

Installing the Cisco IOS XRv 9000 Router in VMware ESXi Environments

These file types are needed to install Cisco IOS XRv 9000 Router on the VMware ESXi hypervisor:

- .iso—Used for installing the image on the VM. This can also be used to create a VM in any supported hypervisor environment.
- .ova—Used for deploying the OVA template on the VM (in TAR format). The OVA image is recommended for deploying Cisco IOS XRv 9000 Router on the VMware ESXi hypervisor.

- Installation Requirements for VMware ESXi, on page 1
- Installing the Cisco IOS XRv 9000 Router to the VM, on page 2
- Installing the Cisco IOS XRv 9000 Router to the VM using OVA Template , on page 2
- Installing the Cisco IOS XRv 9000 Router to the VM using ISO Template , on page 3
- Increasing Performance on VMware ESXi Configurations, on page 7

Installation Requirements for VMware ESXi

Before installing Cisco IOS XRv 9000 Router, you must first set up your VMware environment, including the necessary host and client software. For example, if you are installing Cisco IOS XRv 9000 Router in a VMware ESXi environment, you must first install the vSphere Client.

For information on the installation requirements for VMware ESXi, refer to the latest *Release Notes for Cisco IOS XRv 9000 Router*.

Note When deploying Cisco IOS XRv 9000 Router with OVA file, six vNICs are automatically created. You can manually add these vNICs to the VM after Cisco IOS XRv 9000 Router has booted.

See these sections for information on VMware ESXi support, and supported VMware features and operations:

- *VMware ESXi Support Information*
- *Supported VMware Features and Operations*

Installing the Cisco IOS XRv 9000 Router to the VM

VMWare ESXi supports installing Cisco IOS XRv 9000 Router to the VM using the OVA and ISO file.

Note The KVM and Microsoft Hyper-V implementations do not support deploying the VM using the .ova file. You must install the VM using the .iso file.

Installation using OVA file

The OVA file package includes an OVF file that contains a default VM configuration based on Cisco IOS XR release. Use the default.ova package to deploy Cisco IOS XRv 9000 Router as virtual Provider Edge, a high speed virtual router and use the vrr.ova package to deploy Cisco IOS XRv 9000 Router as virtual Route Reflector, a high scale route reflector.

For information on how to install Cisco IOS XRv 9000 Router using OVA file, see the section Installing the Cisco IOS XRv 9000 Router to the VM using OVA Template , on page 2.

Installation using ISO file

For information on how to install Cisco IOS XRv 9000 Router using ISO file, see the section *Deploying the Cisco IOS XRv 9000 Router to the VM using ISO Template* .

Installing the Cisco IOS XRv 9000 Router to the VM using OVA Template

The following procedure provides a general guideline for how to deploy the Cisco IOS XRv 9000 Router. However, the exact steps that you need to perform may vary depending on the characteristics of your VMware environment and setup.

If VM's configurations such as memory, CPU, and NICs are modified, then the Cisco IOS XRv 9000 Router must be rebooted for the changes to take effect.

Before you begin

Make sure that:

- The vSphere Client is installed on your machine.
- You have set the correct Firewall Options to allow VM Serial port to be connect over network.

Procedure

Step 1 In the vSphere client, select **File** > **Deploy OVF Template**.

Step 2 Select the location where the Cisco IOS XRv 9000 Router .ova file is stored and click **Next**.

Step 3 Verify OVF template details, and click **Next**.

Step 4 Specify the name of the VM, select Inventory Location, and click **Next**.

Step 5 (Cisco IOS XR Release 5.4 and later) Select a hardware deployment configuration from the drop-down, and click **Next**.

Step 6 Select the datastore for the VM files, and click **Next**.

Step 7 Select the format in which virtual disks are stored, and click **Next**.

These are the disk formats you can choose:

- Thick Provision Lazy Zeroed
- Thick Provision Eager Zeroed
- Thin Provisioned

Note
The Thick Provision Eager Zeroed option takes longer duration to install but provides better performance. Thick Provisioned will also consume more physical space on the disk.

Step 8 Under **Network Mapping**, allocate one or more virtual network interface card (vNIC) on the destination network using the drop-down list.

For information on interface mapping, see the Mapping the Router Network Interfaces to VM Network Interface Cards.

Step 9 In the **Virtual Machine Properties** window configure the properties for the VM if available. This will vary depending on release.

Step 10 Under the VM Options tab, select the boot option as EFI.

- By default, the boot type will be set to Legacy BIOS. Change it to EFI if required.

Step 11 Select **Power on after deployment** to automatically power on the VM.

Step 12 Click **Finish** to deploy the OVA.

The OVA deploys the .iso file and, if the **Power on after deployment** setting is selected, automatically powers on the VM. When the VM is powered on, Cisco IOS XRv 9000 Router begins the installation and boot process. If a bootstrap configuration file was included in the OVA, the router configuration is automatically enabled. For information on bootstrap configuration file, see the CVAC - Bootstrap Configuration Support

What to do next

Access the console on the Cisco IOS XRv 9000 Router. For details see the Console Mapping section.

Installing the Cisco IOS XRv 9000 Router to the VM using ISO Template

The following procedure provides a general guideline for how to deploy Cisco IOS XRv 9000 Router using VMware vSphere. However, the exact steps that you need to perform may vary depending on the characteristics of your VMware environment and setup. The steps in this procedure are based on VMware ESXi 5.5 version.

Starting with Cisco IOS XR Software Release 25.2.1, the XRv9K image can be launched on an ESXi 8.x or later hypervisor using the ESXi Host Portal. This support was initially introduced in Release 24.4.1 for ESXi 7.x. For flashing and loading the OE image, you need to do an extra configuration in the VM options. The default boot type needs to be changed from legacy BIOS to EFI. The commands to create the cd-rom EFI image is mentioned in the EFI standard iso from IOSXR build iso image section. Also for vrr,vga, and vpe image launch, you can directly use the iso image from the PIMS portal as it is already in the EFI standard format.

Before you begin

Make sure that:

- The vSphere Client is installed on your machine.
- You have set the correct Firewall Options to allow VM serial port to be connect over network.

Procedure

Step 1 Download the Cisco IOS XRv 9000 Router ISO file and copy the file to the VM Datastore.

Note
Use the _vga version of ISO file to map the XR console to VGA console, else the XR console will be mapped to the first serial port. See Mapping the Router Network Interfaces to VM Network Interface Cards.

Step 2 In the vSphere client, select **Create a New Virtual Machine**.

Step 3 Under Configuration, select **Create a Custom configuration**, and click **Next**.

Step 4 Specify the name of the VM, and click **Next**.

Step 5 Under Storage, select the datastore for the VM files, and click **Next**.

Step 6 Select Virtual Machine version 8, and click **Next**.

Note
Cisco IOS XRv 9000 Router is not compatible with VMware ESXi Server versions prior to 5.0.

Step 7 Select Linux and the **Other Linux (64-bit) setting** from the drop-down, and click **Next**.

Step 8 Under **CPUs**, select the following settings:

- Number of virtual sockets (virtual CPUs)
- Number of cores per socket

  The number of cores per socket must always be set to 1, regardless of the number of virtual sockets selected. For example, a Cisco IOS XRv 9000 Router with the 4 vCPU configuration must be configured as 4 sockets and 1 core for each socket.

For information on the supported number of virtual CPUs and the corresponding required RAM allocation for your release, see the Installation Requirements for VMware ESXi, on page 1 section .

Click **Next**.

Step 9 Configure the VM's memory size. Click **Next**.

Note
The supported memory size is 64 GB for the default image and a minimum of 115 GB for VRR scenarios.

Step 10 Under **Network**, allocate at least 4 virtual network interface cards (vNICs).

a. From the drop-down select the number of vNICs.

Note
The VMware ESXi 5.5 interface allows for creating 4 vNICS during the initial VM creation. You can add more vNICs after the VM is created and Cisco IOS XRv 9000 Router is first booted.

b. Add the vNICs.

- Select a different network for each vNIC. Note the 2nd and 3rd NICs are reserved.
- Select the adapter type from the drop-down menu. Select E1000 adapter for the first three NICs and later you may select physical interfaces (passthrough) or VMXNET3. For information on the supported adapter type in your release, see the Installation Requirements for VMware ESXi, on page 1 section.

Note
From Release 6.0, VMXNET3 NIC is supported.

c. Select all vNICs to connect at power-on, and click **Next**.

Note
You can add vNICs into the VM using vSphere while Cisco IOS XRv 9000 is running. For more information about adding vNICS to an existing VM, see the vSphere documentation.

Step 11 Under the VM Options tab, select the boot option as EFI.

- By default, the boot type will be set to Legacy BIOS. Change it to EFI if required.

Step 12 Under **SCSI Controller**, select **LSI Logic Parallel**, and click **Next**.

Step 13 Under **Select a Disk**, click **Create a new virtual disk**.

Step 14 Under **Create a Disk**, select the following:

- Capacity: Disk Size

  See the Installation Requirements for VMware ESXi, on page 1 section for information on the virtual hard disk size required in your release.

- Disk Provisioning

  Select one of the following:

  - Thick Provision Lazy Zeroed
  - Thick Provision Eager Zeroed
  - Thin Provisioned

Note
The Thick Provision Eager Zeroed option takes a longer duration to install but provides better performance. Thick Provisioned also consumes more physical space on the disk.

- Location

  Store with the virtual machine.

Click **Next**.

Step 15 Under **Advanced Options**, select **IDE (0:0)** for the virtual device node.

Step 16 On the **Ready to Complete** screen, select **Edit the virtual machine settings before completion.**

Step 17 Click **Continue checkbox**.

Step 18 Click **New CD/DVD Drive** and do the following:

a. Select the Device Type from which the VM boots:

Select **Datastore ISO file** option to boot from the Cisco IOS XRv 9000 .iso file. Browse to the location of the .iso file on the datastore set in Step 1.

b. In the **Device Status** field, select **Connect at power on** checkbox.

c. Select the **Virtual Device Node CD/DVD** drive on the host from which the VM boots.

Step 19 To add a serial port (Console Port), click **Add** under the Hardware tab.

Note
Setting up the serial ports is required for a non-vga (default) image.

For information on configuring serial console access, see the Configuring Serial Console Access in VMware ESXi

Step 20 Select **Serial Port** and click **Next**.

Step 21 Select **Connect via Network** and click **Next**.

Step 22 Select **Server** and add a telnet address of the host and an unused port higher than 1000. Click **Next**.

Step 23 On Ready to Complete screen, click **Finish**.

Step 24 Repeat Step 17 till Step 22 to add three serial ports. The three ports are XR auxiliary port, admin port, and admin auxiliary port.

Step 25 In the **Resources** tab, click the **CPU setting** and set the **Resource Allocation** setting to **Unlimited**.

Step 26 Click **OK**.

Step 27 Click **Finish**.

The VM is now configured for Cisco IOS XRv 9000 Router and is ready to boot. Cisco IOS XRv 9000 is booted when the VM is powered on.

What to do next

To access and configure Cisco IOS XRv 9000 Router from the serial port on the ESXi host instead of the VM console, provision the VM to use this setting before powering on the VM and booting the router. For more information, see the Console Mapping section.

Note By default the XR console is mapped to the first serial port of the VM. However, if a VGA image is used for Cisco IOS XRv 9000 Router deployment, the XR console is mapped to the VGA console. The VGA console is accessed at the Console Tab in the vSphere Client. On ESXi, VGA console is console which opens by itself once the installation is complete. You don't need any specific procedure to connect to VGA console.

Increasing Performance on VMware ESXi Configurations

You can improve performance on VMware ESXi configurations by performing the following:

- Disable VMware ESXi power management.

  Choose the High Performance setting to disable power management in VMware ESXi. For more information, see the VMware Documentation.

The downside of improving performance on VMware ESXi is that it requires dedicated system resources.