Deploying in VMware ESX

Prerequisites and Guidelines

You must have reviewed and completed the general prerequisites described in the Deployment Overview.

When deploying in VMware ESX, ensure that the VMware Tools periodic time synchronization is disabled. To disable the VMware Tools period time synchronization:

1. Right-click the node's VM and select **Edit Settings**.
2. In the **Edit Settings** window, select the **VM Options** tab.
3. Expand the **VMware Tools** category and uncheck the **Synchronize guest time with host** option.

In addition, the following apply when deploying when deploying in VMware ESX.

Table 1: Deployment Requirements

Version	Requirements
Release 1.1.3d* *We do not recommend deploying earlier releases	• ESXi 5.5 or later • 16 vCPUs • 48 GB of RAM • 230 GB disk The disk must have an I/O latency of 20ms or lower Each disk must be deployed on its own storage partition, which is not shared with other virtual machines • We recommend that each Application Services Engine node is deployed in a different ESX server. • Additional or higher requirements may depend on the applications installed in the cluster. Consult individual applications' documentation for details

Deploying Cisco Application Services Engine in VMware ESX

This section describes how to deploy Cisco Application Services Engine cluster using VMware vCenter.

Before you begin

- You have familiarized yourself with deployment options, recommendations, Application Services Engine connectivity described in Deployment Overview and Requirements.
- Ensure that you meet the requirements and guidelines described in Prerequisites and Guidelines, on page 1.

Step 1 Download the Cisco Application Services Engine image.

a) Browse to the Software Download page.

https://software.cisco.com/download/home/286324815/type

b) Click **Application Services Engine Software**.

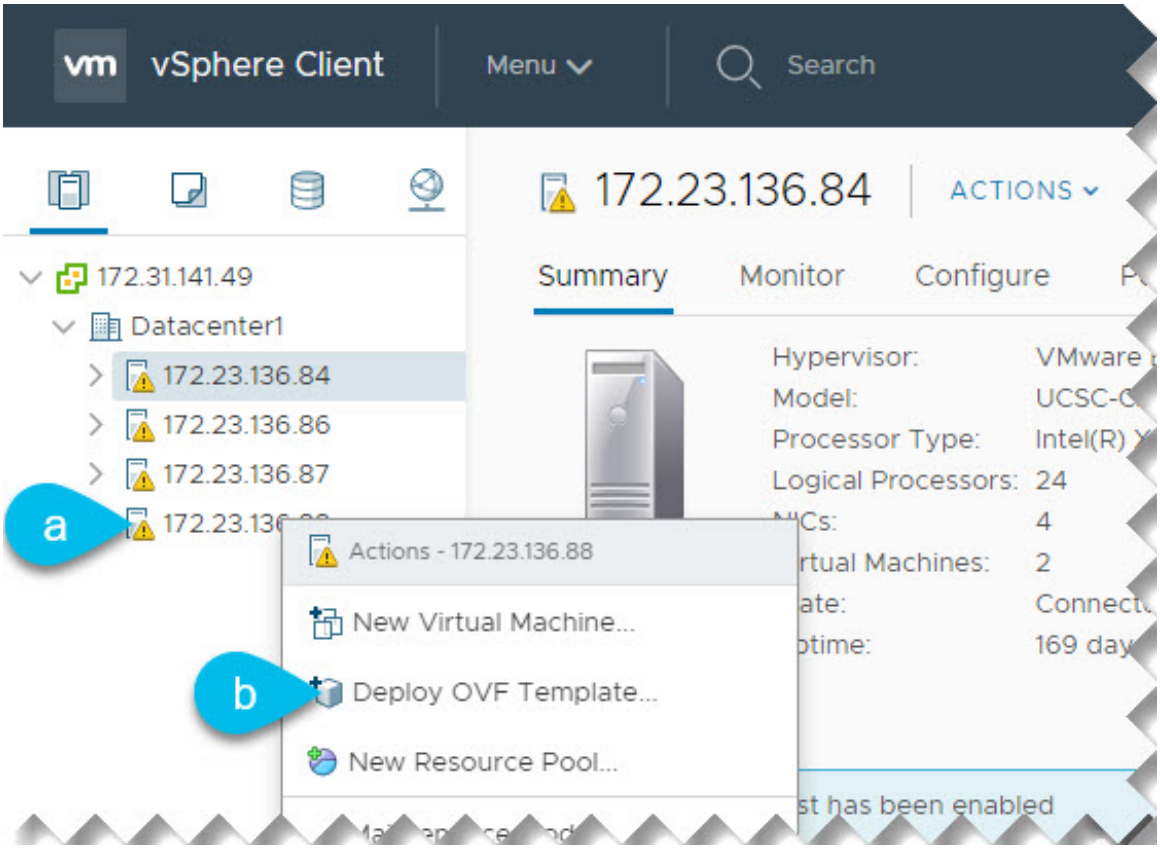
c) From the left sidebar, choose the Application Services Engine version you want to download.

d) Download the Cisco Application Services Engine image for VMware ESX (`case-dk9.<version>.ova`).

Step 2 Log in to your VMware vCenter.

You cannot deploy the OVA directly in the ESX host, you must deploy it using the vCenter.

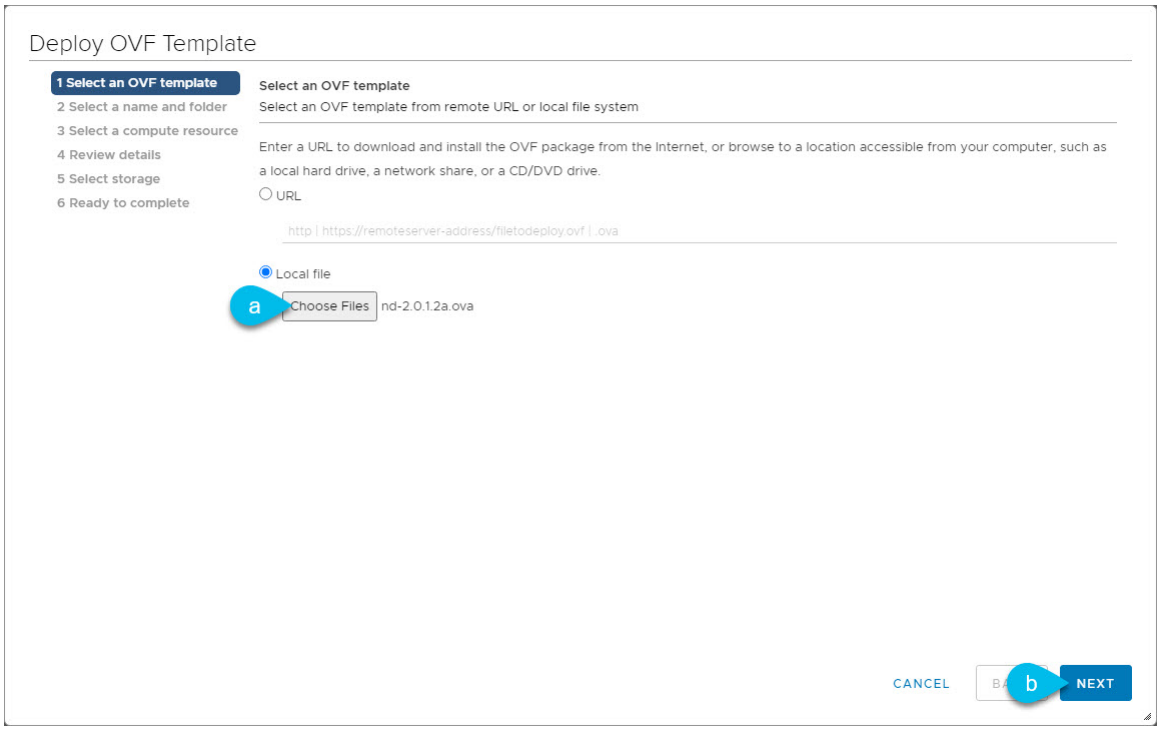
Step 3 Start the new VM deployment.



a) Right-click the ESX host where you want to deploy.
b) Then select **Deploy OVF Template...**

The **Deploy OVF Template** wizard appears.

Step 4 Select the OVA image.



a) Select **Local file**.
b) Click **Choose Files** and select the OVA file you downloaded.
c) Click **Next** to continue.

Step 5 Provide a name and location for the VM.

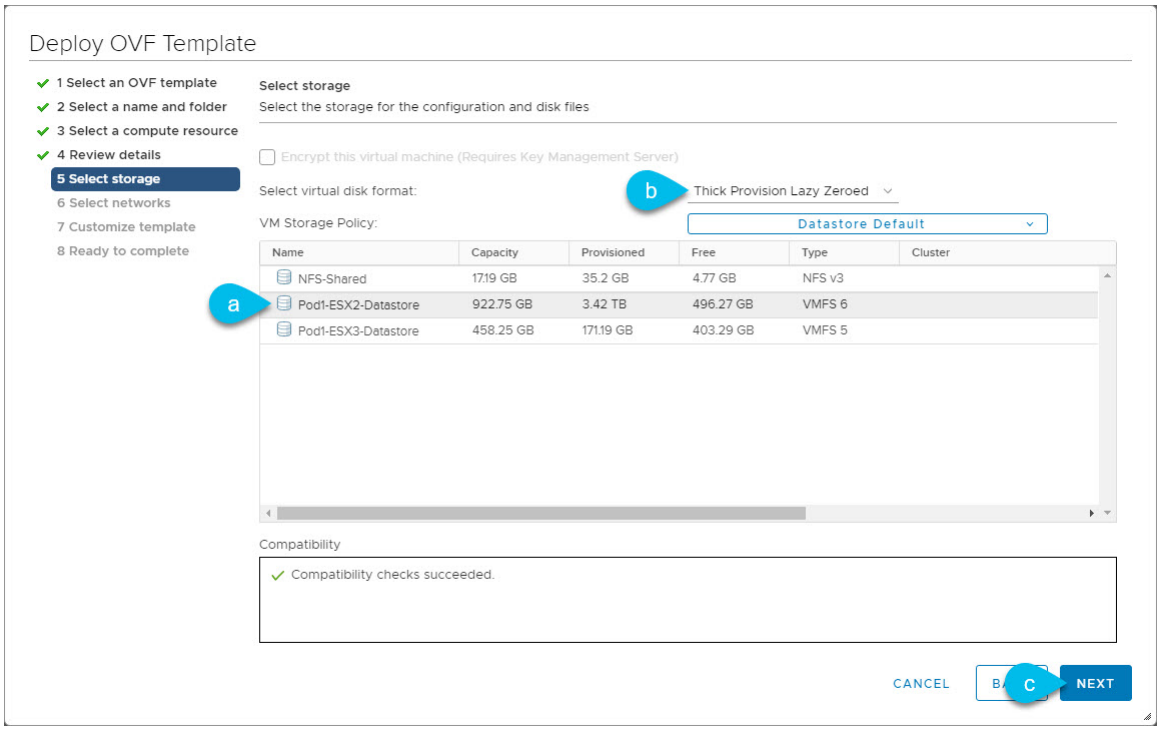
a) Provide the name for your virtual machine.
b) Select the location for the virtual machine.
c) Click **Next** to continue

Step 6 Select a compute resource.

a) Select the vCenter datacenter and the ESX host for the virtual machine.
b) Click **Next** to continue

Step 7 Review the information and click **Next** to continue.

Step 8 Select storage.



a) From the **Select virtual disk format** dropdown, select **Thick Provision Lazy Zeroed**.

b) Select the datastore for the virtual machine.

   We recommend a unique datastore for each node.

c) Click **Next** to continue

Step 9 In the **Select networks** screen, accept default values and click **Next** to continue.

There are two networks, **fabric0** is used for the data network and **mgmt0** is used for the management network.

Step 10 Provide the node and network information.

a) In the **Node Name** field, provide the hostname for node.

   For example, `case-node1`

b) In the **Password** fields, provide the password.

   We recommend configuring the same password for all nodes, however you can choose to provide different passwords for the second and third node. If you provide different passwords, the first node's password will be used as the initial password of the `admin` user in the GUI.

c) Check the **Master Node** checkbox.

   All nodes in the 3-node cluster must be `master` nodes.

d) Provide the **Management Address and Subnet** for the node.

   For example, `192.168.10.11/24`.

e) Provide the **Management Gateway IP**.

   For example, `192.168.10.1`.

f) Provide the **Data Network Address and subnet**.

For example, `172.10.10.11/24`.

g) Provide the **Data Network Gateway**.

For example, `172.10.10.1`.

h) (Optional) If the data traffic is on a VLAN, provide the **Data Network Vlan**.

For most deployments, you can leave this field blank. If you do want to provide a VLAN ID for your data network, you can enter it in this field, for example `100`.

Step 11 Provide Application Services Engine cluster information for this node.

a) Provide the name for the Application Services Engine cluster.

This name must be the same for all nodes.

For example, `case-cluster`.

b) In the **Master List** field, provide the IP addresses of the other 2 nodes you will configure for your cluster.

Each IP address in the list must be separated by a space.

c) Provide a value for the **dbgtoken** field.

Since this is the first node you are deploying, provide any 11-character value for this field (for example, `abcdef12345`). When you deploy the other two nodes, you will use this field to provide a token from the first node to simplify configuration.

d) Leave the **Download Config From Peers** checkbox unchecked.

You will use this option when configuring the other two nodes.

Step 12 Provide the common Application Services Engine cluster information.

You must provide this information when configuring the first node.

a) Provide the **App Subnet**.

The application overlay network defines the address space used by the application's services running in the Application Services Engine. This must be a `/16` subnet.

For example, `1.1.0.0/16`.

Note Communications between containers deployed in different Application Services Engine nodes is VXLAN-encapsulated and uses the data interfaces IP addresses as source and destination. This means that the Application Overlay and Service Overlay addresses are never exposed outside the data network and any traffic on these subnets is routed internally and does not leave the cluster nodes. As such, when configuring these networks, ensure that they are unique and do not overlap with any existing networks or services you may need to access from the Application Services Engine cluster nodes

b) Provide the **Services Subnet**.

The services network is an internal network used by the Application Services Engine and its processes. This must be a `/16` subnet.

For example, `2.2.0.0/16`.

c) Provide the **NTP Servers** information.

For example, `10.197.145.2 10.197.146.2`.

d) Provide the **Name servers** information.

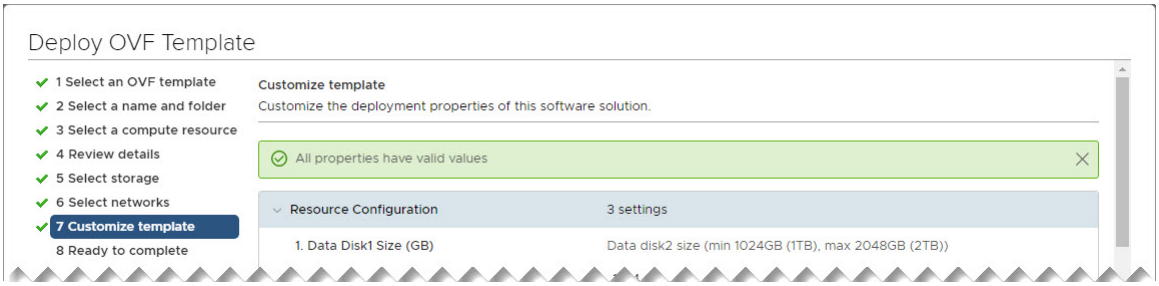
For example, `10.197.145.3`.

e) (Optional) Provide the **Search Domains** information.

For example, `company.com`.

Step 13 Verify that all information is valid and click **Next** to continue.

After you complete the **Customize template** screen, a verification banner is shown at the top.



Step 14 In the **Ready to complete** screen, verify that all information is accurate and click **Finish** to begin deploying the first node.

Step 15 Wait for the VM deployment to complete, then start the VM.

Step 16 Log in to the first node's console as the `rescue-user`.

Use the password you specified in the OVF template when deploying the VM.

Step 17 Retrieve the `dbgtoken`.

Run the following command:

```
$ acidiag dbgtoken
09GZ1PMB8CML
```

Make a note of this token, you will use it to deploy the other two nodes.

Keep in mind, the token expires and is refreshed every 30 minutes, so ensure to retrieve it when ready to deploy the second and third nodes.

Step 18 Deploy the second node.

The steps to deploy the second and third nodes are similar, with the exception that you can now use the `dbgtoken` from the first node to skip some of the configuration.

a) Right-click the ESX host where you want to deploy and select **Deploy OVF Template...**.

We recommend using a different ESX host for each node.

b) Select **Local file**, click **Choose Files**, and select the OVA file you downloaded. Then click **Next** to continue.

c) Provide the name for your virtual machine and select the location for the virtual machine. Then click **Next** to continue.

d) Select the vCenter datacenter and the ESX host for the virtual machine. Then click **Next** to continue.

e) Review the information and click **Next** to continue.

f) From the **Select virtual disk format** dropdown, select **Thick Provision Lazy Zeroed**. Then select the datastore for the virtual machine and click **Next** to continue.
g) In the **Select networks** screen, accept default values and click **Next** to continue.
h) In the **Node Name** field, provide the hostname for node.
i) In the **Password** fields, provide the password.

   We recommend configuring the same password for all nodes, however you can choose to provide different passwords for the second and third node. If you provide different passwords, the first node's password will be used as the initial password of the `admin` user in the GUI.

j) Provide the **Management Network Address and subnet**.
k) Provide the **Management Gateway IP**.
l) Provide the **Data Network Address and subnet**.
m) Provide the **Data Network Gateway**.
n) (Optional) If the data traffic is on a VLAN, provide the **Data Network Vlan**.
o) Provide the name for the Application Services Engine cluster.

   This name must be the same for all Application Services Engine nodes.

p) In the **Master List** field, provide the IP addresses of the other 2 nodes in your cluster.

   Each IP address in the list must be separated by a space.

q) Provide the **dbgtoken** you obtained from the first node.

   The token expires and is refreshed every 30 minutes, ensure to obtain the latest valid token from the first node before continuing. For example, `09GZ1PMB8CML`.

r) Check the **Download Config From Peers** checkbox.

   Note The second and third nodes will download common configuration parameters from the first node using the `dbgtoken`.

s) Skip **Cluster Configuration Optional** fields and click **Next** to continue.
t) In the **Ready to complete** screen, verify that all information is accurate and click **Finish** to begin deploying the second node.

Step 19 Repeat the previous step to deploy the third node.

Step 20 Wait for the second and third node VMs deployment to complete, then start the VMs.

Step 21 Verify that the cluster is healthy.

It may take up to 30 minutes for the cluster to form and all the services to start.

After all three nodes are ready, you can log in to any one node via SSH and run the following command to verify cluster health:

a) Verify that the cluster is up and running.

   You can check the current status of cluster deployment by logging in to any of the nodes and running the `acidiag health` command.

   While the cluster is converging, you may see the following outputs:

```
$ acidiag health
k8s install is in-progress
```

```
$ acidiag health
k8s services not in desired state - [...]
```

```
$ acidiag health
k8s: Etcd cluster is not ready
```

When the cluster is up and running, the following output will be displayed:

```
$ acidiag health
All components are healthy
```

b) Log in to the Application Services Engine GUI.

After the cluster becomes available, you can access it by browsing to any one of your nodes' management IP addresses. The default password for the `admin` user is the same as the `rescue-user` password you chose for the first node of the Application Services Engine cluster.

When you first log in, you will be prompted to change the password.