



# Booting the Cisco CSR 1000v and Accessing the Console

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## Booting the Cisco CSR 1000v as the VM

The Cisco CSR 1000v boots when the VM is powered on. Depending on your configuration, you can monitor the installation process on the virtual VGA console or the console on the virtual serial port.



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**Note** If you want to access and configure the Cisco CSR 1000v from the serial port on the hypervisor instead of the virtual VGA console, you should provision the VM to use this setting before powering on the VM and booting the router. For more information, see the [Introduction to Accessing the Cisco CSR 1000v through the Virtual Serial Port, on page 4](#)

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### SUMMARY STEPS

1. Power-up the VM. Within 5 seconds of powering on the VM, choose a console described from one of the following three steps (2, 3, or 4) to select a console to view the router bootup and to access the Cisco CSR 1000v CLI.
2. (Optional) Select **Auto Console**: (Cisco IOS XE 3.13S and later, and IOS XE Denali 16.3.1 and later)
3. (Optional) Select **Virtual Console**
4. (Optional) Select **Serial Console**
5. Telnet to the VM using one of the following two commands: **telnet://host-ipaddress:portnumber** or, from a UNIX xTerm terminal: **telnet host-ipaddress portnumber** The following example shows the Cisco CSR 1000v initial boot output on the VM.
6. After booting, the system presents a screen showing the main software image and the Golden Image, with an instruction that the highlighted entry is booted automatically in three seconds. Do not select the option for the Golden Image and allow the main software image to boot.

## DETAILED STEPS

**Step 1** Power-up the VM. Within 5 seconds of powering on the VM, choose a console described from one of the following three steps (2, 3, or 4) to select a console to view the router bootup and to access the Cisco CSR 1000v CLI.

**Step 2** (Optional) Select **Auto Console**: (Cisco IOS XE 3.13S and later, and IOS XE Denali 16.3.1 and later)

Choose this option to use automatic console detection. When two virtual serial ports are detected, the IOS XE CLI will be available on the first virtual serial port and the IOS XE diagnostic CLI will be available on the second virtual serial port. If two virtual serial ports are not detected, the IOS XE CLI will be available on the virtual VGA console. This is the default setting and the Cisco CSR 1000v will boot using the automatic console detection if another option is not selected within the 5 second timeframe.

**Note** (for **VMware ESXi**): If you are installing on VMware ESXi without a virtual serial port concentrator (vSPC), this option may not be able to properly detect virtual serial ports when there is an active connection to the virtual serial ports. If you are not using a vSPC and wish to use virtual serial ports, choose the Serial Console option.

**Note** (for **Microsoft Hyper-V**): If you are installing on Microsoft Hyper-V, this option may be unable to properly detect virtual serial ports when there is an active connection to the virtual serial ports. If you wish to use virtual serial ports, you should choose the Serial Console option.

(Optional) **Automatic selection of virtual serial ports** For this option, the virtual serial ports must already be present on the VM. The virtual serial port must already be present on the VM for this option to work.

If you are installing on VMware ESXi, see [Creating Serial Console Access in VMware ESXi, on page 4](#).

If you are installing in KVM environments, see [Creating the Serial Console Access in KVM, on page 5](#).

If you are installing in Microsoft Hyper-V environments, see [Creating the Serial Console Access in Microsoft Hyper-V, on page 6](#).

The Cisco CSR 1000v starts the boot process.

**Step 3** (Optional) Select **Virtual Console**

Choose this option to use the virtual VGA console. If you choose to use the virtual console, the rest of the steps in this procedure do not apply. On Cisco IOS XE 3.12S and earlier, this is the default setting and the Cisco CSR 1000v boots using the Virtual Console if another option is not selected within the 5 second timeframe.

The Cisco CSR 1000v starts the boot process.

**Step 4** (Optional) Select **Serial Console**

Choose this option to use the virtual serial port console on the VM (not supported on Citrix XenServer VMs).

The virtual serial port must already be present on the VM for this option to work.

If you are installing on VMware ESXi, see [Creating Serial Console Access in VMware ESXi, on page 4](#).

If you are installing in KVM environments, see [Creating the Serial Console Access in KVM, on page 5](#).

If you are installing in Microsoft Hyper-V environments, see [Creating the Serial Console Access in Microsoft Hyper-V, on page 6](#).

**Note** The option to select the console port during the boot process is available only the first time the Cisco CSR 1000v boots. To change the console port access after the Cisco CSR 1000v has first booted, see [Changing the Console Port Access After Installation, on page 8](#) the “Changing the Console Port Access After Installation” section on page 8-7.

The Cisco CSR 1000v starts the boot process.

**Step 5** Telnet to the VM using one of the following two commands: **telnet://host-ipaddress:portnumber** or, from a UNIX xTerm terminal: **telnet host-ipaddress portnumber** The following example shows the Cisco CSR 1000v initial boot output on the VM.

**Example:**

```
%IOSXEBOOT-4-BOOT_SRC: (rp/0): CD-ROM Boot%IOSXEBOOT-4-BOOT_CDROM: (rp/0):  
Installing GRUB%IOSXEBOOT-4-BOOT_CDROM: (rp/0): Copying super packagecsr1000v-universalk9  
2011-10-20_13.09.SSA.bin%IOSXEBOOT-4-BOOT_CDROM: (rp/0):  
Creating /boot/grub/menu.lst%IOSXEBOOT-4-BOOT_CDROM: (rp/0):  
CD-ROM Installation finished%IOSXEBOOT-4-BOOT_CDROM: (rp/0): Ejecting CD-ROM tray
```

The system first calculates the SHA-1, which may take a few minutes. Once the SHA-1 is calculated, the kernel is brought up. Once the initial installation process is complete, the .iso package file is removed from the virtual CD-ROM, and the VM is rebooted. This enables the Cisco CSR 1000v to boot normally off the virtual Hard Drive.

**Note** The system reboots during first-time installation only.

The time required for the Cisco CSR 1000v to boot may vary depending on the release and the hypervisor used.

**Step 6** After booting, the system presents a screen showing the main software image and the Golden Image, with an instruction that the highlighted entry is booted automatically in three seconds. Do not select the option for the Golden Image and allow the main software image to boot.

**Note** The Cisco CSR 1000v does not include a ROMMON image that is included in many Cisco hardware-based routers. During installation, a “backup” copy of the installed version is stored in a backup partition. This copy can be selected to boot from in case you upgraded your boot image, deleted the original boot image, or somehow corrupted your disk. Booting from the backup copy is equivalent to booting a different image from ROMMON. For more information on changing the configuration register settings to access GRUB mode, see [Accessing and Using GRUB Mode](#).

You can now enter the router configuration environment by entering the standard commands **enable** and then **configure terminal**. **The following should be noted for the initial installation:**

When the Cisco CSR 1000v is booted for the first time, the mode the router boots in depends on the release version.

For Cisco IOS XE 3.13S and later, and IOS XE Denali 16.3.1 and later, the Cisco CSR 1000v boots with the AX package set of features and throughput is limited to 100 Kbps. For Cisco IOS XE 3.12S and earlier, the Cisco CSR 1000v boots in a limited mode that provides limited feature support and throughput is limited to 2.5 Mbps.

You must install the software license or enable an evaluation license to obtain the supported throughput and features. Depending on the release version, you must enable the boot level or change the maximum throughput level, and reboot the Cisco CSR 1000v. For more information, see [Installing Cisco CSR 1000v Licenses](#).

For Cisco IOS XE 3.13S and later, and IOS XE Denali 16.3.1 and later, the installed license technology package must match the package level configured with the **license boot level** command. If the license package does not match the configured setting, throughput is limited to 100 Kbps.

(VMware ESXi only) If you manually created the VM using the .iso file, then you need to configure the basic router properties. You can use either the Cisco IOS XE CLI commands or you can manually configure the properties in the vSphere GUI. For more information, see [Editing the Basic Properties of Cisco CSR 1000v using vSphere](#).

# Accessing the Cisco CSR 1000v Console

## Accessing the Cisco CSR 1000v Through the Virtual VGA Console

When installing the Cisco CSR 1000v software image, the setting to use is as follows:

- (Cisco IOS XE 3.12S and earlier, Cisco\_IOS XE 3.17S and later, and IOS XE Denali 16.3.1 and later) Virtual VGA console
- (Cisco IOS XE 3.12S through Cisco IOS XE 3.16S) Automatic console detection

No other configuration changes are required to access the Cisco CSR 1000v CLI through the virtual VGA console if:

- You do not change the console setting during the bootup process

and

- (If using automatic console detection) You do not add two virtual serial ports to the VM configuration

## Accessing the Cisco CSR 1000v Through the Virtual Serial Port

### Introduction to Accessing the Cisco CSR 1000v through the Virtual Serial Port

By default, the Cisco CSR 1000v is accessed using the virtual VGA console. If using automatic console detection and two virtual serial ports are detected, the Cisco CSR 1000v CLI will be available on the first virtual serial port.

You can also configure the VM to use the Serial Console, which always attempts to use the first virtual serial port for the Cisco CSR 1000v CLI. See the following sections to configure the virtual serial port on your hypervisor.



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**Note** The Citrix XenServer does not support access through a serial console.

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### Creating Serial Console Access in VMware ESXi

Perform the following steps using VMware VSphere. For more information, refer to the VMware VSphere documentation.

#### SUMMARY STEPS

1. Power-down the VM.
2. Select the VM and configure the virtual serial port settings.
3. Select **Select Network Backing**.
4. Power on the VM.
5. When the VM is powered on, access the virtual serial port console.
6. Configure the security settings for the virtual serial port.

## DETAILED STEPS

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**Step 1** Power-down the VM.

**Step 2** Select the VM and configure the virtual serial port settings.

- a) Choose Edit Settings > Add.
- b) Choose Device Type > Serial port.

Click **Next**.

- c) Choose **Select Port Type**.

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

**Step 3** Select **Select Network Backing**.

Select the **Server (VM listens for connection)** option.

Enter the **Port URI** using the following syntax:

```
telnet://:portnumber
```

where *portnumber* is the port number for the virtual serial port.

Under I/O mode, select the option **Yield CPU on poll** and click **Next**.

**Step 4** Power on the VM.

**Step 5** When the VM is powered on, access the virtual serial port console.

**Step 6** Configure the security settings for the virtual serial port.

- a) Select the ESXi host for the virtual serial port.
- b) Click the **Configuration** tab and click **Security Profile**.
- c) In the Firewall section, click **Properties**, and then select the **VM serial port connected over Network** value.

You can now access the Cisco IOS XE console using the Telnet port URI. When you configure the virtual serial port, the CSR 1000v is no longer accessible from the VM's virtual console. See [Opening a Telnet Session to the Cisco CSR 1000v Console on the Virtual Serial Port, on page 7](#).

**Note** To use these settings, either the **Auto Console** option or the **Serial Console** option in the GRUB menu must have been selected during the Cisco CSR 1000v bootup. If you have already installed the Cisco CSR 1000v software using the virtual VGA console, you must configure either the Cisco IOS XE **platform console auto command** or the Cisco IOS XE **platform console serial command** and reload the VM for the console access through the virtual serial port to work. See [Changing the Console Port Access After Installation, on page 8](#).

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## Creating the Serial Console Access in KVM

Perform the following steps using the KVM console on your server. For more information, refer to the KVM documentation.

### SUMMARY STEPS

1. Power off the VM.

2. Click on the default **Serial 1** device (if it exists) and then click **Remove**. This removes the default pty-based virtual serial port which would otherwise count as the first virtual serial port.
3. Click **Add Hardware**.
4. Select **Serial** to add a serial device.
5. Under Character Device, choose the **TCP Net Console (tcp)** device type from the drop-down menu.
6. Under Device Parameters, choose the mode from the drop-down menu.
7. Under Host, enter 0.0.0.0. The server will accept a telnet connection on any interface.
8. Choose the port from the drop-down menu.
9. Choose the **Use Telnet** option.
10. Click **Finish**.

## DETAILED STEPS

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- Step 1** Power off the VM.
- Step 2** Click on the default **Serial 1** device (if it exists) and then click **Remove**. This removes the default pty-based virtual serial port which would otherwise count as the first virtual serial port.
- Step 3** Click **Add Hardware**.
- Step 4** Select **Serial** to add a serial device.
- Step 5** Under Character Device, choose the **TCP Net Console (tcp)** device type from the drop-down menu.
- Step 6** Under Device Parameters, choose the mode from the drop-down menu.
- Step 7** Under Host, enter 0.0.0.0. The server will accept a telnet connection on any interface.
- Step 8** Choose the port from the drop-down menu.
- Step 9** Choose the **Use Telnet** option.
- Step 10** Click **Finish**.

You can now access the Cisco IOS XE console using the Telnet port URI. See the [Opening a Telnet Session to the Cisco CSR 1000v Console on the Virtual Serial Port, on page 7](#).

**Note** To use these settings, either the **Auto Console** option or the **Serial Console** option in the GRUB menu must have been selected while the Cisco CSR 1000v booted. If you have already installed the Cisco CSR 1000v software using the virtual VGA console, you must configure either the Cisco IOS XE **platform console auto** command or **platform console serial command** and reload the VM in order for the console access through the virtual serial port to work. See the [Changing the Console Port Access After Installation, on page 8](#).

## Creating the Serial Console Access in Microsoft Hyper-V

The console port access for Microsoft Hyper-V is created when configuring the VM settings. For more information, see the [“Configuring the VM Settings” section on page 7-4](#).




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**Note** Telnet access to the Cisco CSR 1000v console is not supported for Microsoft Hyper-V. You must use a Putty session to access the console.

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## Opening a Telnet Session to the Cisco CSR 1000v Console on the Virtual Serial Port

Perform the following steps using the Cisco IOS XE CLI commands:

### SUMMARY STEPS

1. Telnet to the VM
2. At the Cisco CSR 1000v IOS XE password prompt, enter your login password. The following example shows entry of the password *mypass*:
3. From user EXEC mode, enter the **enable** command as shown in the following example:
4. At the password prompt, enter your system password. The following example shows entry of the password *enablepass*:
5. When the enable password is accepted, the privileged EXEC mode prompt appears:
6. You now have access to the CLI in privileged EXEC mode and you can enter the necessary commands to complete your desired tasks.
7. To exit the Telnet session, use the **exit** or **logout** command as shown in the following example:

### DETAILED STEPS

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- Step 1** Telnet to the VM
- Use the following command **telnet://host-ipaddress:portnumber**
  - Or, from a UNIX terminal use the command  
**telnet host-ipaddress portnumber**
- Step 2** At the Cisco CSR 1000v IOS XE password prompt, enter your login password. The following example shows entry of the password *mypass*:
- Example:**
- ```
User Access Verification
Password: mypass
```
- Note** If no password has been configured, press **Return**.
- Step 3** From user EXEC mode, enter the **enable** command as shown in the following example:
- Example:**
- ```
Router> enable
```
- Step 4** At the password prompt, enter your system password. The following example shows entry of the password *enablepass*:
- Example:**
- ```
Password: enablepass
```
- Step 5** When the enable password is accepted, the privileged EXEC mode prompt appears:
- Example:**
- ```
Router#
```

**Step 6** You now have access to the CLI in privileged EXEC mode and you can enter the necessary commands to complete your desired tasks.

**Step 7** To exit the Telnet session, use the **exit** or **logout** command as shown in the following example:

**Example:**

```
Router# logout
```

## Changing the Console Port Access After Installation

After the Cisco CSR 1000v has booted successfully, you can change the console port access to the router using Cisco IOS XE commands. After you change the console port access, you must reload or power-cycle the router.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Do one of the following:
  - **platform console auto**
  - **platform console virtual**
  - **platform console serial**
4. **end**
5. **copy system:running-config nvram:startup-config**
6. **reload**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	Do one of the following: <ul style="list-style-type: none"> <li>• <b>platform console auto</b></li> <li>• <b>platform console virtual</b></li> <li>• <b>platform console serial</b></li> </ul> <b>Example:</b>	Options for <b>platform console x</b> : <ul style="list-style-type: none"> <li>• <b>auto</b>—Specifies that the Cisco CSR 1000v console is detected automatically. This is the default setting during the initial installation boot process (Cisco IOS XE 3.13S and later). For additional information, see <a href="#">Booting the Cisco CSR 1000v as the VM, on page 1</a>.</li> </ul>



	Command or Action	Purpose
	<pre>Router(config)# platform console auto</pre> <p><b>Example:</b></p> <pre>Router(config)# platform console virtual</pre> <p><b>Example:</b></p> <pre>Router(config)# platform console serial</pre>	<ul style="list-style-type: none"> <li>• <b>virtual</b>—Specifies that the Cisco CSR 1000v is accessed through the hypervisor virtual VGA console. This is the default setting during the initial installation boot process (on Cisco IOS XE 3.12S and earlier).</li> <li>• <b>serial</b>—Specifies that the Cisco CSR 1000v is accessed through the serial port on the VM.</li> </ul> <p><b>Note:</b> Use this option only if your hypervisor supports serial port console access.</p>
<b>Step 4</b>	<p><b>end</b></p> <p><b>Example:</b></p> <pre>Router(config)# end</pre>	Exits configuration mode.
<b>Step 5</b>	<p><b>copy system:running-config nvram:startup-config</b></p> <p><b>Example:</b></p> <pre>Router# copy system:running-config nvram:startup-config</pre>	Copies the running configuration to the NVRAM startup configuration.
<b>Step 6</b>	<p><b>reload</b></p> <p><b>Example:</b></p> <pre>Router# reload</pre>	Reloads the operating system.

## License Installation

One of the first steps you need to perform after obtaining console access is to install the Cisco CSR 1000v software licenses. For more information, see [Installing Cisco CSR 1000v Licenses](#).

