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Deploying Smart Licensing Using Policy in Cisco Catalyst SD-WAN

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Table 1: Feature History

Feature Name	Release Information	Description
License Management for Smart Licensing Using Policy, Using Cisco SD-WAN Manager	Cisco IOS XE Catalyst SD-WAN Release 17.5.1a Cisco vManage Release 20.5.1	Cisco Catalyst SD-WAN operates together with Cisco Smart Software Manager (Cisco SSM) to provide license management through Cisco SD-WAN Manager. Cisco SD-WAN Manager shows available DNA licenses, assigns licenses to devices, and reports license consumption to Cisco SSM.
Support for License Management Offline Mode and Compliance Alarms	Cisco IOS XE Catalyst SD-WAN Release 17.6.1a Cisco vManage Release 20.6.1	With this feature, you can manage Cisco Catalyst SD-WAN licenses through a Cisco SD-WAN Manager instance that is not connected to the internet. To synchronize license and compliance information between Cisco SD-WAN Manager and Cisco SSM, you must periodically download synchronization files from Cisco SD-WAN Manager and upload the files to Cisco SSM. This feature also introduces compliance alarms that alert you if devices in the Cisco Catalyst SD-WAN network are not yet licensed.
Support for Postpaid MSLA License Billing Models	Cisco IOS XE Catalyst SD-WAN Release 17.8.1a Cisco vManage Release 20.8.1	For postpaid Managed Services License Agreement (MSLA) program licenses, Cisco Catalyst SD-WAN supports the uncommitted (MSLA-U) billing model for licenses. The procedure for assigning a postpaid license enables you to configure these licenses.
Support for License Management Using a Proxy Server	Cisco IOS XE Catalyst SD-WAN Release 17.9.1a Cisco vManage Release 20.9.1	If you configure Cisco SD-WAN Manager to use a proxy server for internet access, Cisco SD-WAN Manager uses the proxy server to connect to Cisco SSM or an on-prem SSM.
Support for Managing Licenses Using Cisco Smart Software Manager On-Prem	Cisco IOS XE Catalyst SD-WAN Release 17.9.1a Cisco vManage Release 20.9.1	Cisco SD-WAN Manager supports management of device licenses, using a Cisco SSM on-prem license server. This is useful for organizations that use Cisco SSM on-prem to accommodate a strict security policy that does not permit devices to communicate with Cisco SSM over a direct internet connection.

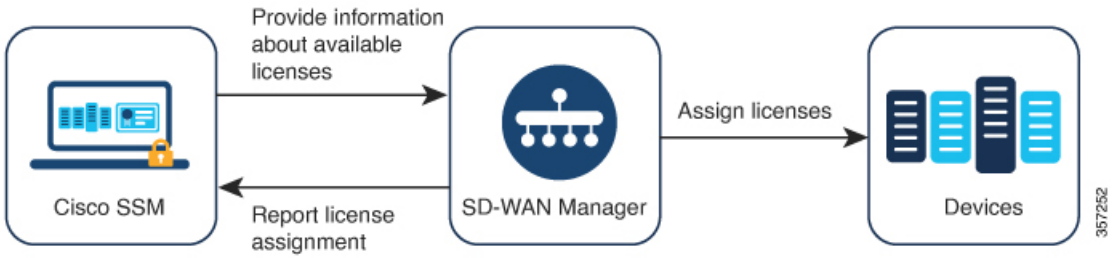
Feature Name	Release Information	Description
Enhancements in License Management	Cisco IOS XE Catalyst SD-WAN Release 17.13.1a Cisco Catalyst SD-WAN Control Components Release 20.13.x	Updated license management as follows: • Moved the selection of license type from license synchronization to license assignment. • Added a preview of existing template when selected during license assignment. • Removed the Mixed mode from license types. • Added the ability to view devices associated with a template and delete a template.
License Compliance Messaging	Cisco IOS XE Catalyst SD-WAN Release 17.14.1a Cisco Catalyst SD-WAN Manager Release 20.14.1	Cisco SD-WAN Manager actively monitors the compliance status of Cisco Catalyst SD-WAN licenses to identify issues with license synchronization, device assignments, or expired licenses. In case of an issue, it displays a compliance error message. In addition, on the **License Management** page, the device list indicates the license compliance status of each device.
Release a License from a Device	Cisco IOS XE Catalyst SD-WAN Release 17.14.1a Cisco Catalyst SD-WAN Manager Release 20.14.1	You can manually release a license from a device without having to remove or decommission the device. This leaves the license available to use with other devices.
Multitenant License Management	Cisco IOS XE Catalyst SD-WAN Release 17.14.1a Cisco Catalyst SD-WAN Manager Release 20.14.1	In a multitenant scenario, Cisco SD-WAN Manager supports license management at the provider level for multitenant edge devices.
Workflow for Assigning Licenses to Devices	Cisco IOS XE Catalyst SD-WAN Release 17.15.1a Cisco Catalyst SD-WAN Control Components Release 20.15.1	Introduced the License Assignment Workflow for assigning licenses to devices.
Assigning high availability licenses	Cisco IOS XE Catalyst SD-WAN Release 17.18.1a Cisco Catalyst SD-WAN Control Components Release 20.18.1	When using the license assignment workflow, an **HA License** option streamlines the process of assigning high availability (HA) licenses to secondary devices in an HA scenario.

Information About Managing Licenses for Smart Licensing Using Policy

Cisco Smart Software Manager (SSM) manages Smart Licensing Using Policy (SLP) purchases, tracking the availability and consumption of licenses. A Smart Account (SA) contains the licenses purchased by an organization. Virtual Accounts (VA) are subaccounts within the Smart Account that further organize the licenses, such as by department, product, geography, and so on. For more information to activate and manage Cisco licenses, see Smart Software Manager.

Cisco Catalyst SD-WAN operates together with Cisco SSM to provide license management through Cisco SD-WAN Manager for devices operating with Cisco Catalyst SD-WAN. Cisco SD-WAN Manager can show available DNA licenses, assign licenses to devices, monitor license usage, and report license consumption to CSSM. When you set up Cisco SD-WAN Manager to manage licenses, Cisco SD-WAN Manager operates between Cisco SSM and the devices in the network, as shown in the following illustration.

Figure 1: Cisco SSM Providing License Management Through Cisco SD-WAN Manager for Cisco Catalyst SD-WAN Devices



Supported Licenses

Cisco SD-WAN Manager supports a subset of the license entitlements by default. The license entitlement types include the following:

- Pre-paid
  - A la carte: These entitlements are delievered based on orders in Cisco Commerce Workspace (CCW).
  - Enterprise agreement (EA): These entitlements are delivered by reporting on the EA workspace.
- Post-paid
  - MSLA-U: These entitlements are delievered based on orders in CCW.

For information about Smart Licensing Using Policy, see Smart Licensing Using Policy for Cisco Enterprise Routing Platforms.

For information about Managed Service License Agreements, see MSLA on Cisco Sales Connect.

Supported Entitlements

A license may include more than one entitlement. Each entitlement included with a license provides a specific functionality, such as routing features or a specific traffic throughput. The applicability of these entitlements on a particular device depends on the Cisco IOS XE software release operating on the device, and on the operation mode of the device, which can be autonomous or controller mode.

Your organization's Smart Account shows the entitlements included in each associated license.

Cisco SD-WAN Manager manages the following types of entitlements.

- DNA entitlements (for example, DNA Routing Advantage Tier 1)
- High Security (HSEC)

Other entitlements may appear in the Smart Account, but are not managed by Cisco SD-WAN Manager. Examples may include network stack entitlements, IP Base, App, Sec, Perf, Boost, DNA Essentials for SDWAN, and DNA Advantage for SDWAN.

Note

DNA Essentials for SDWAN (SDWAN-DNA-E) and DNA Advantage for SDWAN (SDWAN-DNA-A) are considered obsolete entitlement types and are not managed by Cisco SD-WAN Manager.

Supported Devices

License management using Cisco SD-WAN Manager supports Cisco IOS XE Catalyst SD-WAN devices and Cisco vEdge devices.

License Server Options

Cisco SD-WAN Manager can receive license information and transmit reports on licensing usage in multiple ways, including the following:

- Direct internet connection to Cisco SSM (online mode)
- Manual management of licensing data (offline mode)
- Cisco SSM on-prem server (on-prem mode, available from Cisco vManage Release 20.9.1)

For each of these modes, you can assign licenses to device in Cisco SD-WAN Manager in the same way.

Multitenancy

Cisco Catalyst SD-WAN infrastructure can support multiple organizations, which share the resources of Cisco SD-WAN Controllers, while operating independently of one another. This arrangement is called multitenancy. It enables a service provider to support multiple customers using the same Cisco SD-WAN Controllers, and enables the service provider to manage the tenants using Cisco SD-WAN Manager. Cisco Catalyst SD-WAN isolates each tenant's data to ensure that each tenant has access only to the resources relevant to their organization. The service provider can use Cisco SD-WAN Manager to view all resources, and each tenant can separately log in to Cisco SD-WAN Manager to view their own resources. For more information about multitenancy, see Cisco SD-WAN Multitenancy in the *Cisco Catalyst SD-WAN Systems and Interfaces Configuration Guide, Cisco IOS XE Release 17.x*.

When using Cisco Catalyst SD-WAN with multitenancy, the service provider chooses the mode of synchronizing license information with a Cisco license server: online mode, offline mode, or on-prem mode. When you choose on-prem mode, the Cisco SSM on-prem license server stores the license information for the licenses that Cisco SD-WAN Manager manages. This includes the licenses that each tenant has chosen to manage. When a tenant configures a Cisco Smart Account and chooses licenses to manage in Cisco SD-WAN Manager, Cisco SD-WAN Manager sends a request to the Cisco SSM on-prem license server to retrieve the relevant license information from Cisco SSM. Cisco SD-WAN Manager receives the license information from the Cisco SSM on-prem license server and makes the licenses available for the tenant to use.

Information About Offline Mode

Normally, Cisco SD-WAN Manager communicates directly with the Cisco Smart Software Manager (SSM) through the internet for the following:

- Receiving information about available licenses from Cisco SSM
- Reporting license assignment to Cisco SSM

Offline mode provides the ability to keep Cisco SD-WAN Manager license management in synchronization with the Cisco SSM server when the Cisco SD-WAN Manager server is not connected to the internet. This is accomplished through the following steps:

1. In Cisco SSM, generate a license summary file containing the details of all available license entitlements.

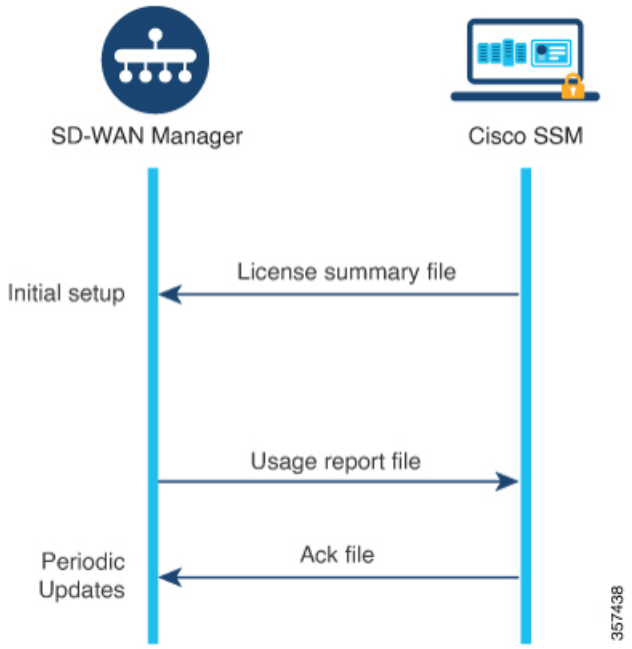
2. Upload the license summary file into Cisco SD-WAN Manager.

Note

Even before uploading a license summary file into Cisco SD-WAN Manager, you can use Cisco SD-WAN Manager to assign default entitlements to devices in the network. These assignments are reconciled with the available entitlements after the license summary file is uploaded to Cisco SD-WAN Manager.

3. In Cisco SD-WAN Manager, periodically generate a license report to upload to Cisco SSM, indicating license assignment.
4. Receive an acknowledgement file from Cisco SSM after uploading the license report.
5. Upload the acknowledgement file into Cisco SD-WAN Manager.

Figure 2: Upload and Receive Acknowledgement Files From Cisco SD-WAN Manager and Cisco SSM



By default, Cisco SD-WAN Manager requires this synchronization within an interval of 90 days. If you do not complete this synchronization within that period, an alert appears in the License Management dashboard. Some licenses might require synchronization more frequently:

- Prepaid licenses: A report is required every three months.
- Postpaid licenses: A report is required each month.

Failover

In a high availability scenario with more than one Cisco SD-WAN Manager instance, the Cisco SD-WAN Manager instances keep their license information synchronized. If one of the instances fails, the redundant Cisco SD-WAN Manager instance continues to perform license management operations using the previously synchronized license information.

Assigning Licenses to Devices Before Providing Smart Account Details to Cisco SD-WAN Manager

The recommended workflow for using offline mode is the following:

1. Enable offline mode in Cisco SD-WAN Manager.

   See Enable Offline Mode.

2. Provide your Smart Account details to Cisco SD-WAN Manager.

   See Generate a Cisco SSM License Summary File and Upload It into Cisco SD-WAN Manager.

3. In Cisco SD-WAN Manager, assign licenses to devices.

4. Periodically, generate a usage report file in Cisco SD-WAN Manager to upload to Cisco SSM. This report provides information about the licenses that you have assigned in Cisco SD-WAN Manager.

   See Generate a Usage Report File in Cisco SD-WAN Manager and Synchronize with Cisco SSM.

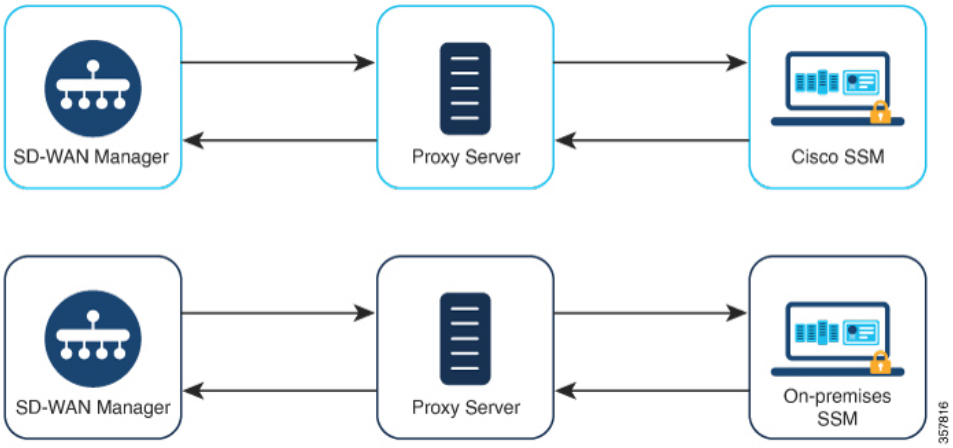
In some scenarios, such as during a trial period, you can delay the step of providing Smart Account details to Cisco SD-WAN Manager, and begin assigning licenses to devices. When you generate the usage report file for the first time and upload it to Cisco SSM, Cisco SSM prompts you to select the relevant virtual account.

Information About License Management Using a Proxy Server

Minimum releases: Cisco IOS XE Catalyst SD-WAN Release 17.9.1a, Cisco vManage Release 20.9.1

If you configure Cisco SD-WAN Manager to use a proxy server for internet access, Cisco SD-WAN Manager uses the proxy server to connect to Cisco SSM or an on-prem SSM.

Figure 3: Proxy Server Providing Connectivity to Cisco SSM or On-Prem SSM



For information about using a proxy server, see Configure HTTP/HTTPS Proxy Server in the *Cisco SD-WAN Systems and Interfaces Configuration Guide, Cisco IOS XE Release 17.x*.

Benefits of License Management Using a Proxy Server

For scenarios in which Cisco SD-WAN Manager is not connected directly to the internet, using a proxy server can provide access to internet-based services, such as Cisco SSM, or to a local on-prem SSM.

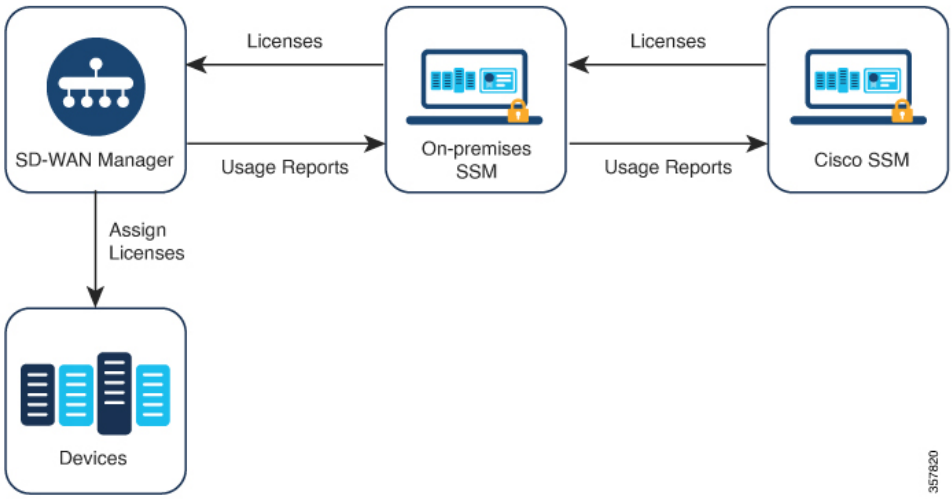
Information About Managing Licenses Using Cisco Smart Software Manager On-Prem

Minimum release: Cisco vManage Release 20.9.1

Cisco Smart Software Manager on-prem (SSM on-prem) is a Cisco Smart Licensing solution that enables you to administer licenses from a server on your premises, instead of having to connect directly to Cisco SSM. The solution involves setting up a Cisco SSM on-prem license server, which synchronizes its license database with Cisco SSM periodically and functions similarly to Cisco SSM, while operating locally.

Cisco SD-WAN Manager supports management of licenses using a Cisco SSM on-prem server, using a mode called on-prem. On-prem mode is useful for organizations that use Cisco SSM on-prem to accommodate a strict security policy that does not permit network devices to communicate with Cisco SSM by direct internet connection.

Figure 4: Cisco Catalyst SD-WAN Manager Using a Cisco SSM On-Prem License Server



When operating in on-prem mode, Cisco SD-WAN Manager synchronizes license information with the Cisco SSM on-prem license server every 24 hours. During this synchronization, Cisco SD-WAN Manager receives any updates to available licenses and it sends license usage reports to the Cisco SSM on-prem license server. You can synchronize licenses at any time—see Synchronize Licenses, on page 16.

For information about configuring the frequency of synchronization between the Cisco SSM on-prem license server and Cisco SSM, see the documentation for Cisco SSM on-prem. The Cisco Smart Software Manager On-Prem Data Sheet provides a link to the Cisco SSM on-prem software on the Cisco Software Download site. The product documentation is available through the Cisco Software Download site.

Benefits of Using Cisco Smart Software Manager On-Prem

Organizations whose security policies, or other circumstances, require that Cisco SD-WAN Manager not be connected to the internet have the following options for managing licenses for Smart License Using Policy:

- Use offline mode, which requires transferring files manually between Cisco SD-WAN Manager and Cisco SSM.
- Use a Cisco SSM on-prem server that is accessible through a local area connection to Cisco SD-WAN Manager.

Both of these methods address the need to transfer license information between Cisco SSM and Cisco SD-WAN Manager. Wherever it is possible to use the on-prem mode, this mode provides the significant benefit of reducing the maintenance overhead of transferring files manually between Cisco SD-WAN Manager and Cisco SSM, as is necessary for offline mode.

Information About License Compliance

Minimum required releases: Cisco IOS XE Catalyst SD-WAN Release 17.14.1a, Cisco Catalyst SD-WAN Manager Release 20.14.1

Cisco SD-WAN Manager actively monitors the compliance status of Cisco Catalyst SD-WAN licenses to identify issues with license synchronization, device assignments, or expired licenses. In case of an issue, it displays a compliance error message. In addition, on the **License Management** page, the device list indicates the license compliance status of each device.

Message: Out of Compliance Due to Licensing

In Cisco SD-WAN Manager, a message appears at the top of the page if the network is out of compliance due to a licensing issue. The following are possible causes:

- Cisco SD-WAN Manager has not been synchronized with Cisco Smart Software Manager (Cisco SSM) through one of the supported methods—online, offline, or on-prem SSM.
- There are devices that do not have licenses assigned.
- One or more devices has an expired license for a postpaid subscription.

The message remains until all compliance issues are resolved.

Viewing License Compliance for Devices Individually

The **License Management** > **Device** page shows each device for which licensing is relevant, and the compliance status. For information about viewing license compliance, see View licenses in SD-WAN Manager.

Information About Releasing a License from a Device

Minimum supported releases: Cisco IOS XE Catalyst SD-WAN Release 17.14.1a, Cisco Catalyst SD-WAN Manager Release 20.14.1

If you remove a device from the network using **Configuration** > **Devices** > **...** > **Delete WAN Edge** or **Configuration** > **Devices** > **...** > **Decommission WAN Edge**, Cisco SD-WAN Manager automatically releases any license assigned to the device. This ensures that the removed or decommissioned device does not consume a license.

From Cisco Catalyst SD-WAN Control Components Release 20.14.1, you can manually release a license from a device without removing or decommissioning the device. This leaves the license available to use with other devices.

See Release a License from a Device, on page 26.

Licenses are released after sync

The result of releasing a license appears after synchronization. The synchronization interval is:

- Online mode: 24 hours
- On-prem installations: Depends on the frequency of synchronization with Cisco SSM, determined by network administrators
- Offline mode: Depends on the frequency of synchronization with Cisco SSM, determined by network administrators

Prerequisites for Managing Smart License Using Policy

In a multitenant scenario, to configure a Cisco Smart Account to use with Cisco SD-WAN Manager, choose licenses to manage and synchronize license information, the tenant administrator requires the following permissions:

- Write permission for the License Management option
- Read permission for the Settings option

For information about configuring user permissions, see Role-Based Access Control in the *Cisco Catalyst SD-WAN Systems and Interfaces Configuration Guide, Cisco IOS XE Release 17.x*.

Prerequisites for License Management Using a Proxy Server

Minimum supported release: Cisco vManage Release 20.9.1

- Global proxy server is configured and operational.

  The proxy server handles network or internet access requirements for multiple Cisco SD-WAN Manager services.

  To enable a global proxy server for Cisco SD-WAN Manager, from the Cisco SD-WAN Manager menu, do the following:

  1. Click **Administration** > **Settings**.
  2. Click **HTTP/HTTPS Proxy Server** and enable the **HTTP/HTTPS Proxy Server** option.
  3. Click **Save**.

- Proxy server has access to Cisco SSM or an on-prem SSM.

Prerequisites for Using Cisco SSM On-Prem

Minimum supported release: Cisco vManage Release 20.9.1

- Cisco SD-WAN Manager must be hosted on-prem to enable local connectivity to the Cisco SSM on-prem license server. Cisco SD-WAN Manager cannot be hosted on a cloud server.
- The minimum supported release of the Cisco SSM on-prem license server is SSM_On-Prem_8-202206.
- Ensure that there is connectivity between the Cisco SD-WAN Manager host and the Cisco SSM on-prem license server.
- The Cisco SSM on-prem license server must be operational.

Prerequisites for Multitenant License Management

Minimum supported releases: Cisco IOS XE Catalyst SD-WAN Release 17.14.1a, Cisco Catalyst SD-WAN Manager Release 20.14.1

- The base license must be a DNA Advantage license, within tiers 1 to 5.
- Each multitenant edge device requires a license instance for each tenant using the device. The base license assigned to the device accommodates one tenant.

Restrictions for Managing Licenses for Smart Licensing Using Policy

License assignment

We recommend assigning a license to every device in the network.

Note

If a device appears in the device list but is not currently intended for use, it is not necessary to assign a license.

High Security (HSEC) licenses

Some devices (including Cisco ISR 1000 Series, Cisco ISR 4000 Series, Cisco Catalyst 8000 Series, and Cisco Catalyst 8000V) require an additional type of license called an HSEC license to enable throughput above 250 Mbps. The HSEC license is in addition to the typical type of device license, such as DNA Advantage. When applying a device license for a throughput above 250 Mbps to one of these devices, ensure that the device has an HSEC license installed. Otherwise the throughput is limited to 250 Mbps even for a device license with a higher entitlement.

Note

From Cisco vManage Release 20.9.1, SD-WAN Manager supports installing HSEC licenses, and we recommend using SD-WAN Manager to install these licenses. (See Manage HSEC Licenses.) If you are using an earlier release of SD-WAN Manager, and if you are installing an HSEC license on a device manually, the following scenario may occur. If (a) the device transport mode is CSLU mode instead of Smart mode, and (b) the device is connected directly to Cisco SSM, the HSEC license installation may fail. As a workaround, push the device template to the device again, which can restore the device transport mode to Smart mode, enabling installation of the HSEC license.

MSLA-C licenses

Cisco vManage Release 20.8.1 provided an option to support the MSLA-C license billing model. For technical reasons, Cisco SSM did not fully support the MSLA-C model in the context of Cisco Catalyst SD-WAN, so support was discontinued. We recommend using MSLA-U licensing.

Perpetual licenses

Cisco Catalyst SD-WAN does not support perpetual licenses, except for High Security (HSEC) licenses.

If perpetual SD-WAN licenses were added to your account unintentionally, open a Cisco TAC case to remove the perpetual licenses and reprocess the order to add only subscription licenses. Bug CSCws75823 describes the issue of erroneously adding perpetual licenses.

Mixing prepaid and postpaid

Do not assign both prepaid and postpaid licenses for the same DNA entitlement type, for devices in a single overlay network.

Multiple subscriptions for postpaid licenses

Do not assign multiple subscriptions for postpaid licenses within a single SD-WAN Manager instance.

Virtual accounts

Ensure that the licenses in Cisco SSM that you are managing with SD-WAN Manager are organized into virtual accounts (VA).

Isolated networks

License management by SD-WAN Manager does not support isolated networks.

Cisco Umbrella Secure Internet Gateway (SIG)

Assigning a DNA Premier entitlement to a device does not automatically enable Cisco Umbrella Secure Internet Gateway (SIG).

Umbrella certificates

Starting from Cisco IOS XE Catalyst SD-WAN Release 17.9.1a and Cisco SD-WAN Release 20.9.1, while pushing an umbrella certificate from SD-WAN Manager, you need to provide Cisco vEdge certificate first, followed by IOS XE certificate, without any space. If we have an IOS XE certificate first, followed by Cisco vEdge certificate, umbrella registration fails on Cisco vEdge devices.

License details that do not appear in SD-WAN Manager

When assigning licenses to devices, have Cisco SSM available to view license details that do not appear in SD-WAN Manager.

Cisco Secure Routers require a license to receive a configuration group push

Cisco 8000 Series Secure Routers require a license to be assigned before they will accept a configuration push from SD-WAN Manager by configuration group.

License management user account

We recommend using one license management user login for all license assignment tasks, possibly shared among different authorized users.

From SD-WAN Manager 20.18.2, if you change from using one license management user to using another login, do this:

1. Switch the account used for license management.
   a. From the Cisco Catalyst SD-WAN Manager menu, choose **Administration** > **License Management** > **Sync Licenses**.
   b. Select **Switch account** and choose the same SA and VA as the network has been using.
2. Select **Sync** to synchronize SD-WAN Manager with Cisco SSM or the equivalent.

Restrictions for Offline Mode

In a multitenancy scenario, all tenants must operate in online mode or all tenants must operate in offline mode. There cannot be a mix of modes.

Restrictions for Using Cisco SSM On-Prem

Minimum supported release: Cisco vManage Release 20.9.1

The mode of connecting Cisco SD-WAN Manager to a license server (online, offline, on-prem) is an integral part of the Cisco Catalyst SD-WAN infrastructure. When using Cisco Catalyst SD-WAN multitenancy, only the service provider configures connectivity to a Cisco SSM on-prem license server. Individual tenants cannot configure separate license servers.

Use Cases for Smart License Using Policy

The following are use cases for managing Cisco Smart License Using Policy.

Use Cases for Offline Mode

In scenarios where the Cisco SD-WAN Manager does not have internet access, such as for security reasons, you can use offline mode to keep Cisco SD-WAN Manager and Cisco SSM in periodic synchronization.

Use Cases for Cisco SSM On-Prem

Minimum supported release: Cisco vManage Release 20.9.1

An organization’s security policy does not permit the devices hosting Cisco SD-WAN Controllers to have direct connections to the internet. To enable management of device licenses using Cisco SD-WAN Manager, the organization sets up a Cisco SSM on-prem license server, accessible within the organization's LAN.

The license server has internet access and synchronizes license information with Cisco SSM. Cisco SD-WAN Manager connects to the license server over the organization's LAN and exchanges license information locally, without requiring direct internet access.

Verify Cisco Catalyst SD-WAN Manager's Connectivity to the Cisco IoT Control Center

Before You Begin

- Ensure that Cisco SD-WAN Manager has connectivity to the internet through VPN 0.
- In a multitenant scenario, only the provider has access to Cisco SD-WAN Manager. In this scenario, the provider performs this procedure.

Verify Cisco Catalyst SD-WAN Manager Connectivity to the Cisco IoT Control Center

1. From the Cisco SD-WAN Manager menu, choose **Monitor** > **Overview**.
2. In the **Summary** area, click **Manager**. A dialog box opens and displays the Cisco SD-WAN Manager instances.
3. For each Cisco SD-WAN Manager instance, perform the following steps:
   a. Click **…** and choose **SSH Terminal**.
   b. Log in using your Cisco SD-WAN Manager credentials.
   c. Use the **nslookup** command to verify connectivity to a domain over VPN 0. Here, verify Cisco SD-WAN Manager's connectivity to the domain sdo.jasper.com.

      If the output shows external IP addresses, it confirms that Cisco SD-WAN Manager has connectivity to the domain. If the output indicates that the command cannot resolve the domain, it indicates that Cisco SD-WAN Manager does not have connectivity to the domain.

      The following is an example indicating connectivity to a domain:

      ```
      Device# nslookup vpn 0 sdo.jasper.com
      nslookup in VPN 0:
      ```

```
Server:    10.1.0.1
Address 1: 10.1.0.1 dns.google

Name:      sdo.jasper.com
Address 1: 10.1.0.2 apmx-prod1-vip.jasper.com
```

Manage Cisco Smart License Using Policy in Cisco Catalyst SD-WAN Manager, high level

1. Log in to a Smart Account has access to the VA's that your network uses.

Note

We recommend using one license management user login for all license assignment tasks, possibly shared among different authorized users.

2. Verify Cisco SD-WAN Manager connectivity to the Cisco SSM server.

   This step is only required when setting up license management.

   See Verify Cisco Catalyst SD-WAN Manager Connectivity to the Cisco SSM Server, on page 15.

3. Prepare the licenses.

   Purchase licenses and ensure that they are in the correct Smart Account for your organization. In Cisco SSM, make note of how the licenses are organized in the Virtual Accounts within the Smart Account. This information is required in a later step of the workflow.

4. In Cisco SD-WAN Manager, provide your account credentials.

Note

This step describes the most common case, which is managing licenses in Online mode. For other modes, the details of this step differ.

   After you provide credentials, Cisco SD-WAN Manager connects to the Smart Account and receives the information about available licenses in the account. After you begin using Cisco SD-WAN Manager for license management, Cisco SD-WAN Manager reports license assignments back to Cisco SSM to keep license details synchronized between Cisco SD-WAN Manager and Cisco SSM.

   See Enter Smart Account Credentials in Cisco Catalyst SD-WAN Manager, on page 16.

5. In Cisco SD-WAN Manager, select the Virtual Accounts to use, within the Smart Account.

   Cisco SD-WAN Manager downloads the details of available licenses in the selected Virtual Accounts. There are options to manage only prepaid licenses, only postpaid licenses, or both, in the selected Virtual Accounts.

Note

Configuring Cisco SD-WAN Manager to manage compatible licenses requires confirmation before proceeding.

   See Synchronize Licenses, on page 16.

6. In Cisco SD-WAN Manager, assign licenses to devices.

   Assign licenses using existing license templates or create a new license template.

   See Assign Licenses to Devices, Cisco Catalyst SD-WAN Manager Release 20.14.1 and Later, on page 20.

7. In Cisco SD-WAN Manager, monitor license usage.

   See Monitor License Usage.

Configure the license reporting mode

Before you begin

When using Cisco Catalyst SD-WAN multitenancy, only the service provider configures the Cisco SSM license server details, using the license server credentials.

Configure the license reporting mode

1. For Cisco vManage Release 20.9.1 and later, from the Cisco SD-WAN Manager menu, choose **Administration** > **Settings**.

Note

In Cisco vManage Release 20.8.x and earlier, to configure the license reporting mode, from the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**. Click **Sync Licenses & Refresh Devices** and choose a license reporting mode. Then continue with the procedure for synchronizing licenses, Synchronize Licenses, on page 16.

2. Click **License Reporting** and select the choice of mode.
   - Online
   - Offline
   - On-prem

   Note

   Changing the mode causes SD-WAN Manager to permanently clear any license information that it is currently storing.

3. Enter the following information for the Cisco SSM on-prem server:

Field	Description
SSM Server	IP address of the Cisco SSM on-prem license server.
SSM Credentials **Client ID** and **Client Secret**	Client ID and client secret credentials for the Cisco SSM on-prem license server. This information is available from the administrator who manages the license server.

4. Click **Save**.

Verify Cisco Catalyst SD-WAN Manager Connectivity to the Cisco SSM Server

Before You Begin

- This procedure applies to online mode, as described in the overview here.
- Ensure that Cisco SD-WAN Manager has connectivity to the internet through VPN 0.
- In a multitenant scenario, only the provider has access to Cisco SD-WAN Manager. In this scenario, the provider performs this procedure.

Verify Cisco SD-WAN Manager Connectivity to the Cisco SSM Server

1. From the Cisco SD-WAN Manager menu, choose **Monitor** > **Overview**.

   Cisco vManage Release 20.6.x and earlier: From the Cisco SD-WAN Manager menu, choose **Dashboard** > **Main Dashboard**.
2. In the **Summary** area, click **Manager**. A dialog box opens and displays the Cisco SD-WAN Manager instances.
3. For each Cisco SD-WAN Manager instance, perform the following steps:
   a. Click **…** and choose **SSH Terminal**.
   b. Log in using your Cisco SD-WAN Manager credentials.
   c. Use the **nslookup** command to verify connectivity to each of the following domains over VPN 0. Cisco SD-WAN Manager requires connectivity to each of the domains.
      - apx.cisco.com
      - swapi.cisco.com

      If the output shows external IP addresses, it confirms that Cisco SD-WAN Manager has connectivity to the domain. If the output indicates that the command cannot resolve the domain, it indicates that Cisco SD-WAN Manager does not have connectivity to the domain.

      The following is an example indicating connectivity to each domain:

```
SDWAN-Manager# nslookup vpn 0 apx.cisco.com
nslookup in VPN 0:
Server:    10.1.0.1
Address 1: 10.1.0.1 dns.google

Name:      apx.cisco.com
Address 1: 10.1.0.2 apmx-prod1-vip.cisco.com

SDWAN-Manager# nslookup vpn 0 swapi.cisco.com
nslookup in VPN 0:
Server:    10.1.0.1
Address 1: 10.1.0.1 dns.google

Name:      swapi.cisco.com
Address 1: 10.2.0.1 swapi.cisco.com
Address 2: 1234:5678:90ab::1 swapi.cisco.com
```

   d. The **nslookup** commands in the previous step confirm the necessary connectivity between a Cisco SD-WAN Manager instance and the Cisco SSM servers, apx.cisco.com and swapi.cisco.com. However, if you continue to experience connectivity issues, use **telnet** to verify that the socket for the Cisco SSM servers are open. The output indicates connected if the socket is open:

```
SD-WAN-Manager:~$ telnet apx.cisco.com 443
Connected to apx.cisco.com

SD-WAN-Manager:~$ telnet swapi.cisco.com 443
Connected to swapi.cisco.com
```

e. If the **nslookup** output shows a resolved connection but you cannot connect to one of the servers, you can use these commands to check whether the connectivity problem is local, on the server hosting the Cisco SD-WAN Manager, or remote.

```
SD-WAN-Manager# tools nping vpn 0 apx.cisco.com options "-tcp -p 443"

SD-WAN-Manager# tools nping vpn 0 swapi.cisco.com options "-tcp -p 443"
```

If the problem is local, the output shows that no packets are sent. If the problem is remote with the Cisco SSM server, the output shows that no packets are received.

Enter Smart Account Credentials in Cisco Catalyst SD-WAN Manager

Before You Begin

Ensure that you have configured DNS host and next-hop IP route entries for the Cisco SSM servers under VPN 0 on Cisco SD-WAN Manager. Without this configuration, Cisco SD-WAN Manager cannot communicate with Cisco SSM.

Enter Smart Account Credentials

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Sync Licenses & Refresh Devices.**

   The **Reporting Mode** area shows the reporting mode configured on the **Adminstration** > **Settings** page (requires administration permissions).
3. Click **Smart Account Credentials**.
4. In the **Smart Account Credentials** dialog box, configure the following:

Field	Description
Username	Username of the account you use to access the Smart Accounts and Virtual Accounts for which you have administrative privileges.
Password	Password for the account you use to access Smart Accounts and Virtual Accounts.

5. Click **Save**.

   Cisco SD-WAN Manager authenticates the Smart Account credentials, and on successful authentication, saves the credentials in the database.

Synchronize Licenses

Before You Begin

- Use this procedure if the reporting mode is online or on-prem. For offline mode, see Configure Offline Mode.

- You use this procedure to specify Smart Account and Virtual Account information, or synchronize licenses on-demand, which is useful if you have recently added licenses to your Smart Account and want to bring those licenses into Cisco SD-WAN Manager.
- Ensure licenses belong to the correct Smart Accounts or Virtual Accounts on Cisco SSM.

  When the selected Smart Accounts and Virtual Accounts are registered with Cisco SD-WAN Manager, Cisco SD-WAN Manager fetches and synchronizes the license information with Cisco SSM, and reports usage of the licenses in these accounts.

Synchronize Licenses, Cisco Catalyst SD-WAN Manager Release 20.13.1 and Later

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Sync Licenses & Refresh Devices**.

   The **Sync Licenses & Refresh Devices** pane opens.

   The **Reporting mode** field shows the current reporting mode. To change the reporting mode, open **Administration** > **Settings** > **License Reporting**. For additional information, see Configure the license reporting mode, on page 14.
3. In the **Sync Licenses & Refresh Devices** pane, configure the following:

Note

If these details are already configured, you can skip this step and proceed to the next step to synchronize licenses again. This is useful if you have recently added licenses to your Smart Account and want to bring those licenses into Cisco SD-WAN Manager.

Item	Description
Select Smart/Virtual Accounts to Fetch/Sync Licenses	Select the Smart Accounts or Virtual Accounts for which Cisco SD-WAN Manager must fetch licenses from the Cisco SSM. Cisco SD-WAN Manager also reports license usage for the licenses in these accounts. **Note** Selecting an Smart Account automatically selects all the Virtual Accounts under the Smart Account. To stop Cisco SD-WAN Manager from fetching and synchronizing license information with Cisco SSM for an Smart Account or Virtual Account registered earlier, deselect the Smart Account or Virtual Account. You can deregister the Smart Account or Virtual Account only if you have not assigned any licenses from the account.

Item	Description
Advanced > **Multiple Entitlement**	(This option does not appear in Cisco Catalyst SD-WAN Manager Release 20.14.1 or later.) Select one of the following: • **On**: You can assign more than one license to a device. • **Off**: You can assign only one license to a device. **Note** Set this setting to **On** only if you need to map more than one DNA entitlement to a single device.

4. Click **Sync**.

Synchronize Licenses, through Cisco Catalyst SD-WAN Manager Release 20.13.1

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Sync Licenses & Refresh Devices**.
3. In the **Sync Licenses & Refresh Devices** pane, configure the following:

Note

If these details are already configured, you can skip this step and proceed to the next step to synchronize licenses again. This is useful if you have recently added licenses to your Smart Account and want to bring those licenses into Cisco SD-WAN Manager.

Item	Description
Select Smart/Virtual Accounts to Fetch/Sync Licenses	Select the Smart Accounts or Virtual Accounts for which Cisco SD-WAN Manager must fetch licenses from the Cisco SSM. Cisco SD-WAN Manager also reports license usage for the licenses in these accounts. **Note** Selecting an Smart Account automatically selects all the Virtual Accounts under the Smart Account. To stop Cisco SD-WAN Manager from fetching and synchronizing license information with Cisco SSM for an Smart Account or Virtual Account registered earlier, deselect the Smart Account or Virtual Account. You can deregister the Smart Account or Virtual Account only if you have not assigned any licenses from the account.

Item	Description
Advanced > **Type of Licenses**	Choose the type of licenses that must be fetched by Cisco SD-WAN Manager from among the license types that may belong to the selected Smart Accounts and Virtual Accounts. Select one of the following: • **Prepaid** • **Postpaid** • **Mixed** (both Prepaid and Postpaid) From Cisco vManage Release 20.8.1, if you choose to synchronize postpaid licenses, the license assignment procedure enables you to select uncommitted MSLA licenses (MSLA-U). See Assign Licenses to Devices, through Cisco Catalyst SD-WAN Manager Release 20.13.x, on page 21.
Advanced > **Multiple Entitlement**	Select one of the following: • **On**: You can assign more than one license to a device. • **Off**: You can assign only one license to a device. **Note** Set this setting to **On** only if you need to map more than one DNA entitlement to a single device.

4. Click **Sync**.

Assign licenses using a workflow

Minimum supported releases: Cisco IOS XE Catalyst SD-WAN Release 17.15.1a and Cisco Catalyst SD-WAN Control Components Release 20.15.1

1. From the Cisco SD-WAN Manager menu, choose **Workflows** > **Workflow Library** > **License Assignment Workflow**.

Note

You can only start the license assignment workflow if your licenses are in-sync with your Cisco SD-WAN Manager. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management** > **Sync Licenses**. Enter your Smart account credentials and choose the respective license from the drop-down list.

2. You can also assign licenses using the **Devices** tab. Click **Assign Licenses** to start the **License Assignment Workflow**.
3. When assigning licenses to high availability (HA) sites, use the an HA License option to assist in retrieving an HA license for the secondary device.

   The option is available only if you have HA licenses in the SD-WAN Manager license repository.

Note

- A site qualifies as a high availability site if it has two devices of the same model, assigned the same site ID.
- SD-WAN Manager automatically selects the HA license based on the license type and tier of the primary license. The license type and tier of the licenses for the primary and secondary devices must match.

4. Follow the on-screen instructions to complete the license assignment workflow.

Assign Licenses to Devices, Cisco Catalyst SD-WAN Manager Release 20.14.1 and Later

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Device**.

   The table shows each device for which licensing is relevant, and provides information about the assigned license.

Note

In a multitenancy scenario, a multitenant connector device does not require a license and does not appear in the list. To view multitenant connector devices, open **Configuration** > **Devices** and click **WAN Edge List**. multitenant connector devices appear in the list, tagged as **Connector**.

3. Select the devices to which to assign a license using the check box for each device.
4. Click **Assign License/Subscription**.

   The **Assign License/Subscription** pane opens, showing the licenses available through the configured Smart Account and Virtual Accounts. In a multitenancy scenario, the list is divided into a **Base License** area and a **Tenant License** area.

   The **Total Count** column indicates how many license instances are available for each license.
5. Do one of the following:
   - In a single-tenant scenario, select the license to assign to the device or devices.
   - In a multitenant scenario, do this:
     a. In the **Base License** area, select a license to assign a base license to the device.

        A base license must be of the type DNA Advantage Tier 1 through Tier 5. A base license accommodates one tenant.

     b. To enable more than one tenant to use the device, in the **Tenant License** area, select a license for the device.
6. Click **Next**.
7. In the **Count** column, click a row and enter the number of tenant licenses to allocate for tenants.

   In a multitenant scenario, the base license accommodates one tenant, so for *n* tenants, enter *n*-1.
8. Click **Next**.

   The **Assign License/Subscription** pane shows a summary of license assignments.
9. Click **Submit** to assign the licenses.

In a multitenant scenario, you can use a device for as many tenants as you have assigned licenses. If you use the device for more than that number of tenants, the device is out of compliance.

Assign Licenses to Devices, through Cisco Catalyst SD-WAN Manager Release 20.13.x

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Device**.
3. Select the devices to which to assign a license using the check box for each device.
4. Click **Assign License/Subscription**.

   The **Assign License/Subscription** pane appears.
5. In the **Assign License/Subscription** dialog box, configure the following:
   - In Cisco Catalyst SD-WAN Manager Release 20.13.1 and later, the following options appear:

Type of licenses	Choose the type of licenses that must be fetched by Cisco SD-WAN Manager from among the license types that belong to the selected Smart Accounts and Virtual Accounts. Select one of the following: • **Prepaid** • **Postpaid**
Postpaid > MSLA Type	Choose **MSLA-U** for MSLA licenses using the uncommitted billing model. Only this MSLA type is supported.
License Template Name	To use a new template, enter a unique name for the template. To use an existing template, do the following: **a.** Turn on the **Use existing license template** toggle. **b.** Choose an existing template. **Note** The template preview shows the smart account name, virtual account name, subscription ID, and license name.
Virtual Account	Choose the virtual account from which you wish to assign a license to the device.
Subscription ID	Choose the subscription ID to track the license consumption. This option appears only if both of the following are true: • The license mode is postpaid. • You have chosen an option in the **MSLA Type** field.

License	Choose a license or licenses to apply to the device. If you have enabled Multiple Entitlements in the **Sync Licenses & Refresh Devices** dialog box, you can assign up to three licenses to the device. **Note** • Select a license that belongs to the Virtual Account you have selected. On Cisco SSM, you can check the licenses that are available in a Virtual Account. • Check the device license applicability matrix in the Cisco DNA Software for SD-WAN and Routing Ordering Guide to ensure that you assign a license that is applicable to the device. Different device models support different throughputs. If you apply an incompatible license, the license may have no effect on device behavior. However, Cisco SD-WAN Manager records the consumption of the license. • When assigning licenses, Cisco SD-WAN Manager shows the throughput entitlement levels as tiers. Select the tier that matches the license you have purchased. If you purchased a license with a throughput expressed as a throughput value, find the tier that corresponds to the throughput that the license provides. For details about the throughput levels of various tiers, see the Cisco DNA Software for SD-WAN and Routing Ordering Guide. The list includes the predefined licenses that Cisco SD-WAN Manager provides, together with the licenses in the virtual account that you have chosen, that meet the MSLA type and subscription ID criteria.

• In Cisco vManage Release 20.7.x and earlier, the following options appear:

Are you using utility-based licensing (MSLA)?	Check this check box if you wish to apply an MSLA license. By default, the check box is unchecked.
Template Name	To use a new template, enter a unique name for the template. To use an existing template, do the following: **a.** Turn on the **Use existing template** toggle. **b.** Choose an existing template.
Virtual Account	Choose the virtual account from which you wish to assign a license to the device.

License	Choose license to apply to the device. If you have enabled Multiple Entitlements in the **Sync Licenses & Refresh Devices** dialog box, you can assign up to three licenses to the device. **Note** • Select a license that belongs to the Virtual Account you have selected. On Cisco SSM, you can check the licenses that are available in a Virtual Account. • Check the device license applicability matrix in the Cisco DNA Software for SD-WAN and Routing Ordering Guide to ensure that you assign a license that is applicable to the device. Different device models support different throughputs. If you apply an incompatible license, the license may have no effect on device behavior. However, Cisco SD-WAN Manager records the consumption of the license. • When assigning licenses, Cisco SD-WAN Manager shows the throughput entitlement levels as tiers. Select the tier that matches the license you have purchased. If you purchased a license with a throughput expressed as a throughput value, find the tier that corresponds to the throughput that the license provides. For details about the throughput levels of various tiers, see the Cisco DNA Software for SD-WAN and Routing Ordering Guide.
Subscription ID	Choose the subscription ID to be used to track the license consumption. The subscription ID field is displayed only for the following conditions: • if mode is postpaid. • if mode is mixed and MSLA is true and if there are any subscriptions available.

• In Cisco vManage Release 20.8.1 and later, the following options appear:

Template Name	To use a new template, enter a unique name for the template. To use an existing template, do the following: **a.** Turn on the **Use existing template** toggle. **b.** Choose an existing template.
Virtual Account	Choose the virtual account from which you wish to assign a license to the device.
MSLA Type	Choose **MSLA-U** for MSLA licenses using the uncommitted billing model. Only this MSLA type is supported.

Subscription ID	Choose the subscription ID to track the license consumption. This option appears only if both of the following are true: • The license mode is postpaid. • You have chosen an option in the **MSLA Type** field.
License	Choose a license or licenses to apply to the device. If you have enabled Multiple Entitlements in the **Sync Licenses & Refresh Devices** dialog box, you can assign up to three licenses to the device. **Note** • Select a license that belongs to the Virtual Account you have selected. On Cisco SSM, you can check the licenses that are available in a Virtual Account. • Check the device license applicability matrix in the Cisco DNA Software for SD-WAN and Routing Ordering Guide to ensure that you assign a license that is applicable to the device. Different device models support different throughputs. If you apply an incompatible license, the license may have no effect on device behavior. However, Cisco SD-WAN Manager records the consumption of the license. • When assigning licenses, Cisco SD-WAN Manager shows the throughput entitlement levels as tiers. Select the tier that matches the license you have purchased. If you purchased a license with a throughput expressed as a throughput value, find the tier that corresponds to the throughput that the license provides. For details about the throughput levels of various tiers, see the Cisco DNA Software for SD-WAN and Routing Ordering Guide. The list includes the predefined licenses that Cisco SD-WAN Manager provides, together with the licenses in the virtual account that you have chosen, that meet the MSLA type and subscription ID criteria.

• In Cisco vManage Release 20.7.x and earlier, the following options appear:

Are you using utility-based licensing (MSLA)?	Check this check box if you wish to apply an MSLA license. By default, the check box is unchecked.
Template Name	To use a new template, enter a unique name for the template. To use an existing template, do the following: **a.** Turn on the **Use existing template** toggle. **b.** Choose an existing template.
Virtual Account	Choose the virtual account from which you wish to assign a license to the device.

License	Choose license to apply to the device. If you have enabled Multiple Entitlements in the **Sync Licenses & Refresh Devices** dialog box, you can assign up to three licenses to the device. **Note** • Select a license that belongs to the Virtual Account you have selected. On Cisco SSM, you can check the licenses that are available in a Virtual Account. • Check the device license applicability matrix in the Cisco DNA Software for SD-WAN and Routing Ordering Guide to ensure that you assign a license that is applicable to the device. Different device models support different throughputs. If you apply an incompatible license, the license may have no effect on device behavior. However, Cisco SD-WAN Manager records the consumption of the license. • When assigning licenses, Cisco SD-WAN Manager shows the throughput entitlement levels as tiers. Select the tier that matches the license you have purchased. If you purchased a license with a throughput expressed as a throughput value, find the tier that corresponds to the throughput that the license provides. For details about the throughput levels of various tiers, see the Cisco DNA Software for SD-WAN and Routing Ordering Guide.
Subscription ID	Choose the subscription ID to be used to track the license consumption. The subscription ID field is displayed only for the following conditions: • if mode is postpaid. • if mode is mixed and MSLA is true and if there are any subscriptions available.

6. Click **Save**.

The license is assigned and you are returned to **License Management** > **Device** tab. In the table listing the devices, entries are made in the following columns in accordance with the license assignment:

- Template Name: name of the template used to assign the license
- Virtual Account: name of Virtual Account to which license belongs
- MSLA:
  - True for an MSLA license
  - False for an a la carte or EA license
- License Status: subscribed
- License Type: prepaid, postpaid, or mixed based on the types of licenses assigned to the device.

Note

Starting with Cisco Catalyst SD-WAN Manager Release 20.13.1, **Mixed** mode is not supported.

- Subscription ID: The subscription ID used for billing purposes in case of a postpaid license. For a prepaid license, this column has a blank entry.

Release a License from a Device

Minimum supported releases: Cisco IOS XE Catalyst SD-WAN Release 17.14.1a, Cisco Catalyst SD-WAN Manager Release 20.14.1

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Devices**.

   A table lists devices and their licenses.
3. Click **…** adjacent to a device and select **Release Licenses**.

   In releases earlier than 20.15: Check the check box adjacent to a device and click **Release Licenses**.
4. In the pop-up window, select **Proceed** to remove the license from the device.

   The **Compliance Status** column shows **Out of compliance**, and the **License Type** column shows **—**.

   In its next synchronization with Cisco SSM, Cisco SD-WAN Manager reports that the license is no longer assigned.

Refer to Information About Releasing a License from a Device, on page 8 for information about the synchronization interval.

View Devices Associated with a License Template

Minimum supported release: Cisco Catalyst SD-WAN Manager Release 20.13.1

Before You Begin

Note

From Cisco Catalyst SD-WAN Manager Release 20.14.1, license templates are no longer used, and this procedure is no longer applicable. For information about assigning licenses, see Assign Licenses to Devices, Cisco Catalyst SD-WAN Manager Release 20.14.1 and Later, on page 20.

View Devices Associated with a License Template

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **License Template**.
3. Adjacent to the license template, click **…** in the **Action** column, and choose **View Devices**.

Delete a License Template

Before You Begin

Note

From Cisco Catalyst SD-WAN Manager Release 20.14.1, license templates are no longer used, and this procedure is no longer applicable. For information about assigning licenses, see Assign Licenses to Devices, Cisco Catalyst SD-WAN Manager Release 20.14.1 and Later, on page 20.

Ensure that no devices are associated with the license template that you want to delete.

Delete a License Template

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **License Template**.
3. Adjacent to the license template you want to delete, click **…** in the **Action** column, and choose **Delete Template**.

License Management Offline Mode

Enable Offline Mode

Before You Begin

Note

Changing the mode from online to offline, or from offline to online causes Cisco SD-WAN Manager to permanently clear any license information that it is currently storing.

Enable Offline Mode, Cisco vManage Release 20.9.1 and Later

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **Settings**.
2. Click**License Reporting** and select the **Offline** option.
3. Click **Save**.

Enable Offline Mode, Before Cisco vManage Release 20.9.1

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Overview**.
3. Click **Sync Licenses & Refresh Devices**.
4. Click the **Offline** option.

5. (Optional) Click **Advanced** and select license types or configure multiple entitlement. For information about these options, see Fetch and Synchronize Licenses.
6. Click **Sync**.

Note

If you are configuring offline mode for the first time, we recommend uploading a license summary file. See Generate a Cisco SSM License Summary File and Upload It into Cisco Catalyst SD-WAN Manager.

Generate a Cisco SSM License Summary File and Upload It into Cisco Catalyst SD-WAN Manager

Generating a license summary file in Cisco SSM and uploading the file to Cisco SD-WAN Manager brings all of the license information from your Cisco smart account into Cisco SD-WAN Manager.

Note

Generating a license summary file in the Cisco SSM portal is outside the scope of Cisco Catalyst SD-WAN documentation and is subject to change.

1. In Cisco Software Central, navigate to **Manage Licenses**, then navigate to **Reports**.
2. Locate the option for downloading a synchronization file for device controllers. Specify Cisco SD-WAN Manager as the controller type, and include all virtual accounts.
3. Download the license summary file, which is in tar.gz format.
4. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
5. Click **Overview**.
6. Click **Sync Licenses & Refresh Devices**.
7. Click the **Offline** option.
8. In the **Attach License File** area, click the option to upload a file. Browse to the license summary file and upload it.
9. Click **Sync**.

Generate a Usage Report File in Cisco Catalyst SD-WAN Manager and Synchronize with Cisco SSM

When managing licenses with Cisco SD-WAN Manager in the offline mode, use manually generated files to enable Cisco SD-WAN Manager to provide information about license assignment to Cisco SSM.

To generate a usage report file in Cisco SD-WAN Manager, upload it to Cisco SSM, receive an acknowledgement file from Cisco SSM, and upload the acknowledgement file to Cisco SD-WAN Manager, perform the following steps.

1. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.
2. Click **Reporting**.
3. In the table, in the row with the Cisco Smart Account, click **…** and choose **Generate Report** to generate the usage report file.

When you generate a report, the Cisco Catalyst SD-WAN Controller starts a 48-hour timer. If you do not upload an acknowledgement file from Cisco SSM within that time, an alert appears in the **License Management Overview** dashboard.

4. In Cisco SSM, upload the usage report file.

Note

The details of procedures in the Cisco SSM portal are outside the scope of this documentation and subject to change.

   a. In Cisco Software Central, navigate to **Manage Licenses**.

   b. Navigate to **Reports**.

   c. Navigate to **Upload Usage Data** > **Select and Upload File** or the equivalent, and upload the report file generated by Cisco SD-WAN Manager.

   d. If prompted to select a virtual account, select the desired virtual account.

Note

In a scenario where you have not yet generated a license summary in Cisco SSM and uploaded it to Cisco SD-WAN Manager, Cisco SSM prompts you to select a virtual account. After you have generated a license summary in Cisco SSM and uploaded it to Cisco SD-WAN Manager, Cisco SD-WAN Manager has the virtual account information that it needs to associate licenses with the correct virtual account.

For information about the scenario of assigning licenses to devices before providing Smart Account details to Cisco SD-WAN Manager, see Information About Offline Mode

.

   Cisco SSM generates an acknowledgement file.

   e. When Cisco SSM finishes generating an acknowledgement file, click **Download** or the equivalent to download the file.

5. From the Cisco SD-WAN Manager menu, choose **Administration** > **License Management**.

6. Click **Reporting**.

7. In the table, in the row with the Cisco Smart Account, click **…** and choose **Upload Ack** to upload the acknowledgement file from Cisco SSM.

Related Information

Table 2: General Information

Topic	Document Title
Monitor license usage, view device license status	Monitoring License Usage in Cisco Catalyst SD-WAN

Table 3: Troubleshooting

Topic	Document Title
Troubleshooting Smart License Using Policy	Troubleshooting Smart License Using Policy in Cisco Catalyst SD-WAN
Troubleshooting HSEC licenses	Troubleshooting HSEC Licenses in Cisco Catalyst SD-WAN