



Licensing

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Cisco ISE Licenses

Cisco ISE services provide visibility and control over the increasing number of endpoints in your network. Cisco ISE features are mapped to specific licenses and you can enable the licenses that provide the Cisco ISE capabilities you need to meet your organizational needs.

Cisco ISE is bundled with a licensing mechanism with the following salient features:

- **Built-in License:** Cisco ISE comes with a built-in evaluation license that is valid for 90 days. You do not have to install a Cisco ISE license immediately after you install Cisco ISE. You can use the Evaluation license that provides all the Cisco ISE functionalities.
- **Central Management of Licenses:** The Cisco ISE Primary Administration node (PAN) centrally manages Cisco ISE licenses. In a distributed deployment that has primary and secondary PANs, the primary PAN automatically shares the licensing information with the secondary PAN.
- **Concurrent Active Endpoint Count:** Cisco ISE licenses include a count value for each tier license. Each tier license supports a specific number of active endpoints at any time. The count value refers to the number of active endpoints across the entire deployment that are using specific Cisco ISE services at any time. Because Cisco ISE licensing relies on RADIUS accounting, you must have RADIUS services enabled on the network devices.

Concurrent active endpoints refer to the total number of supported users and devices. Here, an endpoint could mean users, PCs, laptops, IP phones, smart phones, gaming consoles, printers, fax machines, or other types of network devices.

Cisco ISE Release 3.0 and later releases do not support legacy licenses, such as Base, Plus, and Apex licenses, that were used in Cisco ISE Release 2.x. Cisco ISE Release 3.x licenses are managed entirely through a centralized database that is called the Cisco Smart Software Manager (CSSM). You can register, activate, and manage all your licenses easily and efficiently with single-token registration.

To maximize economy for customers, licensing in Cisco ISE is supplied in the following packages:

- **Tier Licenses**

From Cisco ISE Release 3.0, a new set of licenses that are called Tier Licenses replace the Base, Apex, and Plus licenses used in releases earlier than Release 3.0. Tier Licenses include three licenses—Essentials, Advantage, and Premier.

If you currently have Base, Apex, or Plus licenses, use the CSSM to convert them into the new license types.

- **Device Administration Licenses**

Policy Service nodes (PSN) that have the TACACS+ persona enabled on them use Device Administration licenses.

- **Virtual Appliance Licenses**

Virtual appliance licenses are available in three forms, VM Small, VM Medium, and VM Large.

If a virtual appliance is used, but your Cisco ISE does not have an active VM license, you receive warnings and notifications of noncompliant license consumption until you procure and install a VM license. However, Cisco ISE services are not interrupted.

- **Evaluation Licenses**

The Evaluation license is enabled by default when you first install Cisco ISE Release 3.0 and later releases and support up to 100 endpoints. Evaluation licenses are 90-day licenses that give you access to all the Cisco ISE features. During the evaluation period, license consumption is not reported to the CSSM.

If you are upgrading to Cisco ISE Release 3.0 and later releases with Base, Apex, and Plus licenses smart licenses, your smart licenses are upgraded to the new license types in Cisco ISE. However, you must register the new license types in CSSM to activate the licenses in the Cisco ISE release that you upgrade to.

If you own traditional Cisco ISE licenses, you must convert them to smart licenses to enable license consumption in Cisco ISE Release 3.0 and later releases. To convert Cisco ISE 2.x licenses to the new license types, open a case online through the Support Case Manager at <http://cs.co/scmswl>, or use the contact information that is provided at <http://cs.co/TAC-worldwide>.

Notifications about noncompliant license consumption are also displayed in Cisco ISE. If your license consumption is out of compliance for 45 days in a 60-day period, you will lose all administrative control of Cisco ISE until you purchase and activate the required licenses.

When upgrading from one licensing package to another, Cisco ISE continues to offer all the features that were available in the earlier package before the upgrade. However, you do have to reconfigure any settings that you had already configured. For example, if you currently use an Essentials license and later add an Advantage license, the features that are already configured using the Essentials license will not change.

You should update your license agreements if:

- The evaluation period has ended, and you have not yet registered your license.
- Your license has expired.
- The endpoint consumption exceeds your licensing agreement.

Cisco ISE Community Resource

[Cisco Identity Services Engine Ordering Guide](#)

For information on how to obtain evaluation licenses, see [How to Get ISE Evaluation Licenses](#).

Tier Licenses

The following table specifies what the new Tier Licenses enable.

Table 1: Cisco ISE Tier Licenses

License Name	What Does this License Enable?
Essentials	<ul style="list-style-type: none"> • RADIUS authentication, authorization, and accounting, including 802.1X, MAC authentication bypass and easy connect, and web authentication. • MACsec. • Authentications that are based on Single Sign-On (SSO), Security Assertion Markup Language (SAML), and Open DataBase Connectivity (ODBC) standards. • Guest access and sponsor services. • Representational State Transfer (REST) APIs for monitoring purposes, and External RESTful Services APIs for CRUD operations. • Passive ID services. • Secure wired and wireless access.
Advantage	<ul style="list-style-type: none"> • All the features that are enabled by the Cisco ISE Essentials license. • Bring Your Own Device (BYOD) device registration and provisioning, with a built-in certification authority. Device registration occurs through the configured My Devices portals. • Security Group Tagging, TrustSec, and Cisco Application-Centric Infrastructure (ACI) integration. • Profiling services, including basic asset visibility and enforcement features. • Feed services. • Context sharing (such as pxGrid), and security ecosystem integrations. • Rapid Threat Containment, using Adaptive Network Control and context-sharing services.
Premier	<ul style="list-style-type: none"> • All the features that are enabled by the Cisco ISE Essentials and Advantage licenses. • Posture visibility and enforcement. • Compliance visibility and enforcement through Enterprise Mobility Management and Mobile Device Management. • Threat-Centric Network Access Control visibility and enforcement.



Note You may witness higher Cisco ISE license consumption count if the privacy settings in endpoints permit MAC randomization or rotating and changing MAC. When an endpoint authenticates with a new random MAC address, a new Cisco ISE session is created.

Device Administration Licenses

A Device Administration license allows you to use TACACS services on a Policy Service node. In a high availability (HA) standalone deployment, a Device Administration license permits you to use TACACS services on a single Policy Service node in the HA pair.

Virtual Appliance Licenses

Cisco ISE is also sold as a virtual appliance. Choose your Virtual Machine (VM) licenses based on the number of VM nodes in your network, and each VM node's resource specifications, such as CPU and memory. There are three categories of VM licenses offered—VM Small, VM Medium, and VM Large.

The following table shows the minimum VM resources by category.

Table 2: Minimum VM Resources by Category

VM License	RAM Capacity of VM Node	Number of CPUs of VM Node
VM Small	16 GB	12 CPUs
VM Medium	64 GB	16 CPUs
VM Large	256 GB	16 CPUs

For example, if you are using a 3595-equivalent VM node with 16 CPUs and 64-GB RAM, you need a VM Medium license to enable Cisco ISE services on this VM node. Even if you only have VM Small licenses registered and activated, Cisco ISE will register the consumption of a VM Medium license by the VM node. This is because the license consumed is determined by the RAM and CPU specifications of the VM node.

You will then receive warnings and notifications of noncompliant license consumption until you procure and install the required VM licenses. However, Cisco ISE services are not interrupted.

You can install multiple VM licenses based on the number of VMs in your deployment and their resources.

VM licenses are infrastructure licenses. Therefore, you can install VM licenses irrespective of the endpoint licenses available in your deployment. However, in order to use the features enabled by the Tier licenses, you must also install the appropriate Tier licenses.

After installing or upgrading to Cisco ISE Release 2.4 or later releases, if there is any mismatch between the number of deployed VM nodes and installed VM licenses, alarms are displayed in the **Alarms** dashlet in the **Home** page every 14 days. Alarms are also displayed if there are any changes in the VM node's resources, and when a VM node is registered or deregistered.

VM licenses are perpetual licenses. VM licensing changes are displayed every time you log in to the Cisco ISE GUI, until you check the **Do not show this message again** check box in the dialog box displayed.

Evaluation Licenses

Evaluation licenses are activated by default when you install or upgrade to Cisco ISE Release 3.0 and later releases and support up to 100 endpoints. The Evaluation license is active for 90 days, and you have access to all the Cisco ISE features during this time. Cisco ISE is considered to be in Evaluation mode when the Evaluation license is in use.

The Cisco ISE GUI displays messages with the number of days that are left in the Evaluation mode.



Note You must purchase and register Cisco ISE licenses by the end of the Evaluation mode to continue using the Cisco ISE features that you need.

Cisco ISE Smart Licensing

When a smart license token is active and registered in the Cisco ISE administration portal, the CSSM monitors the consumption of licenses by each endpoint session per product license. Smart Licensing notifies the administrator about license consumption by endpoint sessions with a simple table layout in Cisco ISE. Smart Licensing reports the peak usage of each enabled license to the centralized database daily. When licenses are available and not consumed, the administrator is notified of available licenses and can continue to monitor usage. When consumption exceeds the number of licenses available, an alarm is activated and the administrator is notified through alarms and notifications.

With Smart Licensing, you can also manage the different license entitlements included through your Cisco Smart Account, such as Essentials, Advantage, Premier, or Device Admin. From Cisco ISE, you can monitor basic consumption statistics per license entitlement. From your CSSM account, you can view additional information, statistics, and notifications, as well as make changes to your account and entitlements.



Note CSSM satellite is not supported in Cisco ISE Releases 3.0 Patch 1 and earlier.

Cisco ISE takes internal samples of license consumption every 30 minutes. License compliancy and consumption is updated accordingly. To view this information in the **Licenses** table in Cisco ISE, from the main menu, choose **Administration > System > Licensing**, and click **Refresh**.

From the time you register your Cisco ISE Primary Administration node (PAN) with the CSSM, Cisco ISE reports peak counts of license consumption to the CSSM server every six hours. The peak count reports help ensure that license consumption in Cisco ISE is in compliance with the licenses purchased and registered. Cisco ISE communicates with the CSSM server by storing a local copy of the CSSM certificate. The CSSM certificate is automatically reauthorized during the daily synchronization, and when you refresh the **Licenses** table. Typically, CSSM certificates are valid for six months.

If there is a change in the compliance status when Cisco ISE synchronizes with the CSSM server, the **Last Authorization** column of the **Licenses** table is updated accordingly. In addition, when entitlements are no longer compliant, the number of days for which they are out of compliancy appears in the **Days Out of Compliance** column. Noncompliance is also indicated in the notifications displayed at the top of the **Licensing** area, and on the Cisco ISE toolbar next to the **License Warning** link. In addition to notifications, you can view alarms.



Note Device Admin licenses are authorized when Cisco ISE communicates with the CSSM server, but they are not session-based, and therefore, no consumption count is associated with them in the **Licenses** table.


The compliance column of the **Licenses** table displays one of the following values:

- **In Compliance:** The use of this license is in compliance.
- **Released Entitlement:** The licenses have been purchased and released for use, but none have been consumed so far in this Cisco ISE deployment. In such a scenario, the **Consumption Count** for the license is 0.
- **Evaluation:** Evaluation licenses are available for use.

Register and Activate Smart Licenses

Before you begin

- If you have traditional Cisco ISE licenses, you must convert them to smart licenses.
- If you are upgrading to Cisco ISE Release 3.0 and later releases with existing smart licenses, convert the licenses to the new smart license types in CSSM.
- Register your new smart license types in CSSM to receive a registration token.

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- Step 1** In the Cisco ISE GUI, click the **Menu** icon () and choose **Administration > System > Licensing**.
- Step 2** In the **Licensing** window that is displayed, click **Registration Details**.
- Step 3** In the **Registration Details** area that is displayed, enter the registration token that you received from CSSM, in the **Registration Token** field.
- Step 4** Choose a connection method from the **Connection Method** drop-down list:
- **Direct HTTPS** if you have configured a direct connection to the internet.
 - **HTTPS Proxy** if you do not have a direct connection to the internet and need to use a proxy server. (If you change your proxy server configuration after you register Cisco ISE Smart Licenses, you must update your Smart Licenses configuration in the **Licensing** window. Cisco ISE establishes a connection with the CSSM using the updated proxy server, avoiding disruption of Cisco ISE services.)
 - **SSM On-Prem Server** to connect to the configured SSM on-prem server. This option is available in Cisco ISE Release 3.0 Patch 2 and later. See [Smart Licensing for Air-Gapped Networks, on page 8](#).
- Step 5** In the **Tier** and **Virtual Appliance** areas, check the check boxes for all the licenses you need to enable. The chosen licenses are activated and their consumption is tracked by CSSM.
- Step 6** Click **Register**.
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Manage Smart Licensing in Cisco ISE

After you activate and register your Smart Licensing token, you can manage license entitlements from Cisco ISE by:

- Enabling, disabling, and refreshing license entitlement certificates.
- Updating Smart Licensing registration.
- Identifying compliant and noncompliant licensing issues.

Before you begin

Ensure that you have activated and registered your Smart Licensing token.

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- Step 1** (Optional) When you first install Cisco ISE Release 3.0 and later releases, all the license entitlements are enabled automatically as part of the Evaluation mode. After you register your license token, if your CSSM account does not include certain entitlements and you did not disable them during registration, noncompliant notifications are displayed in Cisco ISE. Add those entitlements to your CSSM account (contact your CSSM account representative for assistance), and then, in the **Licenses** table, click **Refresh** to remove noncompliant notifications and continue to use the related features. After you refresh the authorization, log out and then log back in to Cisco ISE for the relevant noncompliance messages to be removed.
- Step 2** (Optional) If the daily automatic authorization does not succeed for any reason, noncompliance messages may appear. Click **Refresh** to reauthorize your entitlements. After you refresh the authorization, log out and then log back in to Cisco ISE for the relevant noncompliance messages to be removed.
- Step 3** (Optional) When you first install Cisco ISE Release 3.0 and later releases, all license entitlements are enabled automatically as part of the evaluation period. After you register your token, if your CSSM account does not include certain entitlements and you did not disable them during registration, you can still disable those entitlements from Smart Licensing in ISE in order to avoid unnecessary noncompliant notifications. From the **Licenses** table, check the check boxes for the license entitlements that are not included in your token, and click **Disable** from the toolbar. After you have disabled license entitlements, log out and then log back in to Cisco ISE for the relevant features to be removed from the menus and for the noncompliance messages to be removed.
- Step 4** (Optional) After you add entitlements to your account, enable those entitlements. From the **Licenses** table, check the check boxes for the required disabled licenses, and click **Enable** from the toolbar.
- Step 5** (Optional) The registration certificate is automatically refreshed every six months. To manually refresh your Smart Licensing certificate registration, click **Renew Registration** at the top of the **Licensing** window.
- Step 6** (Optional) To remove your Cisco ISE registration (indicated by UDIs) from your Smart Account, but continue to use Smart Licensing till the end of the evaluation period, click **Deregister** at the top of the **Cisco Smart Licensing** area. You can do this, for example, if you need to change the UDIs you have indicated as part of the registration process. If you still have time remaining in your evaluation period, Cisco ISE remains in Smart Licensing. If your evaluation period is at an end, a notification appears when the browser is refreshed. After you deregister your smart license, you can follow the registration process again in order to register with the same or different UDIs.
- Step 7** (Optional) To remove your Cisco ISE registration (indicated by UDIs) from your Smart Account entirely, and to revert to traditional licensing, click **Disable** at the top of the **Cisco Smart Licensing** area. You can do this, for example, if you need to change the UDIs you have indicated as part of the registration process. After you disable the smart license, follow the registration process again in order to activate and register with the same or different UDIs.
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Troubleshooting: Unregistered License Usage

Issue

Endpoint license consumption relies on the attributes that are used in the authorization policy with which an endpoint is matched.

Consider a scenario where you only have a Cisco ISE Essentials license registered in your system, because you deleted the 90-day Evaluation license. You will be able to see and configure the corresponding Cisco ISE Essentials menu items and features.

If you configure an authorization policy to use a feature, for example, if you use the Session:PostureStatus attribute that requires an Premier license, and an endpoint matches this authorization policy, then:

- The endpoint consumes a Cisco ISE Premier license despite the fact that a Cisco Premier license has not been registered in the system.
- You see notifications of noncompliant license consumption whenever you log in.
- Cisco ISE displays notifications and alarms with the message `Exceeded license usage than allowed`. This is because there are no Cisco ISE Premier licenses that are registered in CSSM for your Cisco ISE, but an endpoint is consuming one.




Note The licensing alarm is displayed for about 60 days from the first occurrence of noncompliant license use even if you fix the licensing issue by registering the necessary licenses.

If the use of all three Tier licenses is out of compliance for 45 days in a 60-day period, administrative control of Cisco ISE is lost until you register the correct licenses. You will be able to access only the **Licensing** window in the Cisco ISE administration portal until the correct licenses are registered. However, Cisco ISE continues to handle authentications.

Possible Causes

Because of the configuration of an authorization policy, the **Licensing** table reports that Cisco ISE has used a license that you have not purchased and registered. Before you purchase an Advantage or Premier license, the Cisco ISE administration portal does not display the features covered by these licenses. However, after you purchase these licenses, the GUI continues to display the features that the licenses enable even after the license has expired or endpoint consumption of the license has exceeded a set limit. Thus, you can configure the features even if you do not currently have a valid license for them.

Solution

In the Cisco ISE administration portal, click the **Menu** icon () and choose **Policy > Policy Sets**, identify the authorization rule that is using the feature for which you do not have a registered license, and reconfigure that rule.

Smart Licensing for Air-Gapped Networks

An air-gapped network does not allow any communication between a secured network and an external network. Cisco ISE Smart Licensing requires Cisco ISE to communicate with the CSSM. If your network is air-gapped,

Cisco ISE is unable to report license usage to CSSM, and this lack of reporting results in the loss of administrative access to Cisco ISE and restrictions in Cisco ISE features.

To avoid licensing issues in air-gapped networks and enable full Cisco ISE functionality, you can configure a Smart Software Manager (SSM) On-Premises server. This licensing method is available in Cisco ISE Release 3.0 Patch 2 and later releases.

You must configure an SSM On-Prem server and ensure that Cisco ISE can reach this server. This server takes over the role of CSSM in your air-gapped network, releasing license entitlements, as needed, and tracking usage metrics. The SSM On-Prem server also sends notifications, alarms, and warning messages that are related to licensing consumption and validity.

Configure Smart Software Manager On-Prem for Smart Licensing

Before you begin


Configure an SSM On-Prem server and ensure that Cisco ISE can reach this server. For more information, see [Smart Software Manager On-Prem Resources](#).

You must update to SSM On-Prem Release 8-202108 or later to register your license successfully for Cisco ISE 3.0 and later.

If you buy more licenses or modify your license purchases, you must connect the SSM On-Prem server to CSSM for the changes to be available in your local server.



Note ISE-PIC 2.7 and earlier do not support Smart Licensing.

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- Step 1** In the Cisco ISE GUI, click the **Menu** icon () and choose **Administration > System > Licensing**.
- Step 2** Click **Registration Details**.
- Step 3** In the **Registration Details** area that is displayed, in the **Registration Token** field, enter the registration token that you received from CSSM.
- Step 4** From the **Connection Method** drop-down list, choose **SSM On-Prem server** .
- The **Certificate** window in the SSM On-Prem portal displays either the IP address or the hostname (or FQDN) of the connected SSM On-Prem server.
- Step 5** In the **SSM On-Prem server Host** field, enter the configured IP address or the hostname (or FQDN).
- Step 6** In the **Tier** and **Virtual Appliance** areas, check the check boxes for all the licenses you want to enable. The chosen licenses are activated and their consumption is tracked by CSSM.
- Step 7** Click **Register**.
- Note** Ensure that port 443 and the port used for ICMP communication are open while registering Cisco ISE with the SSM On-Prem server.
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