Cisco ISE upgrade overview

This document describes how to upgrade your Cisco Identity Services Engine (Cisco ISE) software on Cisco ISE appliances and virtual machines to Release 3.0. (See the section "What is New in Cisco ISE, Release 3.0" in the *Release Notes for Cisco Identity Services Engine, Release 3.0.*)

Note Cisco ISE, Release 2.3 and later offer a new and enhanced **Policy Sets** window that replaces all the existing network access policies and policy sets. When you upgrade from an earlier release to Release 2.3 or later, all the network access policy configurations (including authentication and authorization conditions, rules, policies, profiles, and exceptions) are migrated to the new **Policy Sets** window in the Cisco ISE GUI. For more information on the new policy model, see the "New Policy Model" section in Cisco Identity Services Engine Administrator Guide, Release 2.3

Upgrading a Cisco ISE deployment is a multistep process and must be performed in the order that is specified in this document. Use the time estimates provided in this document to plan for an upgrade with minimum downtime. For a deployment with multiple Policy Service Nodes (PSNs) that are a part of a PSN group, there is no downtime. If no endpoints are authenticated through a PSN that is being upgraded, the request is processed by another PSN in the node group. The endpoint is reauthenticated and granted network access after the authentication is successful.

Caution If you have a standalone deployment or a deployment with a single PSN, you might experience a downtime for all the authentications when the PSN is being upgraded.

Note When upgrading to Cisco ISE Release 3.2 and above, Root CA regeneration happens automatically in the upgrade flow. Thus, post-upgrade Root CA regeneration is not required.

Different types of deployment

- Standalone Node: A single Cisco ISE node assuming the Administration, Policy Service, and Monitoring persona.
- Multi-Node Deployment: A distributed deployment with several ISE nodes.

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Upgrade path

Single-step upgrade

You can directly upgrade to Cisco ISE, Release 3.0 from any of the following releases:

Note If you have Permanent License Reservation or the SSM On-Prem connection method are enabled in the release that you upgrade from, you must disable these features first. Then, upgrade to Cisco ISE Release 3.0 Patch 2 or later to reenable these features in your Cisco ISE.

Permanent License Reservation and the SSM On-Prem connection method are available in the following releases:

- Cisco ISE Releases 2.6 Patch 10 and later
- Cisco ISE Releases 2.7 Patch 4 and later

- Cisco ISE, Release 2.4
- Cisco ISE, Release 2.6
- Cisco ISE, Release 2.7

You can download the upgrade bundle from Cisco.com. The following upgrade bundle is available for Release 3.0:

ise-upgradebundle-2.4.x-2.7.x-to-3.0.0.458.SPA.x86_64.tar.gz—Use this bundle to upgrade from Release 2.4, 2.6 or 2.7 to 3.0

Two-step upgrade

If you are currently using a version earlier than Cisco ISE, Release 2.4, you must first upgrade to one of the releases that are listed above and then upgrade to Release 3.0.

Supported operating system for virtual machines

Cisco ISE runs on the Cisco Application Deployment Engine Operating System (ADE-OS), which is based on Red Hat Enterprise Linux (RHEL). For Cisco ISE 3.0, ADE-OS is based on RHEL 7.6.

The following table shows the RHEL versions used in different versions of Cisco ISE.

Table 1: RHEL Releases

Cisco ISE Release	RHEL Release
Cisco ISE 1.3	RHEL 6.4
Cisco ISE 1.4	RHEL 6.4
Cisco ISE 2.0	RHEL 7.0
Cisco ISE 2.1	RHEL 7.0
Cisco ISE 2.2	RHEL 7.0
Cisco ISE 2.3	RHEL 7.0
Cisco ISE 2.4	RHEL 7.3
Cisco ISE 2.6	RHEL 7.5
Cisco ISE 2.7	RHEL 7.6
Cisco ISE 3.0	RHEL 7.6
Cisco ISE 3.2	RHEL 8.4

For Cisco ISE Release 3.0 and later releases, we recommend that you update to VMware ESXi 7.0.3 or later releases.

If you are upgrading the Cisco ISE nodes on VMware virtual machines (VMs) after the upgrade, you must change the Guest operating system to the supported version of RHEL. To do this, you must power down the VM, change the Guest operating system to the supported RHEL version, and power on the VM.

Note If you have selected **Guest OS RHEL 8** and **Firmware EFI**, ensure that the **Enable UEFI Secure Boot** option is disabled in the **VM Options** tab. This option is enabled by default for Guest operating system RHEL 8 VM. Ensure that you disable the option for the Cisco ISE VM.

Cisco ISE upgrades with RHEL operating system upgrade might take a longer time than the normal upgrade process. Additionally, if there are changes in the Oracle database version, it might take more time to upgrade because the new Oracle package is installed during the operating system upgrade.

Licensing changes

Device administration licenses

The licenses that are used for Cisco ISE Releases 2.x, such as Base, Plus, and Apex, have been replaced with new license types. Cisco ISE Release 3.0 uses Essentials, Advantage, and Premier licenses. See the Chapter "Licensing" in the *Cisco Identity Services Engine Administrator Guide*. For more information on license migration, see the ISE 3.0 License Migration Guide.

You must convert your existing smart or traditional licenses to the new license type through the Cisco Smart Software Manager (CSSM), to enable license consumption in Cisco ISE Release 3.0.

From Cisco ISE, Release 2.4, the number of Device Administration licenses must be equal to the number of device administration nodes (PSNs configured for the device administration service) in a deployment.

If you are currently using a Device Administration license and plan to upgrade to Release 2.4 or above, TACACS+ features will be supported for 50 Device Administration nodes in Release 2.4 and above.

If you install a PAK generated from a new PID, Device Administration license count is displayed as per the quantity available in the PAK file. You can add multiple Device Administration licenses to your deployment based on the number of Device Administration nodes that you require. Evaluation license supports one Device Administration node.

Licenses for VM nodes

Cisco ISE is also shipped as a virtual appliance. For Release 2.4 and above, it is recommended that you install appropriate VM licenses for the VM nodes in your deployment. You must install the VM licenses based on the number of VM nodes and each VM node's resources such as CPU and memory. Otherwise, you will receive warnings and notifications to procure and install the VM license keys in Release 2.4 and later, however, the services are not interrupted.

VM licenses are Infrastructure licenses, therefore, you can install VM licenses irrespective of the endpoint licenses available in your deployment. You can install a VM license even if you have not installed any Evaluation, Base, Plus, or Apex license in your deployment. However, in order to use the features enabled by the Base, Plus, or Apex licenses, you must install the appropriate licenses.

After installing or upgrading to Release 2.4 or above, if there is any mismatch between the number of deployed VM nodes and installed VM licenses, alarms are displayed in the Alarms dashlet for every 14 days. Alarms are also displayed if there are any changes in the VM node’s resources or whenever 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 notification dialog box.

If you have not purchased any ISE VM license before, refer to the ISE Ordering Guide to choose the appropriate VM license to be purchased. If you have purchased ISE VM licenses with no Product Authorization Key (PAK) associated, you can request VM PAKs by reaching out to licensing@cisco.com with Sales Order numbers that reflect the ISE VM purchase. This request will be processed to provide one medium VM license key for each ISE VM purchase you made in the past.

VM License Categories

VM licenses are offered under three categories: Small, Medium, and Large. These categories depend on the resources such as hardware appliances, RAM capacity and number of CPUs. For instance, if you are using 3595 equivalent VM node with 8 cores and 64-GB RAM, you might need a Medium category VM license, if you want to replicate the same capabilities on the VM. You need to install multiple VM licenses based on the number of VMs and their resources as per your deployment requirements.

The following table shows the minimum VM resources required for the VM categories:

VM Category	VM License Specifications
Small	• Minimum 16GB RAM and 12 CPU cores for SNS-3515 equivalent. • Minimum 32GB RAM and 16 CPU cores for SNS-3615 equivalent.
Medium	• Minimum 64GB RAM and 16 CPU cores for SNS-3595 equivalent. • Minimum 96GB RAM and 24 CPU cores for SNS-3655 equivalent.

VM Category	VM License Specifications
Large	• Minimum 256GB RAM and 16 CPU cores for MnT in clusters supporting more than 500,000 concurrent sessions. • Minimum 256GB RAM and 24 CPU cores for SNS-3695 equivalent.

For more information about the licenses, see chapter "Cisco ISE Licenses" in the *Cisco Identity Services Engine Administrator Guide*.

Additional references

The following link contains additional resources that you can use when working with Cisco ISE:

https://www.cisco.com/c/en/us/td/docs/security/ise/end-user-documentation/Cisco_ISE_End_User_Documentation.html

Communications, services, and additional information

- To receive timely, relevant information from Cisco, sign up at Cisco Profile Manager.
- To get the business impact you're looking for with the technologies that matter, visit Cisco Services.
- To submit a service request, visit Cisco Support.
- To discover and browse secure, validated enterprise-class apps, products, solutions, and services, visit Cisco DevNet.
- To obtain general networking, training, and certification titles, visit Cisco Press.
- To find warranty information for a specific product or product family, access Cisco Warranty Finder.

Cisco Bug Search Tool

Cisco Bug Search Tool (BST) is a gateway to the Cisco bug-tracking system, which maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. The BST provides you with detailed defect information about your products and software.

Documentation feedback

To provide feedback about Cisco technical documentation, use the feedback form available in the right pane of every online document.