



Installing Cisco CMX

- [Installing Cisco CMX in a VMware Virtual Machine, on page 1](#)

Installing Cisco CMX in a VMware Virtual Machine

This chapter describes how to install and deploy a Cisco Mobility Services Engine (MSE) virtual appliance.

Cisco CMX is a prebuilt software solution that comprises one or more virtual machines (VMs) that are packaged, maintained, updated, and managed as a single unit. Cisco CMX is distributed as an Open Virtual Appliance (OVA) for installation on a virtual appliance and as an ISO image for installation on a physical appliance.

Cisco CMX acts as a platform (physical or virtual Cisco Mobility Services Engine [MSE] appliance) to deploy and run the Cisco services.

If you choose Location during installation, you will see the following services in Cisco CMX GUI.

- DETECT & LOCATE—Active for 120 day trial period unless either a CMX base or advanced license is added.
- ANALYTICS—Active for 120 day trial period unless a CMX advanced license is added.

Virtualization Concepts

Refer to these documents for information on virtualization:

- [Virtualization Overview](#)
- [Setting Up ESXi](#)
- [Virtualization Basics](#)

Installation Overview

The following table lists the Cisco CMX virtual appliance installation process and contains information about the sections providing details about them:

Table 1: Installation Overview

Step	Task	See
1	Review the deployment checklist and prepare for the installation of a Cisco CMX virtual appliance.	Cisco CMX Virtual Appliance Deployment Checklist, on page 2 and Hardware Guidelines, on page 3
2	Download the Cisco CMX Open Virtualization Archive (OVA) file from Cisco.com.	Downloading the Cisco CMX OVA File, on page 8
3	Deploy the Cisco CMX OVA file.	Deploying the Cisco CMX OVA File Using the VMware vSphere Web Client, on page 8
4	Configure the basic configurations and install the Cisco CMX virtual appliance.	Configuring Cisco CMX Release 11.0.0, on page 17



Note Performing a Cisco CMX installation over high latency links might not work in a reliable manner. If you want to install Cisco CMX on a remote location, we recommend that you load the ISO to a remote file server that can be accessed locally by the remote server.

Restrictions for Installing Cisco CMX in a VMware Virtual Machine

- Map size must be less than 5 MB in Cisco Prime Infrastructure.
- There must be less than 1000 access points on a single map.
- The Mobile Application Server is not available.
- The Wireless Intrusion Prevention System (wIPS) is available with limited feature support. From 10.4 release onwards, Cisco CMX supports rogue access points and rogue clients.
- A common NTP server must be used to synchronize the time.
- Simple Mail Transfer Protocol (SMTP) Mail Server name and authentication mechanism must be used for the Cisco CMX mail notification system.
- VMware vSphere Storage API - Data Protection (VADP) hypervisor clone feature is not supported

Cisco CMX Virtual Appliance Deployment Checklist

- Cisco Wireless Controller has IP connectivity to a Cisco CMX instance.
- Cisco Prime Infrastructure has IP connectivity to a Cisco CMX instance.
- Port 16113 is routable from Cisco WLC to the Cisco CMX IP address.
- Port 161 (for Simple Network Management Protocol [SNMP] traffic) is routable from Cisco WLC to the Cisco CMX IP address.
- SSH client to log in with the root access to the VM is present.

- A Secure Copy (SCP) client (on MAC native or installed on PC) or a Secure File Transfer Protocol (SFTP) exists to move files into Cisco CMX OVA (specifically, map files and images to upgrade).
- Ensure that UDP port 2003 is routable from Cisco WLC to Cisco CMX IP address for hyperlocation .



Note If you are using Cisco 3365 CMX Appliance and need to deploy Cisco CMX 10.5, you can only restore a backup file of maximum 200GB. If your backup file size is more than 200GB, we recommend that you add external disks or perform a selective backup for restoring Cisco CMX data.

Prerequisites for Installing Cisco CMX in a VMware Virtual Machine

- VMWare vSphere client.
- Cisco 11.0.0 OVA, which can be downloaded from [Download Software](#) page on cisco.com.
- Hostname IP address, netmask, default gateway, DNS IP address, and Network Time Protocol (NTP) Server IP address or name.

Hardware Guidelines

The following table lists the hardware guidelines for the Cisco CMX virtual appliance.



Note If the hardware requirements are not met, the OVA deployment fails. Similarly, the Cisco CMX setup fails during installation when the other minimum requirements listed in the table below are not met.

Table 2: Hardware Guidelines

Hardware Platform	Basic Appliance	Standard Appliance	High-End Appliance
CPU	8 vCPU (2.4 GHz core)	16 vCPU (2.4 GHz core)	20 vCPU (2.4 GHz core)
RAM	24 GB	48 GB	64 GB ¹
HDD ²	550 GB	550 GB	1 TB

¹ The high-end deployment VM (20 vCPU, 64 GB RAM) reserves 63.74 GB for itself and the rest of the RAM is used by ESXi.

² For Cisco CMX OVA installation, 250 GB is the default HDD (hard disk drive) on low-end, standard and high-end virtual machines. We strongly recommend immediately after deploying the OVA file and before powering on the VM that you increase the disk space to the recommended amount as described in the above table, so that the HDD resource does not run low while using Cisco CMX. If you do not increase the disk space before powering on the VM, refer to the VMWare 6.7 guidelines on how to increase disk space: https://docs.vmware.com/en/VMware-vSphere/6.7/com.vmware.vsphere.vm_admin.doc/GUID-79116E5D-22B3-4E84-86DF-49A8D16E7AF2.html



Note We recommend you to allocate the required HDD space. For more information, see [Deploying the Cisco CMX OVA File Using the VMware vSphere Web Client, on page 8](#).

Release Upgrade Compatibility Matrix

The following table lists the Cisco CMX releases available on Cisco.com.

Table 3: Cisco CMX Releases Available on Cisco.com

Cisco CMX Release	OVA	3365 ISO	3375 ISO	Upgrade Option Only
10.1.0	cmx-v10-1-0.ova	—		—
10.1.1	—	10.1.1		—
10.1.1-2	—	—		cisco_cmx-10.1.1-2.tar.gz (cisco_cmx-10.1.1-2.x86_64.rpm and cisco_cmx_connect-10.1.1-30.x86_64.rpm)
10.1.2	—	—		cisco_cmx-10.1.1-2.tar.gz
10.2	10.2 OVA	10.2 ISO		10.2 backend upgrade (10.1 and 10.1.1 to 10.2) script and.CMX image file
10.3	10.3 OVA	10.3 ISO		—
10.4	10.4 OVA	10.4 ISO		—
10.5	10.5 OVA	10.5 ISO		No direct upgrade option. New OVA/ISO System
10.6	10.6 OVA	10.6 ISO	10.6 ISO	—

Table 4: Node Types Supported Per Release

Release	Location and Analytics Node	Location and Connect Node	Location, Analytics, and Connect Node (L-Node)	Connect and Presence Node (P-Node)	High Availability
10.1.0	Yes	—	—	—	—
10.1.1-2	Yes	Yes	Yes	—	—
10.1.2	Yes	Yes	Yes	—	—

Release	Location and Analytics Node	Location and Connect Node	Location, Analytics, and Connect Node (L-Node)	Connect and Presence Node (P-Node)	High Availability
10.2	Use the upgrade script to change Location and Analytics to Location, Analytics, and Connect internally.	Use the upgrade script to change Location and Connect to Location, Analytics, and Connect internally.	Yes	Yes	—
10.3	Use the upgrade script to change Location and Analytics to Location, Analytics, and Connect internally.	Use the upgrade script to change Location and Connect to Location, Analytics, and Connect internally.	Yes	Yes	Yes
10.4	Use the upgrade script to change Location and Analytics to Location, Analytics, and Connect internally.	Use the upgrade script to change Location and Connect to Location, Analytics, and Connect internally.	Use the upgrade script to change Location and Connect to Location, Analytics, and Connect internally.	Yes	Yes
10.5	No direct upgrade is available. New OVA/ISO system upgrade	No direct upgrade is available. New OVA/ISO system upgrade	Yes	Yes	Yes
10.6	Use the upgrade script to change Location and Analytics to Location, Analytics, and Connect internally.	Use the upgrade script to change Location and Connect to Location, Analytics, and Connect internally.	Yes	Yes	Yes

Table 5: Upgrade Path by Node Type

Upgrade Path 1 ³	Location and Connect Node	Location and Analytics Node	Location, Analytics, and Connect Node (L-Node)	Connect and Presence Node (P-Node)
10.1.0 OVA to 10.2	10.2 backend script to upgrade image to 10.2 and change Location and Connect to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2 and change Location and Analytics to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2.	—

10.1.1-2 tar.gz to 10.2	10.2 backend script to upgrade image to 10.2 and change Location and Connect to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2 and change Location and Analytics to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2.	—
10.1.2 tar.gz to 10.2	10.2 backend script to upgrade image to 10.2 and change Location and Connect to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2 and change Location and Analytics to Location, Connect, and Analytics.	10.2 backend script to upgrade image to 10.2.	—
10.2 OVA/ISO to 10.3	—	—	UI upgrade script to upgrade image.	UI upgrade script to upgrade image
10.3 OVA/ISO to 10.4	—	—	UI upgrade script to upgrade image.	UI upgrade script to upgrade image
10.5 OVA/ISO	—	—	UI upgrade script to upgrade image.	UI upgrade script to upgrade image

10.6 OVA/ISO	—	—	UI upgrade script to upgrade image.	Upgrade is supported from the Cisco CMX Release 10.5.x to Cisco CMX Release 10.6. Note Releases earlier than Cisco CMX Release 10.5 cannot be upgraded to Cisco CMX Release 10.6, for example Cisco CMX Release 10.4.1 cannot be upgraded to Cisco CMX Release 10.6.
-----------------	---	---	-------------------------------------	--

³ The path that is provided for upgrade is the same as that used for backup and restore.

VM Alerts

The following table displays the alerts shown on the VM for the following conditions:

Table 6: VM Alerts

Hard Disk Status	Alert Shown
50 percent	Do Not Back Up
80 percent	System Is About To Run Out Of Space
85 percent	All The Services Are Stopped

Downloading the Cisco CMX OVA File

- Step 1** Download the Cisco CMX image from the [Download Software](#) page on cisco.com.
- Step 2** Save the Cisco CMX OVA installer to your computer and ensure that it is accessible.
-

Deploying the Cisco CMX OVA File Using the VMware vSphere Web Client

The VMware vSphere Web Client (Flash/Flex client) manages the vCenter Server 6.5 environment with all the features and plugins. From VMware vSphere Release 6.5, we recommend that you use vSphere Web Client.

From VMware vSphere Release 6.5, the **thick client** is no longer supported. Only the vSphere Client (HTML 5) and vSphere Web Client are supported.

To deploy the Cisco CMX OVA file using the VMware vSphere Web Client, follow these steps.

- Step 1** Launch the VMware vSphere Web Client application on your desktop.
- Step 2** From the **Navigator** pane, click **Create/Register VM** to create or register a virtual machine (VM).
The **Deploy OVF Template** window is displayed.
- Step 3** In the **Select an OVF Template** section, click the **Local file** radio button to browse to a local directory, select the Cisco CMX OVA file that is stored locally, and click **Next**.
This helps you create a VM from a Cisco CMX OVA file.

Figure 1: Select an OVF Template

Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 Select storage

6 Ready to complete

Select an OVF template

Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

URL

Local file

CISCO_CMX-11.0.0.ova

Step 4 In the **Select a name and folder** section, enter the following information and click **Next**.

- **Virtual machine name:** Enter a name for the VM.
- **Select a location for the virtual machine:** Select a location for VM.

Figure 2: Select a Name and Folder

Deploy OVF Template

1 Select an OVF template
2 Select a name and folder
3 Select a compute resource
4 Review details
5 Select storage
6 Ready to complete

Select a name and folder
Specify a unique name and target location

Virtual machine name:

Select a location for the virtual machine.

- CMX Lab
 - ALMA-OS-CMX-VMS
 - CMX Development Servers
 - CMX Templates
 - DNA Spaces Connectors

CANCEL BACK NEXT

Step 5 In the **Select a compute resource** section, select the destination data store for the VM configuration files and virtual disks and click **Next**.

Figure 3: Select a Compute Resource

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- 3 Select a compute resource**
- 4 Review details
- 5 Select storage
- 6 Ready to complete

Select a compute resource

Select the destination compute resource for this operation



Compatibility

✓ Compatibility checks succeeded.

CANCEL

BACK

NEXT

Step 6

In the **License agreements** section, click the **I accept all license agreements** check box to accept the End User License Agreement and click **Next**.

Figure 4: License Agreements

The screenshot shows the 'Deploy OVF Template' wizard in the VMware vSphere Web Client. The wizard is currently on step 5, 'License agreements', which is highlighted in blue. The left sidebar shows the progress of the wizard, with steps 1 through 9 listed. Steps 1-4 are marked with green checkmarks, and step 5 is the current step. Steps 6-9 are not yet reached. The main content area displays the license agreement text, which states that the end-user license agreement must be accepted and that the user must read and accept the terms. The agreement text is enclosed in a scrollable box. Below the scrollable box, there is a checkbox labeled 'I accept all license agreements.' which is checked. At the bottom right of the wizard, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'. The 'NEXT' button is highlighted in blue, indicating it is the active button.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- 5 License agreements**
- 6 Configuration
- 7 Select storage
- 8 Select networks
- 9 Ready to complete

License agreements
The end-user license agreement must be accepted.

Read and accept the terms for the license agreement.

We will reserve part of the resources of CPU and memory based on your OVA selection.

Low-end vMSE:
8 vCPUs. 8000 Mhz will be reserved.
24 GB Memory. 24 GB will be reserved.

Standard vMSE:
16 vCPUs. 16000 Mhz will be reserved.
48 GB Memory. 48GB will be reserved.

High-end vMSE:
20 vCPUs. 20000 Mhz will be reserved.
64 GB Memory. 64GB will be reserved.

I accept all license agreements.

CANCEL BACK NEXT

Step 7 In the **Select storage** section, select the storage for the configuration and disk files and click **Next**.

Figure 5: Select Storage


Deploy OVF Template

1 Select an OVF template
 2 Select a name and folder
 3 Select a compute resource
 4 Review details
 5 License agreements
 6 Configuration
 7 Select storage
 8 Select networks
 9 Ready to complete

Select storage
Select the storage for the configuration and disk files

Select virtual disk format: Thick Provision Lazy Zeroed

VM Storage Policy:

Name	Capacity	Provisioned	Free	Type	Cluster
 datastore-124	11.45 TB	13.89 TB	364.41 GB	VMFS 5	

Compatibility

Compatibility checks succeeded.

CANCEL BACK NEXT

Step 8

In the **Select Networks** section, from the **Destination Network** drop-down list, choose a destination network for each source network and click **Next**.

Figure 6: Select Networks

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Configuration
- ✓ 7 Select storage
- 8 Select networks**
- 9 Ready to complete

Select networks
Select a destination network for each source network.

Source Network	Destination Network
NAT	[Dropdown menu with 1 item]

IP Allocation Settings

IP allocation:	Static - Manual
IP protocol:	IPv4

CANCEL BACK NEXT

Step 9

In the **Ready to complete** section, review the settings and click **Finish**. Do not refresh the browser when the VM is deployed.

Figure 7: Ready to Complete

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Configuration
- ✓ 7 Select storage
- ✓ 8 Select networks
- 9 Ready to complete

Ready to complete
Click Finish to start creation.

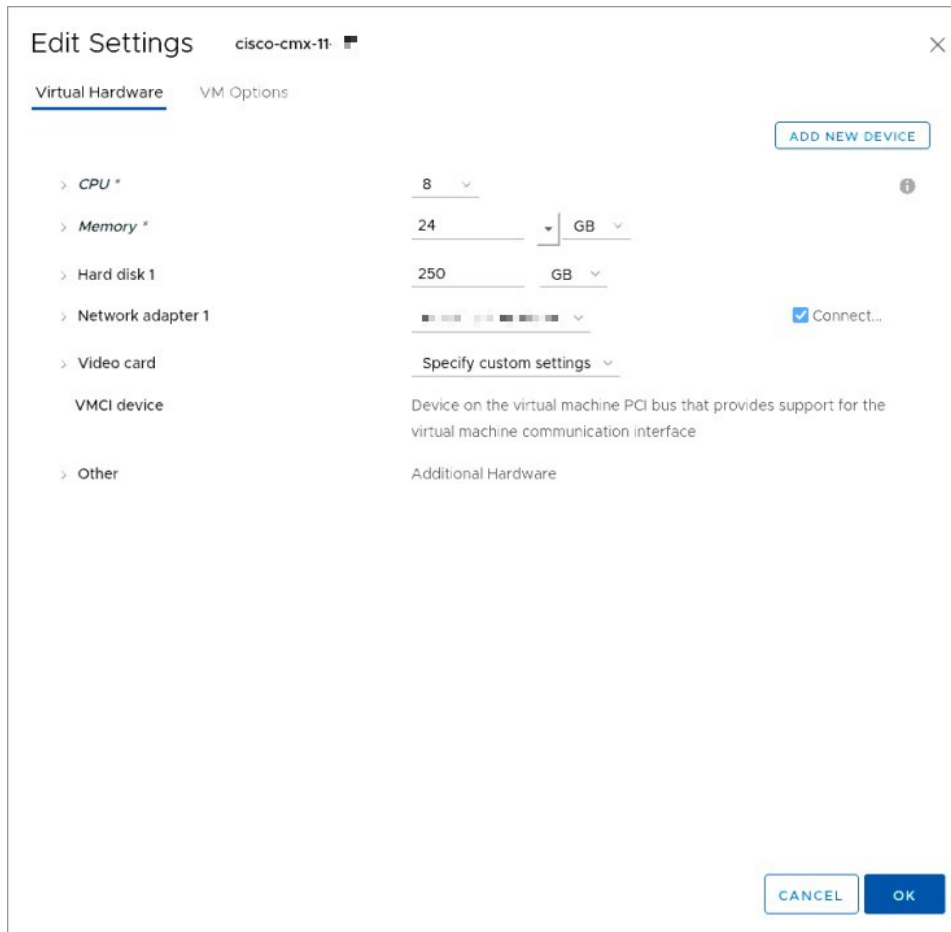
Provisioning type	Deploy from template
Name	cisco-cmx-11
Template name	cisco-cmx
Download size	8.6 GB
Size on disk	250.0 GB
Folder	ALMA-OS-CMX-VMS
Resource	
Storage mapping	1
All disks	Datastore: datastore-124; Format: Thick provision lazy zeroed
Network mapping	1
NAT	
IP allocation settings	
IP protocol	IPV4
IP allocation	Static - Manual

CANCEL
BACK
FINISH

Step 10 Click the deployed VM and choose **Actions > Edit Settings**.

Step 11 In the **Virtual Hardware** tab, in the **Hard disk 1** field, modify the provisioned size to match the instance requirement and click **OK**. The default size is 250 GB.

Figure 8: Hard Disk Provisioned Size



Note If the instance is powered on, it will display a warning message—Hard Disk Size Failure—for Standard and High End instances.


```

Restarting network...
Pinging 10.10.10.1 ..... Success
Pinging 10.10.10.2 ..... Success
Pinging 10.10.10.3 ..... Success
Network configuration completed successfully
*****
Checking if the machine meets required specification...
*****
+-----+-----+-----+-----+
| Check | Minimum Required | Actual | Result |
+-----+-----+-----+-----+
| Memory | 47GB              | 48GB  |  ■    |
+-----+-----+-----+-----+
| CPU    | 16                | 16    |  ■    |
+-----+-----+-----+-----+
| Disk   | 500GB             | 259GB |  ■    |
+-----+-----+-----+-----+
| hostname | RFC Compliant Hostname | test  |  ■    |
+-----+-----+-----+-----+
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!! Disk Check Size Failure !!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Do you wish to continue with disk size failure?: _

```

Step 12 Click **Power on** to power on the VM. The first boot takes a while because the new disk has to be expanded.

Figure 9: Power On VM



Configuring Cisco CMX Release 11.0.0

After the Cisco CMX is deployed, you can install and configure a Cisco CMX VM. Note the following points:

- Cisco CMX does not have a node install menu. However, there is a first-boot script that checks if a configuration exists on the device. If the script does not find a valid configuration, it launches the setup routine and initiates network configuration tasks using the CLI and completes the installation. You should not use the Web install.
- The new first-boot script determines if the initial configuration is completed, and then displays the normal login prompt. If the initial configuration is not completed, the default login prompt is displayed.



Note The `cmxctl node install` command is no longer valid.

To install and configure a Cisco CMX VM, follow these steps.

Step 1 Right-click the Cisco CMX VM and click **Open Console**.

The initial boot displays two options, with the first option being selected by default. Retain the selection and wait for five seconds.

Step 2 Enter the login name `cmxadmin` and password `cisco`, as prompted.

Figure 10: Console

```

CISCO CMX
Please login with user 'cmxadmin' password: cisco
localhost login:
  
```

Step 3 Press **Enter** when prompted.

Figure 11: Press Enter

```

*****
** Welcome to Cisco CMX
** This setup procedure will take you through configuring your CMX.
** Please press the enter key to continue...
  
```

Step 4 Enter a new password for the root user and reconfirm it when prompted. The password should meet the minimum requirements listed on the screen.

Note The root password is used only for the root operating system configuration and not for the `cmxadmin` user functions.

From Cisco CMX Release 10.6.3, you are not required to enter a new password for the root user.

Step 5 Enter a new password for the `cmxadmin` user and reconfirm it. The password should meet the minimum requirements listed on the screen.

Note The `cmxadmin` password is used for logging into the Cisco CMX account for future network admin configurations.

Figure 12: Set Passwords

```

*****
** Welcome to Cisco CMX
** This setup procedure will take you through configuring your CMX.
** Please press the enter key to continue...

*****
** Adding default swap space - takes 5-20 minutes to complete
*****
[ 162.252954] Adding 10485756k swap on /swapfile1. Priority:-3 extents:1 across:10485756k FS
unable to load certificate
140500971604728:error:0906D06C:PEM routines:PEM_read_bio:no start line:pem_lib.c:697:Expecting: TRUSTED CERTIFICATE

** Password Specification
** Password must have 8 to 20 alphanumeric characters...
** ...starting with an alpha character
** Password must contain a digit and must also contain...
** ... a special character like !@#$%^&*()_

Setting new password for *cmxadmin*
Password:

```

Step 6 Enter the following network configuration parameters when prompted.

- Hostname
- IP Address
- Netmask
- Gateway
- DNS Server
- Search Domain Name

Figure 13: Network Configuration Parameters

```

*****
Configuring Network...
*****
Please enter hostname: cisco-cmx-11-
Please enter IP address: 1 1 . 1 1 . 1 1 . 1 1
Please enter netmask: 2 5 5 . 2 5 5 . 2 5 5 . 0
Please enter gateway: 1 9 2 . 1 6 8 . 4 7 2 8
Please enter DNS server: 1 9 2 . 1 6 8 . 4 7 2 8
Please enter search domain name: cisco.com
Are the network settings correct?: yes

```

- Note** For a successful validation, hostname:
- can include a hyphen, however never end or start the hostname with a hyphen
 - can include alphanumeric data
 - cannot not start with a digit
 - cannot not have special characters (for example, .,?,*,_)

Step 7 Confirm the network configurations when prompted.

Figure 14: Network Configuration

```

+-----+-----+-----+-----+
| Check | Minimum Required | Actual | Result |
+-----+-----+-----+-----+
| Memory | 23GB | 24GB | ■ |
+-----+-----+-----+-----+
| CPU | 8 | 8 | ■ |
+-----+-----+-----+-----+
| Disk | 250GB | 259GB | ■ |
+-----+-----+-----+-----+
| hostname | RFC Compliant Hostname | cisco-cmx-11- | ■ |
+-----+-----+-----+-----+
    
```

Step 8 (Optional) Enter the NTP server name or the IP address of the NTP server when prompted.

Figure 15: NTP Server Configuration

```

*****
Configuring NTP Server...
*****
Please enter the NTP server name (blank for no NTP server) []: ntp.esl.cisco.com
Setting ntp server ntp.esl.cisco.com
*****
Configuring Timezone and date...
*****
Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
 1) Africa
 2) Americas
 3) Antarctica
 4) Arctic Ocean
 5) Asia
 6) Atlantic Ocean
 7) Australia
 8) Europe
 9) Indian Ocean
10) Pacific Ocean
11) none - I want to specify the time zone using the Posix TZ format.
#? _
    
```

Note After installation, the task of changing the NTP information either through the CLI or the GUI is not supported. Use the **cmxos reconfigure** command from the CMX CLI to change the NTP information. The following example shows a workaround to change the NTP information:

```
cmxctl stop
cmxctl stop ?a
!Go to root user
su
!Run the timezone script
/opt/cmx/bin/tzselect
!Logout of the box
exit
!Log back in and check the timezone
date
!Restart the services
cmxctl start agent
cmxctl start
```

Step 9 Configure a time zone and save the changes.

Figure 16: Configuring a Time Zone

```
*****
Configuring Timezone and date...
*****
Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
 1) Africa
 2) Americas
 3) Antarctica
 4) Arctic Ocean
 5) Asia
 6) Atlantic Ocean
 7) Australia
 8) Europe
 9) Indian Ocean
10) Pacific Ocean
11) none - I want to specify the time zone using the Posix TZ format.
#? 5
Please select a country.
 1) Afghanistan      18) Israel          35) Palestine
 2) Armenia          19) Japan           36) Philippines
 3) Azerbaijan       20) Jordan          37) Qatar
 4) Bahrain          21) Kazakhstan     38) Russia
 5) Bangladesh      22) Korea (North)  39) Saudi Arabia
 6) Bhutan           23) Korea (South)  40) Singapore
 7) Brunei           24) Kuwait         41) Sri Lanka
 8) Cambodia         25) Kyrgyzstan    42) Syria
 9) China            26) Laos           43) Taiwan
10) Cyprus           27) Lebanon        44) Tajikistan
11) East Timor      28) Macau          45) Thailand
12) Georgia         29) Malaysia       46) Turkmenistan
13) Hong Kong       30) Mongolia       47) United Arab Emirates
14) India           31) Myanmar (Burma) 48) Uzbekistan
15) Indonesia       32) Nepal          49) Vietnam
16) Iran            33) Oman           50) Yemen
17) Iraq            34) Pakistan

#? 14
```

Step 10 Encrypt the /opt partition of the disk. For Cisco CMX Release 11.0.0, select N.

Note Disk encryption is not supported in Cisco CMX Release 11.0.0. If you perform disk encryption, Cisco CMX Release 11.0.0 installation fails.

Figure 17: Disk Encryption

```

*****
Disk Encryption...
*****
Do you want to encrypt the /opt partition of the disk ? [y/N]: N
*****
** Running CMX Node Setup - takes 5-20 minutes to complete
*****

```

Step 11 After the Cisco CMX installation is complete, the following success message is displayed.

Figure 18: Success Message

```

CMX :installation is complete.
Please visit below url to login to CMX
User: admin Password: admin
*****
https://cisco-cmx-11-

```

Step 12 To stop all the Cisco CMX services, run the **cmxctl stop -a** command.

Step 13 To restart the Cisco CMX services, run the **cmxctl start -a** command.

Verifying Installation of Cisco CMX in a VMware Virtual Machine

You can verify the overall system health and status of the Cisco CMX services using the **System** tab in the Cisco CMX GUI. Ensure that all the services, memory, and CPU indicate a healthy status (green) for each Cisco CMX and Cisco CMX node, and that there is at least one active Cisco WLC.

The **System** tab contains the following subtabs:

- **Dashboard:** Provides an overall view of the system.
- **Alerts:** Enables you to view live alerts.
- **Patterns:** Enables you to detect patterns of various criteria, such as Client Count, CPU Usage, Memory Usage, and so on.
- **Metrics:** Enables you to view system metrics.