

# **Preparing Virtual Machines for Cisco APIC-EM**

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# Preparing a VMware System for Cisco APIC-EM Deployment

To ensure that the Cisco APIC-EM works well within a virtual environment, configure the virtual machine with recommended resource pool values. A resource pool is a logical abstraction for the virtual machines that can be used to manage resources. Resource pools can be grouped into hierarchies and then used to partition CPU and memory resources.

You can configure and prepare the virtual machine using either the VMware vSphere Client or Web Client. We recommend that you use the VMware vSphere Web Client, since the **Latency Sensitivity** setting for resource pools must be configured as **High**. The **Latency Sensitivity** setting can only be configured using the VMware vSphere Web Client



When deploying the Cisco APIC-EM in a virtual environment, you must first configure the VMware system before installing Cisco APIC-EM. To install Cisco APIC-EM, you need to download the ISO image containing the controller from Cisco.com and then map the ISO image to the VMware system and boot from it.

# **Related Topics**

Configuring Resource Pools Using vSphere Web Client, on page 3 Configuring a Virtual Machine Using vSphere Web Client, on page 6 System Requirements—Virtual Machine

# **Virtual Machine Configuration Recommendations**

The following table lists the recommended configuration settings for a successful Cisco APIC-EM VMware vSphere installation, including resource pools. When installing Cisco APIC-EM on a supported virtual machine, we recommend that the following configuration settings are used.

Note

When preparing the virtual machine for the Cisco APIC-EM, the configuration settings terminology may differ depending upon the VMware application and GUI that your are using.

Resource Pool: CPU Resources	Reservation—14400 MHz is minimum configuration setting for this value			
	Limit—Unlimited			
	Shares—Normal			
vCPU	6 (minimum)			
	<b>Note</b> 6 vCPUs is the minimum number required for your virtual machine configuration. For better performance, we recommend using 12 CPUs.			
Resource Pool: Memory	Memory—32 GB or 64 GB is the minimum configuration setting for this value, depending upon your hardware. Reserve all guest memory—Enable			
SCSI controller value	VMware Paravirtual			
New network value	New network value—Enter the network that the controller will connect to. Status—Connect at power on Adapter type—VMXNET3			
Advanced	Choose High for the Latency sensitivity			

#### Table 1: Virtual Machine Configuration Recommendations (Including Resource Pools)

#### **Related Topics**

Configuring Resource Pools Using vSphere Web Client, on page 3 Configuring a Virtual Machine Using vSphere Web Client, on page 6 System Requirements—Virtual Machine

# **Configuring Resource Pools Using vSphere Web Client**

To ensure that the Cisco APIC-EM works well within a virtual environment, you should configure resource pools with the recommended values. A resource pool is a logical abstraction for the virtual machines that can be used to manage resources. Resource pools can be grouped into hierarchies and then used to partition CPU and memory resources.

Note

You should first create a new resource pool with the recommended configuration values as described in this procedure, and then subsequently create a virtual machine (where the Cisco APIC-EM will be installed) on that resource pool.

# **Before You Begin**

You have reviewed your VMware documentation concerning resource pools and their configuration.

You are familiar with the VMware vSphere Web Client and have a basic knowledge of how to create, manage and troubleshoot virtual machines using it.

You have your host and virtual datastores already set up and accessible in vSphere Web Client for this procedure.

**Step 1** Open the VMware vSphere Web Client to perform the procedure.

#### Figure 1: VMware vSphere Web Client



#### **Step 2** Click vCenter in the Navigator.

#### Figure 2: vCenter Home



# Step 3 Click on Hosts.

#### Figure 3: Hosts

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vCenter 💌 🖡	209.165.200.10 Actions -	=×	
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Choose a host where you will create the resource pool.

**Step 4** Right-click on the selected host and click **All vCenter Actions** | **New Resource Pool**.

#### Figure 4: New Resource Pool

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vCenter  Hosts Getting S	<ul> <li>New Resource Pool</li> <li>New Datastore</li> <li>Add Diagnostic Partition</li> </ul>	Related Objects	=*	▼ Becent Tasks
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		Learn how to create virtual machines		All (5) New (5) Ackno  At datastore1 (4) Datastore usage on disk

**Step 5** Enter a name and specify values for the resource pool in the **New Resource Pool** dialog box.

# Figure 5: New Resource Pool

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vmware <sup>®</sup> vSphere Web Client				ប់ I Adr			I Q Search -
vCenter 👻 🕱 📳	209.165.200.19 Actions 🛌	_				=*	T I
Hosts G	Setting Started Summary	> 209.165.200.19	New Resource Pool		?		🔹 🗊 Recent Tasks 🛛 🗖
<ul> <li>209.165.200.19 &gt;</li> <li>209.165.200.10</li> <li>209.165.200.11</li> <li>209.165.200.13</li> </ul>	What is a Host? A host is a computer that us software, such as ESX and is memory resources that vitual and give vitual machines ac and network connectivity. Basic Tasks Create a new virtu	Name: apic_re CPU Shares Reservation type Limit Shares Reservation type Limit Reservation type Limit	source_poolD1  Normal  47949  Ax reservation: 47,949 MHz  Expandable Unlimited  Normal  188577  Max reservation: 188,577 MB  Expandable Unlimited  Max limit: 189,607 MB  OI	) (MHz ) (MHz ) (MHz ) (MB ) (MB K (Ca	I I I I I I I I I I I I I I I I I I I	8	All Running Failed All Running Failed My Tasks • More Tasks V Work In Progress 209.165.200.19 V C Alarms All (5) New (5) Ackno Adatastore1 (4) Datastore1 (4)

We recommend entering the following resource pool values in this dialog box:

#### CPU Resources

- ° Shares-Choose Normal from the drop-down menu
- Reservation-14400 MHz is minimum configuration setting for this value
- ° Reservation Type—Check box for Expandable
- ° Limit-Set to Maximum Limit

#### Memory Resources

- Shares—Choose Normal from the drop-down menu
- **Reservation**—32 GB or 64 GB is the minimum configuration setting for this value, depending upon your hardware.
- ° Reservation Type—Check box for Expandable
- ° Limit-Set to Maximum Limit

**Step 6** Click **OK** to save the configured resource pool values.

### What to Do Next

Proceed to create a new virtual machine on this resource pool. For assistance with this procedure, see the following procedure, Configuring a VMware Server Using vSphere Web Client.

# **Related Topics**

Preparing a VMware System for Cisco APIC-EM Deployment, on page 1 Virtual Machine Configuration Recommendations, on page 2

System Requirements-Virtual Machine

# **Configuring a Virtual Machine Using vSphere Web Client**

To ensure that the Cisco APIC-EM properly functions in a virtual environment, create the virtual machine(s) following the procedure described below with the recommended settings.



You must create this virtual machine on the resource pool that you earlier configured, as described in the previous procedure.

# **Before You Begin**

You have reviewed the minimum system requirements for a successful Cisco APIC-EM VMware vSphere installation, as previously described in this guide.

1

You are familiar with the VMware vSphere Web Client and have a basic knowledge of how to create, manage and troubleshoot virtual machines using the Web Client.

You have your host and virtual datastores already set up and accessible in vSphere Web Client for this procedure.

You have already created a resource pool on the host, following the steps described in the previous procedure, Configuring Resource Pools Using vSphere Web Client.

**Step 1** Open the VMware vSphere Web Client to perform the procedure.

Figure 6: VMware vSphere Web Client

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History 💌	🚮 Home	Ŧ
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Ø       vCenter <sup>™</sup> Rules and Profiles <sup>™</sup> vCenter Orchestrator <sup>™</sup> Administration <sup>™</sup> Tasks	<ul> <li>Click the Home tab to access solutions, inventory views, and other tools.</li> <li>Welcome to the VMware vSphere Web Client</li> <li>The vSphere Web Client introduces a unique approach to tightly integrating solutions. When you navigate to the details of an object by using the navigator, search, or related objects, the vSphere Web Client consistently displays solution perspectives and actions for that object.</li> </ul>	All Running Failed
Log Browser Events	Aggregated view of all objects	
<ul> <li>Q New Search</li> <li>☐ Saved Searches</li> </ul>	Content Area     C	My Tasks  More Tasks More Tasks More Tasks More Tasks More Tasks
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#### Step 2 Click vCenter in the Navigator.

#### Figure 7: vCenter



- **Step 3** Click **Resource Pools** in the **Inventory Lists** in vCenter.
- **Step 4** Choose the resource pool where you will install the virtual machine from the list.

# Figure 8: Resource Pools

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e systems-rp-3	Name	CPU Reservation (MHz)	CPU Limit (MHz)	CPU Allocation Type	
	🥱 systems-rp-1	14440	Unlimited	Expandable	
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	🥏 systems-rp-3	14440	Unlimited	Expandable	
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# **Step 5** Right click on the resource pool and select **New Virtual Machine** from the menu.

# Figure 9: New Virtual Machine

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**Note** We strongly recommend that only a single virtual machine be created under the resource pool.

# **Step 6** Click **Create a new virtual machine** in the **New Virtual Machine** dialog box under **1a Select creation type**.

# Figure 10: Select Creation Type

New Virtual Machine		ę
1 Select creation type	How would you like to create a virtual machine?	
1 a Select a creation type	Create a new virtual machine	This option guides you through creating a new virtual machine. You will be able to customize processors, memory.
2 Edit settings	Deploy from template	network connections, and storage. You will need to install a
2a Select a name and folder	Clone an existing virtual machine	guest operating system after creation.
2b Select a compute resource	Clone virtual machine to template	
2c Select storage	Clone template to template	
2d Select compatibility	Convert template to virtual machine	
2e Select a guest OS		
2f Customize hardware		
3 Ready to complete		
	4 ::	
		Back Next Finish Cance

Click Next to proceed to the next step.

**Step 7** In the New Virtual Machine dialog box under 2 Edit Settings, click 2a Select a name and folder. Enter a name for the virtual machine and a location for the virtual machine.

# Figure 11: Select Name and Folder

1 Select creation type	Enter a name for the virtual machine.					
1a Select a creation type	APIC-EM					
2 Edit settings	Virtual machine names can contain up to 80 characters and must be unique within each vCenter Server VM folder. Select a location for the virtual machine					
2a Select a name and folder 2b Select a compute resource 2c Select storage	Q Search ▼					
2d Select compatibility 2e Select a guest OS	Bapic-em-platform      Bagy-dev      Select a datacenter or VM folder location for the new v					
2f Customize hardware	machine.					
3 Ready to complete						

Click **Next** to proceed to the next step.

# **Step 8** Click **2b Select a computer resource**.

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Select the resource pool that was created in the previous procedure.

# Figure 12: Select Computer Resource

Click Next to proceed to the next step.

# Step 9 Click 2c Select storage.

Select a datastore for your virtual machine.

# Figure 13: Select Storage

New Virtual Machine						?
1 Select creation type 1 a Select a creation type 2 Edit settings	VM Storage Profile: None The following datastores ar virtual machine configuratic	e accessible from the de in files and all of the virtua	stination resource that I disks.	at you selected. Selec	t the destination d	atastore for the
2a Select a name and folder	Name	Capacity	Provisioned	Free	Туре	Storage DR
2h Select a compute resource	Datastore #1	87.25 GB	74.98 GB	12.27 GB	VMFS 5	
2c. Select storage	datastore1	837.00 GB	954.32 GB	116.97 GB	VMFS 5	
2d Select compatibility						
2e Select a guest OS						
2f Customize hardware						
3 Ready to complete						
	4					
	Compatibility:					
	Compatibility checks :	succeeded.				
				Back	Next Finis	sh Canc

Click **Next** to proceed to the next step.

# Step 10 Click 2d Select compatibility.

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Select **ESX 5.1 and later** from the drop down menu.

# Figure 14: Select Compatibility

1 New	Virtual Machine		(?) <b>}</b>
New           1 Se           2 Ec           2 2a           2 2b           2 2c           2 2c           2 2c           2 2c           2 2c           2 3 2c           2 4 2c           2 5 2c           2 7 3 8c	Virtual Machine  elect creation type  a Select a creation type  fit settings  a Select a name and folder  a Select a compute resource Select storage  Select a guest OS Customize hardware eady to complete	The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the virtual machine. Compatible with: ESX 5.1 and later  This virtual machine (VM version 9) provides the best performance and latest features in ESXI 5.1.	***
J ra	zauy to complete	Back Next Finish C	Cancel

Click Next to proceed to the next step.

# Step 11 Click 2e Select a guest OS.

Select the following values from the drop down menus:

- Guest OS Family: Linux
- Guest OS Version: Ubuntu Linux (64-bit)

# Figure 15: Select Guest OS

🔁 New Virtual Machine					(?) >>
<ul> <li>New Virtual Machine</li> <li>1 Select creation type</li> <li>1 a Select a creation type</li> <li>2 Edit settings</li> <li>2 a Select a name and folder</li> <li>2 b Select a compute resource</li> <li>2 c Select storage</li> <li>2 d Select compatibility</li> <li>2 e Select a guest OS</li> <li>2 f Customize hardware</li> <li>3 Ready to complete</li> </ul>	Identifying the gues installation. Guest OS Family: Guest OS Version:	st operating system here allows the wizard Linux Ubuntu Linux (64-bit)	d to provide the appropriate defau	Ilts for the operating system	•
			Compati Back	bility: ESXi 5.1 and later (VM ver	rsion 9) Cancel

Click Next to proceed to the next step.

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# Step 12 Click 2f Customize hardware.

### Figure 16: Customize Hardware

🔁 New Virtual Machine				(?)
1 Select creation type	Virtual Hardware VM Opt	tions SDRS Rules		
<ul> <li>1 a Select a creation type</li> <li>2 Edit settings</li> <li>2 a Select a name and folder</li> <li>2 b Select a compute resource</li> <li>2 c Select storage</li> <li>2 d Select compatibility</li> <li>2 e Select a guest OS</li> <li>2 f Customize hardware</li> </ul>		1     Image: Constraint of the second s	▼       ▼       ✓       Connet       ▼       Connet       ▼       Connet	ct ct
3 Ready to complete	Video card      Wideo card      Wideo card      Wideo card      Other Devices      New device:	Specify custom settings	Add	Compatibility: ESXi 5.1 and later (VM version 9
			B	lack Next Finish Cancel

# Step 13 In the Virtual Hardware tab, ensure that the following CPU values are selected.

СРИ	Enter a value of 6 cores.	
	<b>Note</b> 6 cores is the minimum number to enter for your virtual machine configuration. For better performance, we recommend entering and using 12 cores.	
Reservation	Enter a minimum value of at least 14400 MHz.	
Limit	Select Unlimited from the drop down menu	
Shares	Select Normal from the drop down menu.	

Note The above dedicated CPU resources for the host are required for the Cisco APIC-EM.

# Step 14 In the Virtual Hardware tab, ensure that the following Memory values are selected.

Memory	Enter a minimum value of 32 GB or 64 GB, depending on your hardware.
Reserve all guest memory (all locked)	Check this box.

Note The above dedicated memory resources for the host are required for the Cisco APIC-EM.

# **Step 15** In the Virtual Hardware tab, ensure that the following New Hard disk value is entered.

New Hard disk	Increase to at least 500 GB minimum.

# Step 16 In the Virtual Hardware tab, ensure that the following New SCSI controller value is entered. New SCSI controller Select VMware Paravirtual from the drop down menu.

# Step 17 In the Virtual Hardware tab, ensure that the following New Network values are entered.

New network value	Enter the network that the controller will connect to for this value.
Status	Check the box for <b>Connect at Power On</b> .
Adapter type	Select VMXNET3 from the drop down menu.

# **Step 18** In the Virtual Hardware tab, ensure that the following New CD/DVD Drive value is entered.

New CD/DVD Drive	Select Datastore ISO file from the drop down and the
	configure the location of the ISO file in the File window.

# **Step 19** Click the VM Options tab to open it and ensure that the following values are entered.

Advanced	Choose High for Latency sensitivity from the drop down
	menu.

Click Ok to save your configuration and to proceed to the next step.

- Step 20
   Click 3 Ready to complete.

   Click Finish to finish the virtual machine configuration.
- **Step 21** In the virtual machine, map the Cisco APIC-EM ISO image onto the local drive (CD/DVD).
- **Step 22** Boot up the virtual machine and choose the **CD-ROM** option from the **Boot Menu**.
- Step 23 Choose Install Grapevine Appliance from the Ubuntu window that appears in the virtual machine.

# What to Do Next

Proceed to deploy the controller by following the configuration wizard prompts.

For information about the deployment process and configuration wizard options, see Chapter 4 in the *Cisco Application Policy Infrastructure Controller Enterprise Module Deployment Guide*, and the following sections:

- Configuring Cisco APIC-EM as a Single Host Using the Wizard
- · Configuring Cisco APIC-EM as a Multi-Host Cluster Using the Wizard

#### **Related Topics**

Preparing a VMware System for Cisco APIC-EM Deployment, on page 1 Virtual Machine Configuration Recommendations, on page 2 System Requirements—Virtual Machine