

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 6In 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

C Debioy OVP Template					?
 1 Select template 2 Select name and location 	Select storage Select location to store the	e files for the deployed template.			
 ✓ 3 Select a resource ✓ 4 Review details 	Select virtual disk format: VM storage policy:	Thin provision	•		
5 Select storage	Show datastores from	Storage DRS clusters			
6 Select networks	Filter				
7 Customize template	Datastores Datastore	a Clusters			
8 Ready to complete	Datastores	- CHEARLY A		📡 📑 (q. Filt	er 🔹
	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
	Vc1-1-local	 Normal 	VM Encryption P	1.74 TB	1.55 TB
	O 🖬 vc1-2-local	 Normal 	VM Encryption P	1.74 TB	1.45 TB
	Vc1-3-local	 Normal 	VM Encryption P	884.75 GB	471.22 GB
	O 🖬 vc1-4-local	 Normal 	VM Encryption P	439.5 GB	412.81 GB
	Il vc1-5-local	 Normal 	VM Encryption P	439.5 GB	425.43 GB
	_ _				
	O E vo1-6-local	🙆 Normal	VM Encryption P	439.5 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

1 Select template	Select networks Select a destination network for each source netw	vork.	
Select a resource Review details Select storage Select networks Customize template Ready to complete	Source Network	Destination Network	
	IP Allocation Settings		

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	e VMware vSphere Web Client as an administrator.				
Step 2	In the Navi Deploy OV The Deploy	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	et template screen, perform these steps:				
	a) Click the	ne URL radio button, and enter the URL of the Installer OVA.				
	Alterna your co	tively, click the Local file 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	Jext.				
Step 4	In the Select name and location screen, perform these steps:					
	a) In the I	Name field, enter a name for the installer VM.				
	b) In the Ic) Click N	Browse tab, choose the data center where you want to deploy Cisco Container Platform. Next.				
Step 5	In the Sele	et 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	et storage screen, perform these steps:				
	a) From the	ne Select virtual disk format drop-down list, choose Thin Provision to allocate storage on demand.				
	b) In the I	Filters tab, choose a destination datastore to store the installer VM.				
	c) Click N	lext.				
Step 8	In the Sele	et networks screen, perform these steps:				
	a) From the VM.	ne Destination Network column, choose a network for each source network that is available in the installer				
	Note	The selected network must have access to vCenter and the tenant VM networks.				
	b) Click N	lext.				
	The Custor	mize template screen appears.				

Figure 3: Customize Template Screen

beploy OVF Template			(?) ₩
 1 Select template 2 Select name and location 	Customize template Customize the deployment proper	rties of this software solution.	
✓ 3 Select a resource	All properties have valid value	es Show next Col	lapse all
✓ 4 Review details		1 setting	
 5 Select storage 6 Select networks 7 Customize template 	01. SSH public key for installer node access	SSH public key used to access installer node. Enter the public key to be pasted into Oper 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/concepts/ cluster-administration/networking/.

- 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			
m ware [,] vSphere	Web Clie	ent n≣ Updated at 3:02	PM 👌 Administrator@	VSPHERE.LOCAL - I Help	- I Q Search	
Navigator	x	3 9	Work In Progress			*
	2	G S N C P S D N U Powered Off	Deploy OVF Templat Otject Netapp-1	e e e	Severity	(6) (5) (4) (3) I × Name
™ ₫ + =	-	• •	All (4) *	alaha asas	A Marel	Inn Unit man
Recent Objects	¥×	😤 Recent Tasks				.≢ ×
Viewed C	reated	l <u>≥</u> +			Q Filter	-
8	*	Task Name	Target	Status	Initiator	Queue
20		Check new notifications	0	✓ Completed	VMware vSphe	are U
-	:	Power Off virtual machine	B	 Completed 	VSPHERE.LO	CALV
Ab.	-	Power On virtual machine	B	✓ Completed	System	
		Initialize powering On	Da	 Completed 	VSPHERE.LO	CALV
W		Deploy OVF template	8	 Completed 	VSPHERE.LO	CALV
Ath			20			

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.
The Welcome screen appears.

Figure 5: Welcome Screen

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Step 2 Click Install.

The Connect your Cloud screen appears.

Figure 6: Connect your Cloud Screen

cisco Install Conta	iner Platform	×
OI Connect your Cloud O2 Placement Properties O3 Cluster Configuration O4 Network Settings O5 Authentication O6 Control Plane Settings O7 Install Status	Siner Platform Connect your Cloud · vceNTER HOSTNAME OR IP ADDRESS · port · vceNTER USERNAME · vceNTER PASSPHRASE · vceNTER PASSPHRASE · vceNTER PASSPHRASE · 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

01	Placement Properties	
Connect your Cloud	* VSPHERE DATACENTER	
02 Placement Properties	Hyperflex	~
riacement rioperdies	* VSPHERE CLUSTER	
03 Cluster Configuration	hx1	~
cluster conliguration	* VSPHERE DATASTORE	
04 Natural Sattings	hx1-data	~
Network Settings	* VSPHERE NETWORK	
05	WLAN 1154 - 10 10 Mid- 22	~
Autnentication	KUBERNETES VERSION	
06	1.12.7	
Control Plane Settings	* BASE VM IMAGE	
07	ccp-tenant-image-1.12.7-ubuntu18-3.2.1	~
Install Status		

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

.ıļı.ı cısc	". Install Containe	r Platform	×
	Install Containe Install Containe O1 Connect your Cloud O2 Placement Properties O3 Cluster Configuration O4 Network Settings O5 Authentication O6 Control Plane Settings O7 Install Status	P Platform Cluster Configuration I NETWORK PLUGIN FOR TEMANT KUBERNETES CLUSTERS Calico Calico Controller KUBERNETES POD NETWORK USERNAME FOR NODE ACCESS SSH PUBLIC KEY FOR NODE ACCESS	×
		BACK	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

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

.1 1.1 1. cisco	Install Container Plat	tform				×
Control of the second sec	Install Container Plat I I I I I I I I I I I I I I I I I I I	tform Network Settings Network Settings RETWORK NAME default network suBNET CIDR GATEWAY IP GATEWAY IP Agsteway P will allow a clutter to access of NAMESERVER Address NAMESERVER POLS First IP DOLS POL	ter networks	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

cisco Install Cor	ntainer Platform	×
 O1 Connect your Cloud O2 Placement Properties O3 Cluster Configuration O4 Network Settings 	Authentication SCHEME DESCRIPTION Active Directory Allow users from Active Directory to login into CCP. Not Configured ENABLE Local Auth Create a local admin account for CCP (not recommended) Not Configured ENABLE	×
 05 Authentication 06 Control Plane Settings 07 Install Status 		

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, enter the LDAP query to select the AD group that contains the users who must be granted the **User** role.

For example:

CN=UserGroupName,OU=Folder,DC=example,DC=cisco,DC=com

- **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 LDAP query to select the AD group that contains the users who must be granted the **Administrator** role.

For example:

CN=AdminGroupName,OU=Folder,DC=example,DC=cisco,DC=com

- 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

01 Control Plane Settings 02 • CONTROL PLANE NAME 02 • Control Plane Settings 03 • Cop VERSION 04. • CCP VERSION 04. • CCP LICENSE ENTITLEMENT 04. • CCP LICENSE ENTITLEMENT 05 • Advanced Settings (Optional) Authentication • NTP SERVERS 06 • Control Plane Settings (Optional)	
07 Install Status CCP CONTAINER REGISTRY DEV SWITCH: CNI CONTROL PLANE	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.