Cisco Container Platform

Cisco Container Platform is a turnkey, production grade, extensible platform to deploy and manage multiple Kubernetes clusters. It runs on 100% upstream Kubernetes. Cisco Container Platform offers seamless container networking, enterprise-grade persistent storage, built-in production-grade security, integrated logging, monitoring and load balancing.

Cisco Container Platform provides authentication and authorization, security, high availability, networking, load balancing, and operational capabilities to effectively operate and manage Kubernetes clusters. Cisco Container Platform also provides a validated configuration of Kubernetes and can integrate with underlying infrastructure components such as Cisco HyperFlex and Cisco ACI. The infrastructure provider for Cisco Container Platform is Hyperflex.

Using the Cisco Container Platform web interface, you can create Kubernetes clusters on which you can deploy containerized applications. The clusters are created on the infrastructure provider platform.

The two user personas in Cisco Container Platform are as follows:

- The **Administrator** persona, which is associated with the **Administrator** role.

- The **User** persona, which is associated with the **User** role.

This chapter contains the following topics:

Administrator Workflow

The following table lists the workflow for Cisco Container Platform administrators.

Task	Related Section
Access the Cisco Container Platform web interface with *Administrator* credentials.	Accessing Cisco Container Platform Web Interface, on page 3
Set up the Cisco Container Platform infrastructure configuration.	Setting Up Cisco Container Platform, on page 3

Task	Related Section
Configure Cisco Smart Software Licensing for your Cisco Container Platform instance.	Configuring Cisco Smart Software Licensing, on page 4
Manage the Cisco Container Platform infrastructure configurations using which clusters are created.	Managing Cisco Container Platform Infrastructure Configuration
Create Kubernetes clusters.	Creating Kubernetes Clusters on vSphere On-prem Clusters Creating AWS EKS Clusters
Add users, assign appropriate roles, and associate the new users to the Kubernetes clusters that you have created.	Managing Users and RBAC
Monitor Kubernetes clusters.	Monitoring Health of Cluster Deployments Monitoring Logs from Cluster Deployments
Manage Kubernetes cluster using the Kubernetes Dashboard.	Managing Kubernetes Clusters
Manage the lifecycle of Kubernetes clusters by scaling or upgrading the clusters.	Scaling vSphere Clusters Upgrading vSphere Clusters Scaling AWS EKS Clusters

User Workflow

The following table lists the workflow for developers assigned with the *User* role.

Task	Related Section
Access the Cisco Container Platform web interface with user credentials.	Accessing Cisco Container Platform Web Interface, on page 3
Monitor Kubernetes clusters that are assigned to the user.	Monitoring Health of Cluster Deployments Monitoring Logs from Cluster Deployments
Manage the assigned Kubernetes clusters using the Kubernetes Dashboard or CLI.	Managing Kubernetes Clusters
Deploy applications on the assigned Kubernetes clusters.	Deploying Applications on Kubernetes Clusters

Accessing Cisco Container Platform Web Interface

Before you begin

Ensure that you have configured the prerequisites for integrating ACI with Cisco Container Platform.

For more information, refer to the following documents:

- *ACI Integration Requirements* section of the *Cisco Container Platform Installation Guide*

- Planning and Prerequisites section of the Cisco ACI and Kubernetes Integration page

Ensure that you have powered on the installer VM on vCenter. The URL of the installer appears on the vCenter **Web console**.

Step 1   Obtain the URL to access the Cisco Container Platform web interface from the vCenter **Web console**.

Step 2   Access the URL using your web browser.

```
https://<Cisco Container Platform IP Address>:32443
```

Note   We recommend that you use the Chrome, Safari, or Firefox browser to access the URL.

Step 3   Log in to the web interface as an *admin* user using the passphrase given during the Cisco Container Platform installation.

Setting Up Cisco Container Platform

Note   This topic is applicable only for an ACI environment. In a non-ACI environment, the IP address range of the default VIP pool must be expanded to include the additional VIPs for tenant clusters. For more information, see Managing Networks.

When you log in to Cisco Container Platform for the first time, you need to configure the Cisco Container Platform initial setup using the **Cisco Container Platform Setup** wizard.

Step 1   On the **Welcome** page, click **START THE SETUP**.

Step 2   In the **ACI Credentials** screen, specify information such as IP address, username, and passphrase of the APIC instance, click **CONNECT**, and then click **NEXT**.

Step 3   In the **ACI Configuration** screen, perform these steps:

a)   In the **NAMESERVERS** field, enter the IP address of all the DNS servers that the ACI fabric can access.

b)   From the **VMM DOMAIN** drop-down list, choose the Virtual Machine Manager Domain (VMMD) that you want to use.

c)   In the **INFRASTRUCTURE VLAN ID** field, enter the VLAN number for layer 2 networking.

d)   From the **VRF** drop-down list, choose the Virtual Routing and Forwarding (VRF) IP address.

e)   From the **L3OUT POLICY NAME** drop-down list, choose the ACI object for allowing external internet connectivity.

f) From the **L3OUT NETWORK NAME** drop-down list, choose the external network that is reachable through the L3OUT object.

g) From the **AAEP NAME** drop-down list, choose an Attachable Access Entity Profile (AAEP) name to associate the VMM domain with an AAEP.

h) In the **STARTING SUBNET FOR PODS** field, enter the starting IP address for the IP pool that is used to allocate IP addresses to the pods.

i) In the **STARTING SUBNET FOR SERVICE** field, enter the starting IP address for the IP pool that is used to allocate IP addresses to the service VLAN.

j) In the **CONTROL PLANE CONTRACT NAME** field, enter the name of the contract that is provided by the Control Plane endpoint group to allow traffic from the Control Plane cluster to the tenant cluster.

k) In the **NODE VLAN START ID** field, enter the starting VLAN ID that is used to allocate VLAN to the node.

l) In the **NODE VLAN END ID** field, enter the ending VLAN ID that is used to allocate VLAN to the node.

m) In the **OPFLEX MULTICAST RANGE** field, enter a range for the Opflex multicast.

n) Click **CONNECT**.

Step 4   In the **Summary** screen, verify the configuration, and then click **FINISH**.
For more information on adding, modifying, or deleting an ACI profile, see Managing ACI Profile.

Configuring Cisco Smart Software Licensing

You need to configure Cisco Smart Software Licensing to easily procure, deploy, and manage licenses for your Cisco Container Platform instance. The number of licenses required depends on the number of VMs necessary for your deployment scenario.

A Cisco Container Platform instance is available for a 90-day evaluation period after which, you need to register with Cisco Smart Software Manager (Cisco SSM). Cisco SSM enables you to manage your Cisco Smart Software Licenses from one centralized website. With Cisco SSM, you can organize and view your licenses in groups called virtual accounts. You can also use Cisco SSM to transfer the licenses between virtual accounts as needed.

You can access Cisco SSM from the Cisco Software Central homepage at software.cisco.com, under the **Smart Licensing** area.

If you do not want to manage licenses using Cisco SSM, either for policy reasons or network availability reasons, you can choose to install Cisco SSM satellite at your premises. Cisco Container Platform registers and reports license consumption to the Cisco SSM satellite as it does to Cisco SSM.

Note   Ensure that you use Cisco SSM Satellite version 5.0 or later. For more information on installing and configuring Cisco SSM satellite, refer to http://www.cisco.com/go/smartsatellite.

License Usage and Compliance

Once you register Cisco Container Platform with Cisco SSM, you will receive the **Cisco Container Platform License with Support** license.

Cisco SSM or Cisco SSM satellite totals the license requirements for all your Cisco Container Platform instances and compares the total license usage to the number of licenses purchased, on a daily basis. After the data synchronization, your Cisco Container Platform instance displays one of the following status indicators:

- **Authorized**, when the number of licenses purchased is sufficient

- **Out of Compliance**, when the number of licenses is insufficient

- **Authorization Expired**, when the product has not communicated with Cisco SSM or Cisco SSM satellite for a period of 90 days.

Workflow of Cisco Smart Software Licensing

The following table describes the workflow of Cisco Smart Software Licensing.

Task	Related Section
Generate a product instance registration token in your virtual account	Generating Registration Token, on page 5
Configure the transport settings using which Cisco Container Platform connects to Cisco SSM or Cisco SSM satellite	Configuring Transport Settings, on page 6
Register the Cisco Container Platform instance with Cisco SSM or Cisco SSM satellite	Registering Cisco Container Platform License, on page 7
Manage licenses	Renewing Authorization, on page 7 Reregistering Cisco Container Platform License, on page 8 Deregistering Registration, on page 8

Generating Registration Token

You need to generate a registration token from Cisco SSM or Cisco SSM satellite to register the Cisco Container Platform instance.

Before you begin

Ensure that you have set up a Smart Account and a Virtual account on Cisco SSM or Cisco SSM satellite.

Step 1 Log in to your Smart Account on Cisco SSM or Cisco SSM satellite.

Step 2 Navigate to the Virtual account using which you want to register the Cisco Container Platform instance.

Step 3 If you want to enable higher levels of encryption for the products registered using the registration token, check the **Allow export-controlled functionality on the products registered with this token** check box.

Note This option is available only if you are compliant with the Export-Controlled functionality.

Step 4 Click **New Token** to generate a registration token.

Step 5 Copy and save the token for using it when you register your Cisco Container Platform instance.

For more information on registering your Cisco Container Platform instance, see Registering Cisco Container Platform License, on page 7.

Configuring Transport Settings

By default, Cisco Container Platform directly communicates with the Cisco SSM. You can modify the mode of communication by configuring the transport settings.

Before you begin

Ensure that you have obtained the registration token for the Cisco Container Platform instance.

Step 1 Log in to the Cisco Container Platform web interface.

Step 2 From the left pane, click **Licensing**.

If you are running Cisco Container Platform in the Evaluation mode, a license notification is displayed on the **Smart Software Licensing** pane.

Step 3 If a license notification is displayed, click the **edit the Smart Call Home Transport Settings** link.

Alternatively, click the **Licensing Status** tab, and then click the **View/Edit** link that appears under **Transport Settings**.

Step 4 In the **Transport Settings** dialog box, perform one of these steps:

- To configure Cisco Container Platform to send the license usage information to Cisco SSM using the Internet:

  1. Click the **DIRECT** radio button.

  2. Configure a DNS on Cisco Container Platform to resolve *tools.cisco.com*.

  This is the default setting.

- To configure Cisco Container Platform to send the license usage information to Cisco SSM using the Cisco SSM satellite:

  1. Click the **TRANSPORT GATEWAY** radio button.

  2. Enter the URL of the Cisco SSM satellite.

- To configure Cisco Container Platform to send the license usage information to Cisco SSM using a proxy server. For example, an off-the-shelf proxy, such as Cisco Transport Gateway or Apache:

  1. Click the **HTTP/HTTPS PROXY** radio button.

  2. Enter the IP address and port number of the proxy server.

Step 5 Click **SAVE**.

Registering Cisco Container Platform License

You need to register your Cisco Container Platform instance with Cisco SSM or Cisco SSM satellite before the 90-day evaluation period expires.

Before you begin

Ensure that you have configured the transport settings.

Step 1   Log in to the Cisco Container Platform web interface.

Step 2   From the left pane, click **Licensing**.

Step 3   In the license notification, click **Register**.
The **Smart Software Licensing Product Registration** dialog box appears.

Step 4   In the **Product Instance Registration Token** field, copy and paste the registration token that you generated using the Cisco SSM or Cisco SSM satellite.

For more information on generating a registration token, see .

Step 5   Click **REGISTER** to complete the registration process.
Cisco Container Platform sends a request to Cisco SSM or Cisco SSM satellite to check the registration status and Cisco SSM or Cisco SSM satellite reports back the status to Cisco Container Platform, on a daily basis.

If registering the token fails, you can reregister the Cisco Container Platform instance using a new token.

For more information on reregistering Cisco Container Platform, see .

Renewing Authorization

By default, the authorization is automatically renewed every 30 days. However, Cisco Container Platform allows a user to manually initiate the authorization renew in case the automatic renewal process fails. The authorization expires if Cisco Container Platform is not connected to Cisco SSM or Cisco SSM satellite for 90 days and the licenses consumed by Cisco Container Platform are reclaimed and put back to the license pool.

Before you begin

Ensure that the Cisco Container Platform instance is registered with Cisco SSM or Cisco SSM satellite.

Step 1   Log in to the Cisco Container Platform web interface.

Step 2   From the left pane, click **Licensing**.

Step 3   From the **Actions** drop-down list, choose **Renew Authorization Now**.

Step 4   Click **OK** in the **Renew Authorization** dialog box.
Cisco Container Platform synchronizes with Cisco SSM or Cisco SSM satellite to check the license authorization status and Cisco SSM or Cisco SSM satellite reports back the status to Cisco Container Platform, on a daily basis.

Reregistering Cisco Container Platform License

You can reregister Cisco Container Platform with Cisco SSM or Cisco SSM satellite by deregistering it and registering it again, or by using a register force option.

Before you begin

Ensure that you have obtained a new registration token from Cisco SSM or Cisco SSM satellite.

Step 1   Log in to the Cisco Container Platform web interface.

Step 2   From the left pane, click **Licensing**.

Step 3   From the **Actions** drop-down list, choose **Reregister**.

Step 4   In the **Product Instance Registration Token** field of the **Smart Software Licensing Product Reregistration** dialog box, enter the registration token that you generated using Cisco SSM or Cisco SSM satellite.

For more information on generating a registration token, see .

Step 5   Click **REGISTER** to complete the registration process.
Cisco Container Platform sends a request to Cisco SSM or Cisco SSM satellite to check the registration status and Cisco SSM or Cisco SSM satellite reports back the status to Cisco Container Platform, on a daily basis.

Deregistering Registration

You can deregister the Cisco Container Platform instance from Cisco SSM or Cisco SSM satellite to release all the licenses from the current Virtual account and the licenses are available for use by other products in the virtual account. Deregistering disconnects Cisco Container Platform from Cisco SSM or Cisco SSM satellite.

Before you begin

Ensure that the Cisco Container Platform instance is registered with Cisco SSM or Cisco SSM satellite.

Step 1   Log in to the Cisco Container Platform web interface.

Step 2   From the left pane, click **Licensing**.

Step 3   From the **Actions** drop-down list, choose **Deregister**.

Step 4   Click **DEREGISTER** in the confirmation dialog box.
Cisco Container Platform sends a request to Cisco SSM or Cisco SSM satellite to check the deregistration status and Cisco SSM or Cisco SSM satellite reports back the status to Cisco Container Platform, on a daily basis.