

Understand Smart Licensing in Unified Contact Center Express (UCCX)

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Introduction

This document describes Cisco Smart Software Licensing by use of the Cisco Unified Contact Center Express (UCCX).

Background

Cisco Smart Software Licensing can use the UCCX, which is a flexible software license model that streamlines the way you activate and manage Cisco software licenses across your organization. This solution allows you to easily track the status of your license and software usage trends. It pools the license entitlements in a single account and allows you to move licenses freely across virtual accounts. Smart Licensing is enabled across most of the Cisco products and managed by a direct cloud-based or mediated deployment model.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Unified Contact Center Express (UCCX) Release 12.5
- Cisco Smart Software Manager On-Prem Release 7

Components Used

The information in this document is based on these software and hardware versions:

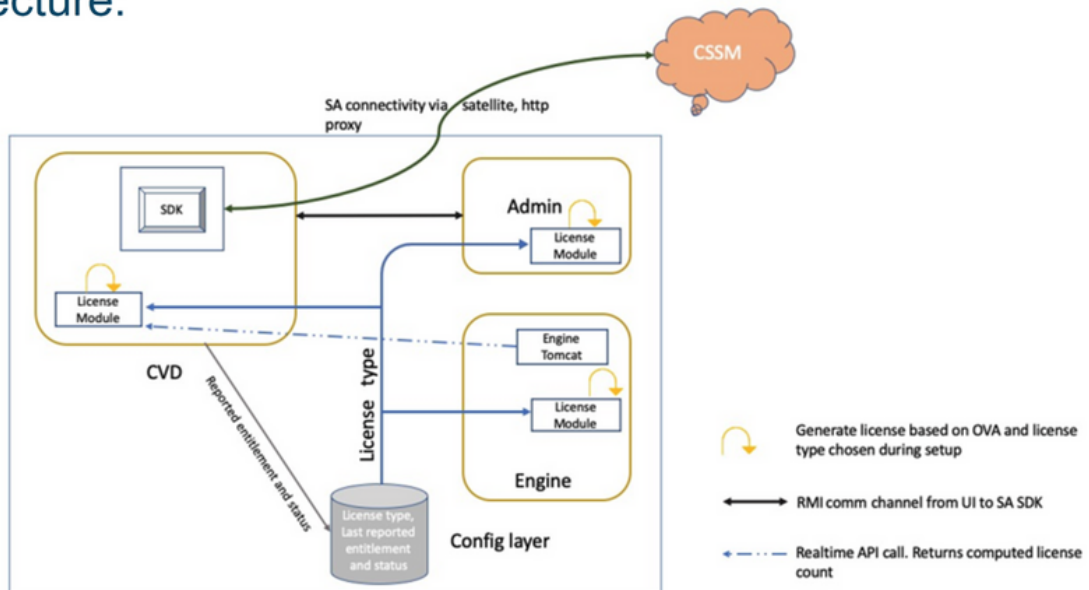
- Cisco Unified Contact Center Express (UCCX) Release 12.5
- Cisco Smart Software Manager On-Prem Release 7

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

Smart licensing architecture in UCCX

Architecture:



Note: SDK will run on Publisher only

Advantage of Smart Licensing over Classic Licensing

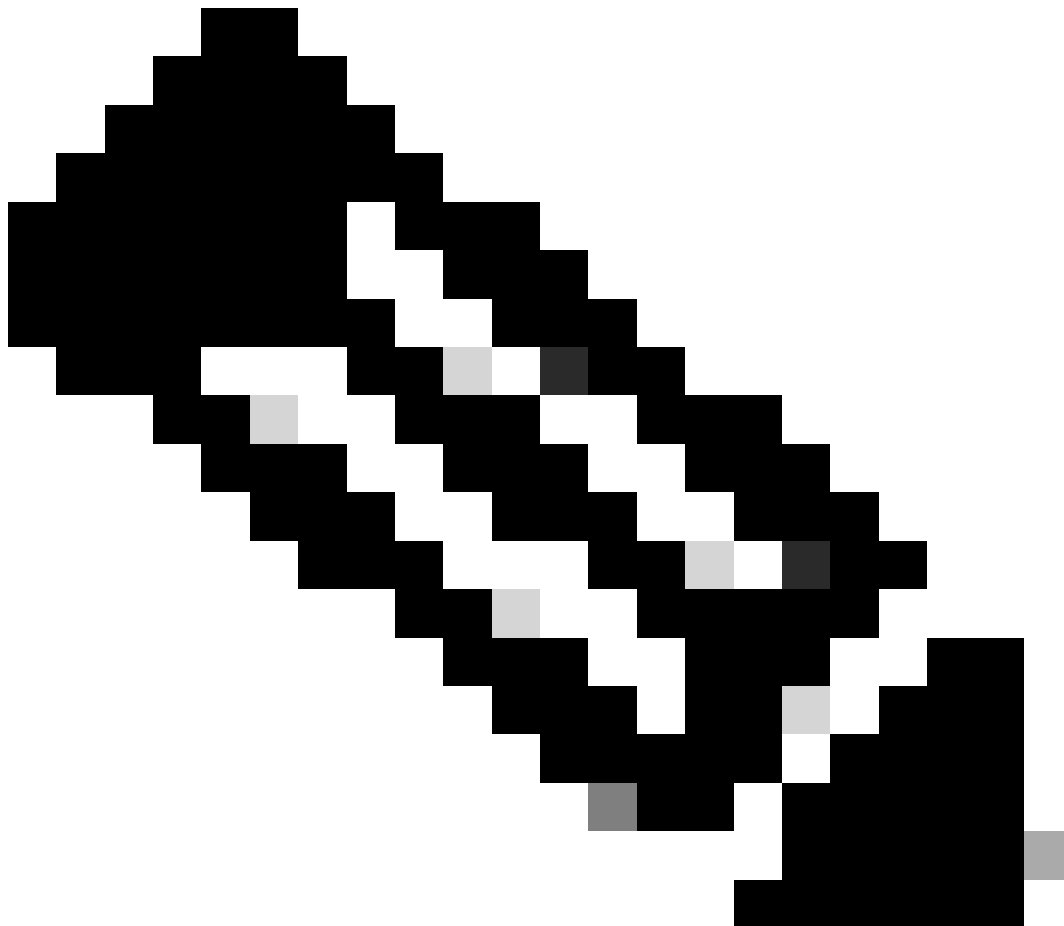
- Smart licensing provides a complete view of licenses for software, services, and devices at one easy to use portal
- No Product Activation Keys (PAK)-based registration is required in Smart Licensing
- The license is not specific to only one device, but is flexible and can be used across devices
- User and license can be added as per the requirement.

Smart Licensing Deployment Types

There are two software deployment options for Smart Licensing:

- Direct - Cisco Smart Software Manager (Cisco SSM)
- Cisco Smart Software Manager On-Prem (Cisco SSM On-Prem)

Direct - Cisco Smart Software Manager (Cisco SSM)



Note: The UCCX server needs to have a direct connectivity to the internet or by a proxy server for direct deployment.

Cisco SSM allows you to:

- Create, manage, or view virtual accounts.
- Manage and track the licenses.
- Move licenses across the virtual accounts.
- Create and manage Product Instance Registration Tokens.

Cisco Smart Software Manager On-Prem (Cisco SSM On-Prem)

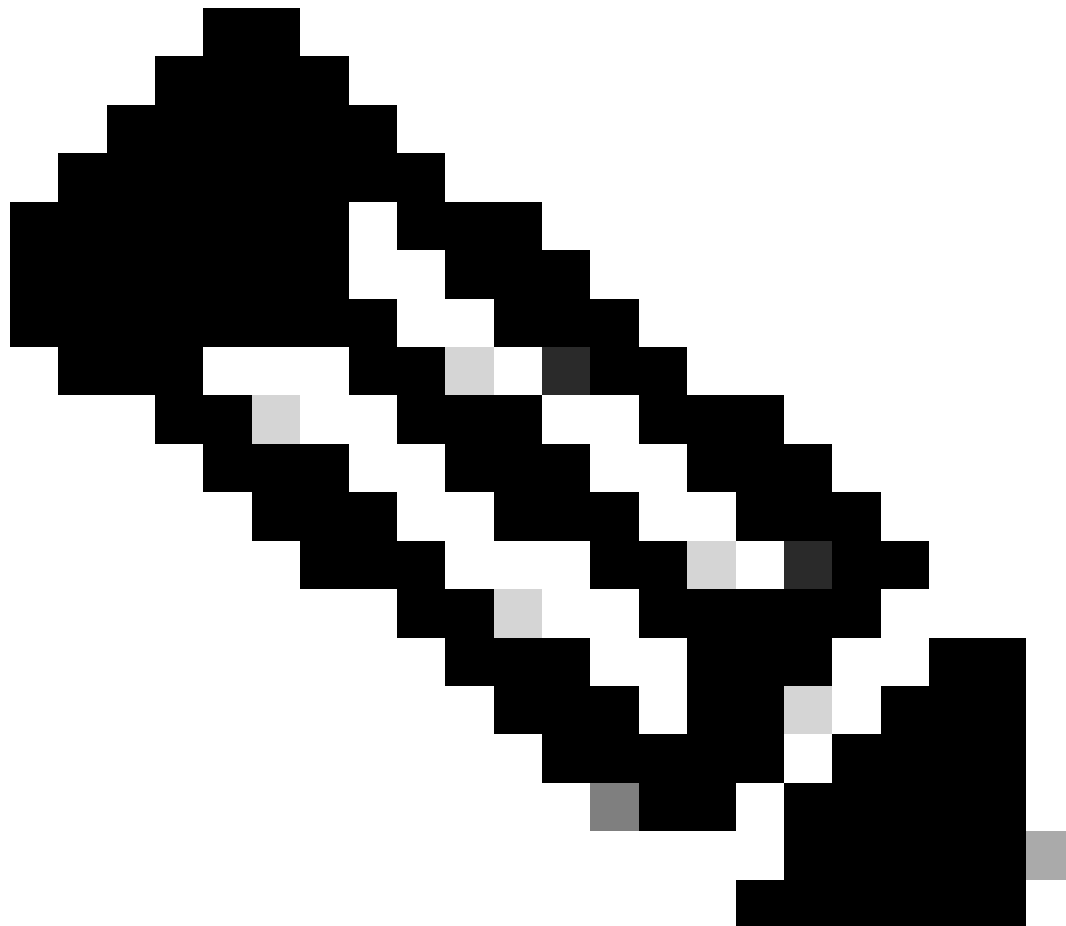
Cisco SSM On-Prem is an on-premises component that can handle your licensing needs. When you choose this option, Unified CCX registers and reports license consumption to the Cisco SSM On-Prem, which synchronizes its database regularly with Cisco SSM that is hosted on cisco.com.

You can use the Cisco SSM On-Prem in either Connected or Disconnected mode, which depends on if the Cisco SSM On-Prem can connect directly to cisco.com.

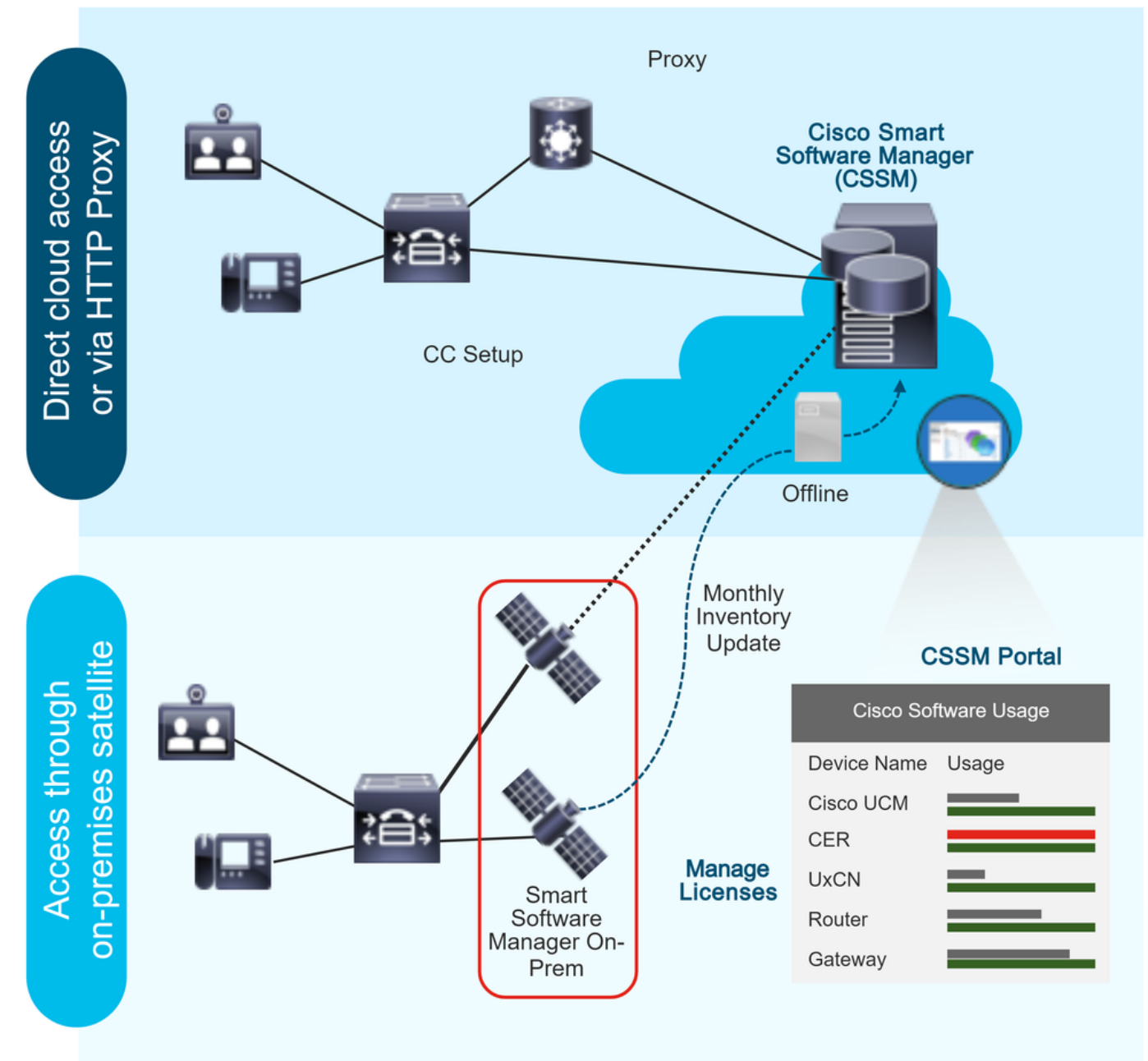
Configure Transport URL for Cisco SSM On-Prem with Smart Call-Home URL:

https://<OnpremCSSM_IP>/Transportgateway/services/DeviceRequestHandler

- Connected — Use when there is connectivity to cisco.com directly from the Cisco SSM On-Prem. Smart account synchronization occurs automatically.
- Disconnected — Use when there is no connectivity to cisco.com from the Cisco SSM On-Prem. Cisco SSM On-Prem must synchronize with Cisco SSM manually to reflect the latest license entitlements.



Note: For more information on Cisco SSM On-Prem, visit https://software.cisco.com/software/cswws/platform/home?locale=en_US.



Licensing Options in UCCX Deployment

1. Fresh installation of UCCX 12.5 Smart Licensing is the only available licensing option in UCCX 12.5.
 - a) Smart Licensing is the only available licensing option in UCCX 12.5.
2. Upgrade from UCCX version 12.0 to 12.5.
 - a) System remains the Classic License by default.
 - b) Has the option to switch to Smart License (only once).
3. Upgrade from UCCX version 10.X ,11.X to 12.5.
 - a) The user has the option to choose the license mode: either Classic License or Smart License.
 - b) If the Classic Licensing option is selected, the user has the option to switch to Smart Licensing (only once). The reverse is not applicable.

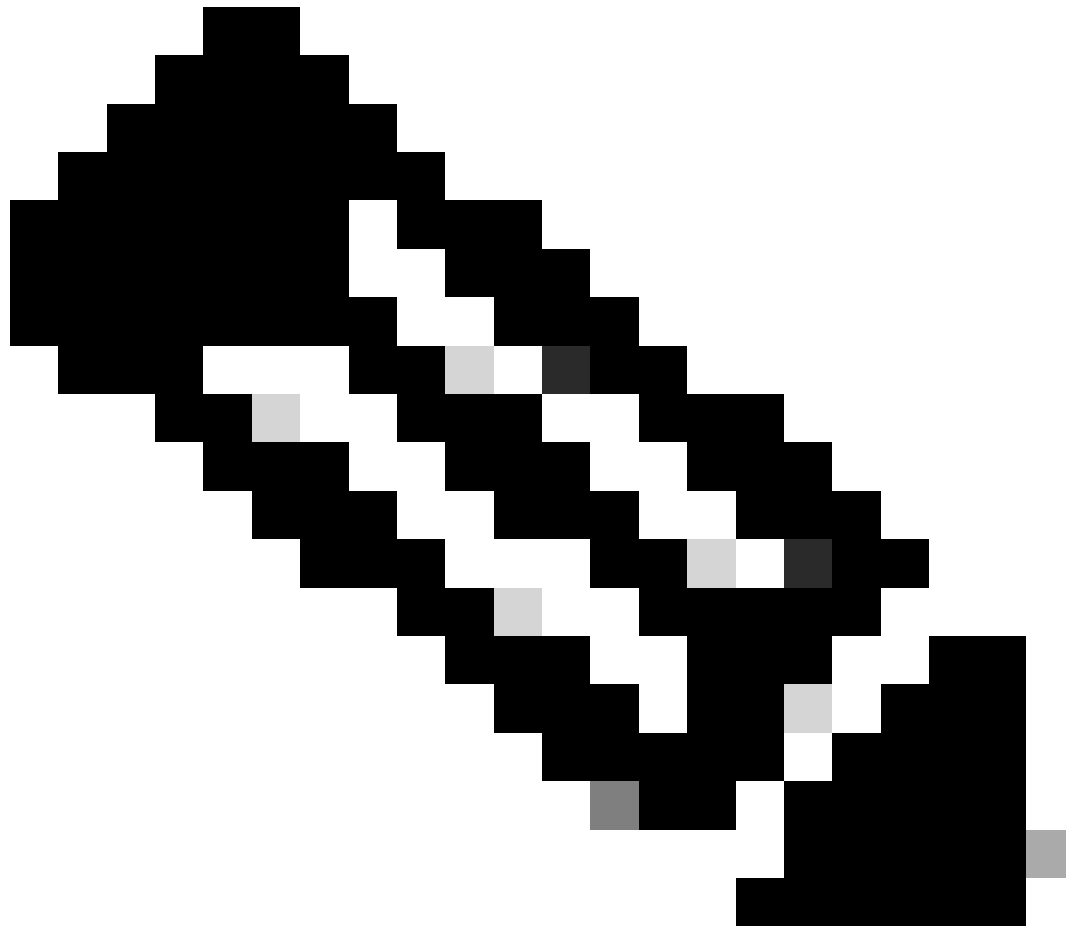


Note: Cisco Workforce Optimization licenses (WFO) are not supported with Smart Licensing. Consequently, users who upgrade to 12.5 must continue with Classic Licensing if they want to continue to use Cisco WFO. Alternatively, users who want to move to Smart Licensing for Unified CCX must consider their migration to the Solutions Plus version of Workforce Optimization. Only in the case of WFO if the Smart Licensing option was selected, reach out to Cisco Technical Assistance Center for the workaround.

Smart License Types

There are five Smart License types available on UCCX:

1. Flex
 - a) Standard
 - b) Premium
2. Perpetual
 - a) Premium



Note: To change from one licensing type to another, first unregister the Smart Licensing from the drop-down list available in the Action tab in license management. Select the **To change the License type** option in license option and select the required option in the license type. A restart of the UCCX cluster is required once the license type is changed.

License States

1. Registration State

- Unregistered — Product Instance is unregistered.
- Registered — After you purchase the license, you need to register the Product Instance with Cisco SSM. To register with Cisco SSM, generate a registration token from the Cisco SSM portal. Use the registration token to register your Product Instance.
- Registration Expired — Product Instance registration has expired because the ID Certificate issued by Cisco SSM is not renewed for more than 12 months. Reregister the Product Instance.

2. Authorization State

- No licenses in use.

- **Evaluation Mode** — The Product Instance license has an Evaluation period of 90 days. In the Evaluation period, you have unlimited access to the product with the highest set of product capabilities and an unlimited number of licenses. You must register the system with Cisco SSM or Cisco SSM On-Prem within 90 days. If the system is not registered before the end of the Evaluation period, it is moved to the Enforcement state where certain system functions are restricted.
- **In Compliance** — When the license consumption is as per the purchased quantity, the product is compliant.
- **Evaluation expired** — Product Instance evaluation period has expired.
- **Authorized** — Product Instance is in authorized or in compliance state. Authorization is renewed every 30 days.
- **Out of Compliance** — Product Instance reports license usage to the Cisco SSM every 15 minutes. If your license consumption is more than the entitlements for five consecutive reporting intervals, the Product Instance is transitioned to the Out-of-Compliance state. The Out-of-Compliance period is for 90 days, within which you need to purchase the additional licenses. If you fail to take corrective action within the 90 day period, the Product Instance is transitioned to the Enforcement state.
- **Authorization Expired** — Product Instance authorization has expired. This usually happens when the product has not communicated with the Cisco SSM for more than 90 days. It is in an overage period for 90 days before restrictions are enforced.

3. Enforcement State

When the 90-day period of Out-of-Compliance, Evaluation period, or Authorization period has expired, the Product Instance is moved to the Enforcement state in which system operations are impacted for Contact Center components. The Product Instance is in the Enforcement state in the listed scenarios:

- **Out-of-Compliance expiry** — When the Out-of-Compliance period of 90 days has expired.

Purchase new licenses to exit the Enforcement state.

- **Authorization expiry** — When the Product Instance has not communicated with the Cisco SSM or the Cisco SSM On-Prem for 90 days and has not automatically renewed the entitlement authorizations.

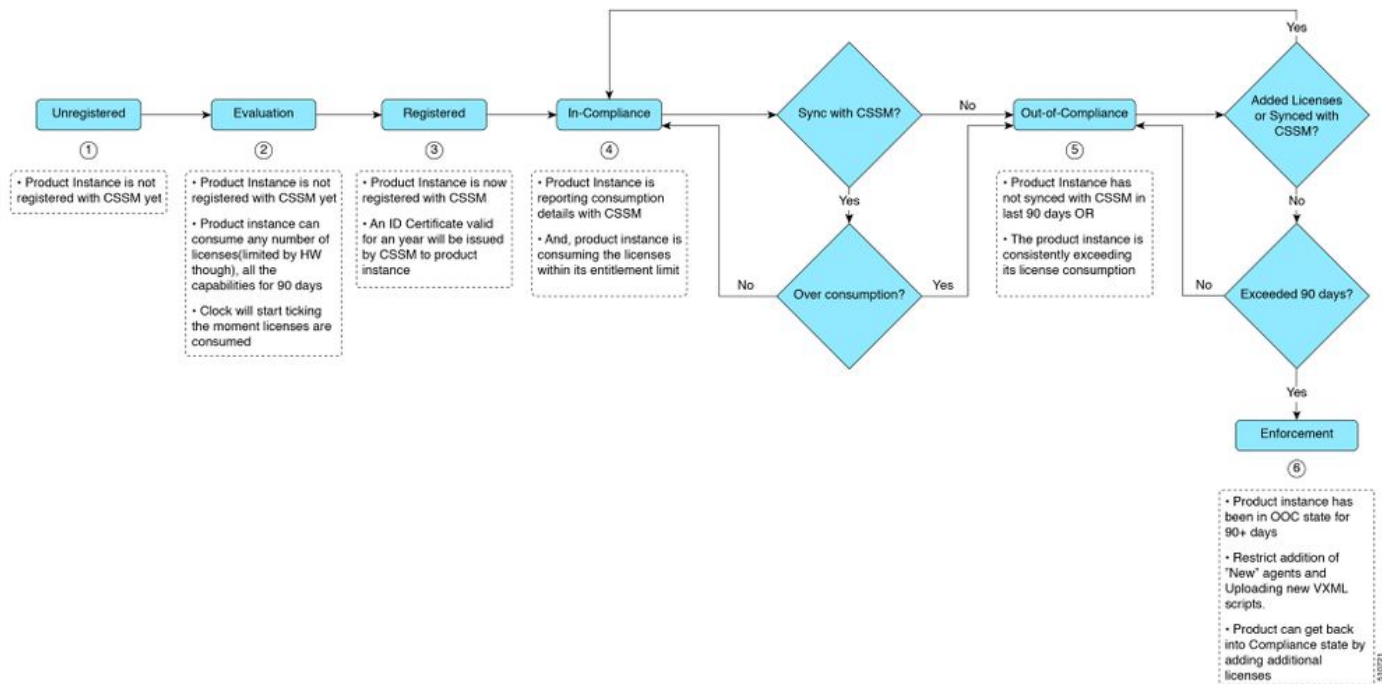
Renew the license authorizations to exit the Authorization expiry state.

- **Evaluation expiry** — When the license evaluation period of 90 days has expired and the Product Instance is not registered with the Cisco SSM.

Register the Product Instance with the Cisco SSM to exit the Evaluation expiry state.

During the Enforcement mode, synchronization from Unified CM is blocked because any new addition, modification, or deletion of agents is not synchronized with the Unified CCX system.

A pictorial representation of the different license states is shown:



License Computation

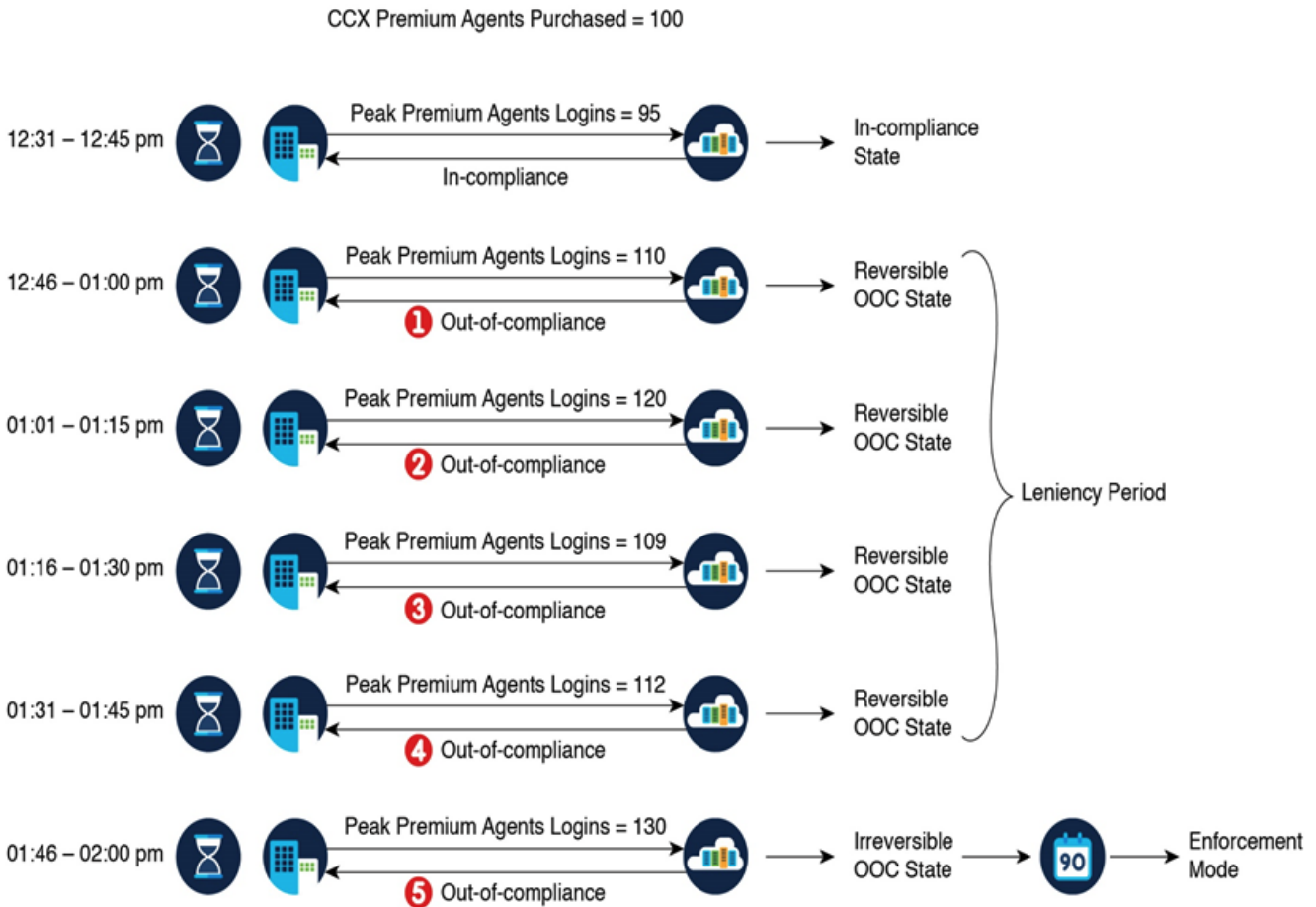
Smart Licensing allows you to view the license consumption of your Cisco Unified CCX deployments. License consumption for an agent is computed as per the skills that are configured and log in status into the Finesse desktop. License consumption is recomputed every 15 minutes. The aggregated data for all logged-in agents is sent to the Cisco SSM or Cisco SSM On-Prem at fixed time intervals and exists in the Unified CCX database. The license consumption details differ, based on the system license type.

License Computation Scenario 1

In this scenario, we look at how the system computes the licenses and in which case the Out-of-Compliance state becomes irreversible.

Number of license purchased = 100

Out-of-compliance (OOC) and Enforcement Modes:



If the Cisco SSM registers five consecutive instances of license over usage in the span of 1 hour, the Product Instance transitions to irreversible Out-of-Compliance. Thereafter, the Product Instance reports Locked usage quantity (130 in the previous scenario) until the deficit licenses (130-100=30) are purchased. The Locked usage is the highest number of license usage (130) in the Out-of-Compliance state. The Product Instance does not report the actual license usage when the Product Instance is in the Out-of-Compliance state.

Real Time Monitoring Tool (RTMT) alerts start to get generated when the system moves into Out-of-Compliance mode.

Cluster view daemon (MCVD) logs show the time that remains until the system moves into irreversible Out-of-Compliance mode:

```
%MCVD-LIB_LICENSE-1-SYSTEM_TO_ENTER_OOC_STATE: [REPORT_ENTITLE] com.cisco.smartlicense.util.SmartLicense
```

```
%MCVD-LIB_LICENSE-0-SYSTEM_TO_ENTER_OOC_STATE_SHORTLY: [REPORT_ENTITLE] com.cisco.smartlicense.util.SmartLicense
```



Note: Users can purchase additional licenses from the [Cisco Commerce website](#) (CCW) to exit the Out-of-Compliance state.

License Computation Scenario 2

In this scenario, you see how the system moves from Out-of-Compliance state back to In-Compliance mode

Number of license purchased = 100

Out-of-compliance (OOC) and Enforcement Modes:

CCX Premium Agents Purchased = 100



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In the example, the Product Instance is back to the In-Compliance state after two instances of overage within one hour. The next time the Product Instance goes Out-of-Compliance, the count is 1 of 5. So, you get 45 minutes (after the first Out-of-Compliance notification from Cisco SSM) to bring back the consumption within the acceptable range to stay in the In-Compliance state.



Note: There can be other Out-of-Compliance scenarios as well. Make use of the license feature list table and the Unified License Consumption Report in the Cisco Unified Intelligence Center (CUIC) to identify such scenarios.


License Control

The overage allowance allows use of more licenses than purchased. To limit the license usage to the purchased quantity or less, use the License Control feature in license management option. With License Control, you can disable the Overage allowance option to restrict the number of agents and ports that can be used in Unified CCX.



Smart License Management

Status

 Ready

License Type Details

Current License Type: Flex

To change the License type [click here](#)


License Control

Overage Allowance: **Enabled**

To update the License Control [click here](#)

License Control

Status


 Ready

Current License Type: Flex

Overage Allowance: Enable Disable

Number of Standard Seats*

Number of Premium Seats*

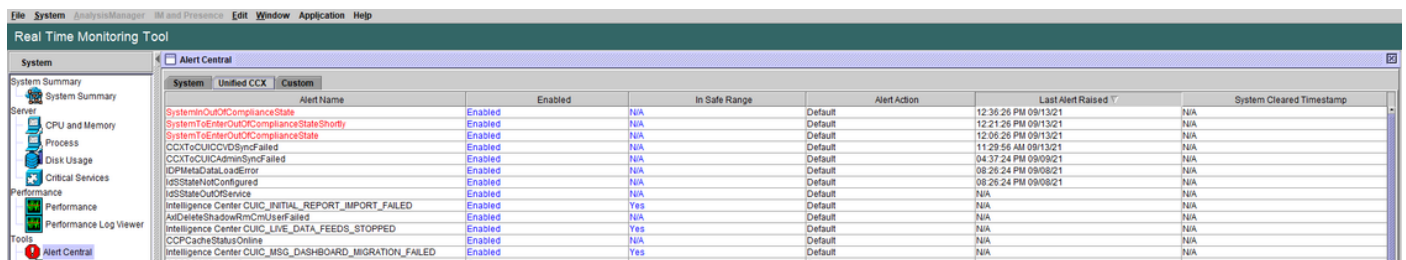
 * - Indicates required item.

Note: Overage allowance is enabled by default on the UCCX and comes after the reversible and irreversible Out-of-Compliance state.

RTMT Alerts

Administrators are notified by alerts (on the landing page of Unified CCX Administration and RTMT) and event logs (Sys logs). Administrators are also notified through emails (that are configured in the Cisco SSM) on the status of licenses in the Smart and Virtual Accounts.

The Out-of-Compliance alert can be seen in the Unified CCX option in alert central of RTMT:



The screenshot shows the 'Alert Central' window in the Real Time Monitoring Tool. The window displays a table of alerts with columns for System, Alert Name, Enabled status, In Safe Range, Alert Action, Last Alert Raised T, and System Cleared Timestamp. The table lists various alerts related to system compliance and performance.

System	Alert Name	Enabled	In Safe Range	Alert Action	Last Alert Raised T	System Cleared Timestamp
System	SystemInOutOfComplianceState	Enabled	N/A	Default	12:38:26 PM 09/13/21	N/A
System	SystemT6EnterOutOfComplianceStateShortly	Enabled	N/A	Default	12:21:26 PM 09/13/21	N/A
System	SystemT6EnterOutOfComplianceState	Enabled	N/A	Default	12:05:26 PM 09/13/21	N/A
System	CCXToCUICCOVDSyncFailed	Enabled	N/A	Default	11:29:56 AM 09/13/21	N/A
System	CCXToCUICAdminSyncFailed	Enabled	N/A	Default	04:37:24 PM 09/09/21	N/A
System	IPMetaDataLoadError	Enabled	N/A	Default	08:28:24 PM 09/08/21	N/A
System	USStateNotConfigured	Enabled	N/A	Default	08:28:24 PM 09/08/21	N/A
System	USStateOutOfService	Enabled	N/A	Default	N/A	N/A
System	Intelligence Center CUIC_INITIAL_REPORT_IMPORT_FAILED	Enabled	Yes	Default	N/A	N/A
System	AutoDeleteShadowRmCmUserFailed	Enabled	N/A	Default	N/A	N/A
System	Intelligence Center CUIC_LIVE_DATA_FEEDS_STOPPED	Enabled	Yes	Default	N/A	N/A
System	CCPCacheStatusOnline	Enabled	N/A	Default	N/A	N/A
System	Intelligence Center CUIC_MSG_DASHBOARD_MIGRATION_FAILED	Enabled	Yes	Default	N/A	N/A

In the Event Viewer-System Log, you can see messages of the time left for the system to move in Out-of-Compliance and when the system moves into the Out-of-Compliance state:

```
%UC_LIB_LICENSE-0-SYSTEM_TO_ENTER_OOC_STATE_SHORTLY: %[The time remaining to enter OOC state=15 minutes
```

```
%UC_LIB_LICENSE-1-SYSTEM_IN_OOC_STATE: %[AppID=Cisco Unified CCX Cluster View Daemon][ClusterID=][NodeID=
```

In the license management page of UCCX GUI, you can also see if the system has moved into the Out-of-Compliance mode.

The screenshot displays the UCCX GUI license management interface. The top section, 'Smart License Details', shows the system is 'Registered (Sep 9, 2021 4:24:09 PM)' and 'Out of Compliance (Sep 9, 2021 4:50:14 PM)'. Below this, the 'License Usage Summary' section contains a table with the following data:

License Name	Description	Reported Usage	Status
CCX Flex Standard Seat 12.5	CCX Flex Standard Licenses	1	Out of Compliance
CCX Flex Premium Seat 12.5	CCX Flex Premium Licenses	0	No License In Use
CCX Inbound Port 12.5-Flex	CCX Inbound Port-Flex	0	No License In Use
CCX Outbound Port 12.5-Flex	CCX Outbound Port-Flex	0	No License In Use

Troubleshooting

1. Verify that the DNS A record of the Cisco SSM server is added into the DNS server of the UCCX for the Cisco SSM On-Prem deployment.
2. For direct deployment, port 80 and 443 are open on the firewall.
3. Collect the cluster view daemon and admin logs with the default lib_license level to further troubleshoot the issue.
4. For license computations, enable LIB_LICENSE and SS_RM to debugging level for the CCX engine.
5. Cisco Unified CCX Cluster View Daemon service under the Serviceability page is INSERVICE.