



Installing the Cisco MSE Virtual Appliance on the VMware Virtual Machine

This chapter describes how to install the Cisco Mobility Services Engine (MSE) Open Virtual Appliance (OVA) components and includes the following sections:

- [Information About the Cisco MSE OVA, page 3-1](#)
- [Virtualization Concepts, page 3-1](#)
- [Overview of the Process for Installing the Cisco MSE Virtual Appliance on the VMware Virtual Machine, page 3-2](#)

Information About the Cisco MSE OVA

An Open Virtual Appliance (OVA) is a prebuilt software solution that comprises one or more virtual machines (VMs) that are packaged, maintained, updated, and managed as a single unit.

The following versions of Cisco MSE OVA are available:

- MSE virtual appliance OVA with 250GB+ disk space for low end vMSE.
- MSE virtual appliance OVA with 500GB+ disk space for standard and high end vMSE.

Virtualization Concepts

Refer to these documents for information on virtualization:

- <https://www.vmware.com/pdf/virtualization.pdf>
- [Virtualization Basics](#)
- [Setting Up ESXi](#)

Overview of the Process for Installing the Cisco MSE Virtual Appliance on the VMware Virtual Machine

Table 3-1 describes the steps to be followed while deploying the Cisco Mobility Services Engine (MSE) virtual appliance.

Table 3-1 MSE Virtual Appliance Installation Workflow

Process	Description
1. Verify the requirements and prepare for Cisco MSE VA installation.	See the Verifying Prerequisites , page 3-2 for more information.
2. Download the Cisco MSE VA OVA file from Cisco.com.	See the Downloading the Cisco MSE Virtual Appliance OVA File , page 3-3 for more information.
3. Setting up the high end Virtual Appliance.	See the Setting up the High End Virtual Appliance , page 3-3 for more information.
4. Deploy the OVA as an OVF template. A step-by-step template in the VSphere Client guides you through this process. After you have completed the step-by-step template, you can review all of the information that you provided, make any corrections, and then deploy the OVA.	See the Deploying the Cisco MSE OVA File as an OVF Template , page 3-5 for more information.
5. Configure the basic settings.	See the Configuring the Basic Settings to Start the MSE Virtual Appliance VM , page 3-12 for more information.
6. Configure the MSE on Prime Infrastructure.	See the Configuring MSE on the Prime Infrastructure , page 3-21 for more information.
7. Synchronize the network design and tracking parameters.	See Synchronizing the Network Designs , page 3-24 for more information.

Verifying Prerequisites

Before installing the Mobility Services Engine (MSE) in a virtual machine, you must ensure the following:

- Latest version of VMware ESX/ESXi is installed and configured on the machine you plan to use as the MSE server host. See the VMware documentation for information on setting up and configuring your host machine.
- The installed VMware ESXi host is reachable.
- You can use the latest version of vSphere Client to manage the small deployments.
- Latest version of vCenter Server is installed on a Windows host in order to manage the ESXi hosts.

Downloading the Cisco MSE Virtual Appliance OVA File

The Mobility Services Engine (MSE) Open Virtualization Archive (OVA) is saved to the same machine where your vSphere Client or vCenter server is installed.

To download the .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 or the latest 7.6 Release version to download.
- Step 5** You can select any of the following ova files to download:
- **MSE-VA-8-0-x-x.ova**—Use this file to deploy MSE on a medium and high end VMware ESXi machine. This OVA is configured by default for the standard appliance. You need to make some modifications for OVA to work as high end appliance. See [Setting up the High End Virtual Appliance](#) for more information.
 - **MSE-VA-8-0-x-x-LowEnd.ova**—Use this file to deploy MSE on a low end VMware ESXi machine.
- Step 6** Save the installer to your computer in a place that will be easy to find when you start to deploy the OVF template.
-

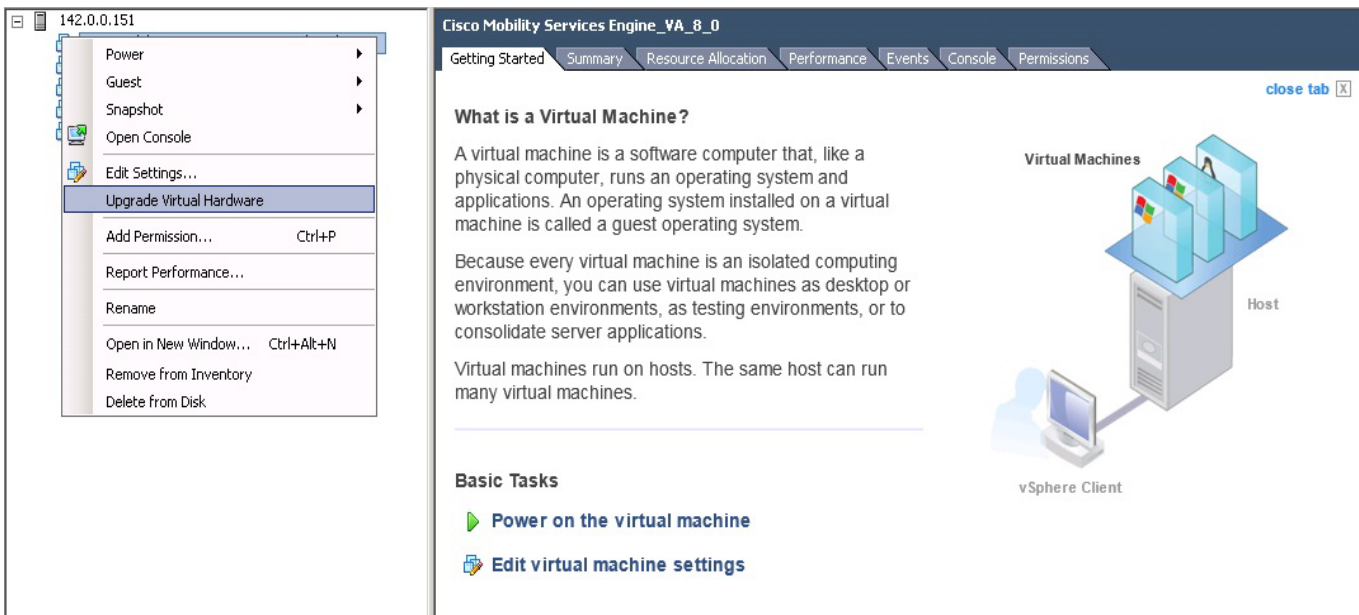
Setting up the High End Virtual Appliance

Use the MSE-VA-8-0-x-x.ova file to deploy both the medium and high end virtual appliance.

To setup the installed standard ova as high end ova, follow these steps:

-
- Step 1** Follow the steps given in [Deploying the Cisco MSE OVA File as an OVF Template](#) to deploy the OVA file.
- Step 2** You must upgrade the virtual hardware on the latest ESXi server while the Virtual Machine (VM) is powered off before increasing the CPU count. To assign more than 8 cores to the Virtual Appliance, you need to upgrade the virtual hardware. See [Figure 3-1](#).

Figure 3-1 Upgrade Virtual Hardware



353778

Step 3 Edit the memory allocation and ensure that proper resources are assigned. See [Table 3-2](#).



Note These levels are configurable on the virtual appliance and corresponding requirements. Allocate dedicated cores to the appliance and not hyper threaded virtual cores. The performance is affected if you assume host has more virtual cores and deploy more appliances.

Table 3-2 Configuring Virtual Appliance Levels

Primary MSE	Resources		Supported License (Individually)	
	Virtual Appliance Level	Total Memory	CPU	CAS License (APs) wIPS License (APs)
Level 2	8G	4	200	2000
Level 3	16G	8	2500	6000
Level 4	24G	16	5000	10000

Deploying the Cisco MSE OVA File as an OVF Template

The Mobility Services Engine (MSE) virtual appliance is distributed as an Open Virtualization Archive (OVA) file. The OVA is a single file distribution of an OVF package as a TAR format. After you download the OVA file, you will deploy the Open Virtualization Format (OVF) template from the vSphere Client application.

**Note**

Make sure that all of the system requirements are met before you deploy the OVA. Review the [Verifying Prerequisites](#), page 3-2.

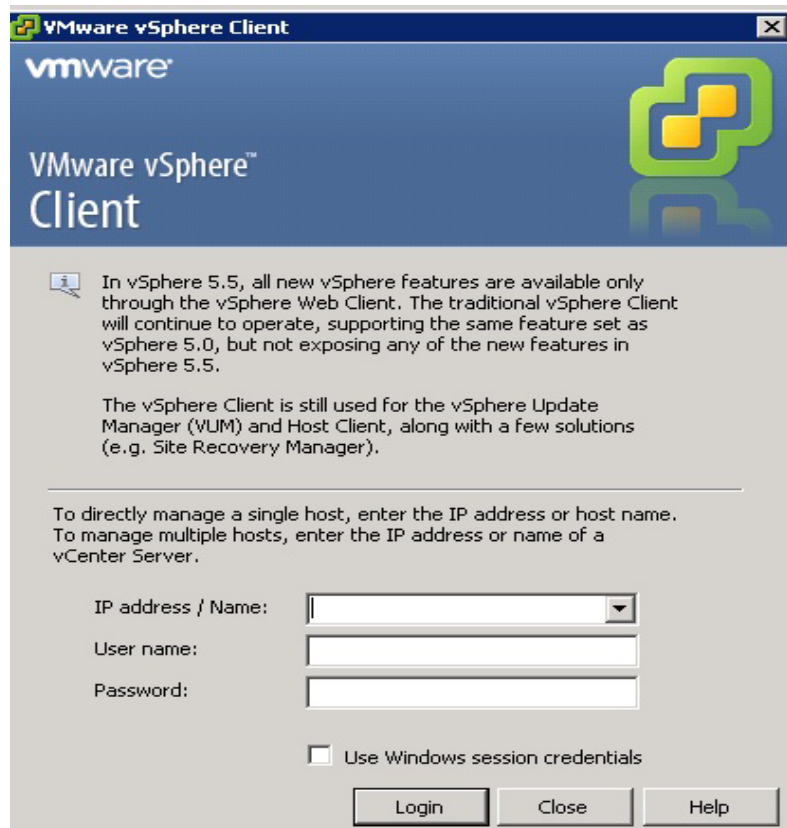
**Note**

After a fresh OVA deployment, you must reboot the Virtual Machine (VM) once.

Step 1 Open the VMware vSphere Client application on your desktop.

Step 2 Log in to your vSphere Client or vCenter Server (see [Figure 3-2](#)).

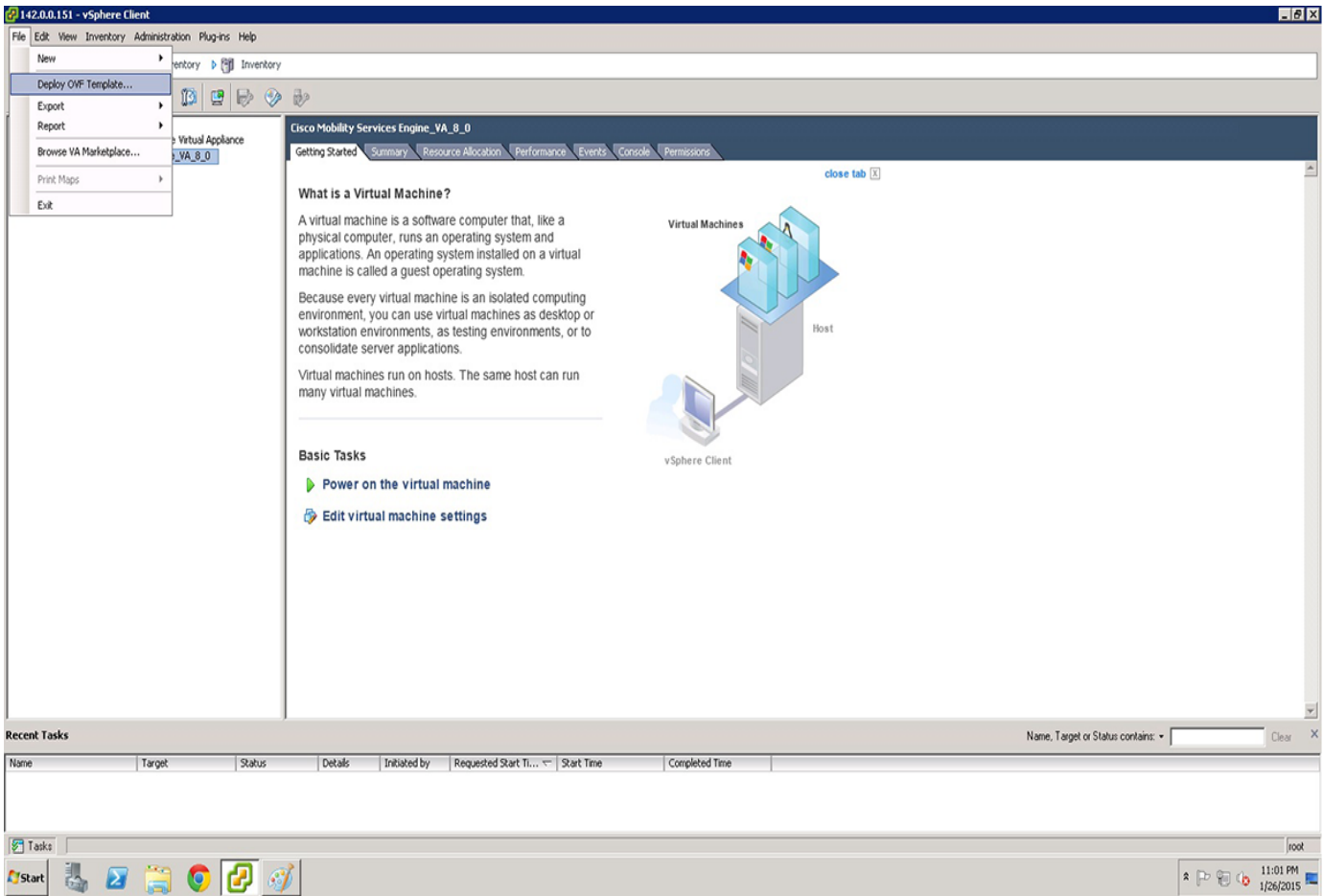
Figure 3-2 VMware vSphere Client



Deploying the Cisco MSE OVA File as an OVF Template

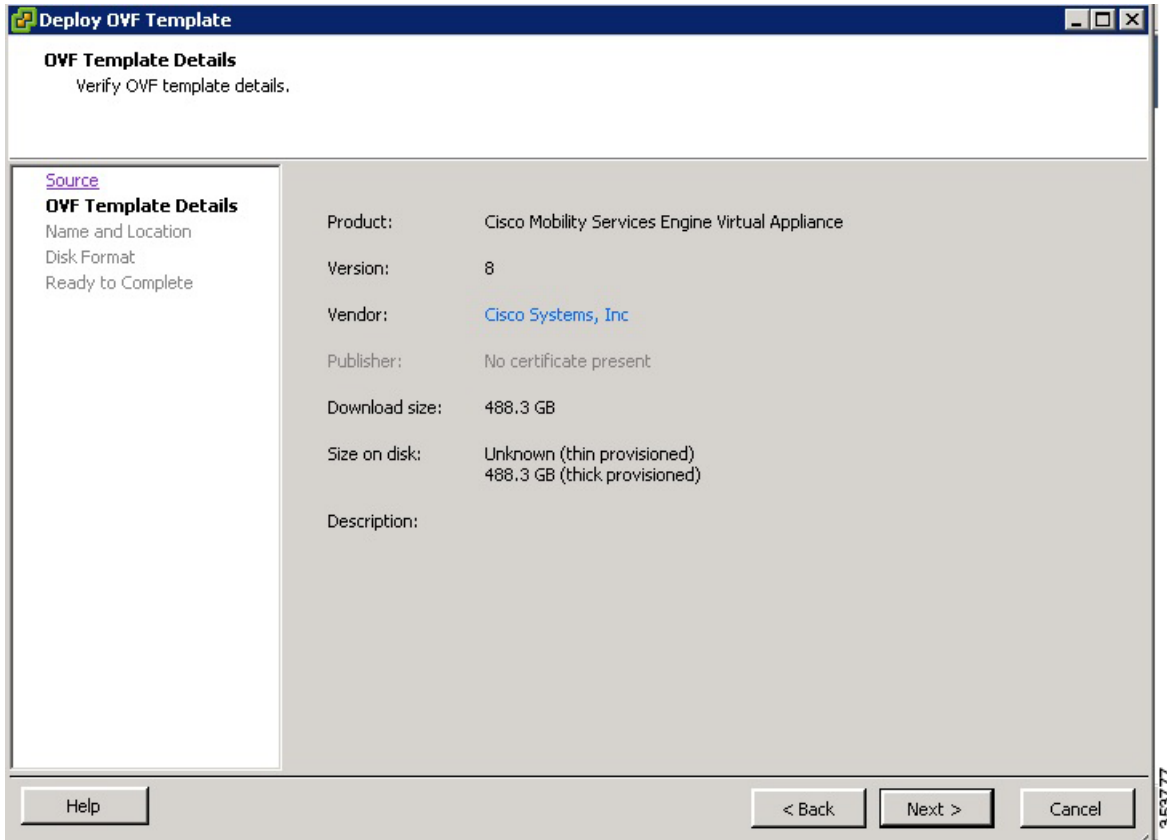
- Step 3** Use the vSphere Client to access the OVF template:
- a. Choose **Home > Inventory > Hosts and Clusters**.
 - b. Choose the host on which the OVF template will be deployed.
 - c. Choose **File > Deploy OVF Template** from VSphere toolbar bar.
- The Deploy OVF Template dialog box appears (see [Figure 3-3](#)).

Figure 3-3 Deploy OVF Template



- Step 4** Choose the Source location (see [Figure 3-4](#)).
- Click **Browse**. The Open dialog box opens.
 - From the Open dialog box, locate the appropriate .ova file that you downloaded to your computer and click **Open**.

Figure 3-4 Deploy From a File or URL

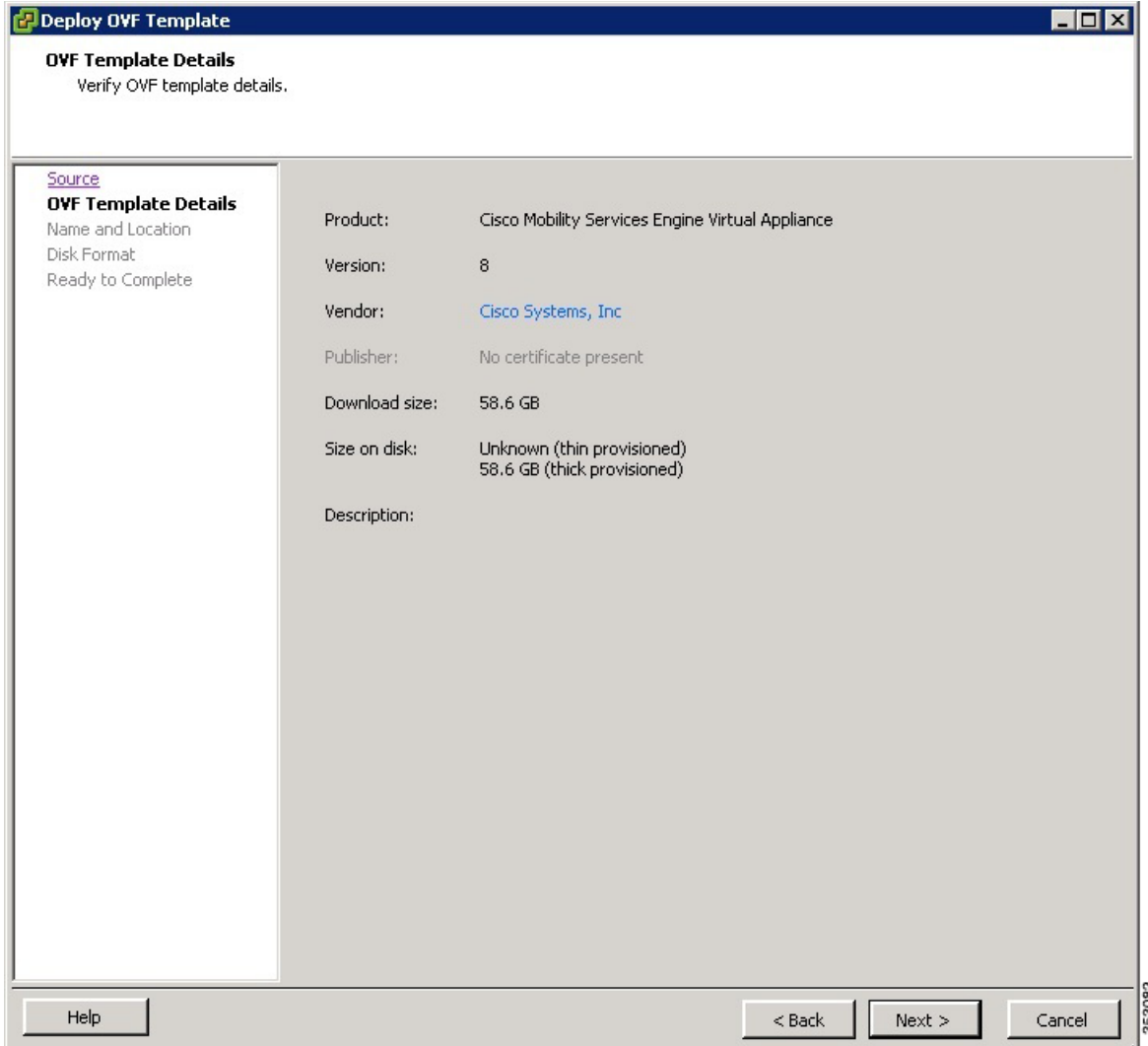


- Step 5** Click **Next**.
- The OVF template details window appears (see [Figure 3-5](#)).
- Step 6** Review the OVF template details. Some of the details about the Cisco MSE virtual appliance include:
- Version number
 - Download size
 - Size on disk
 - Thin provision for the amount of disk space consumed by the virtual appliance immediately after deployment. It is the minimum amount of disk space needed to deploy the virtual appliance.
 - Thick provision for the maximum amount of disk space the virtual appliance can consume.



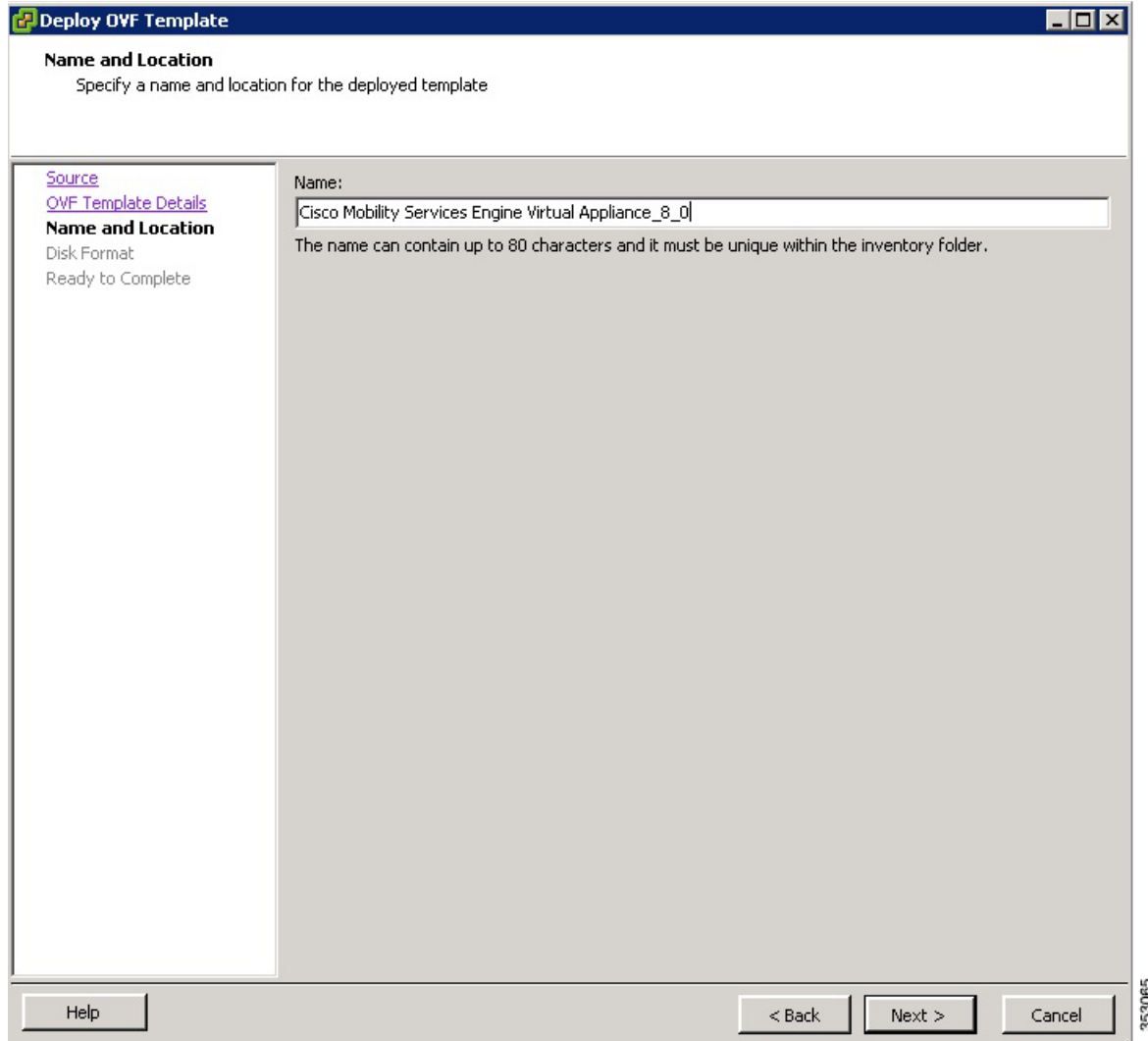
Note For more information on thick and thin provision, see “[Step 10](#)” task.

Figure 3-5 Review OVF Template Details



- Step 7** Click **Next**. The Name and Location window appears (see [Figure 3-6](#)).
- Step 8** In the Name field, enter a template name for the new virtual appliance. If you are using the vCenter to manage the virtual machine, then you will have the option of selecting the location of the inventory.

Figure 3-6 Name and Location Window



Step 9 Click **Next**. The Disk Format window appears.

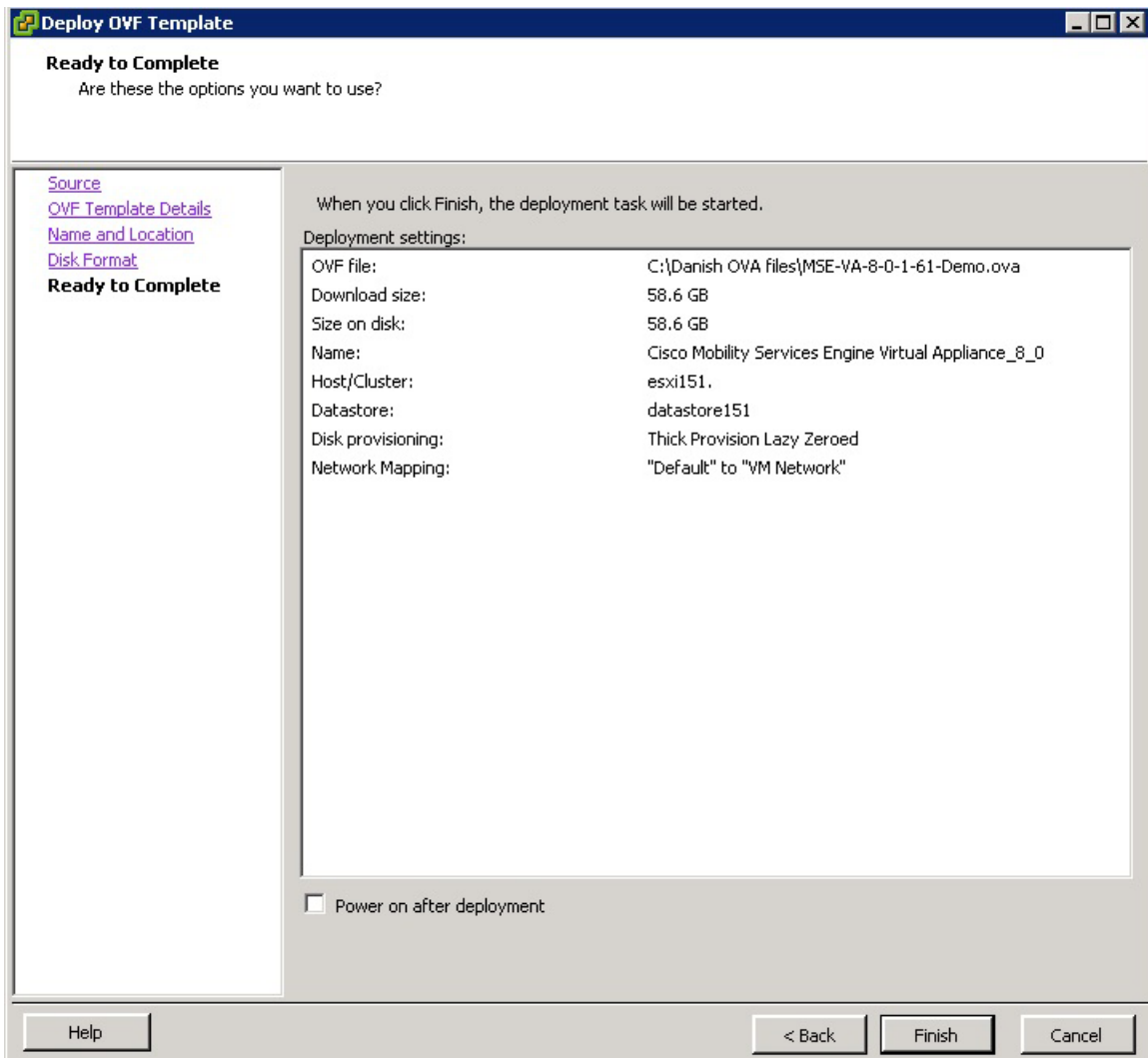
Step 10 Choose the disk format:

- Choose one of the thick provision types if you have enough storage capacity as required by the virtual appliance and want to set a specific allocation of space for the virtual disk.
 - **Thick Provision Lazy Zeroed**—The space that is required for the virtual disk is allocated when the virtual disk is created. The data that remains on the physical device is not erased when the virtual disk is created but is zeroed out on demand at a later time on first write from the virtual disk.
 - **Thick Provision Eager Zeroed**—The space that is required for the virtual disk is allocated when the virtual disk is create. Unlike the Lazy Zeroed option, the data that remains on the physical device is erased when the virtual disk is created.
- **Thin Provision**—Unlike with the thick format, space required for the virtual disk is not allocated during creation, but is supplied, zeroed out, on demand at a later time.

Step 11 Click **Next**. The Network Mapping window appears.

- Step 12** For each network specified in the OVF template, select a network by right-clicking the Destination Network column in your infrastructure to set up the network mapping.
- Step 13** Click **Next**.
The Ready to Complete window appears (see [Figure 3-7](#)).
- Step 14** Review each of the deployment settings that you have established (see [Figure 3-7](#)).

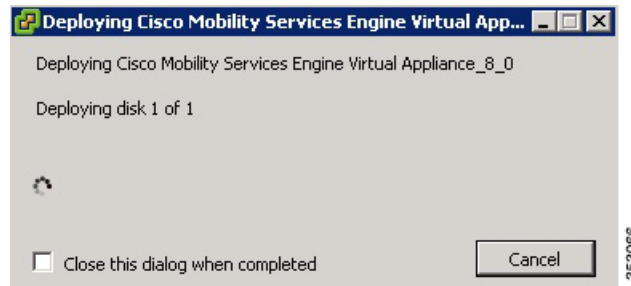
Figure 3-7 Ready to Complete Window



Step 15 Press **Back** to make any changes to the settings and click **Finish** to complete the deployment.

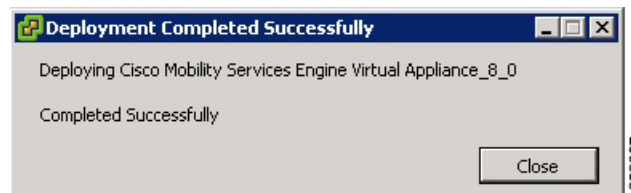
A progress bar keeps pace with your Cisco MSE virtual appliance deployment, which can take from 5 to 10 minutes to finish depending on the network latency (see [Figure 3-8](#)). When the deployment is finished, the Deployment Completed Successfully dialog box opens.

Figure 3-8 Deploying Dialog Box



Step 16 Click **Close** to dismiss the dialog box.

Figure 3-9 Deployment Completed Successfully Dialog Box



Step 17 On the Summary tab in the VSphere Client, review the information about the Virtual Machine.

Step 18 The virtual appliance that you deployed is listed under the host, in the left pane of the VSphere Client.

Step 19 Edit the MSE virtual appliance template to map the management and data interfaces network interfaces to the desired configuration before powering up the MSE virtual appliance.

Step 20 Proceed with installing and configuring the MSE. See [Configuring the Basic Settings to Start the MSE Virtual Appliance VM](#), page 3-12 for more information.

Configuring the Basic Settings to Start the MSE Virtual Appliance VM

You have completed deploying the Mobility Services Engine (MSE) virtual appliance on a new virtual machine. A node for the virtual machine now appears in the resource tree in the VMware VSphere 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 VSphere Client, click the **MSE virtual appliance** node in the resource tree. The virtual machine node should appear in the Hosts and Clusters tree below the host, cluster, or resource pool to which you deployed the MSE virtual appliance.
 - Step 2** If you have not powered on the virtual machine while deploying the OVA file, then right-click on the virtual appliance that is listed in the left pane of the VSphere Client, and choose **Power > Power on**.
The Recent Tasks window at the bottom of the VSphere Client pane indicates the status of the task associated with powering on the virtual machine. After the virtual machine successfully starts, the status column for the task shows Completed.
 - Step 3** Click the **Console** tab, within the console pane to make the console prompt active for keyboard input. The VM starts booting.
 - Step 4** Press **Enter** for the login prompt to appear to initiate the MSE Installation Wizard. The following is displayed:



Note The installation process takes approximately 45 minutes to complete.

```

-----
Cisco Mobility Service Engine
mse login: root
Password: password

Running the Cisco Mobility Services Engine installer. It may take several minutes to
complete.
CISCO-MSE-L-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 SILENT Mode Installation...

=====
Cisco Mobility Services Engine (created with InstallAnywhere by Macrovision)
-----
Auto Startup
-----

```

The Cisco MSE is configured to startup automatically at system boot up. You can modify this setting using `setup.shafter` installation is completed.

```
=====
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 setup.

Installing Database files

```
Step 1/3 - Installing Database files
Step 1/3 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 5 The MSE virtual machine shuts down and reboots.

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

Step 6 Configure the MSE.

```
[Login as root and password]
```

```
-----  
Cisco Mobility Services Engine
```

```
mse login: root  
password: password  
Last login: Mon Apr 7 04:11:50 on tty1
```

[Configuration starts as soon as you log in]

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 least 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 CONTIBNUE:
```

```
-----  
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 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 7 Configure the hostname.

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

```
Current Hostname=[mse]
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 [mse]:

Step 8 Configure eth0 network settings.

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

```
Current eth0 interface IP address=[10.0.0.1]
Current eth0 interface 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 the 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 9 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 10 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
- 21) Greenland
- 22) Grenada
- 23) Guadeloupe
- 24) Guatemala
- 25) Guyana
- 26) Haiti
- 46) Turks & Caicos Is
- 47) United States
- 48) Uruguay
- 49) Venezuela
- 50) Virgin Islands (UK)
- 51) Virgin Islands (US)

#? 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 11 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 12 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 13 Configure the Prime Infrastructure password.

Note If you do not set the password, a warning message appears when you apply the settings. 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 password? (Y)es/(S)kip/(U)se default [Yes]:
```

```
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.
```

```
Enter Prime Infrastructure password:
```

Step 14 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
```

```
-----
```

```
Checking mandatory configuration information...
```

```
Setup will now attempt to apply the configuration.
```

```
Restarting network services with new settings.
```

```
Shutting down interface eth0:
```

```
The system is minimally configured right now. It is strongly recommended that you run the
setup script under /opt/mse/setup/setup.sh command to configure all appliance related
parameters immediately after installation is complete.
```

```

PRESS <ENTER> TO EXIT THE INSTALLER:
[root@mse8-0 installers]# reboot
Stopping MSE Platform

Flushing firewall rules: [OK]
Setting chains to policy ACCEPT: nat filter [OK]
Unloading iptables modules: [ok]

Broadcast message from root (pts/0) (Tue Apr29 14:15:27:2014):

The system is going down for reboot NOW:

```



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 15 Log in and configure the MSE to automatically launch after boot up.

```

Cisco Mobility Service Engine
mse8-0 login:
Password:

```

Step 16 To configure the MSE to automatically launch after boot up, enter the following command:

```
[root@mse8-0]# chkconfig msed on
```

Step 17 Reboot using the following command:

```
[root@mse8-0]# reboot
```



Note To start the MSE service manually, enter the following command:

```
[root@mse8-0]# 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

To configure the Mobility Services Engine (MSE) virtual appliance on the Prime Infrastructure, follow these steps:

Step 1 Launch Mozilla Firefox 11.0 or 12.0 or Internet Explorer 8 or 9 with the Chrome plug-in releases or Google Chrome 19.0. The Internet Explorer versions below than 8 are not recommended.



Note When you use Firefox to log in and access Prime Infrastructure for the first time, the Firefox web browser displays a warning stating that the site is untrustable. When Firefox displays this warning, follow the prompts to add a security exception and download the self-signed certificate from Prime Infrastructure server. After you complete this procedure, Firefox accepts Prime Infrastructure server as a trusted site both now and during all future login attempts.

Step 2 In the address line of browser, enter `https://pi-ip-address`, where `pi-ip-address` is the IP address of the server on which you installed and started Prime Infrastructure. Prime Infrastructure uses interface displays the Login page.

Step 3 Enter the username. The default username is `root`.

Step 4 Enter the root password you created during the PI setup and not the MSE setup and click **Login**.



Note If any licensing problem occur, a message appears in an alert box. If you have an evaluation license, the number of days until the license expires is shown. You are also alerted to any expired licenses. You have the option to go directly to the licensing page to address these problem.

Step 5 Choose **Services > Mobility Services Engines**.

Step 6 From the Select a command drop-down list, choose **Add Mobility Services Engine**. Click **Go**. The Add Mobility Services Engine page appears.

Step 7 Enter the following information:

- **Device Name**—User-assigned name for the mobility services engine.
- **IP Address**—The IP address of the mobility services engine.



Note A mobility services engine is added only if a valid IP address is entered. The Device Name helps you distinguish between devices if you have multiple Prime Infrastructures with multiple mobility services engines, but is not considered when validating a mobility services engine.

- **Contact Name** (Optional)—The mobility service engine administrator.
- **Username**—The default username is `admin`. This is the Prime Infrastructure communication username configured for MSE.
- **Password**—The default password is `admin`. This is the Prime Infrastructure communication password configured for MSE.



Note This refers to the Prime Infrastructure communication username and password created during the setup process. If you have not specified the username and password during the setup process, use the defaults. The default username and password are both `admin`.

Step 8 Select the **Delete synchronized service assignments** check box if you want to permanently remove all service assignments from the mobility services engine.

This option is applicable for network designs, wired switches, controllers and event definitions. The existing location history data is retained, however, you must use manual service assignments to perform any future location calculations.

Step 9 Click **Next**.

The MSE License Summary page appears (see Figure 3-10). You can use the MSE License Summary page to install a license, add a license, remove a license, install an activation license, and install service license.

Figure 3-10 MSE License Summary Page

The screenshot shows the 'MSE License Summary' page in the Cisco Prime Infrastructure interface. On the left is a navigation menu with options like 'Edit MSE Configuration', 'Licensing', 'Select Service', 'Tracking', 'Assign Maps', and 'Mobile App Enablement'. The main content area displays a table of licenses. The table has the following data:

Service	Platform Limit by AP	Type	Installed Limit by AP	License Type
mse-197 Activated (AIR-MSE-VA-K9:V01:MSE-VA-33-197.cisco.com_fa52b40a-b65d-11e3-9800-000c2926c)				
CAS	2500	CAS Elements	1000	Permanent
wIPS	6000	wIPS Monitor Mode APs	10	Evaluation (120 days left)
		wIPS Local Mode APs	10	Evaluation (120 days left)
MC	2500	Mobile Concierge	1000	Permanent
ANA	2500	Location Analytics	1000	Permanent

Below the table are buttons for 'Add License' and 'Remove License'. At the bottom right, there are 'Back' and 'Next' buttons. The total number of entries is indicated as 'Total Entries 2'.

353076

Step 10 Click **Add License** to add a license. You can install an activation license and service license.

The Add a License File dialog box appears.

Step 11 Click **Choose File** to browse to and select the license file.

Step 12 Click **OK** to add the license. The newly added license appears in the MSE license file list.

Step 13 To remove an MSE license file, click **Remove License**.

Step 14 Choose an MSE license file that you want to remove by selecting the **MSE License File** radio button, and click **Remove**.

Step 15 Click **OK** to confirm the deletion.

Step 16 Click **Next** to enable services on the mobility services engine.

Step 17 To enable a service, select the check box next to the service. These are the available services:

- Context Aware Service
- WIPS
- Mobile Concierge Service
- CMX Analytics
- CMX Browser Engage
- HTTP Proxy Service



Note Select the services you need and for which you have the licenses. If you select CMX Analytics, you must also select the Context Aware Service.

Step 18 Click **Next**. The Select Tracking & History Parameters page appears.



Note If you skip configuring the tracking parameters, the default values are selected.

Step 19 You can select the clients to be tracked using the Prime Infrastructure by selecting the corresponding Tracking check box(es). Make sure that wireless clients are tracked.

The various tracking parameters are as follows:

- Wired Clients
- Wireless Clients
- Rogue Access Points
 - Exclude Adhoc Rogue APs
- Rogue Clients
- Interferers
- Active RFID Tags

Step 20 You can enable the history tracking of devices by selecting the corresponding devices check box(es). The different history parameters are as follows:

- Wired Stations
- Client Stations
- Rogue Access Points
- Rogue Clients
- Interferers
- Asset Tags

Step 21 Click **Next** to assign maps to the MSE and view your managed system on realistic campus, building, outdoor area, and floor maps.





Note The Assigning Maps page is available only if you select Context Aware Service as one of the services to be enabled on the MSE.

Table 3-3 lists the preset filters that are available in the Assigning Maps page. Choose the filter you want to show from the Show drop-down list.

Table 3-3 Maps List Filters

Filter	Results
All	Shows all maps (Campus, Building, Floor, Outdoor area).
Campus	Shows only the campus maps list.
Building	Shows only the building maps list.
Floor	Shows only the floor area maps list.
Outdoor Area	Shows only the outdoor area maps list.

In addition, you can use the filter icon () to filter the maps that match the filter rules. If you want to specify a filter rule, choose **All** from the Show drop-down list before you click ().

- Step 22** To synchronize the map, select the **Name** check box and click **Synchronize**. Upon synchronization of the network designs, the appropriate controllers that have APs assigned on a particular network design are synchronized with the MSE automatically.
- Step 23** Click **Next** to configure the mobile application integration.
- Step 24** Click **Done** in the Mobile App Enablement page.
A dialog box appears.
- Step 25** Click **OK** to save the MSE settings.
You must synchronize the network designs. See [Synchronizing the Network Designs, page 3-24](#).
-

Synchronizing the Network Designs

- Step 1** Choose **Services > Synchronize Services**.
The Network Designs page appears. The left sidebar menu contains the following options: **Network Designs, Controllers, Event Groups, Wired Switches, Third Party Elements, and Service Advertisements**.
- Step 2** From the left sidebar menu, choose the appropriate menu options.
- Step 3** To assign a network design to a mobility services engine, in the Synchronize Services page, choose **Network Designs** from the left sidebar menu.
- Step 4** Select the maps to be synchronized with the mobility services engine by selecting the corresponding **Name** check box.
- Step 5** Click **Change MSE Assignment**.
- Step 6** Choose the mobility services engine to which the maps are to be synchronized.
- Step 7** Click **CAS** in the Choose MSEs dialog box and click **Synchronize**.
- Step 8** Click **Synchronize** to update the mobility services engine(s) database(s).
When items are synchronized, a green two-arrow icon appears in the Sync. Status column for each synchronized entry. You can use the same procedure to assign wired switches or event groups to a mobility services engine.
- Assigning an MSE to the Controller**
- Step 9** In the Network Designs page, choose **Controller** from the left sidebar menu.
- Step 10** Select the controllers to be assigned to the mobility services engine by selecting the corresponding Name check box.
- Step 11** Click **Change MSE Assignment**.
- Step 12** Choose the mobility services engine to which the controllers must be synchronized.
- Step 13** Click **CAS** in the Choose MSEs dialog box.
- Step 14** Click **Synchronize** to complete the synchronization process.

- Step 15** Verify that the mobility services engine is communicating with each of the controllers for only the chosen service. This can be done by clicking the **NMSP** status link in the status page.



Note After synchronizing a controller, verify that the timezone is set on the associated controller.



Note Controller names must be unique for synchronizing with a mobility services engine. If you have two controllers with the same name, only one is synchronized. You can use the same procedure to assign Catalyst switches or event groups to a mobility services engine.

Checking the NMSP Connection Status

- Step 16** Choose **Services > Mobility Services Engine**.
- Step 17** Click the name of the mobility services engine whose properties you want to view or edit.
- Step 18** Choose **System > Status > NMSP Connection Status** from the left sidebar menu.
- Step 19** Check if NMSP is active under the Summary panel.
-

