitlements></authorizationCode>
<signature>MEYCIQC/9v5LpgFoEk2l4omIgjjk83g5WXjzs09kQnsO8D0jRgIhAMh+
D6DRuYmqh1TlfJoZxNte0fPKw6fHEY5CEF3+kPQj</signature>
<udi>P:SMF,S:6GKJ2OA-NMUWA7Y</udi></specificPLR>
SMF#
```

   URL-based:

   license smart reservation install url { path *httpPath*
   [username *username* **| password** *password* **] }**

   Example:

```
SMF# license smart reservation install url { username smf password **** path http://
209.165.202.155:8000/AuthorizationCode_SN_6OUP5ZY-LMXHB2A.txt }
```

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

   show license all

   Example:

   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: Smart Transport
   Registration URL: null
   Utility URL: null

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 SMF BASE (SMF_BASE)
  Description: Ultra Cloud Core - Session Management Function (SMF),
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:SMF,SN:6GKJ2OA-NMUWA7Y

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

NOTES:

- **license smart reservation install key** *authorization_code* : Installs a Smart License Authorization code.
- **license smart reservation install url** *path* : Downloads the file containing the authorization code from CSC, saved on the local server.

Returning the Reserved License

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

1. When you install the license reservation authorization in the SMF Ops Center.
   a. Log on to the SMF Ops Center CLI and use the following command.

      license smart reservation return

      Example:

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

Note If there is an issue with the return code generation, open a case with the Cisco Technical Assistance Center.

b. Copy the license reservation return code generated in SMF Ops Center CLI.

c. Log on to your CSC account.

d. Select your product instance from the list in the Product Instances tab.

e. Click **Actions** > **Remove**.

f. Paste the license reservation return code in **Return Code** text-box.

g. Select **Remove Product Instance**.

NOTES:

- **license smart reservation return** : Return a reserved Smart License.

2. When the license reservation authorization code is not installed in the SMF Ops Center.

   a. Log on to the SMF Ops Center CLI and use the following command to generate the return code.

   `license smart reservation return`
   `authorization_code`

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

   b. Log on to your CSC account

   c. Select your product instance from the list in the Product Instances tab.

   d. Click **Actions** > **Remove**.

   e. Paste the license reservation return code in **Return Code** text-box.

   f. Select **Remove Product Instance**.

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

   `show license all`

   Example:

   `SMF# 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: Smart Transport
   Registration URL: null
   Utility URL: null

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 SMF BASE (SMF_BASE)
  Description: Ultra Cloud Core - Session Management Function (SMF), Base Minimum
  Count: 1
  Version: 1.0
  Status: EVAL MODE
  Export status: RESTRICTED_NOTALLOWED
  Feature Name: <empty>
  Feature Description: <empty>

Product Information
===================
UDI: PID:SMF,SN:6GKJ2OA-NMUWA7Y

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

SMF#
```

Canceling License Reservation Request

To cancel a license reservation request through the SMF Ops Center CLI:

Log on to the SMF Ops Center CLI and use the following command.

license smart reservation cancel

Monitoring and Troubleshooting Smart Software Licensing

To view Smart Licensing related information in the SMF Ops Center, use the following show commands.

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

NOTES:

- **all** : Displays an overview of Smart Licensing information that includes license status, 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 the 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.