Installing the Cisco MSE Virtual Appliance on a XenServer

Citrix XenServer is a complete server virtualization platform, optimized for both Windows and Linux virtual servers with all the capabilities required to create and manage a virtual infrastructure.

Citrix XenServer runs directly on server hardware without requiring an underlying operating system, which results in an efficient and scalable system. XenServer works by abstracting elements from the physical machine and allocates them to the Virtual Machines (VMs) running on it.

Citrix XenCenter is the Windows-native graphical user interface for managing Citrix XenServer. Import of MSE virtual appliance onto the XenServer is done using the XenCenter.

This chapter contains the Overview of the Process for Installing the Cisco MSE Virtual Appliance On a XenServer, page 4-1.

Overview of the Process for Installing the Cisco MSE Virtual Appliance On a XenServer

Table 4-1 describes the steps to be followed while deploying the Cisco Mobility Services Engine (MSE) virtual appliance.

Table 4-1 Workflow for MSE Virtual Appliance Installation

Process	Description
1. Verify the requirements and prepare for Cisco MSE VA installation.	See Verifying Requirements, page 4-2 for more information.
2. Download the Cisco MSE VA OVA file from Cisco.com.	See Downloading the Cisco MSE Virtual Appliance OVA File, page 4-2 for more information.
3. Importing VMs.	See Importing the MSE Virtual Appliance Using the XenCenter, page 4-3 for more information.
4. Configure the basic settings.	See Configuring the Basic Settings to Start the MSE Virtual Appliance VM, page 4-10 for more information.
5. Configure the MSE on Prime Infrastructure.	See Configuring MSE on the Prime Infrastructure, page 4-18 for more information.
6. Synchronize the network design and tracking parameters.	See Synchronizing the Network Design and Tracking Parameters, page 4-18 for more information.

Verifying Requirements

Table 4-2 describes the requirements to verify.

Table 4-2 Requirements

System Requirements	64 bit processor Intel VT/AMD-V
	32 GB RAM Memory
	500 GB HDD
	Ethernet Cards (NIC) of 1 Gbps
Software Requirements	Citrix XenServer 6.1 Citrix XenCenter 6.1
Licenses	Enterprise edition or advanced edition
Management Tools	• XenServer Version 6.1.x • XenCenter Version 6.1.x

Downloading the Cisco MSE Virtual Appliance OVA File

To download the MSE .ova file, follow these steps:

Step 1 Access the Cisco MSE Virtual Appliance image at the following location: http://software.cisco.com/download/navigator.html

Step 2 In the **Product/Technology Support** section, choose **Download Software**.

Step 3 In the **Select a Product** section, navigate to the Wireless software by choosing **Products > Wireless > Mobility Services > Cisco Mobility Services Engine Virtual Appliance**.

A list of the latest release software for Cisco Mobility Services Engine Virtual Appliance is available for download.

Step 4 In the **Latest** list, choose 7.6.100.0.

Step 5 You can select any of the following ova files to download:

- **MSE-XEN-VA-8-0-100-0-Generic.ova**—Use this file for a new MSE deployment on a Xen platform.
- **MSE-XEN-VA-8-0-100-0-LowEnd.ova**—Use this file for a new MSE deployment on a low-end Xen platform.

Step 6 Save the installer to your computer in a place that will be easy to find when you start the deployment.

Importing the MSE Virtual Appliance Using the XenCenter

You can import and export Virtual Machines (VMs) in XenCenter using the Import and Export wizards.

To import an Open Virtualization Archive (OVA) package, follow these steps:

Step 1 Launch XenCenter Client application on your desktop and log in using the Administrative privileges.

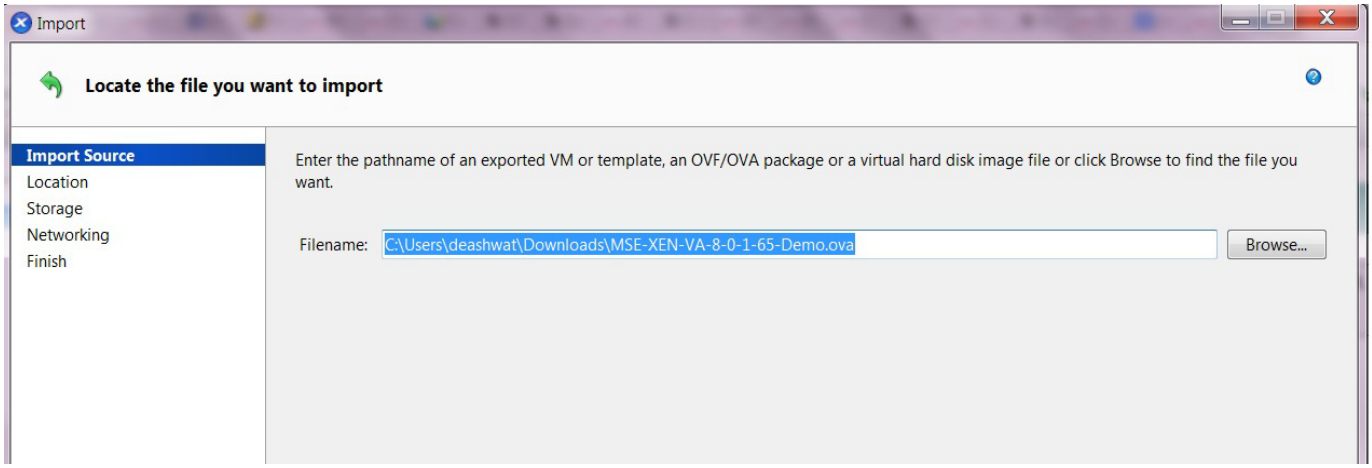
Step 2 Add XenServer to XenCenter if it is not added. You can skip this step if you have already connected the XenCenter to the XenServer host. See this URL for more information: https://support.citrix.com/servlet/KbServlet/download/32306-102-691299/QuickStartGuide_BasicVersion.pdf.

Step 3 Right-click on XenServer in the XenCenter client and choose **Import** to import the MSE OVA file.

The Import wizard appears.

Step 4 In the Import Source page, click **Browse** to select the MSE OVA file (see Figure 4-1).

Figure 4-1 Import Source Page



Step 5 From the Open dialog box, locate the appropriate .ova file that you downloaded to your computer and click **Open**.

Step 6 Click **Next**.

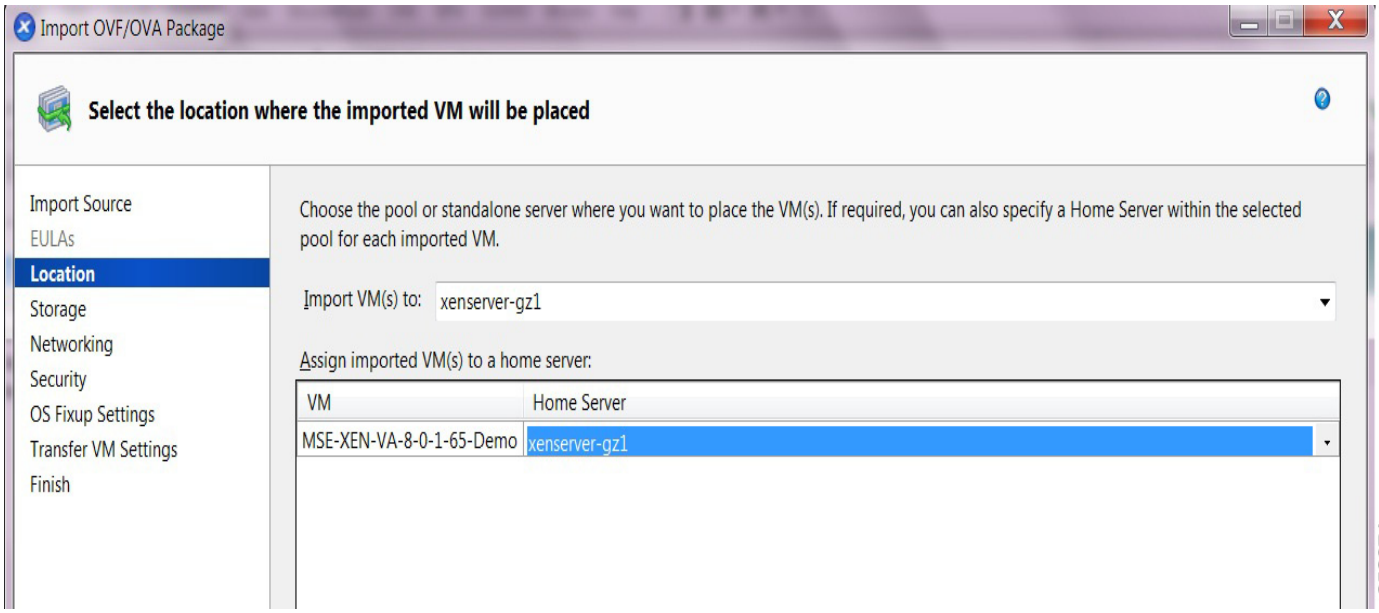
The Location page appears (see Figure 4-2).

Note If the package you are importing includes any EULAs, accept them and click **Next** to continue. If there are no EULAs included in the package, the wizard skips this step and goes to the next page. Review and accept End User License Agreement (EULA).

Step 7 In the Location page, choose the pool or standalone server where you want to place the VM(s). You can also specify a Home Server within the selected pool for each imported VM.

- From the Import VM(s) to drop-down list, choose the destination pool or standalone server where you want to place the VMs that you are importing and assign them a home server. The Add New Server window appears.
  - In the Server text box, enter the host name or IP address of the server you want add.
  - In the User name text box, enter the user name for that server.
  - In the Password text box, enter the password.
- To assign imported VM(s) to a home server, select the server from the list in the **Home Server** column (see Figure 4-2). For more information on assigning a home server to new VMs, see the *Home Server documentation* available at the Citrix Website.

Figure 4-2 Location Page



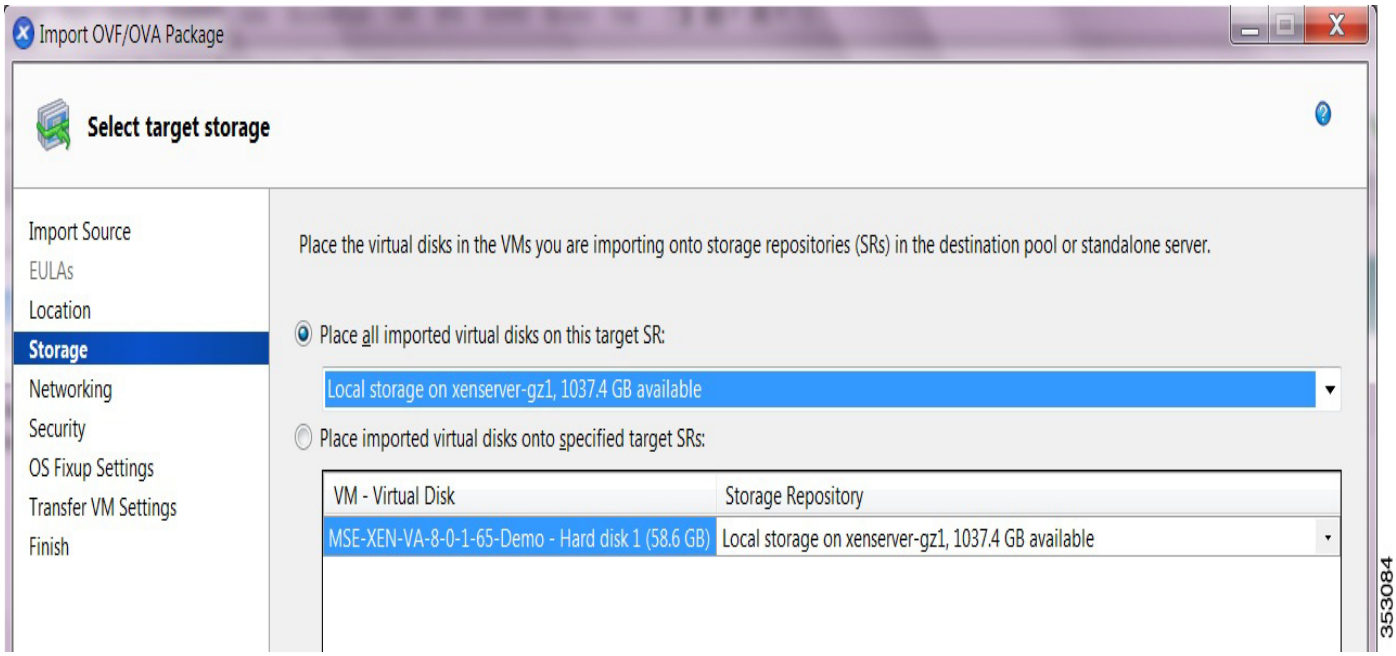
Step 8 Click **Next**.

The Storage page appears (see Figure 4-3).

Step 9 Configure storage for the imported VMs.

On the **Storage** page, select one or more storage repositories (SRs) to place the virtual disks (see Figure 4-3).

Figure 4-3 Storage Page



- To place the imported disk images on the same SR, click **Place all imported virtual disks on this target SR** radio button and select an SR from the list.
- To place the disk images of incoming VMs onto different SRs, click **Place imported virtual disks onto specified target SR** radio button and select the target SR from the drop-down list in the **Storage Repository** column.

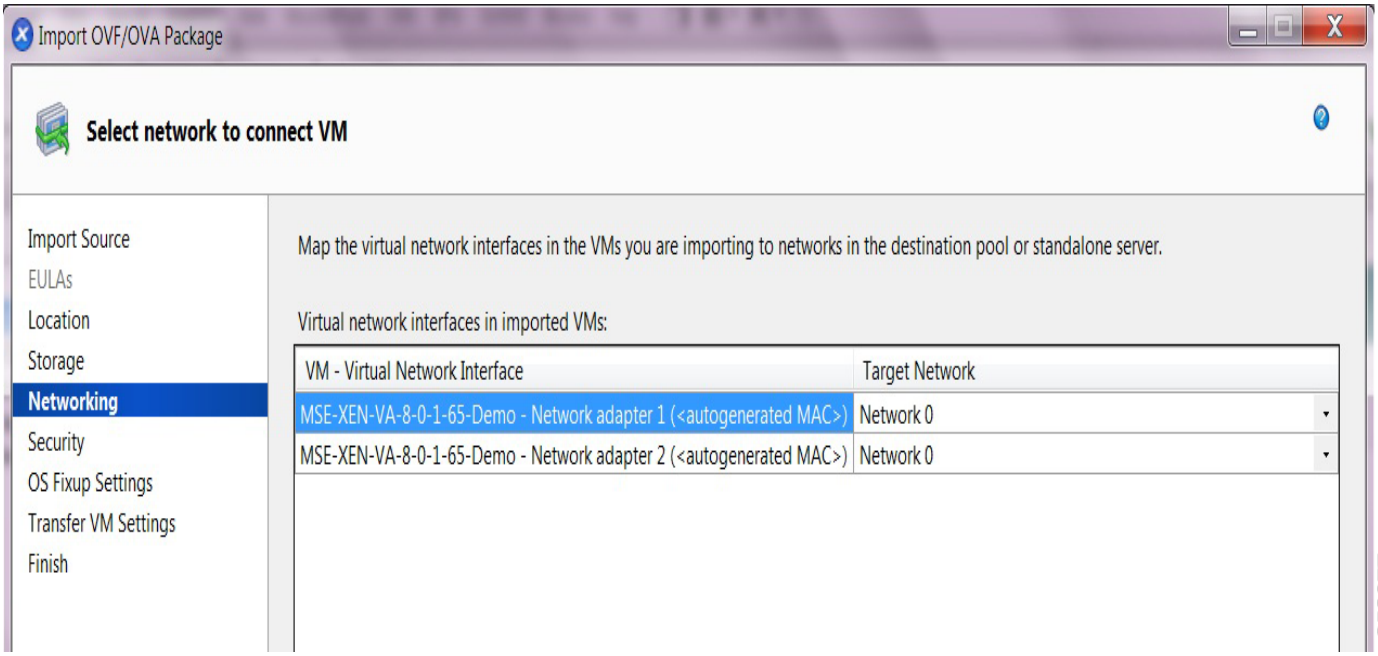
Step 10 Click **Next**.

The Networking page appears (see Figure 4-4).

Step 11 On the **Networking** page, map the virtual network interfaces in the VMs you are importing to target networks in the destination pool or standalone server.

- Select the virtual network interface in the **VM-Virtual Network Interface** column and select the target network from the drop-down list in the **Target Network** column (see Figure 4-4).

Figure 4-4 Networking Page



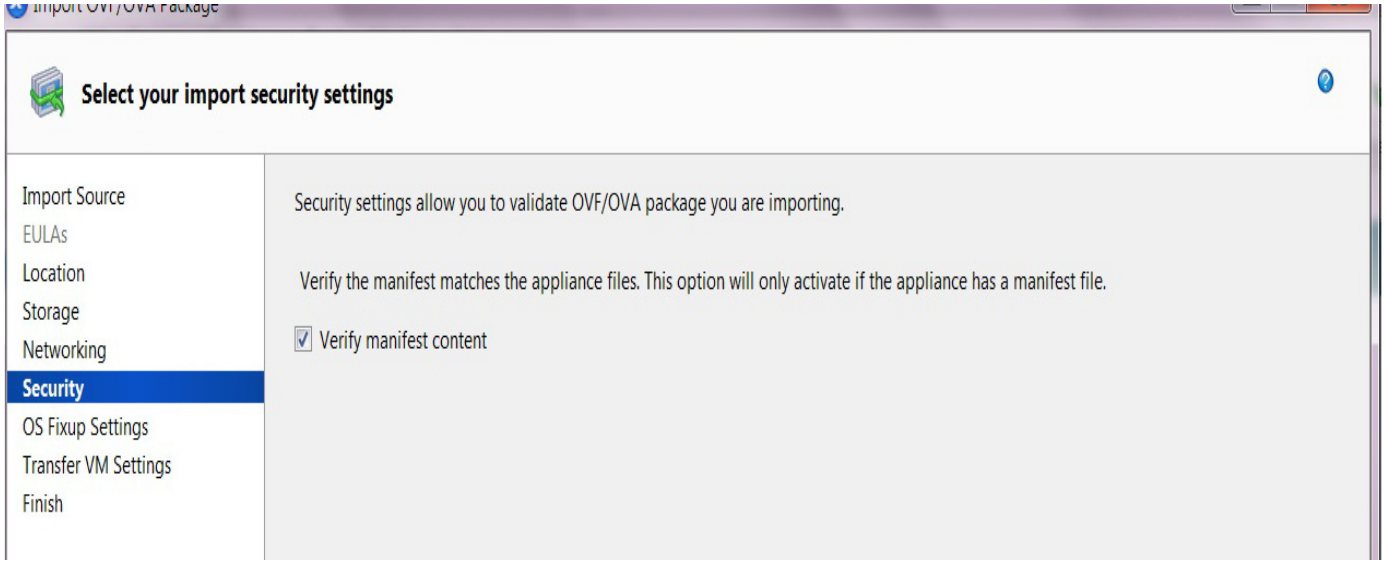
Step 12 Click **Next** to continue.

The Security page appears (see Figure 4-5).

Step 13 On the Security page, you can set the security settings to validate the OVF/OVA package that you are importing.

- Select the **Verify manifest content** check box to verify if the manifest matches with the appliance files.

Figure 4-5 Security Page



Step 14 Click **Next**. The OS Fixup Settings page appears.

Step 15 Configure the following in the OS Fixup Settings page:

- If the VMs in the package you are importing were built on a hypervisor other than XenServer, then select the **Use Operating System Fixup** check box to enable the imported VM to boot correctly on the XenServer. The Operating System Fixup attempts to repair boot device-related problems with imported VMs that might prevent the operating system within the VM from booting in a XenServer environment.
- If you enable the Use Operating System Fixup check box, then you must select an ISO library where the fixup ISO will be copied. Click **New ISO library** to choose the type of new storage and configure.
- Select the type of virtual disk storage:
  - NFS VHD
  - Software iSCSI
  - Hardware HBA
  - StorageLink technology
- Select ISO library type:
  - Windows File Sharing (CIFS)
  - NFS ISO

Step 16 Click **Next**.

- Provide a name and description for your SR in the **Name** and **Description** text box.

Step 17 Click **Next**.

- Provide the name of the share where your SR is located in the Share Name text box. You can optionally specify alternative credentials by setting the server options by providing the username and password.
- Click **Finish**.

Step 18 Click **Next**. The Transfer VM Settings page appears.

Step 19 On the **Transfer VM Settings** page, configure the following networking settings:

- Select the network on which the temporary VM used to perform the import operations from the Network drop-down list.
- Configure either of the following network settings:
  - Automatically obtain network settings using DHCP.
  - Use these network settings.

Step 20 Click **Next** to continue.

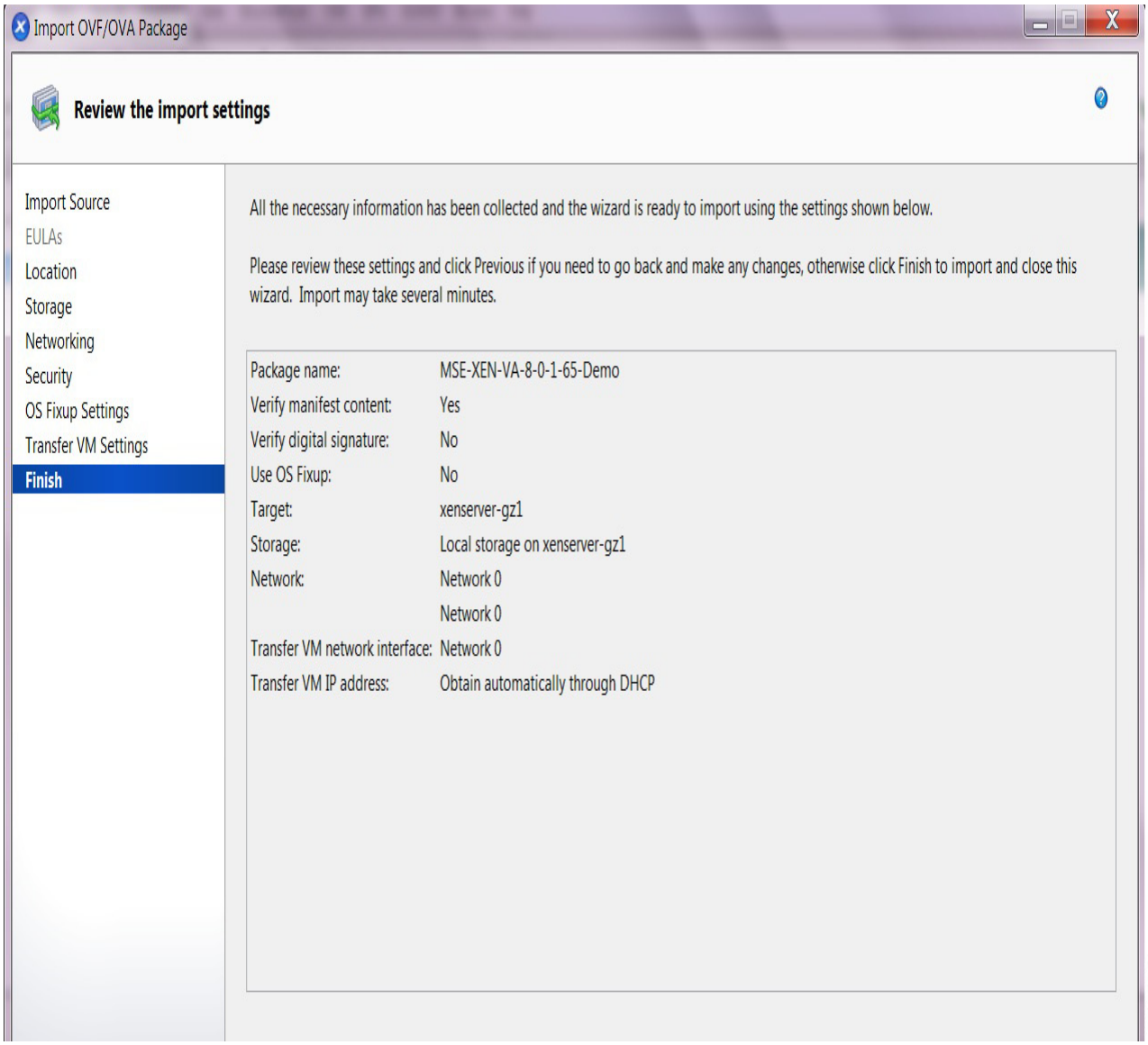
Step 21 On the **Finish** page, review all the import settings and click **Finish** to begin the import process and close the wizard.

Step 22 Click the Logs tab in the XenCenter client to check the progress of the OVA import.

Step 23 The MSE OVA gets imported.

Figure 4-6 shows the deployed appliance.

Figure 4-6 Deployed Appliance



Step 24 The OVA will be in shutdown state as soon as the import is completed.

Step 25 Start the Virtual Machine (VM).

Right-click on the imported file and select **Start**.

Configuring the Basic Settings to Start the MSE Virtual Appliance VM

You have completed deploying the MSE virtual appliance on a new virtual machine. A node for the virtual machine now appears in the resource tree in the XenCenter Client window. After deployment, you need to configure basic settings for the MSE virtual appliance.

To start the MSE setup, follow these steps:

Step 1 In the XenCenter Client, click the **MSE virtual appliance** node in the resource tree.

Step 2 Click the **Console** tab, within the console pane to make the console prompt active for keyboard input. The VM starts booting.

Step 3 Press **Enter** for the login prompt to appear to initiate the MSE Installation Wizard. The following is displayed:

```
------------------------------------------------------------------------
Cisco Mobility Service Engine
Xen-8-6-x-x login: root
Password: password


Running the Cisco Mobility Services Engine installer. It may take several minutes to
complete.
CISCO-MSE-K9-8-0-X-X-64bit.bin
MSE-PUB.pem
signhash.bin
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...
Preparing CONSOLE Mode Installation...



===============================================================
Introduction
------------

InstallAnywhere will guide you through the installation of Cisco Mobility Services Engine.

It is strongly recommended that you quit all programs before continuing with this
installation.

Respond to each prompt to proceed to the next step in the installation. If you want to
change something on a previous step, type 'back'.

Licensing on the Mobility Services Engine is enforced with the release of software version
6.x and greater. Please have the Product Authorization key (PAK) and refer to the
instructions in the User Guide to enable licensing.



PRESS <ENTER> TO CONTINUE:


Installing MSE Version: 8.0.x.x
```

```
================================================================
Installation Check
------------------


================================================================
Cisco Mobility Services Engine Installation Message
----------------------------------------------------------------
Cisco MSE v8.0 upgrade procedure may take several hours to complete, depending on the
amount of data on the system.

During the upgrade process, please ensure that the session to the MSE is not terminated.
User action is needed at the end of the installation process.

    -> 1- Exit
        2- Continue

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT: ^[



================================================================
Installing...
-------------
[==================|==================|==================|=============]
[------------------|------------------|------------------|-------------]

Database Installation
---------------------


The installer will now install the database. This may take a long time (up to 30 minutes).
Do not cancel the installer during this set up.

Installing Database files

Step 1/3 - Installing Database files
Step1/3 Completed
Step 2/3 = Configuring Database
Step 2/3 Completed
Step 3/3 - Updating patches
Step 3/3 Completed

Installation of database Completed

================================================================================
--------------------------------------------------------------------------------]

Starting Health Monitor, Waiting to check the status
Health Monitor successfully started
Starting Admin process...
Started Admin process...
Starting database...
Database started successfully. Starting framework and services........
```

Note After the initial installation, you are logged off the newly created VM and you must login to the console panel again.

Step 4 The MSE virtual machine shuts down and reboots.

```
GRUB Loading stage2...
Press any key to continue.
Press any key to continue.

_
------------------------------------------------------------
Cisco Mobility Services Engine
mse login: root
password: password
Last login: Mon Apr 7 04:11:50 on tty1
```

Note If the MSE does not prompt for setup, enter the following command: /opt/mse/setup/setup.sh.

```
Would you like to setup initial parameters using menu options (yes/no) [yes]:
```

[Press Enter to use the default values (yes) to use the Menu options]

```
Please select a configuration option below and enter the
requested information. You may exit setup at any time by
typing <Ctrl+C>.

You will be prompted to choose whether you wish to configure a
parameter, skip it, or reset it to its initial default value.
Skipping a parameter will leave it unchanged from its current
value.

Please note that the following parameters are mandatory and must be configured at lease
once.
        -> Hostname
        -> Network interface eth0
        -> Timezone settings
        -> Root password
        -> NTP settings
        -> Prime Infrastructure password

You must select option 24 to verify and apply any changes made during this session.
-----------------------------------------------------------------

PRESS <ENTER> TO CONTINUE:

-----------------------------------------------------------------


Configure MSE:

-----------------------------------------------------------------

1) Hostname *                                   13) Remote syslog setting
2) Network Interface eth0 settings *            14) Host access control settings
3) Timezone settings *                          15) Audit rules
4) Root password *                              16) Login banner
5) NTP settings *                               17) System console restrictions
6) Prime Infrastructure configuration           18) SSH root access
7) Display current configuration                19) Single user password check
8) Domain                                       20) Login and password settings
9) High availability role                       21) GRUB password
10) Network interface eth1 settings             22) Root access control
11) DNS settings                                23) Auto start MSE on system boot up
12) Future restart time                         24) ## Verify and apply changes ##
```

Note It is highly recommended that all relevant items must be configured during initial setup to ensure optimum operation of the mobility services engine in your network. The hostname and either the Ethernet-0 (eth0) or the Ethernet-1 (eth1) port must always be configured during the automatic installation.

Note You can rerun the automatic installation script at any time to add or change parameters using this command:
`[root@mse]# /opt/mse/setup/setup.sh`.
There is no need to re-enter values that you do not want to change during one of these updates.

Note If you do not want to configure an item, enter **skip** and you are prompted for the next configuration step. Any setting skipped is retained and not modified.

Note Minimal configuration is done for the mobility services engine as part of installation using the console. All configurations beyond the initial setup using the automatic installation is done with the Cisco Prime Infrastructure.

Step 5 Configure the host name

```
Please enter your choice [1 - 24]: 2

Current hostname=[Xen-8-0-x-x]
Configure hostname?  (Y)es/(S)kip/(U)se default [Skip]: y
The host name should be a unique name that can identify
the device on the network. The hostname should start with
a letter, end with a letter or number, and contain only
letters, numbers, and dashes.

Enter a host name [Xen-8-0-x-x]:
```

Step 6 Configure eth0 network settings

```
Please enter your choice [1 - 24]: 2

Current IP address=[10.0.0.1]
Current eth0 netmask=[255.0.0.0]
Current IPv4 gateway address=[172.20.104.123]
Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Skip]:y

Enter an IP address for first ethernet interface of this machine.

Enter eth0 IP address  [10.0.0.2]:

Enter the network mask for IP address 172.21.105.126

Enter network mask [255.255.255.224]:

Enter an default gateway address for this machine.

Note that the default gateway must be reachable from
the first ethernet interface.

Enter default gateway address [172.20.104.123]:
```

Step 7 Configure the DNS Settings:

```
Please enter your choice [1 - 24]: 11

Domain Name Service (DNS) Setup

Enable DNS (yes/no) [no]: y
Default DNS server 1=[8.8.8.8]
Enter primary DNS server IP address:
DNS server address must be in the form #.#.#.#, where # is 0 to 255 or hexadecimal :
separated v6 address

Enter primary DNS server IP address [8.8.8.8]:
Enter backup DNS server IP address (or none) [none]:
```

Step 8 Configure the Timezone settings:

Note If your wIPS deployment consists of a Cisco MSE and other devices (such as Cisco WLCs and access points), set the Cisco MSE and the other devices to the same time zone.

```
Please enter your choice [1 - 24]: 3

Current Timezone=[America/New York]
Configure timezone? (Y)es/(S)kip/(U)se default [Skip]: y

Enter the current date and time.

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) UTC - I want to use Coordinated Universal Time.
#? 2
Please select a country.
 1) Anguilla                 27) Honduras
 2) Antigua & Barbuda        28) Jamaica
 3) Argentina                29) Martinique
 4) Aruba                    30) Mexico
 5) Bahamas                  31) Montserrat
 6) Barbados                 32) Netherlands Antilles
 7) Belize                   33) Nicaragua
 8) Bolivia                  34) Panama
 9) Brazil                   35) Paraguay
10) Canada                   36) Peru
11) Cayman Islands           37) Puerto Rico
12) Chile                    38) St Barthelemy
13) Colombia                 39) St Kitts & Nevis
14) Costa Rica               40) St Lucia
15) Cuba                     41) St Martin (French part)
16) Dominica                 42) St Pierre & Miquelon
17) Dominican Republic       43) St Vincent
18) Ecuador                  44) Suriname
19) El Salvador              45) Trinidad & Tobago
```

```
20) French Guiana            46) Turks & Caicos Is
21) Greenland                47) United States
22) Grenada                  48) Uruguay
23) Guadeloupe               49) Venezuela
24) Guatemala                50) Virgin Islands (UK)
25) Guyana                   51) Virgin Islands (US)
26) Haiti
#? 47
Please select one of the following time zone regions.
 1) Eastern Time
 2) Eastern Time - Michigan - most locations
 3) Eastern Time - Kentucky - Louisville area
 4) Eastern Time - Kentucky - Wayne County
 5) Eastern Time - Indiana - most locations
 6) Eastern Time - Indiana - Daviess, Dubois, Knox & Martin Counties
 7) Eastern Time - Indiana - Pulaski County
 8) Eastern Time - Indiana - Crawford County
 9) Eastern Time - Indiana - Pike County
10) Eastern Time - Indiana - Switzerland County
11) Central Time
12) Central Time - Indiana - Perry County
13) Central Time - Indiana - Starke County
14) Central Time - Michigan - Dickinson, Gogebic, Iron & Menominee Counties
15) Central Time - North Dakota - Oliver County
16) Central Time - North Dakota - Morton County (except Mandan area)
17) Mountain Time
18) Mountain Time - south Idaho & east Oregon
19) Mountain Time - Navajo
20) Mountain Standard Time - Arizona
21) Pacific Time
22) Alaska Time
23) Alaska Time - Alaska panhandle
24) Alaska Time - Alaska panhandle neck
25) Alaska Time - west Alaska
26) Aleutian Islands
27) Hawaii
#? 21

The following information has been given:

        United States
        Pacific Time

Therefore TZ='America/Los_Angeles' will be used.
Local time is now:      Sun Apr  6 18:45:27 PDT 2014.
Universal Time is now:  Mon Apr  7 01:45:27 UTC 2014.
Is the above information OK?
1) Yes
2) No
#? 1
```

Step 9 Configure the Root password:

Note If you do not set the root password, a warning message is displayed when you apply the settings.

```
Please enter your choice [1 - 24]: 4

Root password has not been configured
Configure root password? (Y)es/(S)kip/(U)se default [Skip]:
Changing password for user root.

You can now choose the new password.

A valid password should be a mix of upper and lower case letters, digits, and other
characters. You can use an 8 character long password with characters from all of these
classes. An upper case letter that begins the password and a digit that ends it do not
count towards the
number of character classes used.

Enter new password:
```

Step 10 Configure the NTP Setup

```
Please enter your choice [1 - 24]: 5

Network Time Protocol (NTP) Setup.

If you choose to enable NTP, the system time will be
configured from NTP servers that you select.  Otherwise,
you will be prompted to enter the current date and time.

NTP is currently disabled.
Configure NTP related parameters? (Y)es/(S)kip/(U)se default [Skip]: y

Enter whether or not you would like to set up the
Network Time Protocol (NTP) for this machine.

If you choose to enable NTP, the system time will be
configured from NTP servers that you select.  Otherwise,
you will be prompted to enter the current date and time.

Enable NTP (yes/no) [no]: y
Default NTP server 1=[time.nist.gov]
Enter NTP server name or address:
NTP server address must be in the form #.#.#.3, where # is 0 to 255 hexadecimal :
separated v6 address.
Enter NTP server name or [time.nist.gov]:
Enter another NTP server IP address (or none) [none]:
Configure NTP Authentication ? (Y)es/(S)kip/(U)se default [Skip]: y
Enter NTP Auth key Number [1]:
Enter NTP Auth key Value (String) [Secret]:
Do you want to continue (yes/no) [no]: y
```

Step 11 Configure the Prime Infrastructure password:

Note If you do not set the password, a warning message appears when you apply the changes. The default PI communication password is *admin.*

```
Please enter your choice [1 - 24]: 6

Cisco Prime Infrastructure communication password has not been configured
Configure Prime Infrastructure communication password? (Y)es/(S)kip/(U)se default [Skip]:
y

Enter a password for the admin user.
The admin user is used by the Prime Infrastructure and other northbound systems to
authenticate their SOAP/XML session with the server. Once this password is updated, it
must correspondingly be updated on the NCS page for MSE General Parameters so that the
Prime Infrastructure can communicate with the MSE
.
```

Step 12 Verify the setup information and apply the changes:

```
Please enter your choice [1 - 24]:      24

Please verify the following setup information.

------------------------------BEGIN-----------------------------

    Hostname=mse8-0
    Eth0 IP address= , Eth0 network mask=255.255.254.0
    Time zone=America/Los_Angeles
    Enable DNS=yes, DNS servers=8.8.8.8
    Enable NTP=yes, NTP servers=time.nist.gov
    Time zone=America/Los_Angeles
    Root password is changed.
    Cisco Prime Infrastructure password is changed.

-------------------------------END-----------------------------

You may enter "yes" to proceed with configuration, "no" to make
more changes.


Configuration Changed
Is the above information correct (yes or no): yes
```

Note The next time you log in using root, only the Linux shell prompt appears and not the setup script. You can rerun the setup script at any time to change settings by logging in as *root* and running **/opt/mse/setup/setup.sh**.

Step 13 To verify the configuration, run the `getserverinfo` command.

```
[root@Xen-8-0-x-x]# getserverinfo
```

Step 14 To configure the MSE to automatically launch after boot up, enter the following command:

```
[root@Xen-8-0-x-x]# chkconfig msed on
```

Step 15 Roboot using the following command:

```
[root@Xen-8-0-x-x]# reboot
```

Note To start the MSE service manually, enter the following command:
`[root@Xen-8-0-x-x]# service msed start`

The setup script generates a log file that can be found at **/opt/mse/setup/setup.log**.

Configuring MSE on the Prime Infrastructure

See Configuring MSE on the Prime Infrastructure, page 3-21 for more information.

Synchronizing the Network Design and Tracking Parameters

See Synchronizing the Network Designs, page 3-24 for more information.