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Cisco Ultra Cloud Core Licensing Quick Reference

Licensing for Cisco Ultra Cloud Core

This article provides information on available licenses and deployment solutions on Cisco Ultra Cloud Core (UCC) .

Cisco Ultra Cloud Core is designed to optimize and modernize the core network functions of mobile operators by leveraging cloud-native technologies.

Cisco Ultra Cloud Core

Cisco Ultra Cloud Core is a cloud-native solution for mobile network operators, designed to enhance the efficiency, scalability, and agility of core network functions. It supports 4G and 5G services, enabling seamless integration and advanced capabilities such as network slicing and ultra-low latency.

Cisco Ultra Cloud Core supports 3GPP's standards for 5G new radio standalone mode. These standards define various network functions based on the separation of control plane and user plane functionality to increase network performance. It supports a range of essential network functions that are critical for managing and delivering mobile services effectively.

- **Access and Mobility Management Function (AMF)**: manages and controls the signaling and mobility aspects of user equipment connections.
- **Serving Gateway Control Plane Function (cnSGW-C)**: acts as a user equipment anchor in the converged core network. It supports mobility procedures, session setup and termination procedures, and selects and controls the SGW-U.
- **Policy Control Function (PCF)**: enforces network policies and quality of service (QoS) rules, ensuring optimal resource allocation and service delivery.
- **Session Management Function (SMF)**: handles session management and controls the establishment, modification, and release of sessions for user equipment.
- **User Plane Function (UPF)**: handles packet routing and forwarding, packet inspection, QoS handling, and external Protocol Data Unit (PDU) sessions for interconnecting data network in the 5G architecture.

Licensing Solutions and Offerings

Cisco Ultra Packet Core offers licensing solutions for you to manage your licenses.

- **Traditional Licensing**: A model that involves purchasing of a perpetual license for a specific feature set. The license is activated with a license key that is tied to the hardware device. You can activate all available software packages on your network devices and enable all the bundled features. For more information, see Traditional Licensing.
- **Smart Licensing**: A flexible and convenient cloud-based software licensing model that simplifies the management of software licenses across your organization. It automatically creates a pool of licenses or entitlements for use throughout the organization. With Smart Licensing, you only pay for the features you currently need, with the option to upgrade as necessary, ensuring the security of your investment. For more information, see Smart Licensing.
- **Specific License Reservation (SLR)**: A solution specifically designed for classified environments where electronic communication is restricted. In such environments, routers are unable to communicate directly with the Cisco Smart Software Manager (CSSM) or through SSM On-Prem. SLR enables the use of all entitlements on the router without the need for communication with Cisco.

Key Differences between Licensing Solutions

Table 1: Available Licensing Solutions

License Attributes	Traditional Licensing	Smart Licensing	Specific License Reservation
Activation of Licenses	Manual registration using Product Activation Keys (PAK)	Registers with CSSM	Generates code from the device to reserve licenses in CSSM
Supported Deployments	Doesn’t communicate with CSSM	• SSM On-Prem deployment • Direct deployment • Offline deployment	Offline deployment for air-gapped environments
License Reporting	No reporting. Doesn’t communicate with CSSM	Generates Product Instance reports from CSSM or SSM On-Prem	Not applicable for SLR

License Types

Smart Licensing enables all Parent and Child Licenses based on the Product type. However, the reporting is done only for Parent Licenses.

- **Reporting Licenses (Parent Licenses)**: The Parent Licenses report to CSSM and account for usage of licenses. Each Parent Licenses creates the entitlement tags to identify the type service or feature.
- **Non-Reporting Licenses (Child Licenses)**: The Child Licenses do not report to CSSM. Child licenses are enabled by default with the Parent Licenses and do not have Entitlement tags.

Software and Entitlement Tags

Reporting licenses provide software and entitlements tags help to identify, report, and enforce licenses. These are the two types of reportng licenses.

- Software Tags: Software tags identify each licensed software product or product suite uniquely on a device.
- Entitlement Tags: Entitlement tags indentify licenses in use for each product type.

Table 2: Software Tags

Ultra Cloud Core	Description	Software Tag
Access and Mobility Management Function (AMF)	Access and Mobility Management Function (AMF), Base Minimum	regid.2020-04.com.cisco.AMF,1.0_d9b74814-21c2-4667-a1b2-e27165bfc533
Serving Gateway Function (cnSGWc)	Serving Gateway Function (cnSGWc), Base Minimum	regid.2020-07.com.cisco.cnSGWc,1.0_ff0b64f1-f54d-46c3-afc7-052d41870b59
Policy Control Function (PCF)	Policy Control Function (PCF), Base Minimum	regid.2020-04.com.cisco.PCF,1.0_a0b80e76-1cc3-4a0f-bbf5-c7a8dafea5f8

Ultra Cloud Core	Description	Software Tag
Session Management Function (SMF)	Session Management Function (SMF), Base Minimum	regid.2020-04.com.cisco.SMF,1.0_37ffdc21-3e95-4192-bcda-d3225b6590ce
User Plane Function (UPF)	User Plane Function (UPF)	regid.2020-04.com.cisco.UPF, 1.0_bc18a9ff-e0ea-4476-a250-04ebf7839c4c

Table 3: Entitlement Feature Tags

Feature	Description	Entitlement Tag
Access and Mobility Management Function (AMF)	Access and Mobility Management Function (AMF), Base Minimum	regid.2020-04.com.cisco.AMF_BASE,1.0_9a44be9e-c644-465a-a3db-404d0d1818d0
Serving Gateway Function (cnSGWc)	Serving Gateway Function (cnSGWc), 1K Sessions	regid.2020-07.com.cisco.cnSGWc_1K,1.0_6ce36c73-26d1-4607-a19b-077fb2e0f54
Policy Control Function (PCF)	Policy Control Function (PCF), Base Minimum	regid.2020-04.com.cisco.PCF_BASE,1.0_60b1da6f-3832-4687-90c9-8879d815a27
Session Management Function (SMF)	Session Management Function (SMF), Base Minimum	regid.2020-04.com.cisco.SMF_BASE,1.0_b4959721-a4d1-5906-0f87-29f9
UCC 5G UPF Base Lic	Ultra Cloud Core - User Plane Function (UPF), Base Minimum Tag: F_UPF_BASE	regid.2020-08.com.cisco.F_UPF_BASE, 1.0_776395f3-8b8d-46e1-ac6e-0bd2306ef3b6
UCC 5G UPF Instance	Ultra Cloud Core - User Plane Function (UPF) Instance Tag: F_UPF_INS	regid.2020-08.com.cisco.F_UPF_INS, 1.0_5cd68c07-152a-48c6-b143-4dc60eb111e5
UCC 5G UPF 1K Sess	Ultra Cloud Core - User Plane Function (UPF), 1K Sessions Tag: L_UPF_SAE_1K	regid.2020-08.com.cisco.L_UPF_SAE_1K, 1.0_5d16e2f6-808a-45ff-8691-f215d5ba2bea

Non-Reporting Licenses

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

License Description	License Type
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
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

License Description	License Type
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 sessions, 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

Enforcement Policy

Cisco's license enforcement policy outlines how on/off feature licenses are managed and enforced. These licenses are tied to service licenses, which may use the on/off features. The policy also describes the handling of compliance, evaluation periods, and out-of-compliance (OOC) scenarios.

A 90-day evaluation period is granted for all licenses in use. You can use all feature licenses without any limitation, and up to one counting license. The evaluation period ends when the system registers successfully with the CSSM.

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 extra sessions until the OOC state is cleared. The OOC state is cleared when the device receives an authorized response

A 90-day grace period is granted when the account in OOC state. The the system generates SNMP traps to inform of the unavailability of valid licenses.

You can view the enforcement policy on your device with the **show license enforcement policy** command.

You can view the enforcement status with the **show license enforcement status** command.

If the feature license is in...	then...
90-day grace period	purchase and register licenses for the feature, or disabe the feature.

If the feature license is in...	then...
90-day grace period expires	OOC is enforced for each license and new calls for the corresponding services to the on/off licenses are dropped. cleat the OOC message by authorizing the licenses.

Revision History

Table 4: Feature History Table

Feature Name	Release Information	
Support for Multiple Entitlement Tags on cnSGW-C	2021.02.0	cnSGW-C supports a REST service that returns Software License entitlements information based on the installed service profile.
Support for Smart Licensing on Ultra Cloud Core Access and Mobility Management Function (AMF)	2021.04.0	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 eliminating the need to install license files on every device. Products that are smart-enabled, communicate directly to Cisco to report consumption.
Support for Smart Licensing on Ultra Cloud Core 5G cnSGWc	2020.03.0	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 eliminating the need to install license files on every device. Products that are smart-enabled, communicate directly to Cisco to report consumption.
Support for Smart Licensing on Ultra Cloud Core 5G Policy Control Function	2020.02.0	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 eliminating the need to install license files on every device. Products that are smart-enabled, communicate directly to Cisco to report consumption.

Feature Name	Release Information	
Support for Smart Licensing on Ultra Cloud Core 5G Session Management Function	Pre-2020.02.0	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 eliminating the need to install license files on every device. Products that are smart-enabled, communicate directly to Cisco to report consumption.
Support for Smart Licensing on Ultra Cloud Core 5G User Plane Function (UPF)	2021.01.0	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 eliminating the need to install license files on every device. Products that are smart-enabled, communicate directly to Cisco to report consumption.