



## Administering vSphere On-prem Clusters

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You can create, modify, or delete vSphere on-prem Kubernetes clusters using the Cisco Container Platform web interface.

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## Creating Kubernetes Clusters on vSphere On-prem Clusters

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- Step 1** From the left pane, click **Clusters**, and then click the **vSphere** tab.
- Step 2** Click **NEW CLUSTER**.
- Step 3** In the **Basic Information** screen, specify the following information:
- a) From the **INFRASTRUCTURE PROVIDER** drop-down list, choose the provider related to your Kubernetes cluster. For more information, see [Adding vSphere Provider Profile](#).
  - b) In the **KUBERNETES CLUSTER NAME** field, enter a name for your Kubernetes tenant cluster.
  - c) In the **VERSION** drop-down list, choose the version of Kubernetes that you want to use for creating the cluster.
  - d) In the **CNI** field, enter the Container Network Interface (CNI) that you want to use.
  - e) In the **DESCRIPTION** field, add a description.
  - f) If you are using ACI, specify the ACI profile, see [Adding ACI Profile](#).
  - g) Click **NEXT**.
- Step 4** In the **Provider Settings** screen, specify the data center, cluster, resource pool, storage class, network, HyperFlex local network, datastore, and VM template that you want to use, and then click **NEXT**.

**Note**

- Ensure that DRS and HA are enabled on the cluster that you choose in this step. For more information on enabling DRS and HA on clusters, refer to the *Cisco Container Platform Installation Guide*.
- Ensure that the datastore that you choose in this step is accessible to the hosts in the cluster.
- For Network, select a subnet with an adequate number of free IP addresses. For more information, see [Managing Networks](#). The selected network must have access to vCenter.
- The default **Storage Class** is **VSPHERE**. If the selected vCenter cluster is running on HyperFlex 3.5+ that supports Dynamic Volume Provisioning, you need to choose the **Storage Class** as **HYPERFLEX**.
- If you have chosen **HYPERFLEX** as the storage class, ensure that the selected network has access to the HypexFlex Connect server.

**Step 5** In the **Node Configuration** screen, specify the following information, and then click **NEXT**:

- The number of worker and master nodes, and their VCPU and memory configurations.
- If you have GPUs in your HyperFlex cluster, you can select the type of GPU you want to use for cluster creation. This is an optional field.
- The SSH public key that you want to use for creating the cluster. Ensure that you use the Ed25519 or ECDSA format for the public key.

**Note:** As RSA and DSA are less secure formats, Cisco prevents the use of these formats.

- The VM username that you want to use as the login for the VM.
  - The subnet that you want to use for this cluster.
  - The number of load balancer IP addresses for this cluster.
- For more information, see [Load Balancer Services](#).
- The IP addresses in CIDR notation that you want to use as the pod subnet.
  - Whether or not you want to enable Istio
  - A root CA certificate to allow tenant clusters to securely connect to additional services

**Step 6** In the **Harbor Registry** screen, specify if you want to enable Harbor. If no, click **NEXT**. If yes, you must specify the following information, and then click **NEXT**:

- a) Ensure the switch to enable Harbor is activated
- b) A password for Harbor server admin
- c) The immutable registry size in gigabits

**Step 7** In the **Summary** screen, verify the configuration, and then click **FINISH**.

The cluster deployment takes few minutes to complete. The newly created cluster is displayed on the **Clusters** screen.

For more information on deploying applications on clusters, see [Deploying Applications on Kubernetes Clusters](#).

# Upgrading vSphere Clusters

## Before you begin

Ensure that you have imported the latest tenant cluster OVA to the vSphere environment.

For more information on importing the tenant cluster OVA, refer to the *Cisco Container Platform Installation Guide*.

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- Step 1** From the left pane, click **Clusters**, and then click the **vSphere** tab.
- Step 2** From the drop-down list displayed under the **ACTIONS** column, choose **Upgrade**.
- Step 3** In the **Upgrade Cluster** dialog box, choose a Kubernetes version and a new template for the VM, and then click **Submit**. It may take a few minutes for the Kubernetes cluster upgrade to complete.
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# Scaling vSphere Clusters

You can scale clusters by adding or removing worker nodes to them based on the demands of the workloads you want to run. You can add worker nodes in a default or custom node pool.

For more information on adding worker node pools, see [Configuring Node Pools, on page 3](#).

# Configuring Node Pools

Node pools allow the creation of worker nodes with varying configurations. Nodes belonging to a single node pool have identical characteristics.

In the Cisco Container Platform vSphere implementation, a node pool has the following properties:

- vcpus
- memory
- template
- [labels](#)
- [taints](#)

Labels and taints are optional parameters. All nodes that belong to a nodepool are tagged with labels and they are tainted. Taints are key-value pairs, which are associated with an *effect*.

The following table describes the available *effects*.

Effect	Description
NoSchedule	Ensures that the pods that do not contain this taint are not scheduled on the node.

Effect	Description
PreferNoSchedule	Ensures that Kubernetes avoids scheduling pods that do not contain this taint on the node.
NoExecute	Ensures that a pod is removed from the node if it is already running on the node, and is not scheduled on the node if it is not yet running on the node.

During cluster creation, each cluster is assigned a default node pool. Cisco Container Platform supports the ability for different master and worker configurations. Upon cluster creation, the master node is created in the default-master-pool and the worker nodes are created in the default-pool.

Cisco Container Platform supports the ability to create multiple node pools and customize each pool characteristics such as vCCPUs, memory, labels, and taints.

## Adding Node Pools

Cisco Container Platform allows you to add custom node pools to an existing cluster.

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- Step 1** Click the cluster for which you want to add a node pool.  
The **Cluster Details** page displays the node pools of the cluster that you have selected.
  - Step 2** From the right pane, click **ADD NODE POOL**.  
The **Add Node Pool** page appears.
  - Step 3** Under **POOL NAME**, enter a name for the node pool.
  - Step 4** Ensure that an adequate number of free IP addresses is available in the subnet that you have selected during tenant cluster creation. For more information, see [Managing Networks](#).
  - Step 5** Under **Kubernetes Labels**, enter the key-value pair of the label.  
You can click the **Delete** icon to delete a label and the **+LABEL** icon to add a label.
  - Step 6** Under **Kubernetes Taints**, enter the key-value pair and the effect you want to set for the label.  
You can click the **Delete** icon to delete a taint and the **+TAINT** icon to add a taint.
  - Step 7** Click **ADD**.  
The **Cluster Details** page displays the node pools. You can point the mouse over the **Labels** and **Taints** to view a summary of the labels and taints that are assigned to a pool.
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## Modifying Node Pools

Cisco Container Platform allows you to modify the worker node pools.

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- Step 1** Click the cluster that contains the node pool that you want to modify.  
The **Cluster Details** dialog box appears displaying the node pools of the cluster that you have chosen.
  - Step 2** From the drop-down list next to the name of the node pool, click **Edit**.  
The **Update Node Pool** page appears.

- Step 3** Ensure that an adequate number of free IP addresses is available in the subnet that you have selected during tenant cluster creation. For more information, see [Managing Networks](#).
- Step 4** Under **Kubernetes Labels**, modify the key-value pair of the label.
- Step 5** Under **Kubernetes Taints**, modify the key-value pair and the effect you want to set for the label.
- Step 6** Click **UPDATE**.
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## Deleting Node Pools

Cisco Container Platform allows you to delete the worker node pools. You cannot delete the default master pool.

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- Step 1** Click the cluster that contains the node pool that you want to delete.  
The **Cluster Details** page displays the node pools of the cluster that you have chosen.
- Step 2** From the drop-down list next to the worker pool that you want to delete, choose **Delete**.  
The worker pool is deleted from the **Cluster Details** page.
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## Deleting vSphere Clusters

### Before you begin

Ensure that the cluster you want to delete is not currently in use, as deleting a cluster removes the containers and data associated with it.

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- Step 1** From the left pane, click **Clusters**, and then click the **vSphere** tab.
- Step 2** From the drop-down list displayed under the **ACTIONS** column, choose **Delete** for the cluster that you want to delete.
- Step 3** Click **DELETE** in the confirmation dialog box.
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