

# **Installing Cisco Container Platform**

Installing Cisco Container Platform is a three-step process:

• Importing Cisco Container Platform Tenant Base VM

The Cisco Container Platform tenant base VM contains the container image and the files that are necessary to create the tenant Kubernetes clusters that are used for configuring monitoring, logging, container network interfaces (CNI), and persistent volumes.

• Deploying Installer VM, on page 3

The Installer VM contains the VM image and the files for installing other components such as Kubernetes and the Cisco Container Platform application.

• Deploying Cisco Container Platform, on page 6

The Cisco Container Platform Control Plane is set up using an installer UI. After the installer VM is switched on, the URL of the installer appears on the vCenter **Web console**.

- Importing Cisco Container Platform Tenant Base VM, on page 1
- Deploying Installer VM, on page 3
- Deploying Cisco Container Platform, on page 6

# Importing Cisco Container Platform Tenant Base VM

## Before you begin

- Ensure that you have configured the storage and networking requirements. For more information, see HyperFlex Integration Requirements and Network Requirements.
- Ensure that vSphere has an Enterprise Plus license, which supports DRS and vSphere HA.
- Recommend to use the vSphere Web Client (Flash) version of the vSphere Web Client.

**Step 1** Log in to the VMware vSphere Web Client as an administrator.

Step 2 In the Navigation pane, right-click the cluster on which you want to deploy Cisco Container Platform, and then choose Deploy OVF Template.

The **Deploy OVF Template** wizard appears.

- **Step 3** In the **Select template** screen, perform these steps:
  - a) Click the URL radio button, and enter the URL of the Cisco Container Platform Tenant OVA. Alternatively, click the Local file radio button, and browse to the location where the Cisco Container Platform tenant OVA is saved on your computer.
    - **Note** The format of the Tenant OVA filename is as follows:

ccp-tenant-image-x.y.z-ubuntuXX-a.b.c.ova

Where x.y.z corresponds to the version of Kubernetes and a.b.c corresponds to the version of Cisco Container Platform.

The Version Mapping Table provides the Cisco Container Platform version, Kubernetes version and image names mapping for each release.

- b) Click Next.
- **Step 4** In the **Select name and location** screen, perform these steps:
  - a) In the Name field, enter a name for the Cisco Container Platform tenant base VM.
    - **Note** You need to note down the Cisco Container Platform tenant base VM name as you will need to specify it while creating a cluster.
  - b) In the **Browse** tab, choose the data center where you want to deploy Cisco Container Platform.
  - c) Click Next.
- **Step 5** In the **Select a resource** screen, choose a cluster where you want to run the Cisco Container Platform tenant base VM, and then click **Next**.
- **Step 6** In the **Review details** screen, verify the Cisco Container Platform tenant base VM details, and then click **Next**. The **Select storage** screen appears.

### Figure 1: Select Storage Screen

Peploy OVF Template					(
<ul> <li>1 Select template</li> <li>2 Select name and location</li> </ul>	Select storage Select location to store the	e files for the deployed template.			
<ul> <li>3 Select a resource</li> <li>4 Review details</li> </ul>	Select virtual disk format: VM storage policy:	Thin provision	•		
5 Select storage 6 Select networks		Storage DRS clusters			
7 Customize template 8 Ready to complete	Filter Datastores Datastore	e Clusters		1 (q. Fil	ter 👻
	Name	1 A Status	VM storage policy	Capacity	Free
	🔘 🚮 Netapp-1	Alert		972.8 MB	6.83 MB
	● ■ netapp-2	Normal		1.9 TB	1.34 TB
	O E vc1-1-local	Normal	VM Encryption P	1.74 TB	1.55 TB
	O 🗐 vc1-2-local	<ul> <li>Normal</li> </ul>	VM Encryption P	1.74 TB	1.45 TB
	Vol-3-local	<ul> <li>Normal</li> </ul>	VM Encryption P	884.75 GB	471.22 GB
		-	VM Encryption P	439.5 GB	412.81 GB
	🔘 🗐 vc1-4-local	Normal	via Encrypton P		
	<ul> <li>vc1-4-local</li> <li>vc1-5-local</li> </ul>	<ul> <li>Normal</li> <li>Normal</li> </ul>	VM Encryption P	439.5 GB	425.43 GB
					425.43 GB 255.21 GB

#### Step 7

In the **Select storage** screen, perform these steps:

- a) From the Select virtual disk format drop-down list, choose Thin Provision to allocate storage on demand.
- b) In the **Filters** tab, choose a destination datastore for the Cisco Container Platform tenant base VM.

### c) Click Next.

The Select networks screen appears.

#### Figure 2: Select Networks Screen

Deploy OVF Template		(?)
<ul> <li>1 Select template</li> <li>2 Select name and location</li> </ul>	Select networks Select a destination network for each source network.	
<ul> <li>3 Select a resource</li> <li>4 Review details</li> <li>5 Select storage</li> <li>6 Select tetworks</li> <li>7 Customize template</li> <li>8 Ready to complete</li> </ul>	Sturce Network	Desfination Network  Browse
	IP Allocation Settings IP protocol: IPv4	IP allocation: Static - Manual 🗿
		Back Next Finish Cancel

Step 8

In the **Select networks** screen, perform these steps:

- a) From the **Destination Network** column, choose a network for each source network that is available in the Cisco Container Platform tenant base VM.
- b) Click Next.

**Step 9** In the Customize template screen, click Next.

**Step 10** In the **Ready to complete** screen, verify the Cisco Container Platform tenant base VM settings, and then click **Finish**. The Cisco Container Platform tenant base VM import takes few minutes to complete.

**Note** You can leave the tenant base VM powered off and continue to Deploying Installer VM.

# **Deploying Installer VM**

#### Before you begin



Note

This deployment is for new installations of Cisco Container Platform. For upgrades, see Upgrading Cisco Container Platform.

Ensure that you have imported the latest tenant image version during the Importing Cisco Container Platform Tenant Base VM.

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Step 1	Log in to th	ne VMware vSphere Web Client as an administrator.			
Step 2	Deploy OV	gation pane, right-click the cluster on which you want to deploy Cisco Container Platform, and then choose //F Template. y OVF Template wizard appears.			
Step 3	In the Sele	ct template screen, perform these steps:			
	a) Click t	he URL radio button, and enter the URL of the Installer OVA.			
		atively, click the <b>Local file</b> radio button, and browse to the location where the Installer OVA is saved on omputer.			
	Note	The format of the Installer OVA filename is as follows:			
		kcp-vm-x.y.z.ova			
		Where x, y, z corresponds to the major, minor, and patch release of Cisco Container Platform.			
	b) Click N	Next.			
Step 4	In the Select name and location screen, perform these steps:				
	a) In the <b>Name</b> field, enter a name for the installer VM.				
	<ul><li>b) In the I</li><li>c) Click N</li></ul>	Browse tab, choose the data center where you want to deploy Cisco Container Platform. Next.			
Step 5	In the Sele	ct a resource screen, choose the cluster where you want to run the installer VM, and then click Next.			
Step 6	In the Revi	ew details screen, verify the template details, and then click Next.			
Step 7	In the Sele	ct storage screen, perform these steps:			
	a) From t	he Select virtual disk format drop-down list, choose Thin Provision to allocate storage on demand.			
	,	Filters tab, choose a destination datastore to store the installer VM.			
	c) Click N				
Step 8		ct networks screen, perform these steps:			
	a) From the VM.	he <b>Destination Network</b> column, choose a network for each source network that is available in the installe			
	Note	The selected network must have access to vCenter and the tenant VM networks.			
	b) Click N	Jext.			
	The Custo	mize template screen appears			

The Customize template screen appears.

#### Figure 3: Customize Template Screen

🍞 Deploy OVF Template			?₩
<ul> <li>✓ 1 Select template</li> <li>✓ 2 Select name and location</li> </ul>	Customize template Customize the deployment proper	rties of this software solution.	
✓ 3 Select a resource	All properties have valid value	ss Show next Co	llapse all
✓ 4 Review details	▼ 1. CCP	1 setting	
<ul> <li>5 Select storage</li> <li>6 Select networks</li> <li>7 Customize template</li> </ul>	01. SSH public key for installer node access	SSH public key used to access installer node. Enter the public key to be pasted into Ope authorized_keys file, typically of the format 'ssh-rsa' or 'ecdsa-sha2-nistp256'	nSSH
8 Ready to complete	2. Advanced	4 settings	
		Back Next Finish	Cancel

**Step 9** In the **Customize template** screen, enter the following optional parameters to customize the deployment properties:

a) Expand CCP, in the SSH public key for installer node access field, enter an ssh public key.

You can use this key to ssh to the installer VM.

- Ensure that you enter the public key in a single line.
  - If you do not have an SSH key pair, you can generate it using the ssh-keygen command.
  - 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.

b) Expand Advance and enter the optional fields as necessary.

In the **CIDR for Kubernetes pod network** field, 192.168.0.0/24 is displayed as the default pod network CIDR of the Kubernetes cluster for the installer. If the CIDR IP addresses conflict with the tenant cluster VM network or the vCenter network, you need to set a different value for the CIDR.

This CIDR is the single large CIDR from which smaller CIDRs are automatically allocated to each node for allocating IP addresses to the pods in the Kubernetes cluster. For more information, refer to https://kubernetes.io/docs/setup/scratch/#network-connectivity.

- c) Click Next.
- **Step 10** In the **Ready to complete** screen, verify the installer VM deployment settings, and then click **Finish**.
- **Step 11** Click the **Power on** button to switch on the VM.

#### Figure 4: Switching on Installer VM

		Web console	- Power on			
mware <sup>,</sup> vSphere	Web Cli	ent n≣ Updated at 3:02	PM 👌   Administrator@	VSPHERE.LOCAL - I Hel	9 - I Q Search	
Navigator	x	3 3	Work In Progress			
◆ Back > )	9	G S N C P S D N U Powered Off	Deploy OVF Templat     Deploy OVF Templa	ne ne	Severity Critical Minerica	(6) (5) (4) (3) T × Datastore Host man
Recent Objects	#×	🝸 Recent Tasks				¥ ×
Viewed	reated	B-			Q Filter	-
8		Task Name	Target	Status	Initiator	Queue
88		Check new notifications	0	✓ Completed	VMware vSphere	U
8		Power Off virtual machine	B	✓ Completed	VSPHERE.LOCAL	LV
-		Power On virtual machine	Bo	✓ Completed	System	
8		Initialize powering On	Da	✓ Completed	VSPHERE.LOCAL	LW
13		Deploy OVF template	8	✓ Completed	VSPHERE.LOCAL	LV
HD .	_	Import OV/E nackane	19	Completed	venhere localijāda	mi

Once the installer VM is switched on, the installer UI takes a few minutes to become ready. You can view the status of the Installer UI using the **Web console** of vCenter. When the installer UI is ready, you can access it using the URL from the **Web console**.

You can use the ssh private key to access the Installer, control plane VMs, or the tenant cluster VMs. However, logging into these VMs using a username and password is not supported.

**Caution** After Deploying Cisco Container Platform, do not change the location of the Control Plane VMs by modifying the datacenter or folder location **in vSphere**. Changing these settings will adversely impact the management of clusters.

# **Deploying Cisco Container Platform**

The Cisco Container Platform Control Plane is set up using an installer UI. After the installer VM is switched on, the URL of the installer appears on the vCenter **Web console**.

Step 1Obtain the URL from the vCenter Web console and use a browser to open the installer UI.<br/>The Welcome screen appears.

Figure 5: Welcome Screen

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n.
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# Step 2 Click Install.

The Connect your Cloud screen appears.

Figure 6: Connect your Cloud Screen

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O1     Cor     Cor     O2     Piac     O2     O     O     O     O     O     O     O     O	L Innect your Cloud 2 ccement Properties 3 ster Configuration 4 twork Settings 5 hentication 5 Introl Plane Settings	atform  Connect your Cloud  · vCENTER HOSTNAME OR IP ADDRESS  · port  · vCENTER USERNAME  · vCENTER PASSPHRASE  · vCENTER PASSPHRASE	×
			CONNECT

**Step 3** In the **Connect your Cloud** screen, enter the following information:

- a) In the VCENTER HOSTNAME OR IP ADDRESS field, enter the IP address of the vCenter instance that you want to use.
- b) In the **PORT** field, enter the port number that your vCenter server uses.

**Note** The default port for vCenter is 443.

- c) In the VCENTER USERNAME field, enter the username of the user with administrator access to the vCenter instance.
- d) In the VCENTER PASSPHRASE field, enter the passphrase of the vCenter user.
- e) Click CONNECT.

The Placement Properties screen appears.

Figure 7: Placement Properties Screen

O1     Placement Properties       Connect your Cloud     • vsPHERE DATACENTER       02     • vsPHERE DATACENTER       Placement Properties     • vsPHERE CLUSTER       03     • vsPHERE CLUSTER       04     • txI - • • • vsPHERE DATASTORE       05     • vsPHERE NETWORK       05     • vsPHERE NETWORK       06     1.127       Control Plane Settings     • 1.127       • Aste vri Lindate     • aste vri Lindate       07     • op-tenant-image-1.127.vduutul/B-3.2.1	Connet your Cloud Connet Properties Connet Prope	<sup>III</sup> Install Containe	r Platform	
02       *VSPHERE DATACENTER         Placement Properties       */Mperflex v         03       */VSPHERE CLUSTER         03       */La v         04       */VSPHERE DATASTORE         05       */VSPHERE NETWORK         05       */VSPHERE NETWORK         06       1.127         Control Plane Settings       1.127         07       control reade	02       • VSPHERE DATACENTER         Placement Properties       · Hyperflex		Placement Properties	
03     hu1       Cluster Configuration     *vsPHERE DATASTORE       04     hu1 data       Network Settings     *vsPHERE NATIWORK       05     *vsPHERE NATIWORK       05     *usernetes version       06     1.127       Control Plane Settings     *aset vm Image-1.127.vobuntul 8-3.2.1	03     hu1       Cluster Configuration     •vsPHERE DATASTORE       04     hu1-data       Network Settings     •vsPHERE NATWORK       05     •vsPHERE NETWORK       05     •uthentication       06     1.127       Control Plane Settings     •lase VM IMAGE       07     cop-tenant-image-1127-ubuntul8-32.1	02	Hyperflex	*
04     Inti-data       Network Settings     ·vsphere Network       05     ·vsphere Network       Authentication     ·userNetTes Version       06     1.127       •ontrol Plane Settings     ·sset Vm IMAGE       07     corp-tenart-image-1.127-ubuntul 8-32.1	04     Inti-data       Network Settings     ·vsphere Network       05     ·vsphere Network       Authentication     ·userNetTes Version       06     1.127       •ontrol Plane Settings     ·sset Vm IMAGE       07     corp-tenart-image-1.127-ubuntul 8-32.1		hx1	*
05     Image: Settings       06     1.127       control Plane Settings	05     Image: Settings       06     1.127       control Plane Settings		hx1-data	*
Control Plane Settings *BASE VM IMAGE 07 ccp-tenart-image-1.12.7-ubuntu18-3.2.1	Control Plane Settings *BASE VM IMAGE 07 ccp-tenart-image-1.127-vbuntu18-3.2.1		W,AN 1154-10.1076-22	*
			ccp-tenant-image-1.12.7-ubuntu18-3.2.1	*

**Step 4** In the **Placement Properties** screen, enter the following information:

- a) From the VSPHERE DATACENTER drop-down list, choose the datacenter.
- b) From the VSPHERE CLUSTER drop-down list, choose the cluster.
- c) From the VSPHERE DATASTORE drop-down list, choose the datastore.

Caution Do not use a datastore located in a nested folder or a Storage DRS (SDRS).

- d) From the VSPHERE NETWORK drop-down list, choose the network.
- e) In the **BASE VM IMAGE** field, enter the Cisco Container Platform tenant base VM name from Step 5 of the Importing Cisco Container Platform Tenant Base VM task.

**Caution** Do not select a VM name that is located in nested folder.

f) Click NEXT.

The Cluster Configuration screen appears.

#### Figure 8: Cluster Configuration Screen

ululu cisco	' Install Container I	Platform	×
o o o o o	01 Connect your Cloud 02 Placement Properties 03 Cluster Configuration 04 Network Settings 05 Authentication 06 Control Plane Settings	Platform  Cluster Configuration  • NETWORK PLUGIN FOR TEMANT KUBERNETES CLUSTERS  Calico  • CIOR FOR CONTROLLER KUBERNETES POD NETWORK  • USERNAME FOR NODE ACCESS  • SSH PUBLIC KEY FOR NODE ACCESS	×
	07 Install Status		
		ВАСК	NEXT

**Step 5** In the **Cluster Configuration** screen, enter the following information:

- a) From the **NETWORK PLUGIN FOR TENANT KUBERNETES CLUSTERS** drop-down list, choose one of the following options for network connectivity:
  - ACI-CNI
  - Calico
  - Contiv (Tech Preview)

**Note** For more information on the network plugins, see Container Network Interface Plugins.

- b) In the CIDR FOR CONTROLLER KUBERNETES POD NETWORK field, 192.168.0.0/16 is displayed as the default pod network CIDR of the Kubernetes cluster for the installer. If the CIDR IP addresses conflict with the tenant cluster VM network or the vCenter network, you need to set a different value for the CIDR.
  - **Note** This CIDR is the single large CIDR from which smaller CIDRs are automatically allocated to each node for allocating IP addresses to the pods in the Kubernetes cluster. For more information, refer to https://kubernetes.io/docs/setup/scratch/#network-connectivity.
- c) In the USERNAME FOR NODE ACCESS field, enter the username of the user who can ssh into the Cisco Container Platform Control Plane nodes.
- d) In the SSH PUBLIC KEY FOR NODE ACCESS field, enter an ssh public key.

You can use this key to ssh to the Control Plane nodes.

Note:

- Ensure that you enter the public key in a single line.
- If you do not have an SSH key pair, you can generate it using the ssh-keygen command.

• 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.

## e) Click NEXT.

The Network Settings screen appears.

Figure 9: Network Settings Screen

Cisco Install Containe	r Platform				×
<ul> <li>Install Contained</li> <li>01 Connect your Cloud</li> <li>02 Placement Properties</li> <li>03 Cluster Configuration</li> <li>04 Network Settings</li> <li>05 Authentication</li> <li>06 Control Plane Settings</li> <li>07 Install Status</li> </ul>	Pr Platform  Network Settings  Network NAME  default-network  SUBNET CIDR  GATEWAY IP  Agateway IP will allow a cluster to access other et  NAMESERVERS  Address  NAMESERVER  PDOLS  First IP  PDOL	etworks Last IP	Actions Actions Actions		×
				ВАСК	SAVE

**Step 6** In the Network Settings screen, enter the following information:

**Note** These network settings will be used to configure the Cisco Container Platform web interface.

- a) In the **NETWORK NAME** field, enter the name of the network that you want to use.
- b) In the SUBNET CIDR field, enter a CIDR for your subnet.
- c) In the GATEWAY IP field, enter the gateway IP address that you want to use.
- d) Under **NAMESERVER**, enter the IP address of the necessary DNS nameserver. You can click **+NAMESERVER** to enter IP addresses of additional nameservers.
- e) Under **POOLS**, enter a range for the VIP network pool by specifying the **First IP** and **Last IP** that are within the Subnet CIDR specified above. The VIP network pool range enables us to prevent provisioning of tenant clusters with IP address ranges from overlapping subnets.

The IP address for the Control Plane is also allocated from this network pool range.

You can click **+POOL** to enter multiple pools in the subnet.

Note You must ensure that these IP addresses are not part of a DHCP pool.

f) Click SAVE.

The Authentication screen appears.

#### Figure 10: Authentication Screen

O1       Authentication         O1       Connect your Cloud         O2       Placement Properties         O3       Active Directory         Active Directory       Allow users from Active Directory to login into CCP.         Not Configured       ENABLE	
Cluster Configuration O4 Network Settings	Connect your Cloud O2 Placement Properties O3 Cluster Configuration 04
O5     Authentication     O6     Control Plane Settings     O7     Install Status	Authentication     O6     Control Plane Settings     O7

Step 7 In the Authentication screen, click the Enable button next to the type of authentication that you want to configure.Caution Use of local authentication is not recommended and is considered less secure for production data.

a) If you have enabled **Active Directory**, specify the following information in the **Active Directory** screen:

- 1. Use the toggle button to enable or disable validation of Active Directory settings.
- 2. In the SERVER IP ADDRESS field, enter the IP address of the AD server.
- 3. In the **PORT** field, enter the port number for the AD server.
- 4. To establish a secure connection using SSL/TLS, enable STARTTLS.
- 5. To ensure security of your data, disable SKIP CERTIFICATE VERIFICATION.
  - **Caution** If you enable **SKIP CERTIFICATE VERIFICATION**, TLS will accept any certificate presented by the AD server. In this mode, TLS is susceptible to data loss.
- 6. In the **BASE DN** field, specify the domain name of the AD server.
  - **Note** Base DN is the Distinguished Name for the base entity. All searches for users and groups will be scoped to this distinguished name.
- 7. In the ADMIN GROUP QUERY field, enter the AD group that is associated with the Administrator role.
- 8. In the SERVICE ACCOUNT DN field, enter the service account domain name that is used for accessing the LDAP server.
- 9. In the SERVICE ACCOUNT PASSPHRASE field, enter the passphrase of the AD account.

- 10. Click SAVE.
- b) If you have enabled Local (not recommended), specify the following information in the LOCAL AUTHENTICATION screen:
  - 1. In the LOCAL ADMIN USERNAME field, enter the admin username.
  - 2. In the LOCAL ADMIN PASSPHRASE field, enter a passphrase.
  - 3. In the CONFIRM LOCAL ADMIN PASSPHRASE re-enter the admin passphrase.
  - 4. Click SAVE.

The Control Plane Settings screen appears.

Figure 11: Control Plane Settings Screen

cisco Install Containe	r Platform	×
<ul> <li>O1 Connect your Cloud</li> <li>O2</li> <li>Placement Properties</li> <li>O3 Cluster Configuration</li> <li>O4 Network Settings</li> </ul>	Control Plane Settings	
Control Plane Settings	Advanced Settings (Optional)  NTP SERVERS  CCP HELM CHART REPOSITORY	
07 Install Status	CCP CONTAINER REGISTRY	
		DEPLOY

**Step 8** In the **Control Plane Settings** screen, enter the following information:

- a) In the **CONTROL PLANE NAME** field, enter the name of the Cisco Container Platform cluster.
  - The cluster name must start with an alphanumeric character (a-z, A-Z, 0-9). It can contain a combination of hyphen (-) symbols and alphanumeric characters (a-z, A-Z, 0-9). The maximum length of the cluster name is 46 characters.
    - Deployment of the installer VM fails if another Control Plane cluster with the same name already exists on the same datastore. You must ensure that you specify a unique name for the Control Plane cluster.
- b) In the CCP VERSION field, enter the version of the Cisco Container Platform cluster.
- c) From the CCP LICENSE ENTITLEMENT drop-down list, choose an entitlement option that indicates the type of Smart Licensing that you want to use.

- **Note** The **Partner** option will only be used in conjunction with a **Not for Retail (NFR)** or **Trial** license.
- d) Expand Advanced Settings, in the NTP SERVERS field, enter the list of any NTP servers in your environment. This field is optional.
- e) Click **DEPLOY** and then monitor the installation progress through the vCenter **Web console**.
- **Caution** After deploying Cisco Container Platform, do not change the location of the Control Plane VMs by modifying the datacenter or folder location **in vSphere**. Changing these settings will adversely impact the management of clusters.