Cisco Catalyst Center 3.1.x on ESXi Deployment Guide

First Published: 2025-06-16

Last Modified: 2026-03-18

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Get Started with Catalyst Center on ESXi

Catalyst Center on ESXi

Catalyst Center on ESXi is a deployment model that

- provides full functionality of Catalyst Center in a virtual format
- allows rapid deployment of Catalyst Center in your network environment, and
- allows you to evaluate Catalyst Center without purchasing a physical appliance.

This deployment guide provides information on:

- The requirements for deploying a Catalyst Center on ESXi virtual appliance.
- Procedures for creating a virtual machine on a VMware ESXi host, configuring a virtual appliance, executing the Quick Start workflow, and completing the necessary post-deployment tasks before using Catalyst Center on ESXi.

Deployment requirements

Performance Best Practices

Certain requirements must be met to successfully deploy a Catalyst Center on ESXi virtual appliance. See performance tips for the most important aspects of VMware vSphere:

- VMware vSphere Client 7.0: *Performance Best Practices for VMware vSphere 7.0* (PDF)
- VMware vSphere Client 8.0: *Performance Best Practices for VMware vSphere 8.0* (PDF)

Virtual Machine Minimum Requirements

Table 1: Virtual Machine Minimum Requirements

Feature	Description
Virtualization platform and hypervisor	VMware vSphere (which includes ESXi and vCenter Server) 7.0.x or later, including all patches.
Processors	Intel Xeon Scalable server processor (Cascade Lake or newer) or AMD EPYC Gen2 with 2.1 GHz or better clock speed. 32 vCPUs with 64-GHz reservation must be dedicated to the VM.
Memory	256-GB DRAM with 256-GB reservation must be dedicated to the VM.
Storage	3-TB solid-state drive (SSD). Reserve additional datastore space if you plan to create backups of your virtual appliance. For information, see "Backup server requirements" in the *Cisco Catalyst Center Administrator Guide*.
I/O Bandwidth	180 MB/sec.
Input/output operations per second (IOPS) rate	2,000 to 2,500, with less than 5 ms of I/O completion latency.
Latency	Catalyst Center on ESXi to network device connectivity: 200 ms.

Caution Any changes to the resource allocation or reservation of the Catalyst Center VM may adversely affect its operations and could result in failure.

Scale Numbers

The number of devices and site elements that Catalyst Center on ESXi supports:

Table 2: Nonfabric Deployment Scale Numbers

Network Component	Maximum Number Supported
Access Points	4000
Devices	1000
Endpoints	25,000
Site Elements	2500

Table 3: Fabric Deployment Scale Numbers

Network Component	Maximum Number Supported
Endpoints	25,000

Network Component	Maximum Number Supported
Devices	2000
Access Points	3000
Site Elements	2500
Per-Fabric Site Scale	
Fabric Nodes	500
VNs	64
IP Pools	100

For both nonfabric and fabric deployments, up to 10 concurrent user connections are supported for network admins to log in to Catalyst Center on ESXi.

Cisco Catalyst Assurance processes data using near real-time streaming analytics, which requires additional guarantees on resource availability. When operating Catalyst Center on ESXi close to maximum scale, the functionality may be impacted by uncontrolled external events, such as host resource oversubscriptions and edge use cases leading to a spike in resource usage. A number of things can indicate that these events are taking place, such as slow performance, data processing gaps, high I/O latency, and a CPU readiness percentage that's higher than normal.

Note For more information about troubleshooting performance problems, see the "Troubleshoot and Enhance Performance" topic for your VMware vSphere version:

- For VMware vSphere Client 7.0, click here.
- For VMware vSphere Client 8.0, click here.

Catalyst Center VA Launcher Requirements

If you plan to use the CC VA Launcher to deploy and configure a virtual appliance, certain requirements must be met by the machine on which you'll run the app:

Feature	Description
RAM	1 GB
Storage	• 40 GB for the virtual appliance's OVA file • 50 MB for the launcher bundle
Supported operating systems	• Linux: Ubuntu 20.04 or later • macOS (Intel and M1): macOS 14 and later • Microsoft Windows: Windows 10 and later
Sleep setting	Configure the machine to not go to sleep.

Additionally:

- Ensure that the user who will run the CC VA Launcher has the privileges necessary to deploy the virtual appliance's OVA file and modify the appliance's virtual machine settings.
- For the system you'll run the app on, configure its HTTP/network proxy settings (if applicable).

Supported Browsers

- Mozilla Firefox, version 65 or later
- Google Chrome, version 72 or later

Catalyst Center on ESXi packages

For a listing of the packages used by the virtual appliance, see "Package versions in Catalyst Center" in the *Cisco Catalyst Center Release Notes*.

Deployment prerequisites

Complete these tasks to deploy a Catalyst Center on ESXi virtual appliance.

- VMware vSphere installation, on page 4
- Enterprise interface reservations, on page 4
- Import the IdenTrust certificate chain, on page 5
- DNS, NTP, and proxy server settings, on page 6
- Required internet URLs and fully qualified domain names, on page 6
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- Quick Start Workflow preparations, on page 11

VMware vSphere installation

VMware vSphere includes several components.

Use VMware vSphere 7.0.x or later, including all patches, for running Catalyst Center on ESXi. To access the overview of the VMware vSphere installation and setup process, see VMware Installation and Setup.

After installing VMware vSphere, verify that it can be reached from the computer you will use to deploy the virtual appliance's OVA file.

Enterprise interface reservations

An enterprise interface reservation is a network configuration requirement that

- dedicates an interface on the virtual appliance for enterprise network connectivity,
- requires recording the assigned IP address for later use during appliance setup, and
- may support management interfaces and additional network interfaces for appliance administration.

Before setting up the virtual appliance:

- Reserve at least one 1-Gbps or 10-Gbps Enterprise interface to connect to your enterprise network.
- Note the IP address for this interface. You will enter it later during appliance configuration.
- Optionally, reserve a 1-Gbps or 10-Gbps Management interface for accessing the Catalyst Center on ESXi GUI. Note its IP address if you plan to configure it.

Note these points:

- The IP address of the intracluster interface is predefined. You do not need to enter it when you complete either the Maglev Configuration wizard with default mode selected or the browser-based Install Configuration wizard.
- Catalyst Center on ESXi supports configuring one additional interface for use by the virtual appliance. If you do so, choose **VMXNET** from the **Adapter Type** drop-down list. If you select a different type, the appliance configuration will not complete successfully. For more information, see the Add a Network Adapter to a Virtual Machine topic in vSphere Virtual Machine Administration.

Import the IdenTrust certificate chain

The Catalyst Center on ESXi OVA file is signed with an IdenTrust CA certificate. This certificate is not included in the default VMware truststore.

If the certificate is invalid, the **Deploy OVF Template** wizard's **Review details** page displays a warning. To resolve this issue, you can import the IdenTrust certificate chain to the host or cluster on which you want to deploy the OVA file.

Procedure

Step 1 On the VMware ESXi host or cluster where your virtual appliance will reside, download **trustidevcodesigning5-3.1.6-VA.tar.gz** from the same location as the Catalyst Center on ESXi OVA file.

Step 2 Extract the downloaded file to a local directory.

Step 3 Log in to the vSphere Web Client.

Step 4 Choose **Administration** > **Certificates** > **Certificate Management**.

Step 5 In the **Trusted Root Certificates** field, click **Add**.

Step 6 In the **Add Trusted Root Certificate** dialog box, click **Browse**.

Step 7 Extract the file that you downloaded in Step 1 and select the **trustidevcodesigning5.pem** file. Then click **Open**.

Step 8 Check the **Start Root certificate push to vCenter Hosts** check box, then click **Add**.

A message confirms that the certificate chain is imported successfully.

After you complete the **Deploy OVF Template** wizard, the **Publisher** field in the **Review details** page shows that you are using a trusted certificate.

DNS, NTP, and proxy server settings

While configuring your virtual appliance, you must prepare the DNS, NTP, and proxy servers that your virtual appliance will use.

You will be prompted to specify three items:

- The Domain Name System (DNS) server that Catalyst Center on ESXi will use to convert domain names to IP addresses.
- The Network Time Protocol (NTP) server that Catalyst Center on ESXi will use for clock synchronization.
- **(Optional)** The proxy server that Catalyst Center on ESXi will use to access internet-bound URLs.

Before you configure your virtual appliance, do the following:

- Ensure that the servers you want to use are available and running.
- For an NTP server, obtain its IP address or hostname. For a proxy server, collect either its URL or hostname and its login credentials.

Required internet URLs and fully qualified domain names

You must provide secure access to the required URLs and Fully Qualified Domain Names (FQDNs) for the virtual appliance to function.

This table describes the features that make use of each URL and FQDN. You must configure either your network firewall or a proxy server so that IP traffic can travel to and from the appliance and these resources.

Caution If you do not provide access to the listed URLs and FQDNs, the associated features will not work as intended.

Note Since the destination domain names for third-party vendors may change without notice, it is mandatory to specify them using wildcards.

For more information about for proxy access requirements, see "Provide secure access to the internet" in the *Cisco Catalyst Center Third-Generation Installation Guide*.

Table 4: Required URLs and FQDN access

In order to...	...Catalyst Center must access these URLs and FQDNs
Download updates for system software and application packages, and submit user feedback to the product team.	Recommended: *.ciscoconnectdna.com:443[1] To avoid wildcards, specify these URLs instead: • https://www.ciscoconnectdna.com • https://cdn.ciscoconnectdna.com • https://registry.ciscoconnectdna.com • https://registry-cdn.ciscoconnectdna.com • https://app-cdn.ciscoconnectdna.com
Submit user feedback to the product team.	https://dnacenter.uservoice.com
Cisco Catalyst Center update package.	• https://*.ciscoconnectdna.com/* • *.cloudfront.net • *.tesseractcloud.com
Smart Account and SWIM software downloads.	• https://apx.cisco.com • https://cloudsso.cisco.com/as/token.oauth2 • https://*.cisco.com/* • https://download-ssc.cisco.com/
Authenticate with the cloud domain.	https://dnaservices.cisco.com
Integrate with ThousandEyes.	Version 3.1.6 and later: • app.thousandeyes.com This URL uses AWS and might map to *.awsglobalaccelerator.com. Other services that might use AWS could also map to the AWS domain. • api.thousandeyes.com Version 3.1.5 and earlier: • *.awsglobalaccelerator.com • api.thousandeyes.com
Allow API calls to enable access to Cisco CX Cloud Success Tracks. Otherwise, the enhancements made to extended configuration-based scanning for the Security Advisories, Bug Identifier, and EOX features that Machine Reasoning Engine (MRE) supports will not operate as expected.	https://api-cx.cisco.com

In order to...	...Catalyst Center must access these URLs and FQDNs
Integrate with Webex.	• http://analytics.webexapis.com • https://webexapis.com
User feedback.	https://dnacenter.uservoice.com
Connectivity with Cisco Catalyst Cloud and apps hosted there (e.g. AppX MS Teams Integration, Talos integration).	*.cisco.com:443 Otherwise, specific FQDNs are: • neoffers.cisco.com • neoffers-de.cisco.com • neoffers-sg.cisco.com • dnaservices.cisco.com
Integrate with Cisco Meraki.	Recommended: *.meraki.com:443 Customers who want to avoid wildcards can specify these URLs instead: • dashboard.meraki.com:443 • api.meraki.com:443 • n63.meraki.com:443
Check SSL/TLS certificate revocation status using OCSP/CRL.	Version 3.1.5 and earlier: • http://validation.identrust.com/crl/hydrantidcao1.crl • http://commercial.ocsp.identrust.com Version 3.1.6 and later: • http://validation.identrust.com • http://commercial.ocsp.identrust.com **Note** Ensure these URLs are reachable directly and through the proxy server configured for Catalyst Center.
Allow Cisco authorized specialists to collect troubleshooting data when Catalyst Center Remote Support functionality is enabled.	wss://prod.radkit-cloud.cisco.com:443

In order to...	...Catalyst Center must access these URLs and FQDNs
Integrate with cisco.com and Cisco Smart Licensing.	*.cisco.com:443 To avoid wildcards, specify these URLs instead: • software.cisco.com • cloudsso.cisco.com • cloudsso1.cisco.com • cloudsso2.cisco.com • apiconsole.cisco.com • api.cisco.com • apx.cisco.com • smartreceiver.cisco.com • sso.cisco.com • apmx-prod1-vip.cisco.com • apmx-prod2-vip.cisco.com • Version 3.1.6 and later: tools.cisco.com • Version 3.1.6 and later: tools1.cisco.com • Version 3.1.6 and later: tools2.cisco.com
Connect to the Network-Based Application Recognition (NBAR) cloud.	prod.sdavc-cloud-api.com:443
Enable the Rogue Management application to detect rogue vendor names.	Version 3.1.6 and later: https://standards-oui.ieee.org/
Render accurate information in site and location maps.	• www.mapbox.com • *.tiles.mapbox.com/* :443. For a proxy, the destination is *.tiles.mapbox.com/*
For Cisco AI Network Analytics data collection, configure your network or HTTP proxy to allow outbound HTTPS (TCP 443) access to the cloud hosts.	• https://api.use1.prd.kairos.ciscolabs.com (US East Region) • https://api.euc1.prd.kairos.ciscolabs.com (EU Central Region)
Access a menu of interactive help flows that let you complete specific tasks from the GUI.	https://ec.walkme.com
Access the licensing service.	https://swapi.cisco.com

In order to...	...Catalyst Center must access these URLs and FQDNs
Integrate with Cisco Spaces.	• https://dnaspaces.io • https://dnaspaces.eu • https://ciscospaces.sg

[1] Cisco owns and maintains ciscoconnectdna.com and its subdomains. The Cisco Connect DNA infrastructure meets Cisco Security and Trust guidelines. It is tested for security on a continuous basis. This infrastructure is robust, with built-in load balancing and automation capabilities. A cloud operations team monitors and maintains the infrastructure to ensure continuous availability.

Enable storage input/output control

For the datastore in which you are planning to deploy a virtual appliance, complete the following procedure so the appliance's virtual machine input/out (I/O) is prioritized over other virtual machines when the network is experiencing I/O congestion.

Procedure

Step 1 In the vSphere Client, navigate to and click the datastore in which you plan to deploy a virtual appliance.

Step 2 Click the **Configure** tab, then click **General**.

Step 3 In the **Datastore Capabilities** area, click **Edit**.

Step 4 In the **Configure Storage I/O Control** window, do the following:

a) Click the **Enable Storage I/O Control and statistics collection** radio button.

b) In the **Storage I/O congestion threshold** area, configure the congestion threshold you want to use.

You can either specify a peak throughput percentage or enter a value (in milliseconds).

c) (Optional) In the **Statistic Collection** area, check the **Include I/O statistics for SDRS** check box.

Step 5 Click **OK**.

HA admission control settings

You cannot create three-node clusters by connecting Catalyst Center on ESXi VMs. To enable high availability (HA), use the HA functionality in VMware vSphere. Enable strict admission control to ensure that:

- The system does not power on a virtual machine if that action would violate availability constraints.
- The system enforces configured failover capacity limits.
- HA operates as expected during a failover.

Quick Start Workflow preparations

After you create a virtual machine on an ESXi host and configure a Catalyst Center on ESXi virtual appliance, you'll be prompted to complete the Quick Start workflow. By completing this workflow, you will discover the devices that Catalyst Center on ESXi will manage. You will also enable the collection of telemetry from those devices. Complete these tasks to finish the workflow:

- Decide on the username and password for the new admin user you will create. The default admin username and password (**admin/P@ssword9**) should be used only the first time you log in to Catalyst Center on ESXi.

Important Changing this password is critical to network security, especially when the people who set up a Catalyst Center on ESXi virtual appliance are not the same people who will serve as its administrators.

- Obtain the credentials you use to log in to Cisco.com.
- Identify the users who need access to your system. For these users, define their roles, unique passwords, and privilege settings.

You have the option to use an IPAM server and Cisco Identity Services Engine (ISE) with your virtual appliance. If you choose to use one or both of them, you'll also need to obtain the relevant URL and login information.

CHAPTER 2

Set up Catalyst Center on ESXi

Virtual appliance

To set up a Catalyst Center on ESXi virtual appliance, complete these tasks:

1. Create a virtual machine.
2. Configure the virtual appliance.
3. Complete the Quick Start workflow.

If you want to set up your virtual appliance using the Cisco Catalyst Virtual Appliance Launcher (CC VA Launcher), first complete the steps described in one of these topics.

- Configure a virtual appliance using the Interactive CC VA Launcher, on page 34
- Configure a virtual appliance using the CC VA launcher in silent mode, on page 37

Then complete the Quick Start workflow.

Create a virtual machine

Complete this procedure to create a virtual machine on the VMware ESXi host or cluster where your virtual appliance will reside.

Procedure

Step 1 Download the Catalyst Center on ESXi OVA file from the location specified by Cisco.

Step 2 Log in to the vSphere Web Client.

Step 3 In the navigation pane, right-click the IP address of host or cluster on which you want to deploy the OVA file and then click **Deploy OVF Template**.

Step 4 Complete the **Deploy OVF Template** wizard:

a) In the **Select an OVF Template** wizard page, specify the OVA file you want to use for deployment and then click **Next**. You can either:

- Click the **URL** radio button and enter the appropriate path and OVA filename. If you choose this option, ensure that the OVA file is stored in and shared from a web-accessible location.
- Click the **Local file** radio button, click **Upload Files**, and then navigate to and select the appropriate OVA file.

The wizard's **Select a name and folder** page opens. By default, the OVA's filename is set as the name of the virtual machine you're about to create. Also, the location where the ESXi host or cluster you selected in Step 3 resides is set as the deployment location.

b) If you want to use the default values, click **Next** and proceed to Step 4c.

If you want to use different values, do these steps:

1. Enter a name for the virtual machine you are creating.
2. Specify where the virtual machine will reside.
3. Click **Next**.

The wizard's **Select a compute resource** page opens.

c) Click the ESXi host or cluster on which you want to deploy the OVA file (the same one you right-clicked in Step 3), then click **Next**.

A page that lists deployment template details is displayed.

d) Review the template details and then do one of these tasks:

- If you need to make any changes, click **Back** as needed to return to the appropriate wizard page.
- If you want to proceed, click **Next**.

Note

Ignore the information provided in the **Extra configuration** field. This refers to additional configurations that Cisco provides in the Catalyst Center on ESXi OVA file.

The wizard's **Select storage** page opens.

e) Configure the storage:

1. Click the radio button for the storage device you want to use.
2. In the **Select virtual disk format** field, choose either the **Thick Provision** or **Thin Provision** option.
3. Click **Next**.

The wizard's **Select networks** page opens.

f) Configure the destination network for the enterprise network.

1. In the **Destination Network** drop-down list for the enterprise network, choose the network that will connect to the Catalyst Center on ESXi enterprise interface.
2. Click **Next**.

A summary of the deployment settings you've entered is displayed by the **Ready to complete** wizard page.

g) Review the settings and then do one of these tasks:

- If you need to make any changes, click **Back** as needed to return to the appropriate wizard page.
- If you want to proceed with deployment, click **Finish**.

Important
In general, deployment takes around 45 minutes to complete. You can monitor the progress in the vSphere Client's **Recent Tasks** tab.

Configure an additional network adapter

Complete this procedure to configure an additional network adapter for your virtual appliance.

Note The Management interface will reside on the adapter.

Procedure

Step 1 Log in to the vSphere Web Client.

Step 2 In the navigation pane, right-click the virtual machine you've created, then choose **Power** > **Power Off**.

Step 3 Right-click the virtual machine and then choose **Actions** > **Edit Settings**.

Step 4 Select the **Virtual Hardware** tab. Click **Add New Device**, and then choose **Network Adapter**.

Step 5 In the drop-down list for the **New Network** field, click **Browse**.

Step 6 In the **Select Network** dialog box, choose the network to connect to your virtual appliance's Management interface, and then click **OK**.

Step 7 In the **Adapter Type** field's drop-down list, choose **VMXNET3** and then click **OK**.

Step 8 In the navigation pane, right-click the virtual machine, and then choose **Power** > **Power On**.

Step 9 Do one of these tasks:

- If you haven't done so already, configure the virtual appliance using one of the available configuration wizards or the CC VA Launcher.
- If you've already configured the virtual appliance, proceed to the next step.

Step 10 After Catalyst Center on ESXi comes up, run the Configuration wizard to configure the settings for the Management interface:

a) Open a terminal window to the virtual machine. Run the **sudo maglev-config update** command.

   The Configuration wizard opens and displays the settings that are already configured for the appliance's Enterprise interface.

b) Click **next>>**.

   The wizard now displays the settings that are already configured for the appliance's Intracluster interface.

c) Click **next>>**.

d) For the Management interface (NETWORK ADAPTER 3) you created, enter the required values for these parameters, and then click **next>>**:

   - **Host IPv4/IPv6 Address** field: Enter the IP address for the Management interface.
   - **IPv4 Netmask/IPv6 Prefix Length** field: Enter the netmask for the interface's IP address.
   - **Default Gateway IPv4/IPv6 Address** field: Enter the default gateway IP address to use for the interface.
   - **IPv4/IPv6 Static Routes** field: Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>.

Configure a Catalyst Center on ESXi virtual appliance

Choose one procedure to configure a Catalyst Center on ESXi virtual appliance on a VMware ESXi host:

- Configure a virtual appliance using the Maglev Configuration Wizard (default mode), on page 16
- Configure a virtual appliance using the Maglev Configuration Wizard (advanced mode), on page 20
- Configure a virtual appliance using the Install Configuration wizard, on page 25
- Configure a virtual appliance using the advanced Install Configuration Wizard , on page 29
- Configure a virtual appliance using the Interactive CC VA Launcher, on page 34
- Configure a virtual appliance using the CC VA launcher in silent mode, on page 37

Configure a virtual appliance using the Maglev Configuration Wizard (default mode)

To quickly configure a virtual appliance using the Maglev Configuration Wizard and preset settings, use this procedure.

Note The Intracluster interface is preconfigured when using this wizard. If you don't want to use the default settings for this interface, you'll need to complete the Maglev Configuration wizard with advanced mode selected.

Before you begin

Gather these information for the virtual appliance before you start this procedure:

- Static IP address
- Subnet mask
- Default gateway
- DNS address
- NTP server details
- Proxy server details

Important If you plan to configure the appliance's Management interface, also configure an additional network adapter for this interface to reside on before you start this wizard.

Procedure

Step 1 After deployment completes, power on the new virtual machine:

a) In the vSphere Client, right-click the virtual machine.

b) Choose **Power** > **Power On**.

Your virtual machine typically becomes operational in about 45 minutes, depending on bandwidth, RAM, hard disk space, and vCPU count. You can monitor progress in the VMware VM Console.

Step 2 Launch either the remote console or web console by clicking the appropriate link.

Step 3 Configure the virtual machine by completing the Maglev Configuration Wizard:

a) You don't need to enter any settings in the wizard's **STATIC IP CONFIGURATION** page, so click **skip>>**.

Enter static IP settings only when configuring a virtual appliance using the browser-based web UI installation mode.

b) Click **Create MKS**.

c) Click **Start using MKS pre manufactured cluster**.

d) Enter the configuration values for **NETWORK ADAPTER #1**, as shown in the table. Click **next>>**.

Catalyst Center on ESXi uses this interface to link the virtual appliance with your network.

Host IPv4 address field	Enter the IP address for the Enterprise interface. This is required.
IPv4 Netmask field	Enter the netmask for the interface IP address.
Default Gateway IPv4 Address field	Enter a default gateway IP address to use for the interface. **Important** Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.

IPv4 Static Routes field	Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>. This is usually required on the Catalyst Center on ESXi Management interface only.
LACP Mode field	Leave this field blank, as it's not applicable to virtual appliances.

The wizard checks the values you entered and displays an error message if any are incorrect. If you receive an error message, check that the value you entered is correct, then reenter it. If necessary, click **<<back** to reenter it.

e) You don't need to enter configuration values for **NETWORK ADAPTER #2**, as the **Host IPv4 Address** and **IPv4 Netmask** fields are prepopulated for the Intracluster interface. Click **next>>** to proceed.

f) Enter the configuration values for **NETWORK ADAPTER #3**, as shown in the table. Click **next>>**.

This interface allows you to access the Catalyst Center on ESXi GUI from the virtual appliance.

Note
This wizard page appears only if you have configured an additional network adapter for the Management interface.

Host IPv4 address field	Enter the IP address for the Management interface. This is required only if you are using this interface to access the Catalyst Center on ESXi GUI from your management network; otherwise, you can leave it blank.
IPv4 Netmask field	Enter the netmask for the interface IP address.
Default Gateway IPv4 Address field	Enter a default gateway IP address to use for the interface. **Important** Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.
IPv4 Static Routes field	Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>.

Correct any validation errors to proceed. The wizard applies your network adapter configurations.

g) In the **DNS Configuration** page, enter the IP address of the preferred DNS server. Click **next>>**. If you are entering multiple DNS servers, separate the IP addresses in the list with spaces.

Important

- For NTP, ensure port 123 (UDP) is open between Catalyst Center on ESXi and your NTP server.
- Configure a maximum of three DNS servers. Configuring more than three DNS servers for a virtual appliance can cause problems.

The wizard updates, indicating that it must shut down the controller in order to validate the settings you have entered so far.

h) Select one of these steps:

- If you need to change any settings, click **<<back** as needed, make the necessary changes, and then return to this wizard page.
- If you're happy with the settings you've entered, click **proceed>>**.

i) After validation successfully completes, select one of these steps:

- If your network does *not* use a proxy server to access the internet, click **skip proxy>>** to proceed.
- If your network does use a proxy server, enter these configuration values in the **NETWORK PROXY** wizard page. Click **next>>**.

HTTPS Proxy field	Enter the URL or host name of an HTTPS network proxy used to access the Internet. **Note** Connection from Catalyst Center on ESXi to the HTTPS proxy is supported only through HTTP in this release.
HTTPS Proxy Username field	Enter the user name used to access the network proxy. If no proxy login is required, leave this field blank.
HTTPS Proxy Password field	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

After you provide the necessary information, correct any validation errors to proceed, as needed.

j) You are next prompted to enter the virtual appliance's virtual IP address in the **MAGLEV CLUSTER DETAILS** wizard page. Enter the virtual IP address configured for the Enterprise interface. If you configured a virtual IP address for the Management interface, enter this address as well (using a comma to separate the two IP addresses).

You can also specify the fully qualified domain name (FQDN) for your virtual appliance. Catalyst Center on ESXi uses this domain name for these steps:

- It uses this host name to access your virtual appliance’s web interface and the Representational State Transfer (REST) APIs used by devices in the enterprise network that Catalyst Center on ESXi manages.
- In the Subject Alternative Name (SAN) field of Catalyst Center on ESXi certificates, it uses the FQDN to the define the Plug and Play server that should be used for device provisioning.

After you provide the information, click **next>>** to proceed. If validation errors appear, correct them as you did on previous screens.

k) Enter these configuration values for the settings provided in the wizard's **USER ACCOUNT SETTINGS** page. Click **next>>**.

Linux Password field	Enter and confirm the password for the `maglev` user.
Re-enter Linux Password field	Confirm the Linux password by entering it a second time.
Password Generation Seed field	If you do not want to create the Linux password yourself, enter a seed phrase in this field and then press <**Generate Password**> to generate the password.
Auto Generated Password field	(Optional) The seed phrase appears as part of a random and secure password. If desired, you can either use this password "as is", or you can further edit this auto-generated password. Press <**Use Generated Password**> to save the password.

After you provide the information, correct any validation errors to proceed, as needed.

l) Enter these configuration values for the settings provided in the wizard's **NTP SERVER SETTINGS** page. Click **next>>**.

NTP Servers field	Enter one or more NTP server addresses or host names, separated by spaces. At least one NTP address or host name is required. For a production deployment, we recommend that you configure a minimum of three NTP servers.
NTP Authentication check box	To enable the authentication of your NTP server before synchronization with Catalyst Center on ESXi, check this check box and enter the required information: • The NTP server's key ID. Valid values range between 1 and 4294967295 (2^32-1). This value corresponds to the key ID that's defined in the NTP server's key file. • The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. **Note** Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.

After you provide the information, correct any validation errors to continue, as needed.

A final message appears, stating that the wizard is ready to apply the configuration.

m) To apply the settings you've entered to the virtual appliance, click **proceed>>**.

After the configuration process completes, the virtual appliance powers on again and displays a **CONFIGURATION SUCCEEDED!** message, then presents the Maglev login page.

Note
Wait 15 to 30 minutes for services to stabilize before you log in to the Catalyst Center UI.

Step 4 Complete the quick start workflow, on page 44.

Configure a virtual appliance using the Maglev Configuration Wizard (advanced mode)

If you want to configure a virtual appliance using the Maglev Configuration wizard and need to specify settings that are different from the preset appliance settings, complete this procedure.

Before you begin

Gather this information for your virtual appliance before you start:

- Static IP address
- Subnet mask
- Default gateway

- DNS address
- NTP server details
- Proxy server details

Important If you plan to configure the appliance's Management interface, also configure an additional network adapter for this interface before you start this wizard.

Procedure

Step 1 After deployment completes, power on the newly-created virtual machine:

a) In the vSphere Client, right-click the virtual machine.

b) Choose **Power** > **Power On**.

Your virtual machine typically becomes operational in about 45 minutes. The exact time depends on your available bandwidth, RAM, hard disk space, and the number of vCPUs. You can monitor the progress in the vSphere Client's **Recent Tasks** tab.

Step 2 Launch either the remote console or web console by clicking the appropriate link.

Step 3 Configure the virtual machine by completing the Maglev Configuration Wizard:

a) You don't need to enter any settings in the wizard's **STATIC IP CONFIGURATION** page, so click **skip**>>.

Configure static IP addresses only if you are installing the virtual appliance through the browser-based WEB UI.

b) Click **Create MKS**.

c) Click the **Start configuration of MKS in advanced mode** option.

The next wizard page opens, indicating that all preconfigured appliance settings (except for the container and cluster subnets) will be erased. You'll need to enter values for these settings.

If you choose this option, you cannot return to the default appliance setup workflow. Keep this in mind before you complete the next step.

d) Click **proceed**>>.

After all of the preconfigured appliance settings have been erased, the next wizard page opens.

e) Do one or more of these steps, then click **next**>>:

- Choose whether you want to use IPv4 or IPv6 addressing.
- If you want to enable FIPS mode, click its corresponding option. For more information regarding FIPS mode, see the "FIPS Mode Support" topic in the *Cisco Catalyst Center Second-Generation Appliance Installation Guide*.

f) You don't need to enter any settings in the **Layer2 mode used for the services** wizard page, so click **next**>>.

g) Enter the configuration values for **NETWORK ADAPTER #1**, as shown in the table, then click **next**>>.

Catalyst Center on ESXi uses this interface to link the virtual appliance with your network.

Host IPv4/IPv6 Address field	Enter the IP address for the Enterprise interface. This is required.

IPv4 Netmask/IPv6 Prefix Length field	Do one of these: • If you selected IPv4 addressing, enter the netmask for the port's IP address. This is required. • If you selected IPv6 addressing, enter the prefix length (in bits). Valid values range from 10 through 127.
Default Gateway IPv4/IPv6 Address field	Enter a default gateway IP address to use for the interface. **Important** Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.
IPv4/IPv6 Static Routes field	Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>. This is usually required on the Management interface only.
Cluster Link field	Leave this field blank. It is required on the Intracluster interface only.
LACP Mode field	Leave this field blank, as it's not applicable to virtual appliances.

The wizard checks the values you entered and displays an error message if any are incorrect. If you receive an error message, verify the value you entered. Click **<<back** to reenter it.

h) Enter the configuration values for **NETWORK ADAPTER #2**, as shown in the table, then click **next>>**.

Host IPv4/IPv6 Address field	Enter the IP address for the Intracluster interface. This is required. Note that you cannot change the address of the Intracluster interface later.
IPv4 Netmask/IPv6 Prefix Length field	Do one of these: • If you selected IPv4 addressing, enter the netmask for the port's IP address. This is required. • If you selected IPv6 addressing, enter the prefix length (in bits). Valid values range from 10 through 127.
Default Gateway IPv4/IPv6 Address field	Leave this field blank.
IPv4/IPv6 Static Routes field	Leave this field blank.
Cluster Link field	Check the check box to set this interface as the link to a Catalyst Center on ESXi cluster. This is required on the Intracluster interface only.
LACP Mode field	Leave this field blank, as it's not applicable to virtual appliances.

If you see validation errors, correct them to continue. The wizard validates and applies your network adapter configurations.

i) Enter the configuration values for **NETWORK ADAPTER #3**, as shown in the table, then click **next>>**.

Use this interface to access the Catalyst Center on ESXi GUI on your the virtual appliance.

Note
You will see this wizard page only if you have already configured an additional network adapter for the Management interface.

Host IPv4/IPv6 Address field	Enter the IP address for the Management interface. This is required only if you are using this interface to access the Catalyst Center on ESXi GUI from your management network; otherwise, you can leave it blank.
IPv4 Netmask/IPv6 Prefix Length field	Do one of these if you entered an IP address: • If you selected IPv4 addressing, enter the netmask for the port's IP address. This is required. • If you selected IPv6 addressing, enter the prefix length (in bits). Valid values range from 10 through 127.
Default Gateway IPv4/IPv6 Address field	Enter a default gateway IP address to use for the interface. **Important** Ensure that you enter a default gateway IP address for at least one of your appliance's interfaces. Otherwise, you will not be able to complete the configuration wizard.
IPv4/IPv6 Static Routes field	Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>.
Cluster Link field	Leave this field blank. It is required on the Intracluster interface only.

Correct validation errors, if any, to proceed. The wizard validates and applies your network adapter configurations.

j) In the **DNS Configuration** page, enter the IP address of the preferred DNS server and then click **next>>**. If you are entering multiple DNS servers, separate the IP addresses in the list with spaces.

Important
- For NTP, ensure port 123 (UDP) is open between Catalyst Center on ESXi and your NTP server.
- Avoid configuring more than three DNS servers for your virtual appliance to prevent problems.

The wizard updates, indicating that it needs to shut down the controller in order to validate the settings you've entered so far.

k) Do one of these:

- If you need to change any settings, click **<<back** as needed, make the necessary changes, and then return to this wizard page.
- If you're happy with the settings you've entered, click **proceed>>**.

l) After validation successfully completes, the **NETWORK PROXY** wizard page opens. Click **skip proxy>>** to proceed.

m) Confirm that you want to skip network proxy configuration by clicking **skip proxy validation>>**.

n) Next, you are prompted to enter the virtual appliance's virtual IP addresses in the **MAGLEV CLUSTER DETAILS** wizard page. Since clusters are not supported by Catalyst Center on ESXi, you can leave the **Cluster Virtual IP Address(s)** field on this page blank.

You can also specify the fully qualified domain name (FQDN) for your virtual appliance. Catalyst Center on ESXi uses this domain name to:

- Access your virtual appliance’s web interface and the Representational State Transfer (REST) APIs used by devices in the enterprise network that Catalyst Center on ESXi manages.
- Define the Plug and Play server, in the Subject Alternative Name (SAN) field of Catalyst Center on ESXi certificates, that should be used for device provisioning.

After you provide the necessary information, click **next>>** to proceed. Correct validation errors, if any, as you did in previous screens.

o) Enter the configuration values for the settings provided in the wizard's **USER ACCOUNT SETTINGS** page as listed in the table, then click **next>>**.

Linux Password field	Enter and confirm the password for the `maglev` user.
Re-enter Linux Password field	Confirm the Linux password by entering it a second time.
Password Generation Seed field	If you do not want to create the Linux password yourself, enter a seed phrase in this field and then press <**Generate Password**> to generate the password.
Auto Generated Password field	(Optional) The seed phrase appears as part of a random and secure password. If desired, you can either use this password "as is", or you can further edit this auto-generated password. Press <**Use Generated Password**> to save the password.

After you provide the necessary information, correct any validation errors to proceed (if necessary).

p) Enter the configuration values for the settings provided in the wizard's **NTP SERVER SETTINGS** page as described in the table, then click **next>>**.

NTP Servers field	Enter one or more NTP server addresses or hostnames, separated by spaces. At least one NTP address or hostname is required. For a production deployment, we recommend that you configure a minimum of three NTP servers.
NTP Authentication check box	To enable the authentication of your NTP server before it's synchronized with Catalyst Center on ESXi, check this check box and then enter these details: • The NTP server's key ID. Valid values range between 1 and 4294967295 (2^32-1). This value corresponds to the key ID that's defined in the NTP server's key file. • The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. **Note** Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.

After you provide the necessary information, correct any validation errors to proceed (if necessary).

The wizard displays a message when it is ready to apply the configuration.

q) Enter the configuration values for the settings provided in the wizard's **MAGLEV ADVANCED SETTINGS** page as described in the table, then click **next>>**.

Container Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal services. By default, this is already set to **169.254.32.0/20**, and we recommend that you use this subnet. If you enter another subnet, ensure that it does not conflict with or overlap with any other internal or an external network subnet used by Catalyst Center on ESXi. For more information, see the Container Subnet description in the *Catalyst Center Second-Generation Appliance Installation Guide's* "Required IP Addresses and Subnets" topic.
Cluster Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal cluster services. By default, this is already set to **169.254.48.0/20**, and we recommend that you use this subnet. If you choose to enter another subnet, ensure that it does not conflict with or overlap any other subnet used by the Catalyst Center on ESXi internal network or an external network. For more information, see the Cluster Subnet description in the *Catalyst Center Second-Generation Appliance Installation Guide's* "Required IP Addresses and Subnets" topic.

After you provide the necessary information, correct any validation errors to proceed (if necessary).

A final message appears, stating that the wizard is ready to apply the configuration.

r) To apply the settings you've entered to the virtual appliance, click **proceed>>**.

After the configuration process completes, the virtual appliance powers on again and displays a **CONFIGURATION SUCCEEDED!** message.

It takes around 180 to 210 minutes for the virtual machine to become operational. The actual time will depend on things like available bandwidth, RAM, hard disk space, and the number of vCPUs. You can monitor the progress in the vSphere Client's **Recent Tasks** tab.

Step 4 Complete the quick start workflow, on page 44.

Configure a virtual appliance using the Install Configuration wizard

If you want to configure a virtual appliance as quickly as possible using the browser-based Install configuration wizard and are okay with using preset appliance settings, complete this procedure.

Important Ensure that all of the IP addresses you enter while completing this procedure are valid IPv4 addresses with valid IPv4 netmasks. Also make sure that the addresses and their corresponding subnets do not overlap. This can result in service communication issues.

Before you begin

Collect the required information:

- Static IP address

- Subnet mask
- Default gateway
- DNS address
- NTP server details
- Proxy server details

Use a supported browser. See Deployment requirements, on page 1.

Enable ICMP on the firewall between Catalyst Center on ESXi and the DNS servers you will specify in this procedure. This wizard uses Ping to verify the DNS server you specify. If a firewall between Catalyst Center on ESXi and the DNS server is not configured to allow ICMP, the ping can be blocked, which can prevent successful completion of the wizard.

Note The Intracluster interface is preconfigured when using this wizard. If you do not want to use the default settings for this interface, complete the browser-based Advanced Install configuration wizard.

Procedure

Step 1 After deployment completes, power on the newly-created virtual machine:

a) In the vSphere Web Client, right-click the virtual machine.

b) Choose **Power** > **Power On**.

The virtual machine typically becomes operational in about 45 minutes. This time varies depending on the bandwidth, RAM, hard disk space, and the number of vCPUs. You can monitor the progress in the vSphere Client's **Recent Tasks** tab.

Step 2 Launch either the remote console or web console by selecting the appropriate link.

Step 3 Open the Install Configuration wizard:

a) In the **STATIC IP CONFIGURATION** page, do one of the tasks:

- If you want a DHCP server to assign an IP address, subnet mask, and default gateway to your virtual appliance's Enterprise interface, click **skip**>>.
- If you want to assign your own IP address, subnet mask, and default gateway to your virtual appliance's Enterprise interface, enter the information described in this table and then click **configure**>>.

Note
The **IPv6 Mode** check box is for enabling IPv6 addressing in advanced mode only. For IPv4 deployments, this check box needs to be unchecked.

IPv6 Mode check box	If you want to enable IPv6 addressing, you will need to do so using the Advanced Install Configuration wizard. Leave this check box unchecked to use IPv4 addressing.
IP Address field	Enter the static IP address that you want to use.

Netmask field	Enter the netmask for the IP address you specified in the previous field. You can enter either a netmask or CIDR address.
Default Gateway Address field	Specify the default gateway that will be used to route traffic.
Static Routes field	Leave the Static Routes field blank as this wizard does not allow configuration of static routes.

Note the URL listed in the **Web Installation** field; you will need it for the next step.

b) Open the URL that was displayed in the **Static IP Configuration** page.

c) Click the **Start a Catalyst Center Virtual Appliance** radio button, then click **Next**.

d) Click the **Install** radio button, then click **Start**.

The **Overview** slider opens. Click > to view a summary of the tasks that the wizard will help you complete.

e) Click **Start Workflow** to start the wizard.

The **Virtual Appliance Interfaces** page opens.

Step 4 Configure your virtual appliance by completing the Install Configuration wizard:

a) Click **Next**.

The **DNS Configuration** page opens.

b) In the **DNS** field, enter the IP address of the preferred DNS server. To enter additional DNS servers, click the **Add** (+) icon.

Important
You can configure a maximum of three DNS servers. Configure no more than three DNS servers for an appliance to avoid issues.

c) Click **Next**.

The **Configure Proxy Server Information** page opens.

d) Do one of the tasks:

- If your network does *not* use a proxy server to access the internet, click the **No** radio button and then click **Next**.
- If your network does use a proxy server to access the internet, enter the values described in this table and then click **Next**.

Proxy Server field	Enter the URL or host name of an HTTPS network proxy used to access the Internet. **Note** Connection from Catalyst Center on ESXi to the HTTPS proxy is supported only via HTTP in this release.
Port field	Enter the port that your appliance used to access the network proxy.
Username field	Enter the username used to access the network proxy. If no proxy login is required, leave this field blank.
Password field	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

The wizard's **Advanced Appliance Settings** page opens.

e) Enter configuration values for your appliance, then click **Next**.

Cluster Virtual IP Addresses	
To access from Enterprise Network and For Intracluster Access fields	Enter the virtual IP address configured for the Enterprise interface. If you configured a virtual IP address for the Management interface, enter this address as well (using a comma to separate the two IP addresses).
Fully Qualified Domain Name (FQDN) field	You can also specify the Fully Qualified Domain Name (FQDN) for your virtual appliance. Catalyst Center on ESXi uses this domain name to do the tasks: • This hostname is used to access your virtual appliance’s web interface and the Representational State Transfer (REST) APIs used by devices managed by Catalyst Center on ESXi in the enterprise network. • In the Subject Alternative Name (SAN) field of Catalyst Center on ESXi certificates, it uses the FQDN to the define the Plug and Play server that should be used for device provisioning.
NTP Server Settings	
NTP Server field	Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the **Add** (+) icon. For a production deployment, Cisco recommends configuring at least three NTP servers.
Turn on NTP Authentication check box	To enable the authentication of your NTP server before it is synchronized with Catalyst Center on ESXi, check this check box and then enter the required information: • The NTP server's key ID. Valid values range between 1 and 4294967295 (2^32-1). This value corresponds to the key ID that's defined in the NTP server's key file. • The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. **Note** Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.
Subnet Settings	
Container Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal services. By default, this is already set to **169.254.32.0/20**, and you cannot enter another subnet.
Cluster Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal cluster services. By default, this is already set to **169.254.48.0/20**, and you cannot enter another subnet.

The **Enter CLI Password** page opens.

f) Enter and confirm the password for the `maglev` user, then click **Next**.

This is the password you will use to log in to Catalyst Center on ESXi for the first time after configuring the virtual appliance. After logging in, you will be prompted to configure a new admin user (as a security measure). See Complete the quick start workflow, on page 44.

The wizard validates the information that you entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you entered are valid, the wizard's **Summary** page opens.

Note
To download the appliance configuration as a JSON file, click the corresponding link.

g) Scroll to the bottom of the screen and review all the settings entered while completing the wizard. To update any settings, click the relevant **Edit** link.

h) To complete the configuration of your Catalyst Center on ESXi virtual appliance, click **Start Configuration**.

The wizard screen continuously updates during the process, showing which tasks are being completed, their progress, and any errors. To save a local copy of this information as a text file, click the **Download** link.

Step 5 After appliance configuration completes, click the copy icon to copy the default admin superuser password.

Important
Catalyst Center on ESXi automatically sets this password when you complete the Install configuration wizard. Ensure that you click the copy icon before you proceed. Otherwise, you will not be able to log in to Catalyst Center on ESXi for the first time.

Note
As a security measure, you will be prompted to change this password after you log in. For more information, see Complete the quick start workflow, on page 44.

Configure a virtual appliance using the advanced Install Configuration Wizard

To configure a virtual appliance using the browser-based Advanced Install configuration wizard with settings differing from the preset appliance settings, complete this procedure.

Important Enter only valid IPv4 addresses with correct IPv4 subnet masks. Ensure that the addresses and their corresponding subnets do not overlap. Overlapping subnets might cause issues with service communication.

Before you begin

Collect this information:

- Static IP address
- Subnet mask
- Default gateway
- DNS address

- NTP server details
- Proxy server details

Ensure you are using a supported browser. For more information, see Deployment requirements, on page 1.

Ensure you enabled ICMP on the firewall between Catalyst Center on ESXi and both the default gateway and the DNS server you specify in this procedure. The wizard uses ping to verify the gateway and DNS server you specify. This ping might get blocked if a firewall is in place and ICMP is not enabled on that firewall. When this happens, you will not be able to complete the wizard.

Procedure

Step 1 After the deployment completes, power on your new virtual machine:

a) In the vSphere Web Client, right-click the virtual machine.

b) Choose **Power** > **Power On**.

It takes approximately 90 to 120 minutes for the virtual machine to become operational. The total time depends on the available bandwidth, RAM, hard disk space, and the number of vCPUs. Monitor the progress in the vSphere Client's **Recent Tasks** tab.

Step 2 Click the link for the remote console or web console to launch it.

Step 3 Open the Advanced Install Configuration wizard:

a) In the **STATIC IP CONFIGURATION** page, do one of the tasks:

- If you want a DHCP server to assign an IP address, subnet mask, and default gateway to your virtual appliance's Enterprise interface, click **skip**>>.
- If you want to assign your own IP address, subnet mask, and default gateway to your virtual appliance's Enterprise interface, enter the information described in this table and then click **configure**>>.

Option	Description
IPv6 Mode check box	If you want to use IPv6 addressing, check this check box. If you want to use IPv4 addressing instead, leave this check box blank.
IP Address field	Enter the static IP address that you want to use.
Netmask field	Enter the netmask for the IP address you specified in the previous field: • If you entered an IPv4 address, you can enter either a netmask or CIDR address. • If you entered an IPv6 address, you can only enter a CIDR address.
Default Gateway Address field	Specify the default gateway that will be used to route traffic.
Static Routes field	Enter one or more static routes in this format, separated by spaces: <*network*>/<*netmask*>/<*gateway*>. This is usually required on the Management interface only.

Note the URL that is listed in the **Web Installation** field. You will need this for the next step.

b) Open the URL that was displayed in the **Static IP Configuration** page.

c) Click the **Start a Catalyst Center Virtual Appliance** radio button, then click **Next**.

d) Click the **Advanced Install** radio button, then click **Start**.

The **Advanced Install Overview** slider opens. Click **>** to view a summary of the tasks that the wizard will help you complete.

e) Click **Start Workflow** to start the wizard.

The **Virtual Appliance Interface Overview** page opens, providing a description of the four appliance interfaces that you can configure.

Step 4 Configure your virtual appliance by completing the Advanced Install Configuration wizard:

a) Click **Next**.

The **How would you like to set up your appliance interfaces?** page opens

If your network is behind a firewall, perform these actions:

- Click the **allow access to these URLs** link to open a window listing the URLs that Catalyst Center on ESXi must access.
- Click the **open these ports** link to open a window listing the network service ports required by Catalyst Center on ESXi.

By default, the **Enterprise Network Interface** check box is already checked. It's also prepopulated with the values you entered in the **STATIC IP CONFIGURATION** page.

b) Follow these steps for each appliance interface you want to use, then click **Next**:

- Click its check box and enter the appropriate configuration values.
- If necessary, click its **Add/Edit Static Route** link to configure static routes. Click **+** as needed to configure additional routes. When you're done, click **Add**.

The **DNS Configuration** screen opens.

c) Enter the IP address of the preferred DNS server, then click **Next**. To enter additional DNS servers, click the **Add** (+) icon.

Important

- For each node in your cluster, configure a maximum of three DNS servers. You might encounter problems if you configure more than three DNS servers for an appliance.
- For NTP, ensure that port 123 (UDP) is open between Catalyst Center on ESXi and your NTP server.

The **Configure Proxy Server Information** screen opens.

d) Follow one of these steps and then click **Next**:

- If your network does *not* use a proxy server to access the internet, click the **No** radio button.
- If your network does use a proxy server to access the internet, enter the values described in this table:

Field	Description
Proxy Server	Enter the URL or host name of an HTTPS network proxy used to access the Internet. **Note** Connection from Catalyst Center on ESXi to the HTTPS proxy is supported only via HTTP in this release.
Port	Enter the port your appliance used to access the network proxy.
Username	Enter the username used to access the network proxy. If no proxy login is required, leave this field blank.
Password	Enter the password used to access the network proxy. If no proxy login is required, leave this field blank.

The wizard checks the information you have entered and displays any settings that need to be changed before you can proceed If the settings you have entered are valid and the port is up, the wizard's **Advanced Appliance Settings** screen opens.

e) Enter configuration values for your appliance, then click **Next**.

Option	Description
Cluster Virtual IP Addresses	
To access from Enterprise Network and For Intracluster Access fields	Enter the virtual IP address configured for the Enterprise interface. If you configured a virtual IP address for the Management interface, enter this address as well (using a comma to separate the two IP addresses).
Fully Qualified Domain Name (FQDN) field	You can also specify the Fully Qualified Domain Name (FQDN) for your virtual appliance. Catalyst Center on ESXi uses this domain name for these tasks: • It uses this hostname to access your virtual appliance’s web interface and the Representational State Transfer (REST) APIs used by devices in the enterprise network that Catalyst Center on ESXi manages. • In the Subject Alternative Name (SAN) field of Catalyst Center on ESXi certificates, it uses the FQDN to the define the Plug and Play server that should be used for device provisioning.
NTP Server Settings	
NTP Server field	Enter at least one NTP server address or hostname. To enter additional NTP server addresses or hostnames, click the **Add** (+) icon. For a production deployment, Cisco recommends that you configure a minimum of three NTP servers.

Option	Description
Turn On NTP Authentication check box	To enable the authentication of your NTP server before it's synchronized with Catalyst Center on ESXi, check this check box and then enter this information: • The NTP server's key ID. Valid values range between 1 and 4294967295 (2^32-1). This value corresponds to the key ID that's defined in the NTP server's key file. • The SHA-1 key value associated with the NTP server's key ID. This 40-character hex string resides in the NTP server's key file. **Note** Ensure that you enter a key ID and key value for each NTP server that you configured in the previous field.
Subnet Settings	
Container Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal services. By default, this is already set to **169.254.32.0/20**, and we recommend that you use this subnet.
Cluster Subnet field	A dedicated, non-routed IP subnet that Catalyst Center on ESXi uses to manage internal cluster services. By default, this is already set to **169.254.48.0/20**, and we recommend that you use this subnet.

The **Enter CLI Password** page opens.

f) Enter and confirm the password for the `maglev` user, then click **Next**.

The wizard validates the information you have entered and notifies you of any settings that need to be changed before you can proceed with the wizard. If the settings you have entered are valid, the wizard's **Summary** page opens.

Note
To download the appliance configuration as a JSON file, click the corresponding link.

g) Scroll to the bottom of the screen and review all of the settings that you have entered while completing the wizard. If necessary, click the appropriate **Edit** link to open the wizard screen in which you want to make updates.

h) To complete the configuration of your Catalyst Center on ESXi virtual appliance, click **Start Configuration**.

The wizard screen updates during the process, to show which tasks are being completed, their progress, and any errors. Click the **Download** link to save this information as a text file.

The virtual machine becomes operational in 180 to 210 minutes. The time depends on the available bandwidth, RAM, hard disk space, and the number of vCPUs. You can monitor the progress in the vSphere Client's **Recent Tasks** tab.

Step 5 After configuring the appliance, click the copy icon to save the default administrator superuser password.

Services may take between 15 to 30 minutes to stabilize before you can log in to the user interface.

Important
Catalyst Center on ESXi automatically sets this password when you complete the Install configuration wizard. Ensure that you click the copy icon before you proceed. Otherwise, you will not be able to log in to Catalyst Center on ESXi for the first time.

Note
As a security measure, you will be prompted to change this password after you log in. For more information, see Complete the quick start workflow, on page 44.

Configure a virtual appliance using the Interactive CC VA Launcher

To configure a Catalyst Center on ESXi virtual appliance using the CC VA Launcher, complete this procedure.

Note The CC VA Launcher provisions all VM deployments within the default root directory and doesn't support deploying VMs to user-defined folders.

Procedure

Step 1 Go to the Cisco Software Download site and download the Catalyst Center on ESXi OVA file.

Step 2 From the same location, download the CC VA Launcher bundle (**CatC-SW-Launcher-**<*release number*>**-VA.tar.gz**) and extract it.

The bundle includes these files:

- Launcher application: **dnac-esxi-launcher**
- Configuration file for single-network interface controller (NIC) deployments: **config.json**
- Configuration file for dual-network interface controller (NIC) deployments: **config_dual_nic.json**
- Logger configuration file: **log_config.json**
- License: **LICENSE**

Step 3 Start the CC VA Launcher in interactive mode by entering the command that's specific to your operating system:

- macOS: **./dnac-esxi-launcher**
- Microsoft Windows: **dnac-esxi-launcher.exe**
- Linux: **./dnac-esxi-launcher**

Step 4 Complete the CC VA Launcher:

a) For the host/vCenter server you want to deploy the virtual appliance on, enter its IP address, credentials, and SSL port number.

The launcher will verify connectivity with the host/vCenter server.

b) Enter the path to the Catalyst Center on ESXi OVA file.

If you are specifying a Microsoft Windows path, use "\\" as the delimiter. Your path should look similar to: `C:\\Users\\dnac\\downloads\\esxi_10.ova`

c) Enter the name of the virtual machine you are going to create.

d) Choose the provisioning format the virtual disk will use, then press **Enter**.

Both thin and thick provisioning formats are supported. Thick provisioned format is the default.

Note
Thick provisioning for NFS datastores is supported only if the storage vendor allows it. Otherwise, the system uses the datastore's default provisioning format during import.

e) Choose one of these discovery modes, then press **Enter**:

Note
This step is not applicable to standalone ESXi hosts. Proceed to Step 4h.

- **Discover all the VMware Datacenters**: When selected, only the datacenters that you have access to and meet Catalyst Center on ESXi's memory, CPU reservation, and disk space requirements are listed.
- **List all available VMware Datacenters**: When selected, all available datacenters are listed.

f) Choose the datacenter you want to use, then press **Enter**.

Discovery time depends on network speed and the number of hosts, clusters, virtual machines, or datastores.

g) If clusters or directly-attached hosts are available, you are prompted to choose the corresponding deployment target option:

- If you choose the cluster option, suitable clusters and their unreserved resources are listed. Specify the cluster you want to use and proceed to Step 4h.

  Note
  A warning message is displayed if the cluster you chose does not have vSphere HA enabled, as well as the cluster's Distributed Resource Scheduler (DRS) status.

- If you choose the directly-attached hosts option (or choose the cluster option and DRS is disabled), suitable hosts are listed. Specify the host you want to use and proceed to Step 4h.

  Note
  If DRS is enabled and a resource pool is found, you are prompted to confirm the use of the resource pool in your deployment.

h) The suitable datastores that are available, based on the disk provisioning format you chose previously, are listed. Specify the datastore you want to use.

Note
For NFS datastores, thick provisioning is supported only if the underlying storage vendor supports it. If not, the datastore's default provision will be picked during import.

i) Enter either **y** or **n** to specify whether you want to configure the Management interface of the virtual appliance.

A list of available networks is displayed.

j) Choose the network you want to use for the appliance's Enterprise interface.

If you selected **y** in the previous step, choose the network for the Management interface of the appliance.

k) Enter the IP address and subnet mask for the Enterprise interface:

- If you configure only the Enterprise interface (by entering **n** in Step 4i), enter the IP address for its gateway.
- If you entered **y** in Step 4i, enter **y** and then configure the default gateway that the Enterprise interface will use.

Note
The default gateway can be configured only for one of the appliance's interfaces. If you want to configure the default gateway on the Management interface, enter **n**.

l) Enter **y** or **n** to specify whether you want to configure static routes for the Enterprise interface.

If you enter **y**, enter the number of static routes you want to set up. Also enter each route in this format: <*network*>/<*netmask*>/<*gateway*>.

m) If you opted to configure the appliance's Management interface (by entering **y** in Step 4i), enter its IP address and subnet mask.

n) If you entered **n** in Step 4k, enter the default gateway that the Management interface will use.

o) Enter **y** or **n** to specify whether you want to configure static routes for the Management interface.

If you enter **y**, enter the number of static routes you want to set up. Also enter each route in this format: <*network*>/<*netmask*>/<*gateway*>.

p) Enter **y** or **n** to specify whether you want to configure a proxy server.

Note
Only HTTP proxy servers are supported.

q) If you entered **y** in the previous step, specify whether authentication has been enabled for your proxy server by entering **y** or **n**.

r) If you entered **y** in the previous step, enter your proxy server's login credentials.

s) Enter the number of DNS servers you want to configure.

You must configure at least one server and can configure a maximum of three. If prompted, enter the IP address for the DNS servers you want to configure.

t) Enter the number of NTP servers you want to configure.

You must configure at least one server and can configure a maximum of three. If prompted, enter the IP address for the NTP servers you want to configure.

u) Specify whether you want to configure a fully qualified domain name (FQDN) by entering **y** or **n**.

If you enter **y**, enter the appropriate FQDN.

Note
The FQDN cannot contain special characters except for hyphens.

v) Enter and then confirm the Maglev password. Use this password to access the shell and enable SSH access.

The password must meet these requirements:

- Minimum length of 8 characters.
- Cannot contain a tab or a line break.
- Contains characters from at least three of these categories:

- Uppercase letters (A–Z)
- Lowercase letters (a–z)
- Numbers (0–9)
- Special characters (for example, ! or #)

A summary of your settings is displayed.

w) Start the deployment and configuration process by entering **y**.

The launcher completes these tasks:

1. Imports the OVA file.
2. Adds the interface to the virtual machine if you have opted to configure the Management interface.
3. Applies the Catalyst Center on ESXi network configuration to the virtual machine.
4. Checks whether the **Enable Storage I/O Control and statistics collection** option has been enabled and displays a message if it hasn't.
5. Powers on the deployed virtual machine.

Note
The time necessary to complete deployment depends on the available network bandwidth and datastore throughput.

Step 5 After the Catalyst Center on ESXi virtual appliance powers on, log in to the host/vCenter server where you deployed it. Open the VMware console for your virtual appliance.

After the virtual appliance boots up, it may take up to 60 minutes for the terminal shell to open.

Step 6 Log in, using the same Maglev password you entered in Step 4v.

The default username is **maglev**.

Step 7 When all the Catalyst Center on ESXi services are running, use a supported browser and access the Enterprise interface using the IP address you provided earlier. If you configured the Management interface, use its IP address.

Step 8 When prompted by the Catalyst Center on ESXi GUI, enter the default credentials (**admin/P@ssword9**) to log in.

Configure a virtual appliance using the CC VA launcher in silent mode

Use the silent mode of the CC VA Launcher to deploy a Catalyst Center on ESXi virtual appliance with the settings specified in the config.json file. Use silent mode to integrate the launcher into a deployment automation workflow. Complete these steps to configure a virtual appliance using the launcher's silent mode.

Note The CC VA Launcher provisions all VM deployments within the default root directory and does not support deploying VMs to user-defined folders.

Procedure

Step 1 Go to the Cisco Software Download site and download the Catalyst Center on ESXi OVA file.

Step 2 Download the launcher bundle (**CatC-SW-Launcher-<*release number*>-VA.tar.gz**) from the same location and extract it.

The bundle contains these files:

- launcher application: **dnac-esxi-launcher**,
- configuration file if you are configuring only the Enterprise interface: **config.json**,
- configuration file if you are configuring both the Enterprise and Management interfaces: **config_dual_nic.json**,
- logger configuration file: **log_config.json**, and
- license: **LICENSE**.

Step 3 Navigate to the directory where the CC VA Launcher bundle files were extracted and open the configuration file in a text editor.

- For single NIC deployments, where you want to configure the Enterprise interface of the appliance, open **config.json**.
- For dual NIC deployments, where you want to configure the Enterprise and Management interface of the appliance, open **config_dual_nic.json**.

Step 4 For the parameters provided in the configuration file, enter the values specific to your deployment.

For more information, see Configuration file parameters, on page 39.

Note
For optional parameters that you are not using, enter an empty string (""). For example, if you do not want to specify an FQDN for the virtual appliance, its entry would look like this: `"fqdn": ""`

Step 5 Run the CC VA Launcher using the values that you specified in the configuration file:

a. If necessary, navigate back to the directory where the launcher bundle files were extracted.

b. Enter the command that is specific to your operating system:

- macOS: **./dnac-esxi-launcher -c** *configuration-filename* **-u** *vCenter-or-host-username* **-p** *vCenter-or-host-password* **-l** *Maglev-password* **--proxy_user** *proxy-username* **--proxy_password** *proxy-password*
- Microsoft Windows: **dnac-esxi-launcher.exe -c** *configuration-filename* **-u** *vCenter-or-host-username* **-p** *vCenter-or-host-password* **-l** *Maglev-password* **--proxy_user** *proxy-username* **--proxy_password** *proxy-password*
- Linux: **./dnac-esxi-launcher -c** *configuration-filename* **-u** *vCenter-or-host-username* **-p** *vCenter-or-host-password* **-l** *Maglev-password* **--proxy_user** *proxy-username* **--proxy_password** *proxy-password*

Note
- If the host or vCenter server is installed with a self-signed certificate, enter the following command to skip the SSL certificate validation: **./dnac-esxi-launcher config.json -d -u** *vCenter-or-host-username* **-p** *vCenter-or-host-password* **-l** *Maglev-password* (single NIC deployment) or **./dnac-esxi-launcher config_dual_nic.json -d -u** *vCenter-or-host-username* **-p** *vCenter-or-host-password* **-l** *Maglev-password* (dual NIC deployment)

- The **--proxy_user** and **--proxy_password** parameters are optional and only need to be entered if an authentication-based proxy is being used.
- If any of the passwords you specify in this command contain OS-specific special characters, we recommend that you enter them as an escape sequence. An escape sequence is a backslash (\) followed by the characters or their corresponding octal or hexadecimal number.

After the CC VA Launcher starts, it:

- verifies connectivity with the host or vCenter server,
- validates the target environment and configuration parameters,
- displays a configuration summary after successful validation,
- imports the OVA file,
- adds this interface to the imported virtual machine if you opted to configure the Management interface,
- applies the Catalyst Center on ESXi network configuration to the virtual machine, and
- checks whether the **Enable Storage I/O Control and statistics collection** option has been enabled and displays a message if it has not.
- Powers on the deployed virtual machine.

Deployment time depends on the available network bandwidth and target the datastore's throughput.

Step 6 When the virtual appliance powers on, enter the host or vCenter server's credentials to open the VMware console of the appliance.

It can take up to an hour for the terminal shell to open.

Step 7 Log in, using **maglev** as the username and the password you specified in Step 5.

Step 8 After the Catalyst Center on ESXi services start, use a supported browser to open the IP address you specified for the Enterprise interface in the configuration file.

Step 9 Log in, using **admin** as the username and **P@ssword9** as the password.

Configuration file parameters

This table describes the parameters you need to enter values for in the config.json file.

Note For optional parameters that you are not using, enter an empty string (""). For example, if you do not want to specify a Fully Qualified Domain Name (FQDN) for the virtual appliance, its entry would look like this: `"fqdn": ""`

Category	Configuration Parameter	Description
Host/vCenter information (host_info)	ip (ip)[2]	IP address or FQDN of the vCenter or standalone ESXi host that the Open Virtual Appliance (OVA) will be imported to. **Note** If a host is managed by vCenter, you cannot specify it.
	SSL Port (ssl_port)[1]	Port that HTTPS is configured for on the vCenter or ESXi host; the default port is 443.
Import configuration (import_info)	OVA file path (ova_path) [1]	Directory where the Catalyst Center on ESXi OVA file was downloaded. **Note** If you are specifying a Microsoft Windows path, use double backslashes as the delimiter. Your path should look similar to this example: `C:\\Users\\dnac\\downloads\\esxi_10.ova`
	Virtual machine (VM) Name (vm_name) [1]	Name of the VM.
	Datacenter (data_center) [3]	Name of the datacenter the virtual appliance OVA file will be imported to. This parameter is not applicable to standalone-ESXi host deployments.
	Cluster Name (cluster) [4]	Name of the cluster where the virtual machine will reside.
	Resource Pool (resource_pool)[3]	Resource pool in which the imported VM should be placed. This parameter is not applicable to ESXi host deployments.
	Host Name (host_name)[2]	The ESXi host (managed by vCenter) in which the VM should be placed. This parameter is not applicable to standalone ESXi host deployments.
	Datastore (datastore)[1]	Name of the datastore where the VMDK and other supporting files should be placed.
	Disk Provision (disk_provision)[1]	The virtual disk's provisioning format. The thick provisioned format is set by default, but both thin and thick provisioning formats are supported.
	Enterprise Network (network: enterprise_network)[1]	Name of the host network that will be mapped to the Enterprise network of the virtual machine.
	Management Network (network: management_network)[5]	Name of the host network that will be mapped to the virtual machine's Management network, which is used to access Catalyst Center on ESXi's Graphical User Interface (GUI).

Category	Configuration Parameter	Description
Catalyst Center on ESXi configuration information (dnac_info)	IP Address (address)[1]	IP address of the Enterprise network interface of your virtual appliance.
	Subnet mask (netmask) [1]	Subnet mask for the Enterprise network interface of your virtual appliance.
	Gateway (gateway)[1],[6]	IP address of the Enterprise network interface's gateway.
	Routes (routes)[5]	Static routes for the Enterprise interface. Enter routes in this format: <*network-IP-address*>/<*netmask*>/<*gateway-IP-address*>. If you are specifying multiple routes, separate them with a comma (,).
	IP Address (address)[4]	IP address of the Management interface of your virtual appliance.
	Subnet mask (netmask) [4]	Subnet mask for the Management network interface of your virtual appliance.
	Gateway (gateway)[1],[5]	IP address of the Management network interface's gateway.
	Routes (routes)[5]	Static routes for the Management interface. Enter routes in this format: <*network-IP-address*>/<*netmask*>/<*gateway-IP-address*>. If you are specifying multiple routes, separate them with a comma (,).
	Domain Name System (DNS) servers (dns_servers)[1]	DNS servers used by the virtual appliance. Specify at least one server. You can specify a maximum of three servers, separated by commas.
	HTTP Proxy (http_proxy)[7]	HTTP proxy the virtual appliance will use. When specifying the proxy, use this format: http://*IP-address-or-FQDN*:*port-number* **Note** Keep the proxy's username and password handy if authentication is enabled.
	NTP server (ntp)[1]	NTP servers used by the virtual appliance. Specify at least one server. You can specify a maximum of three servers, separated by commas.
	FQDN (fqdn)[6]	Fully qualified domain name to be configured for the virtual appliance. Aside from hyphens, this name should not contain any special characters.

[2] Mandatory parameter

[3] Mandatory parameter that's applicable only to vCenter Server

[4] Optional parameter that's applicable only to vCenter, and not standalone ESXi hosts

[5] Mandatory parameter applicable only to dual NIC deployments

[6] Optional parameter applicable only to dual NIC deployments

[7] Optional parameter

CC VA Launcher appliance configuration progress indicators

During a silent mode configuration of a Catalyst Center on ESXi virtual appliance, you can monitor the configuration process by viewing the **progress.json** file. You can find this file in the same directory as the CC VA Launcher. It gives you details about the configuration process.

Field	Description
stage	Current stage of the appliance configuration process: • launcher_start: The launcher has been started. • config_file_validation: The configuration file is being validated. • connectivity_verification: Connectivity with the vCenter/ESXi host is being verified. • import_information_validation: Import information (such as datastores, resource pool, and OVA path) is being verified. • import_ova: The Catalyst Center on ESXi OVA file is being imported. • post_import_configuration: The system performs configuration after the import step. • power_on: The virtual machine is being powered on. • deployment: Deployment of the virtual appliance is almost complete.
status	Current status of the configuration stage: • in-progress • completed • failed • waiting • aborted
percentage	Percentage of the Catalyst Center on ESXi OVA file that is imported.
error_code	The error code associated with a failed operation. You can use the table to find descriptions of these codes.
error_desc	Description of an error that occurred.

Error Code	Description
0	The operation was successful.
101	The operation was ended manually.
102	The configuration file was not found.
103	Incorrect configuration file entry.
104	Connection to the vCenter/ESXi host failed.

Error Code	Description
105	The import operation failed.
106	Specified OVA file path is invalid.
107	Datastore field is empty.
108	Invalid import information.
109	Invalid datastore.
110	Invalid datacenter.
111	Datastore does not have the required amount of free space.
112	Invalid disk provisioning.
113	Invalid cluster.
114	Virtual machine not found.
115	Power on operation failed.
116	Chose "No" in the deployment confirmation message.
117	Incorrect command line arguments.
118	Failed to add Management interface.
119	Invalid json file.
120	Mandatory silent mode fields are missing information.
121	Specified OVA file is a different file type.
122	Virtual machine name field is empty.
123	Enterprise network name field is empty.
124	Invalid resource pool.
125	Invalid management network.
126	Virtual name exceeds character limit.
127	Maglev password does not meet password requirements.
129	Invalid ESXi host.
130	Empty datacenter provided for vCenter-based import.
131	Empty hostname provided for vCenter-based import.
132	Invalid network was specified for the vCenter/ESXi host.
133	Virtual machine has insufficient CPU or memory.

Error Code	Description
134	Incorrect Catalyst Center on ESXi information was provided.
135	No suitable datacenter was found during discovery.
136	Empty OVA file path was provided.

Complete the quick start workflow

After you have deployed and configured a Catalyst Center on ESXi virtual appliance, you can log in to its GUI. Use a compatible, HTTPS-enabled browser when accessing Catalyst Center on ESXi.

When you log in for the first time as the admin superuser (with the username `admin` and the SUPER-ADMIN-ROLE assigned), the Quick Start workflow automatically starts. Complete this workflow to discover the devices that Catalyst Center on ESXi will manage. This process also enables the collection of telemetry from those devices.

Before you begin

To log in to Catalyst Center on ESXi and complete the Quick Start workflow, you will need:

- If you completed the Advanced Install configuration wizard, the *admin* superuser username and password that you specified.
- The information described in the *Cisco Catalyst Center Second-Generation Appliance Installation Guide's* "Required First-Time Setup Information" topic.

Procedure

Step 1 Do one of these:

- If you completed either of the Maglev Configuration wizards, access the Catalyst Center on ESXi GUI by using **`https://`** and the IP address of the Catalyst Center on ESXi GUI that was displayed at the end of the configuration process.
- If you completed either of the browser-based configuration wizards, click **Open Catalyst Center Virtual Appliance** on the wizard's last page.

One of these messages appears (depending on the browser that you are using):

- Google Chrome: `Your connection is not private`
- Mozilla Firefox: `Warning: Potential Security Risk Ahead`

Step 2 Ignore the message and click **Advanced**.

One of these messages appears (depending on the browser that you are using):

- Google Chrome:

```
This server could not prove that it is GUI-IP-address; its security certificate is not trusted
 by your computer's
 operating system. This may be caused by a misconfiguration or an attacker intercepting your
connection.
```

- Mozilla Firefox:

```
Someone could be trying to impersonate the site and you should not continue.
Websites prove their identity via certificates.
Firefox does not trust GUI-IP-address because its certificate issuer is unknown,
the certificate is self-signed, or the server is not sending the correct intermediate
certificates.
```

These messages appear because the controller uses a self-signed certificate. For information on how Catalyst Center on ESXi uses certificates, see the "Certificate and private key support" section in the *Cisco Catalyst Center Administrator Guide*.

Step 3 Ignore the message and do one of these:

- Google Chrome: Click the **Proceed to** *GUI-IP-address* **(unsafe)** link.
- Mozilla Firefox: Click **Accept the Risk and Continue**.

Step 4 Click **Log In**.

The Catalyst Center on ESXi login screen appears.

Step 5 Do one of these and then click **Login**:

- If you completed either of the Maglev configuration wizards or the browser-based Install configuration wizard, enter the admin username (**admin**) and password (**P@ssword9**).
- If you completed the browser-based Advanced Install configuration wizard, enter the admin username (**admin**) and password that you set when you configured your Catalyst Center on ESXi appliance.

In the next screen, you are prompted to configure a new admin user (as the default credentials used to log in for the first time will be deleted).

Step 6 Do these in the resulting dialog box, then click **Submit**.

- In the **Roles** drop-down list, ensure that the `SUPER-ADMIN` user role is selected.
- Enter the new admin user's username.
- Enter and then confirm the new admin user's password.

Step 7 Click **Log In**.

The Catalyst Center on ESXi login screen appears.

Step 8 Enter the username and password you configured for the new admin user, then click **Login**.

Step 9 Enter your cisco.com username and password (which are used to register software downloads and receive system communications) and then click **Next**.

Note
If you don't want to enter these credentials at this time, click **Skip** instead.

The **Terms & Conditions** screen opens, providing links to the software End User License Agreement (EULA) and any supplemental terms that are currently available.

Step 10 After reviewing these documents, click **Next** to accept the EULA.

The **Quick Start Overview** slider opens. Click > to view a description of the tasks that the Quick Start workflow will help you complete in order to start using Catalyst Center on ESXi.

Step 11 Complete the Quick Start workflow:

a) Click **Let's Do it**.

b) In the **Discover Devices: Provide IP Ranges** page, enter this information and then click **Next**:

- The name for the device discovery job.
- The ranges of IP addresses for the devices you want to discover. Click **+** to enter additional ranges.
- Specify whether you want to designate your appliance's loopback address as its preferred management IP address. For more information, see the "Preferred Management IP Address" topic in the *Cisco Catalyst Center User Guide*.

c) In the **Discover Devices: Provide Credentials** screen, enter the information described in this table for the type of credentials you want to configure and then click **Next**:

GUI Components	Description
CLI (SSH) Credentials	
Username field	Username used to log in to the CLI of the devices in your network.
Password field	Password used to log in to the CLI of the devices in your network. The password you enter must be at least eight characters long.
Name/Description field	Name or description of the CLI credentials.
Enable Password field	Password used to enable a higher privilege level in the CLI. Configure this password only if your network devices require it.
SNMP Credentials	
SNMPv2c radio button	Click to use SNMPv2c credentials.
SNMPv3 radio button	Click to use SNMPv3 credentials.
SNMP Credentials: SNMPv2c	
SNMPv2c Type drop-down list	Choose either a read or write community string when SNMPv2c credentials are used.
Name/Description field	Name or description of the SNMPv2c read or write community string.
Community String field	Read-only community string password used only to view SNMP information on the device.
SNMP Credentials: SNMPv3	
Name/Description field	Name or description of the SNMPv3 credentials.
Username field	Username associated with the SNMPv3 credentials.

GUI Components	Description
Mode field	Security level that SNMP messages require: • **No Authentication, No Privacy** (noAuthnoPriv): Does not provide authentication or encryption. • **Authentication, No Privacy** (authNoPriv): Provides authentication, but does not provide encryption. • **Authentication and Privacy** (authPriv): Provides both authentication and encryption.
Authentication Password field	Password required to gain access to information from devices that use SNMPv3. The password must be at least eight characters in length. Note these points: • Some wireless controllers require that passwords be at least 12 characters long. Be sure to check the minimum password requirements for your wireless controllers. Failure to ensure these required minimum character lengths for passwords results in devices not being discovered, monitored, or managed by Catalyst Center on ESXi. • Passwords are encrypted for security reasons and are not displayed in the configuration.
Authentication Type field	Hash-based Message Authentication Code (HMAC) type used when either **Authentication and Privacy** or **Authentication, No Privacy** is set as the authentication mode: • **SHA**: HMAC-SHA authentication. • **MD5**: HMAC-MD5 authentication.
Privacy Type field	Privacy type. (Enabled if you select **Authentication and Privacy** as **Mode**.) Choose one of these privacy types: • **AES128**: 128-bit CBC mode AES for encryption. • **AES192**: 192-bit CBC mode AES for encryption on Cisco devices. • **AES256**: 256-bit CBC mode AES for encryption on Cisco devices. **Note** • Privacy types AES192 and AES256 are supported only for use with Discovery and Inventory features. Assurance features are not supported. • Privacy type AES128 is supported for Discovery, Inventory, and Assurance.

GUI Components	Description
Privacy Password field	SNMPv3 privacy password that is used to generate the secret key for encrypting messages that are exchanged with devices supported with AES128, AES192, and AES256 encryption standards. Passwords (or passphrases) must be at least eight characters long. Note these points: • Some wireless controllers require that passwords be at least 12 characters long. Be sure to check the minimum password requirements for your wireless controllers. Failure to ensure these required minimum character lengths for passwords results in devices not being discovered, monitored, or managed by Catalyst Center on ESXi. • Passwords are encrypted for security reasons and are not displayed in the configuration.
NETCONF	
Port field	The NETCONF port that Catalyst Center on ESXi should use in order to discover wireless controllers that run Cisco IOS-XE.

d) In the **Create Site** screen, group the devices you are going to discover into one site in order to facilitate telemetry and then click **Next**.

You can enter the site's information manually or select the preferred GUI that was displayed at the end of the configuration process using the map interface.

e) In the **Enable Telemetry** screen, check the network components that you want Catalyst Center on ESXi to collect telemetry for and then click **Next**.

f) In the **Summary** screen, review the settings that you have entered and then do one of these:

- If you want to make changes, click the appropriate **Edit** link to open the relevant screen.
- If you are satisfied with the settings, click **Start Discovery and Telemetry**. Catalyst Center on ESXi validates your settings to ensure that they will not result in any issues. After validation is complete, the screen updates.

  Catalyst Center on ESXi begins the process of discovering your network's devices and enabling telemetry for the network components you selected. The process takes at least thirty minutes (0.5 hours). It may take longer for larger networks.

g) Click **Launch Homepage** to open the Catalyst Center on ESXi homepage.

From here, you can monitor the progress of device discovery and telemetry enablement. While these tasks are completing, do one or more of these:

- To open the **Discoveries** page and confirm that the devices in your network have been discovered, click the menu icon and choose **Tools** > **Discovery**.
- To verify that the credentials you entered previously have been configured for your site, click the menu icon and choose **Design** > **Network Settings**. Then click the **Device Credentials** tab.
- To view any tasks (such as a weekly scan of the network for security advisories) that Catalyst Center on ESXi has already scheduled to run, click the menu icon and choose **Activities**. Then click the **Tasks** tab.

- To access guided workflows that will help you set up and maintain your network, click the menu icon and choose **Workflows**.

Enable an air-gapped deployment

An air gap is a security measure that involves isolating a network and preventing it from establishing external connections. Transfer data into an air-gapped network by inserting removable media, such as a USB drive, or by connecting a laptop. To enable an air gap for your Catalyst Center on ESXi deployment, complete these steps.

Procedure

Step 1 Deploy a virtual appliance, making sure to leave the proxy server unconfigured.

Step 2 Contact the Cisco Technical Assistance Center (TAC) to enable an air gap for your network.

CHAPTER 3

Postdeployment Changes

Postdeployment configurations

After you deploy a virtual appliance, complete these tasks to run the appliance.

Enable VM restart priority

If VMware vSphere HA is enabled in your environment, complete this procedure to ensure that the VM of the virtual appliance is prioritized to power on first during an HA failover.

Procedure

Step 1 In the vSphere Client's navigation pane, click the HA cluster.

Step 2 Click the **Configure** tab.

Step 3 Choose **Configuration** > **VM Overrides** and then click **Add**.

Step 4 Click the virtual machine you want to apply overrides to and then click **OK**.

Step 5 In the **vSphere HA** area, **VM Restart Priority** field, perform these steps:

a. Check the **Override** check box.

b. From the drop-down list, choose **High**.

Step 6 Click **Finish**.

Configure VM reservation for recovery site

If you enable disaster recovery for Catalyst Center on ESXi using the vSphere Site Recovery Manager (SRM), ensure that the required resources are reserved during failover. Complete this procedure to reserve the resources. When you configure vSphere replication on the virtual appliance, the recovery site's VM (also called the placeholder VM) does not have a reservation configured on the main site. Configure the reservation manually after replication completes.

Procedure

Step 1 In the vSphere Client's navigation pane, click the secondary site's placeholder VM.

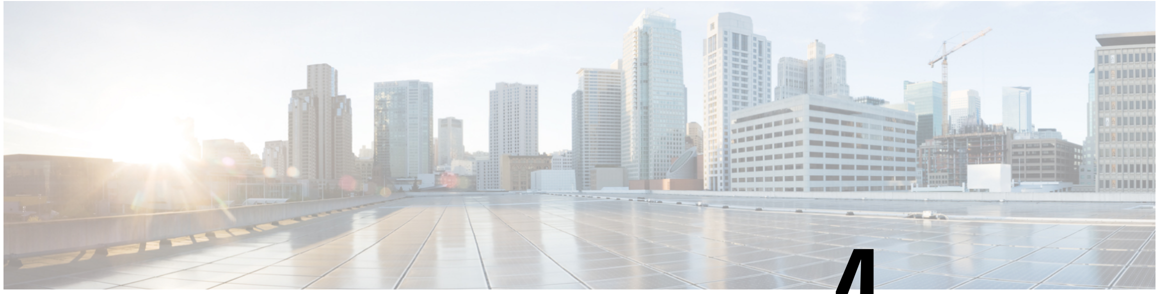
Step 2 Click **Actions**, then choose **Edit Settings**.

Step 3 With the **Virtual Hardware** tab selected, configure a 64-GHz (64-gigahertz) reservation for the **CPU** parameter and a 256-GB (256-gigabyte) reservation for the **Memory** parameter.

Step 4 Click **OK**.

Recovery site VM resource pool reservations

If you deployed a virtual appliance in a resource pool and mapped its primary site resource pool to a secondary site resource pool with Site Recovery Manager (SRM) for vSphere, make sure the secondary site's resource pool reserves the resources the virtual appliance needs.



CHAPTER 4

Upgrade Catalyst Center on ESXi

Upgrade to Catalyst Center 3.1.6 on ESXi

Before you begin

- Create a backup of your Catalyst Center on ESXi database.
- If your deployment uses a firewall, ensure Catalyst Center on ESXi can access this location on each cluster node to download system and package files from: https://www.ciscoconnectdna.com:443.

Note Only users with the SUPER-ADMIN-ROLE can complete this procedure.

Procedure

Step 1 A pop-up window opens in the top-right corner, indicating that a new version of Catalyst Center on ESXi is available. Click the **Go to Software Management** link.

Note

If you do not see this pop-up window, you can also click the menu icon from the upper-left corner and choose **System** > **Software Management**.

Step 2 In the **Software Management** page, click **Upgrade**.

Step 3 In the **Upgrade Release** dialog box, click **Install**.

Step 4 In the **Schedule Upgrade** dialog box, specify when you want to start the upgrade; then click **Download**.

You can track the upgrade progress from the **Activities** page.

Upgrade to Catalyst Center 3.1.6 on ESXi in an air-gapped deployment

Procedure

Step 1 Download the *.tar.gz file from the location specified by Cisco.

Step 2 Enter the following command to copy the file to the **/airgap** folder on the virtual appliance:

```
scp -P 2222 *.tar.gz maglev@<appliance-IP-address>:/airgap
```

Step 3 Log in to the Catalyst Center on ESXi GUI.

Step 4 From the main menu, choose **System** > **Software Management**.

Step 5 Click **Scan**.

Step 6 After the system locates the files required to complete the upgrade, choose one of these options:

- Click **PreLoad** to download the upgrade files. If you select this option, schedule the upgrade time.
- Click **Upgrade** to download the relevant files and begin the upgrade immediately.