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# Junosphere

## Connector Guide

Release

2.4



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# About the Documentation

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## Documentation and Release Notes

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For disclosure information on Junosphere Connector, refer to the files located at <http://www.juniper.net/support/products/junosphereconnector>.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

## Documentation Conventions

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Table 1 on page v defines notice icons used in this guide.

Table 1: Notice Icons


Icon	Meaning	Description
	Informational note	Indicates important features or instructions.

Table 2 on page vi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces important new terms.</li> <li>Identifies book names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS System Basics Configuration Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; interface names; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Enclose optional keywords or variables.	<b>stub</b> <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast</b>   <b>multicast</b>  ( <i>string1</i>   <i>string2</i>   <i>string3</i> )
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	<b>community name members</b> [ <i>community-ids</i> ]
Indentation and braces ( { } )	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

## Documentation Feedback

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We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net), or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

## Requesting Technical Support

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>

- Join and participate in the Juniper Networks Community Forum:  
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html> .

To open a case with JTAC for Junosphere, you must provide the bank serial number. To find the serial number, double-click the bank icon in Junosphere.



## PART 1

# Junosphere Connector Guide

- [Junosphere Connector on page 3](#)



## CHAPTER 1

# Junosphere Connector

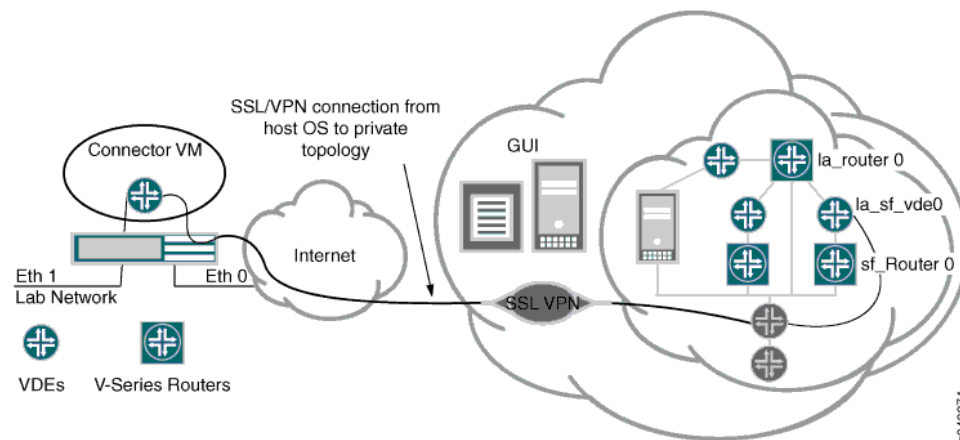
- [Junosphere Connector Overview on page 3](#)
- [Installing the VMware Player on page 5](#)
- [Activating the Junosphere Topology on page 9](#)
- [Configuring and Starting Junosphere Connector on page 10](#)
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- [Connecting Your LAN on page 15](#)
- [Configuring VmWare ESX to Work With the Image on page 16](#)

## Junosphere Connector Overview

The Junosphere Connector runs as a virtual machine connecting a virtual network to a physical network. The Junosphere Connector utilizes Virtual Distributed Ethernet (VDE) switches to connect to physical devices. It creates a VDE switch on a server connected to the physical device, a VDE switch connected to the virtual machine, and bridges the two VDE switches across an SSH:tunnel.

[Figure 1 on page 3](#) shows a physical network connected to a virtual network via two VDE switches across an SSH tunnel. The `la_sf_vde0` is a bridge between `la_router0` and `sfRouter0`.

**Figure 1: Physical Network Connected to a Virtual Network**



The Junosphere Connector supports VMware Player on Linux and Windows.

## Hardware Requirements for Linux

The Junosphere Connector requires:

- Linux PC with two Ethernet ports: eth0 and eth1
- CentOS 5.4 Linux

## Hardware Requirements for Windows

The Junosphere Connector requires:

- Windows PC with two Ethernet ports: eth0 and eth1
- Windows XP or Windows 7

## Configuring Your PC

To configure your PC:

1. Configure a server or PC with two Ethernet ports: eth0 and eth1.
2. Configure eth0 to be your management port; configure eth1 such that it has no IP address, but its link status is "UP".

## VMware Requirements

The Junosphere Connector software is a virtual machine running under VMware Player. In order for the Junosphere Connector virtual machine to run correctly, VMware must be configured with Junosphere in mind. By default, VMware Player is configured so that all network traffic traverses the first Ethernet interface no matter how many Ethernet interfaces you assign to a virtual machine. However, the Junosphere Connector must be able to:

- Connect to the Junosphere topology via one Ethernet port.
- Forward VDE network traffic to and from your physical devices via the second Ethernet port.

Because Junosphere Connector requires two Ethernet ports to work correctly, you need to configure VMware Player to use the second Ethernet port.

### Related Documentation

- [Installing the VMware Player on page 5](#)
- [Activating the Junosphere Topology on page 9](#)
- [Configuring and Starting Junosphere Connector on page 10](#)
- [Using Junosphere Connector on page 12](#)
- [Connecting Your LAN on page 15](#)
- [Configuring VmWare ESX to Work with the Image on page 16](#)

## Installing the VMware Player

The following sections describe how to download, install, modify, and run the VMware Player.

- [Downloading VMware Player on page 5](#)
- [Installing Junosphere Connector on Linux on page 5](#)
- [Installing Junosphere Connector on Windows on page 6](#)
- [Configuring VMware Player to Use the Second Ethernet Port for Linux on page 6](#)
- [Configuring VMware Player to Use the Second Ethernet Port for Windows on page 7](#)
- [Starting VMware Player on Linux on page 8](#)
- [Starting VMware Player in Windows on page 9](#)

### Downloading VMware Player

You must be logged in as root in Linux or have admin privileges in Windows.

1. You must be logged in as root in Linux or have admin privileges in Windows  
<http://www.vmware.com/products/player/overview.html>.
2. Follow the prompts to download the program.

### Installing Junosphere Connector on Linux

To install Junosphere connector on Linux:

1. Log in as root.
2. Run the VMware Player bundle.

Customize the command for your player version.

```
[root@skykvm4 VMwarePlayer]# ./VMware-Player-3.1.3-324285.x86_64.bundle
```

Extracting VMware Installer...done.

- a. Enter **no** for the first two prompts.

Would you like to check for product updates on startup? [yes]: no

Would you like to help make VMware software better by sending anonymous system data and usage statistics to VMware? [yes]: no

- b. Press **Enter** to begin.

The product is ready to be installed. Press Enter to begin installation or Ctrl-C to cancel.

Installing VMware Player Application 3.1.3

Copying files...

```
[#####] 53%
```

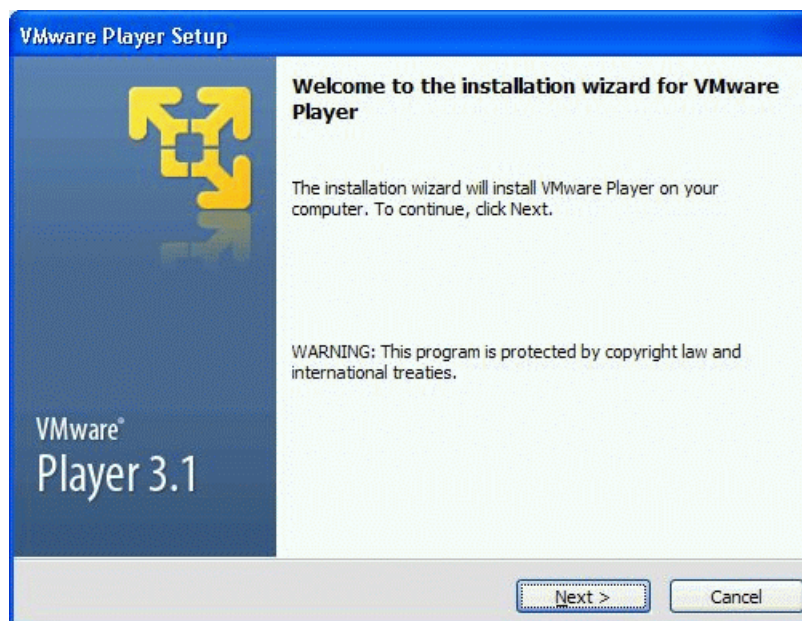
## Installing Junosphere Connector on Windows

When the software download is saved, the Download Complete screen appears with the Run button. To install Junosphere Connector on Windows:

1. Click **Run** to display the VMware Player Setup installation wizard.

The installation wizard appears.

Figure 2: The VMware Player Installation Wizard



2. Click **Next** to run the installation wizard.

When the wizard is finished, it prompts you to restart your PC.

## Configuring VMware Player to Use the Second Ethernet Port for Linux

To stop the process that is running on eth0 and get it running on eth1:

1. View the vmnet-bridge processes on your Linux PC.

```
ps aux | grep vmnet-bridge
root 4138 0.0 0.0 59292 504 ? Ss 13:08 0:00 /usr/bin/vmnet-bridge -s
14 -d /var/run/vmnet-bridge-0.pid -n 0
root 4211 0.0 0.0 61164 736 pts/7 S+ 13:09 0:00 grep bridge
```

2. Stop the vmnet-bridge process so that you can start a new one:

```
kill -9 process-id
kill -9 4138
```

3. Start a new vmnet-bridge process that uses eth1, the second Ethernet port:

```
vmnet-bridge -n 0 -i eth1 -d /var/run/vmnet.pid
```

## Configuring VMware Player to Use the Second Ethernet Port for Windows

To stop the process that is running on eth0 and get it running on eth1:

1. Start the Windows command line:

```
Start ->Run -> cmd
```

2. Change directories (cd) to the directory with the VMware Player installation files (usually **C:\Program Files\vmplayer**).

3. Run the installation file with the /e .\vmplayer arguments.

The .exe installation file may vary from the example below.

```
VMware-player-3.1.3-324285.exe /e .\vmplayer
```

4. In the vmplayer subdirectory, find the **network.cab** file.

```
cd vmplayer.  
dir n*
```

5. Extract the **network.cab** file.

The way in which you extract the file depends on the Windows version and the extraction tools that you have available.

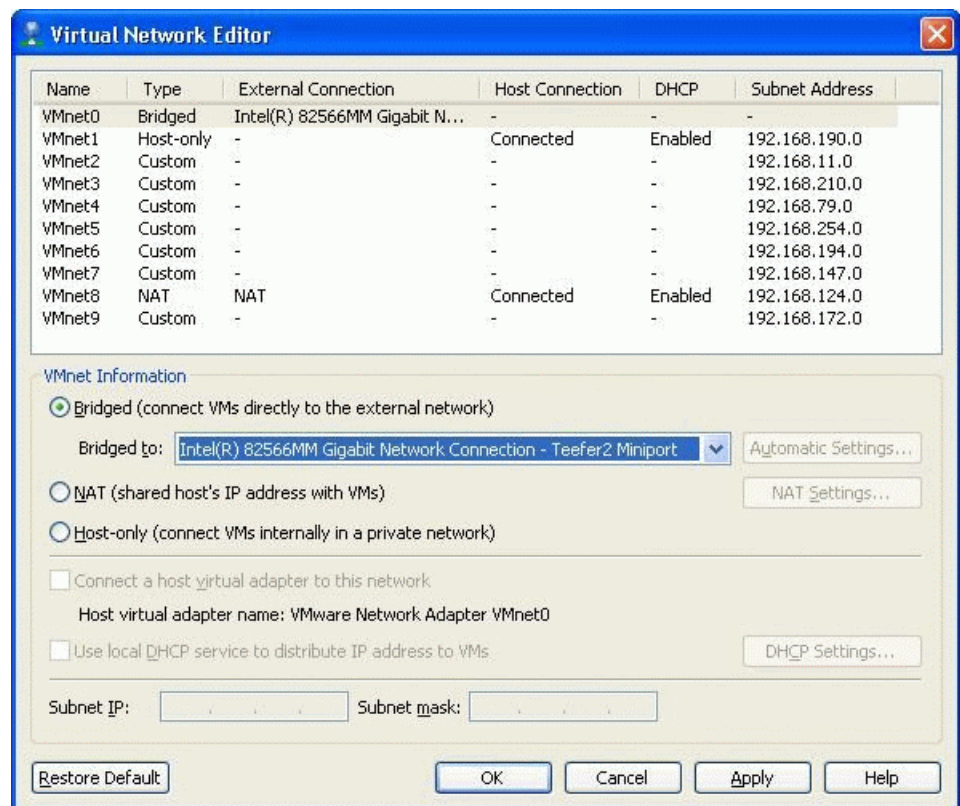
6. From the extracted files, copy **vmnetcfg.exe** to the directory where VMware Player was installed (usually **c:\Program Files\VMWare\VMware Player**).

7. Run Windows Explorer and navigate to the **c:\Program Files\VMWare\VMware Player** directory.

8. Run **vmnetcfg.exe** by double-clicking the .exe file.

The Virtual Network Editor screen appears. [Figure 3 on page 8](#) shows the Virtual Network Editor.

Figure 3: Virtual Network Editor



9. Select **VMnet0**.
10. Select **Bridged** to connect virtual machines directly to the external network.
11. Select the physical Ethernet port next to **Bridged to:**.
12. Click **Apply**.
13. Click **OK**.

## Starting VMware Player on Linux

To start VMware Player on Linux:

1. Set up your display according to your shell.

For example, for the Bash shell, enter:

```
export DISPLAY=crusher:0
```

2. Launch the VMware Player.
  - a. Log in as root in a terminal window.
  - b. Enter `vmplayer &`.

```
vmplayer &
```

The Welcome to the VMware Player window appears.



## Starting VMware Player in Windows

To start VMware Player in Windows:

1. Select **Start > All Programs > VMware > VMware Player**.

### Related Documentation

- [Activating the Junosphere Topology on page 9](#)
- [Configuring and Starting Junosphere Connector on page 10](#)
- [Using Junosphere Connector on page 12](#)
- [Connecting Your LAN on page 15](#)
- [Configuring VmWare ESX to Work with the Image on page 16](#)

## Activating the Junosphere Topology

Before you can start Junosphere Connector, you must have the active topology running. To start the active topology:

1. Log in to [juniper.net](http://juniper.net).
2. Go to the **Active Topology** accordion tab and click the **Connectors** tab to display the list of VDEs for the active topology.



**NOTE:** Before you can access the Connectors tab for an active topology, there must be an existing reservation for the connector. Refer to the *Junosphere Guide for Users* for more information on reservations.



**NOTE:** Click the Refresh icon in the upper right corner of the Connectors tab to refresh the data. Once you click this icon, the Connectors tab is automatically refreshed every time you go to the tab during a session.

3. Go to the Sandbox that has the topology that you want to start.
4. Go to the **Libraries** accordion tab.
5. On the Sandbox tab, right-click the topology you want to access and select **Start Topology**.
6. With a topology active, on the **Details** tab of the Active Topology accordion tab, click **Join** to join the topology via the Junosphere Access Portal page.
7. On the Junosphere Access Portal page, enter your username and password and click **Sign In**.  
The Network Connect page appears.
8. Click the **Start** button to launch the Secure Access SSL VPN and connect to your topology.

- Related Documentation**
- [Configuring and Starting Junosphere Connector on page 10](#)
  - [Junosphere Connector Overview on page 3](#)

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## Configuring and Starting Junosphere Connector

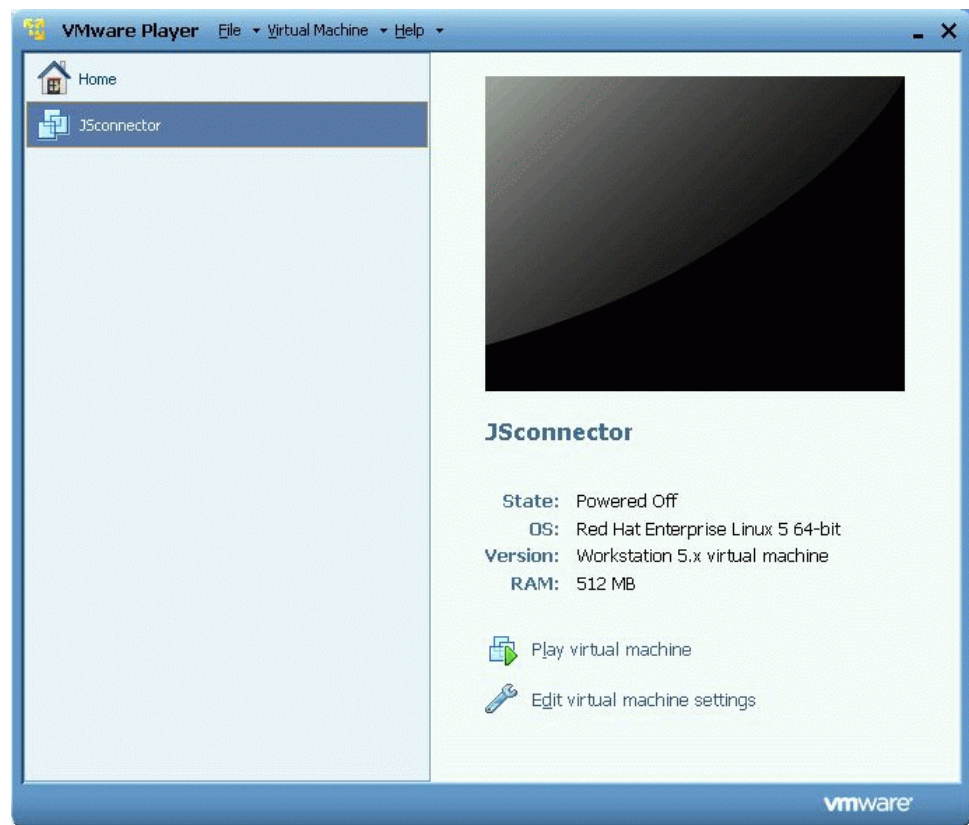
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To configure and start Junosphere Connector:

1. Prepare the Junosphere Connector file.
  - a. Download the Junosphere Connector file from <http://www.juniper.net/customers/support/?jsconnector>.
  - b. Extract the **.zip** file to a directory where you can access the Junosphere Connector **.vmx** file.
2. Open the Junosphere Connector **.vmx** file in VMware Player.
  - a. Navigate to the Junosphere Connector **.vmx** file.
  - b. Select the Junosphere Connector **.vmx** file and click **Open**.

The JSconnector Virtual Machine screen appears. [Figure 4 on page 11](#) shows the JSconnector Virtual Machine.

Figure 4: JSconnector Virtual Machine



3. Click **Edit virtual machine settings**.
  - a. Change the Network Adapter from Bridged to NAT.
  - b. Set Network Adapter2 to Bridged.
  - c. Save.
4. Click **Play virtual machine**.
 

A one-time pop-up window about keyboard appears.

  - a. Click **OK**.
 

A pop-up window about VMware tools appears.
  - b. Click **Remind Me Later**.
 

Wait for the Junosphere Connector VM to boot.
5. If needed, press **Control+ALT** to free the mouse.
6. Perform the initial network setup.
  - a. Scroll to Configure Network.
  - b. Enter **y** to use DHCP.

- c. Enter **n** to not use proxy.
- d. Log out.

- Related Documentation**
- [Using Junosphere Connector on page 12](#)
  - [Junosphere Connector Overview on page 3](#)

## Using Junosphere Connector

To use Junosphere Connector:

1. With an active topology running and the Junosphere Connector virtual machine booted from prior steps, select the Junosphere Connector Virtual Machine terminal screen.
2. Log in to the terminal window as user=hconnect; password=hconnect.

```
Last login: Thu Mar 10 18:19:01 2011
Welcome to the Junosphere Connector virtual appliance. To get started, type:
/vmm/bin/hconnect -c <customer name> -i <bridge to connect to>
```



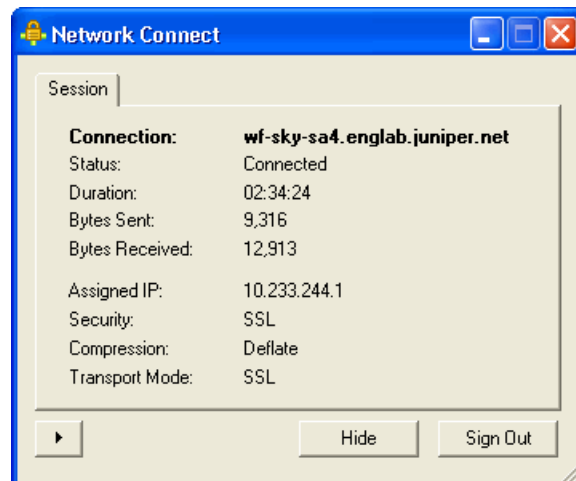
**NOTE:** Make sure that the PC/machine is Network Connected (a "lock" icon [Figure 5 on page 12](#) appears in the status bar in the bottom right-hand part of your screen.)

Figure 5: Lock Icon



Also, make sure that you can ping the nat-vm IP address (10.233.255.254). If you are using Centos on either Windows or Linux, the following dialog box ([Figure 6 on page 12](#)) appears.

Figure 6: Network Connect Dialog Box



3. Copy and paste the command from the Junosphere Connector View page or type `/vmm/bin/hconnect -u hconnect -b privateX -s junosphere.net` (where *privateX* is the name of your bridge) and press **Enter**.

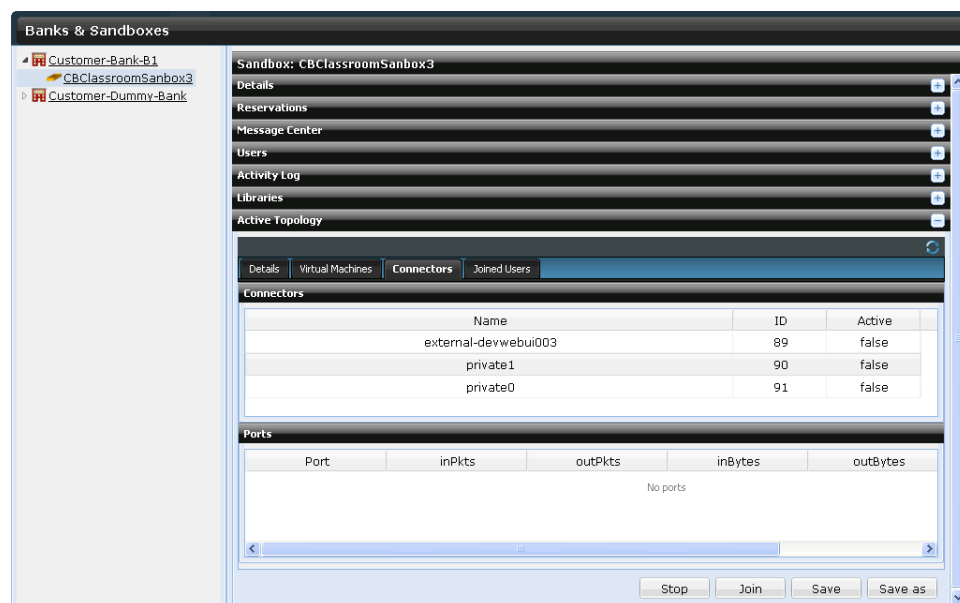
```
[hconnect@localhost ~]$ hconnect -u hconnect -b private0 -s junosphere.net
Junosphere Connector Version: 1.1194-3
Checking connection to 10.233.255.254 [ok]
Starting Junosphere config connecting to 10.233.255.254
This command does not return. Ctrl-C to terminate the Hybridge connection.
The stats of the Hybridge connection will be displayed every 10 seconds until
the connection is terminated
-----
date: Mon Apr 11 19:37:50 2011
-----
Port 0001: Local Hybridge connection
Port 0002: Remote Hybridge connection
Port 0001 untagged_vlan=0000 QnQ,Strict=0000,0 ACTIVE - Unnamed Allocatable
IN: pkts    27    bytes  2358
OUT: pkts   20    bytes  1904
Port 0002 untagged_vlan=0000 QnQ,Strict=0000,0 ACTIVE - Unnamed Allocatable
IN: pkts    20    bytes  1904
OUT: pkts   27    bytes  2358
```



**NOTE:** The user executes this command on the vmware player by the user on the same PC user network connected to the virtual topology:

- `-u <user>`—User must match the step 2 user.
- `-b <network between 2 VJX>`—User can determine the network name from the Active Topology Connectors tab. For example, in the following figure, connectors `private1` and `private0` each connect a pair of VJXs. The user can see traffic on this network only. Connector `external-devwebui003`, however, enables the user to connect to all routers and VJXs and to see traffic on all networks.

Figure 7: Connector Names



Enter the `"hconnect --help"` command for more options. The command prompt window should resemble the following figure.

Figure 8: Command Prompt Window

```

[hconnect@localhost ~]$ su root
Password:
su: incorrect password
[hconnect@localhost ~]$
[hconnect@localhost ~]$
[hconnect@localhost ~]$
[hconnect@localhost ~]$
[hconnect@localhost ~]$
[hconnect@localhost ~]$
[hconnect@localhost ~]$ hconnect --help
Usage: /vmm/bin/hconnect
    --init      : Initializes the Hybridge Connector Appliance
    --user      : Username or customer IP on the remote host
    --bridge    : bridge name to connect to on the remote host
    --server    : server name you are connecting to (junosphere.net|cloud.juniper.net)
    --list      : list the available bridges to connect to on the remote server
    --counters  : dump the packet count statistics for the Hybridge link
    --reset     : reset the packet count statistics for the Hybridge link
    --version   : show the version of the Junosphere Connector Appliance
    --help     : this message

Example:
$ /vmm/bin/hconnect -u hconnect -b private0 -s junosphere.net

[hconnect@localhost ~]$ _

```

- Related Documentation**
- [Connecting Your LAN on page 15](#)
  - [Configuring VmWare ESX to Work with the Image on page 16](#)

## Connecting Your LAN

To connect your LAN to eth1:

1. Connect a cable to eth1.
2. Connect the other end to a switch.
3. Connect your other physical devices to that switch.

Packets from your VDE in your virtual topology will now go to your switch and then to your hardware equipment.

- Related Documentation**
- [Using Junosphere Connector on page 12](#)
  - [Configuring VmWare ESX to Work with the Image on page 16](#)

## Configuring VmWare ESX to Work With the Image

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ESX has a security feature that by default rejects any promiscuous mode connections to a switch. Junosphere Connector requires a promiscuous connection to allow all packets coming from the customer side to be tunneled into the virtual switch chosen for your Junosphere topology.

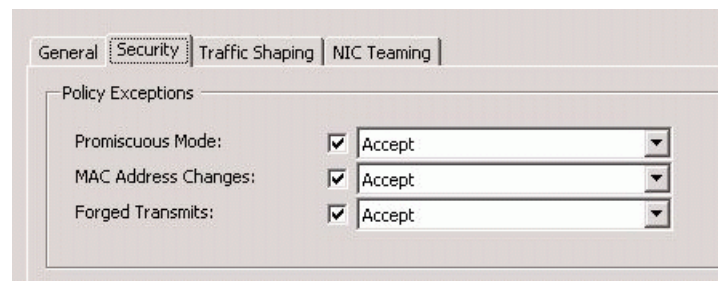
The virtual switch that you connect to the port with the customer-side LAN traffic destined for the cloud must be set to allow promiscuous mode traffic.

To allow promiscuous mode traffic:

1. Connect to your vSphere client.
2. Navigate to the host on which your port group resides.
3. Access the Properties dialog box of the virtual switch to which the port group is assigned.
4. Edit the properties of the port group:
  - a. Select the **Security** tab.
  - b. Select **Accept** from the Promiscuous Mode drop-down menu and click **OK**.

You will now be able to use the Junosphere Connector. The following figure shows the Security tab in the Properties dialog box.

**Figure 9: Properties Dialog Box**



- Related Documentation**
- [Using Junosphere Connector on page 12](#)
  - [Connecting Your LAN on page 15](#)



## PART 2

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