



Smart Licensing

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

| | |
|---|--|
| Applicable Product (s) or Functional Area | 5G-UPF |
| Applicable Platforms | VPC-SI |
| Feature Default Setting | Disabled – Configuration Required |
| Related Changes in this Release | Not Applicable |
| Related Documentation | <i>UCC 5G UPF Configuration and Administration Guide</i> |

Revision History

| Revision Details | Release |
|-------------------|-----------|
| First introduced. | 2021.01.0 |

Overview

Ultra Cloud Core 5G User Plane Function (UPF) supports Smart 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 Smart Software Manager (CSSM). 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 leveraging few tools that authorize and deliver license reporting. Smart Software Licensing functionality incorporated into Network Functions (NFs) completes the product registration, authorization resulting in reporting services available to the end customer.

Evaluation Period

A 90-day evaluation period is granted for all licenses in use. During this period, feature licenses can be used without limitation, and up to one counting license each can be used. The evaluation period ends when the system registers successfully with the CSSM or Cisco.com. Licensed functionality is blocked when this 90-day period expires.

UPF performs license enforcement for on/off feature licenses. Each on/off feature license is tied to service licenses, which potentially use those on/off features. When an Out of Compliance (OOC) is detected for an on/off license, new calls for the corresponding services will be dropped, subject to the following conditions:

- Each on/off feature license is given a 90-day grace (evaluation) period. During this period, the system generates SNMP traps to inform of the unavailability of valid licenses. To resolve the OOC, corrective action is needed such as purchasing and registering licenses for this feature, or disabling the feature.
- If the feature is still OOC after the 90-day grace period, UPF enforces the OOC state based on a predefined policy for each license. If enforcement is required, new calls for the services corresponding to the on/off licenses are dropped.

The following CLI commands can be used to display details about the enforcement of Smart Licenses in use:

```
show license enforcement policy
show license enforcement status [ allowed | blocked ] [ feature | service
]
```

Cisco Smart Software Manager

Cisco Smart Software Manager (CSSM) 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 Smart Software Manager, 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 sub-account 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.

Smart Licensing Mode

The Smart Licensing Mode is categorized as follows:

- **Reporting Licenses (Parent Licenses):** The Parent Licenses are reported to backend license server (CSSM) and accounted for usage of licenses. For each Parent Licenses, the entitlement tags are created and the same is used to identify the type service or feature.
- **Non-Reporting Licenses (Child Licenses):** The Child Licenses are not reported to backend license server (CSSM) and these licenses are enabled by default with the Parent Licenses. For Child Licenses, the entitlement tags are not created.

That is to say, Smart License enables all Parent and Child Licenses based on the Product Type that is configured. However, the reporting is done only for Parent Licenses.

The state of Smart Licensing Agent is persistent across reboot and crashes.

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 Smart Software Manager.

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

`https://software.cisco.com`

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

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

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 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.

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 has been approved by the Account Domain Identifier. After approval, you will receive an email confirmation with instructions for completing the setup process.

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 licenseable software product or product suite on a device. The following software tags exist for UPF.

| Product Type / Description | Software Tag |
|---|--|
| UPF Ultra Cloud Core - User Plane Function (UPF) | regid.2020-04.com.cisco.UPF, 1.0_bc18a9ff-e0ea-4476-a250-04ebf7839c4c |

Reporting (Parent) Entitlement Tags for UPF

The following entitlement tags identify licenses in use for UPF.

| License Display Name/Description | Entitlement Tag | Tag Name |
|---|---|--------------|
| UCC 5G UPF Base Lic Ultra Cloud Core - User Plane Function (UPF), Base Minimum | regid.2020-08.com.cisco.F_UPF_BASE, 1.0_776395f3-8b8d-46e1-ac6e-0bd2306ef3b6 | F_UPF_BASE |
| UCC 5G UPF Instance Ultra Cloud Core - User Plane Function (UPF) Instance | regid.2020-08.com.cisco.F_UPF_INS, 1.0_5cd68c07-152a-48c6-b143-4dc60eb111e5 | F_UPF_INS |
| UCC 5G UPF 1K Sess Ultra Cloud Core - User Plane Function (UPF), 1K Sessions | regid.2020-08.com.cisco.L_UPF_SAE_1K, 1.0_5d16e2f6-808a-45ff-8691-f215d5ba2bea | L_UPF_SAE_1K |

Non-reporting (Child) License List

In this release, the following Child Licenses are enabled by default when the Parent Licenses are enabled.

| License Description | License Type |
|--|---------------------|
| PGW 1k Sessions | Counting |
| SGW 1k Sessions | Counting |
| GGSN 1k Sessions | Counting |
| Per Subscriber Stateful Firewall 1k Sessions | Counting |
| ENAT 1k Sessions | Counting |
| Enhanced Charging Bundle 1 | Counting |
| Enhanced charging bundle 2 | On/Off |
| Dynamic policy interface | On/Off |
| Enhanced LI service | On/Off |
| Lawful intercept | On/Off |
| Session recover | On/Off |
| Radius AAA server group | On/Off |
| IPv6 | On/Off |
| Intelligent Traffic Control | On/Off |
| DIAMETER Closed-Loop Charging Interface | On/Off |
| Per-Subscriber Traffic Policing/Shaping | On/Off |
| Dynamic Radius extensions (CoA and PoD) | On/Off |
| Proxy MIP | On/Off |
| FA | On/Off |
| IPSec | On/Off |
| Inter-Chassis Session Recovery | On/Off |
| ICSR/SR Performance Improvements | On/Off |
| ICSR Enhanced Recovery for Data and Control Plane, 1K Sessions | On/Off |
| MPLS | On/Off |
| TACACS+ | On/Off |
| NAT/PAT With DPI | On/Off |
| Rate Limiting Function (Throttling) | On/Off |
| Overcharging Protection for EPC-GW | On/Off |
| Overcharging Protection Upgrade for EPC-GW | On/Off |
| ADC Trigger Over Gx, 1K Sessions | On/Off |

| License Description | License Type |
|---|--------------|
| Gx Based Virtual APN Selection, 1K Sessions | On/Off |
| EPC-GW Support for Wi-Fi Integration, 1K Sessions | On/Off |
| EPC-GW Non-Standard QCI Support, 1K Sessions | On/Off |
| Local Policy Decision Engine | On/Off |
| Header Enrichment | On/Off |
| HTTP Header Encryption | On/Off |
| HTTP Header Enrichment and Encryption | On/Off |
| Broadcast & Multicast Services | On/Off |
| Integrated Content Filtering Provisioned Service | On/Off |
| Application Detection and Control 1k Sessions | Counting |
| 5G NSA Feature Set 100K Sess VPCSW Active 1k Sessions | Counting |
| 5G NSA Enablement Fee, Network Wide | On/Off |
| Multimedia Priority Service Feature Set, 1K Sessions | On/Off |
| EPC Gw VoLTE enhancements | On/Off |
| DNS Snooping | On/Off |

Configuring Smart Licensing

Before you begin, ensure you have:

- Created a Smart Licensing account on <https://software.cisco.com>.
- Registered your products on <https://software.cisco.com> using the Product Instance Registration tokens created as part of Smart Account/Virtual Account.
- Enabled a communication path between the UPF system to the CSSM server or Cisco.com.

Enable Smart Licensing

By default, Smart Licensing is disabled in UPF. To enable Smart Licensing, enter the following Global Configuration mode commands:

```
configure
license smart product upf
license smart enable
end
```

NOTE: Before enabling Smart Licensing, Product Type must be configured to enable default licenses that are based on product type.

Enter the following command to verify the configuration:

```
show configuration | grep license
```

Register the Device with Cisco

Using the Product Instance Registration token ID provided when you registered the products on <https://software.cisco.com>, register the system using the following Exec mode command:

```
license smart register idtoken token
```

The system now automatically reports entitlement usage count to the CSSM server and receives a compliance status. This also removes the system from "Evaluation Mode".

To show the compliance status, enter any of the following Exec mode commands:

```
show license status  
show license summary  
show license statistics
```

The registration for the system is renewed automatically every 180 days. If needed, use the following Exec mode command to renew the registration information manually:

```
license smart renew id
```

The license authorization for the system is renewed automatically every 30 days. If needed, use the following Exec mode command to renew the license authorization manually:

```
license smart renew auth
```

To unregister a device, enter the following Exec mode command:

```
license smart deregister
```

Changing Smart Transport URL

Smart Agent uses Smart Transport to communicate to Cisco CSSM server. Smart Transport uses the configured URL to identify destination URL where CSSM is reachable. This will not initiate any communication with Cisco. If needed, enter the following Configuration mode commands:

```
configure  
  license smart transport smart  
  license smart url https_link
```

Handling Out of Compliance

If there are not enough licenses in the virtual account for a given SKU, CSSM sends an Out Of Compliance (OOC) message to the device. The system stops allowing additional sessions until the OOC state is cleared. The OOC state is cleared when the device receives an authorized response.

Monitoring and Troubleshooting Smart Licensing

Enter the following Exec mode command to verify the Smart Licensing configuration:

```
show configuration | grep license
```

The following Exec mode commands display information about Smart Licensing:

```
show license { all | enforcement | smart-tags | statistics | status |  
summary | tech-support | udi | usage }
```

NOTES:

- **all** - Shows a superset of information that includes show status, show usage, show UDI, as well as the Smart Licensing agent version.
- **enforcement { policy | status [allowed | blocked] [feature | service] }** - Shows the enforcement policy applied or current enforcement status of Smart Licenses. Status information can be filtered to show only the licenses which are currently allowed or blocked, or by type (feature license or service license).
- **smart-tags [feature | service]** - Shows the features and services that are currently supported and the corresponding Smart Entitlement Tag.
- **statistics [verbose]** - Shows individual feature license status.
- **status** - Shows overall Smart Licensing status information.
- **summary** - Shows summary of Smart Licensing status.
- **tech-support** - Shows information useful for debugging issues with Smart Licensing.
- **udi** - Shows details for all Unique Device Identifiers (UDI).
- **usage** - Shows the usage information for all entitlements that are currently in use.