Junosphere

Junosphere User Guide

Release

1.1

Published 2011-06- 10

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http://www.juniper.net/support/products/junosphereconnector

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Junosphere User Guide
Release 1.1
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Revision History
2011-04-15—R1
2011-05-13—R2
2011-06-10—R3

The information in this document is current as of the date listed in the revision history.

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Table of Contents

Junos OS Documentation and Release Notes ix
Objectives ix
Audience ix
Documentation Conventions x
Documentation Feedback xi
Requesting Technical Support xi
Self-Help Online Tools and Resources xi
Opening a Case with JTAC xii
Junosphere Overview 1
Using the Interface 1
The User Interface Login Page 2
Using the Announcements Page 2
Using the Library Page 3
Saving Device Configurations 5
The File Set Details Page 6
Library Save As Button 7
Topology Upload Page 8
Joining a Started Topology 9
Library Download Button 11
Using the Topology Page 12
Connecting to the Network Topology 13
The Junosphere (Secure Access) Access Portal Page 14
The Network Connect Page 15
Junosphere Connector Page 16
View Connector Page 17
Junosphere Connector Overview 18
Hardware Requirements for Linux 18
Hardware Requirements for Windows 19
Configuring Your PC 19
VMware Requirements 19
Installing the VMware Player 19
Downloading VMware Player 19
Installing Junosphere Connector on Linux 19
Installing Junosphere Connector on Windows 20
Configuring VMware Player to Use the Second Ethernet Port for Linux 20
Configuring VMware Player to Use the Second Ethernet Port for Windows 21

Starting VMPlayer on Linux 22
Starting VMPlayer in Windows 23
Activating the Junosphere Topology 23
Configuring and Starting Junosphere Connector 23
Using Junosphere Connector 25
Connecting Your LAN 25
Configuring VmWare ESX to Work with the Image 26

List of Tables

Table 1: Notice Icon x
Table 2: Text and Syntax Conventions x

List of Figures

Figure 1: Logging In to the User Interface 2
Figure 2: User Library Page 5
Figure 3: The File Set Detail Page 7
Figure 4 : Save As Button 8
Figure 5: Upload Page 9
Figure 6 Joining a Started Topology Page 10
Figure 7 Stopping a Started Topology Page 11
Figure 8: Download Dialog Box 11
Figure 9: Topology Page 13
Figure 10: Junosphere Access Portal Page 15
Figure 11: Network Connect Page 16
Figure 12: Junosphere Connector Page 17
Figure 13: Physical Network Connected to a Virtual Network 18
Figure 14 : Virtual Network Editor 22
Figure 15: JSconnector Virtual Machine 24

ABOUT THIS GUIDE

Junos OS Documentation and Release Notes

For a list of related Junosphere documentation, see *http://www.juniper.net/techpubs/*.

If the information in the latest release notes differs from the information in the documentation, follow the *Junosphere Release Notes*. 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/*.

Juniper Networks supports a technical book program to publish books by Juniper Networks engineers and subject matter experts with book publishers around the world.

These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration using the Junos OS and Juniper Networks devices. In addition, the Juniper Networks Technical Library, published in conjunction with O'Reilly Media, explores improving network security, reliability, and availability using Junos OS configuration techniques. All the books are for sale at technical bookstores and book outlets around the world. The current list can be viewed at *http://www.juniper.net/books*.

Objectives

This guide provides an overview of the Junosphere features supported in this release and describes how to configure the features to provide solutions to setting up a virtual network.

NOTE: For additional information about the Junos OS—either corrections to or information that might have been omitted from this guide—see the software release notes at *http://www.juniper.net/techpubs/en_US/release-independent/junosphere/information-products/pathway-pages/junosphere/product/index.html.*

Audience

This guide is designed for network administrators who are configuring and monitoring the Junosphere virtual network.

To use this guide, you need a broad understanding of networks in general, networking principles, network configuration and Junos OS configuration.

Personnel operating the equipment must be trained and competent and must abide by the instructions provided by the documentation.

Using the Indexes

This reference contains a standard index with topic entries.

Documentation Conventions

Table 1 on page x defines the notice icon used in this guide.

Table 1: Notice Icon

ICON	MEANING	DESCRIPTION
	Informational note	Indicates important features or instructions.

Table 2: Text and Syntax Conventions defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

CONVENTION	DESCRIPTION
Bold text like this	Represents text that you type.
Fixed-width text like this	Represents output that appears on a terminal screen.
Italic text like this	• Introduces important new terms. • Identifies book names. • Identifies RFC and Internet drafts.
Italic text like this	Represents variables (options for which you substitute a value) in commands of configuration statements.
Text like this	Represents names of configuration statements, commands, files, and directory interface names; configuration hierarchy levels; or labels on routing platform components.
< > (angle brackets)	Enclose optional keywords or variables.
| (pipe symbol)	Indicates a choice between keywords or variables on either side of the symbol. The set of choices are enclosed in parentheses for clarity.

# (pound sign)	Indicates a comment specified on the line as the configuration statement to which it applies.
[ ] (square brackets)	Enclose a variable for which you substitute one or more values.
{ } (indents and braces)	Identify a level in the configuration hierarchy.
; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.

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

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- 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/*.
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For international or direct-dial options in countries without toll-free numbers, visit us at *http://www.juniper.net/support/requesting-support.html*.

Part 1

USING JUNOSPHERE

Junosphere Overview

Junosphere is a virtualization environment where multiple virtual machines representing network devices can be connected and configured to create network topologies.

For the initial release, you provide information about your network, and the Juniper Sales Engineer (SE) will set up the cloud, or virtual network, for you. You can then access the topology and configure and use the network devices.

Using the Interface

Users will receive an e-mail with the URL to the login page of the user interface, as well as a user name and password.

1. Log in to the user interface.

   The first time you log in, you will be presented with the End User License Agreement (EULA).

2. Agree to the terms of the agreement to proceed.

   The Announcements page appears. The page displays a scroll-down box with system and operational messages you should review.

3. Click Library

   The Library page appears. The Library page lists your topologies and shows their usage and state of activity. One topology should be labeled Active. The Sales Engineer activated that topology as part of setting up the virtual network.

4. Click the **Start** button if the topology is active, but not yet started.

5. Click the **Topology** button.

   The Topology page appears. The page lists each virtual machine for the active topology.

6. Connect to the active topology representing a virtual network by:

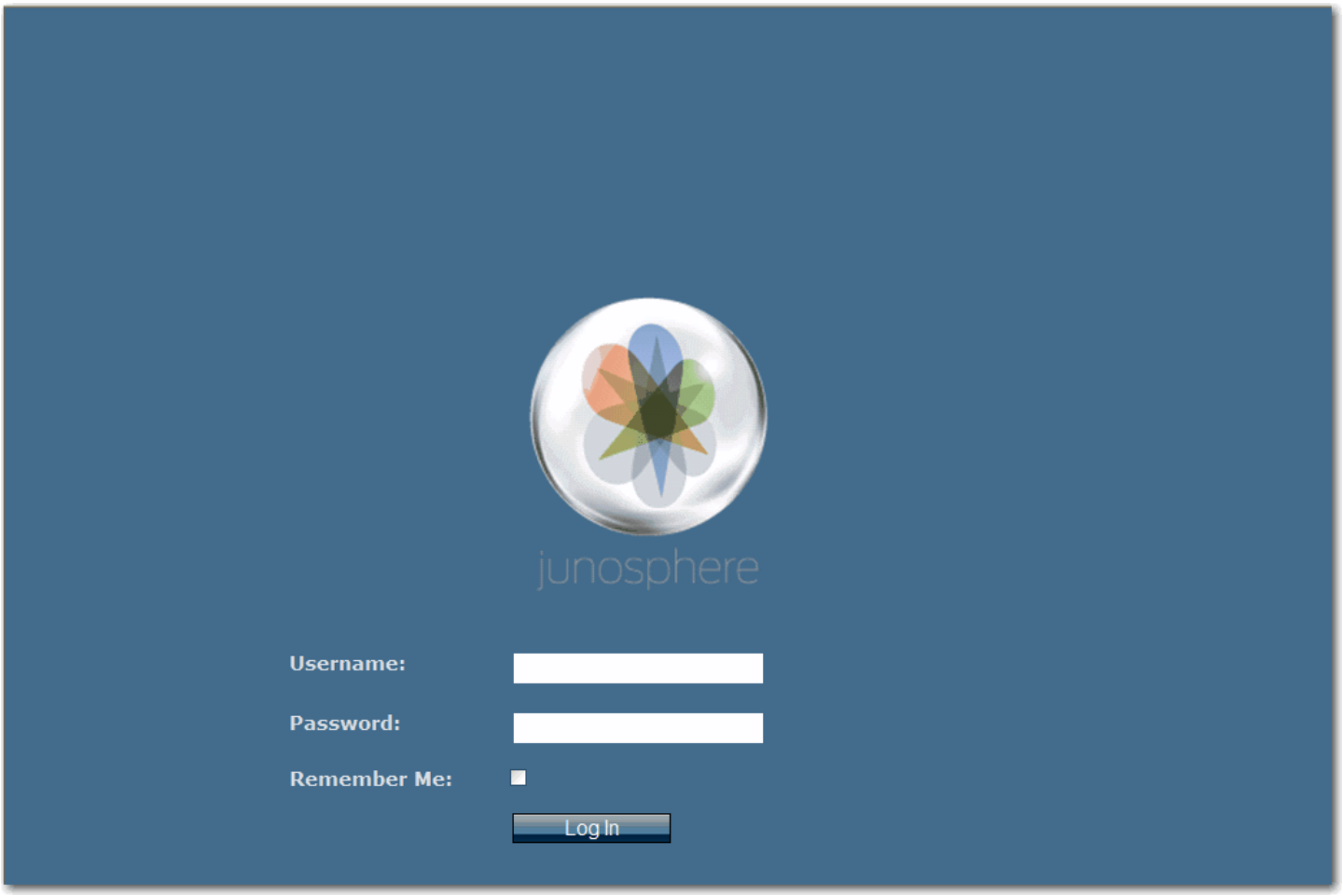
   - Using the Access Portal and Network Connect pages to establish an SSL VPN connection to the virtual network.
   - Using a program such as telnet, SSH, or vnc, to connect to the virtual machines.

Details on using these pages and procedures are listed in the following sections.

The User Interface Login Page

Use the Login page to sign in to the Junosphere user interface. Enter the username and password mailed to you by the Junosphere administrator. Figure 1 on page 2 shows the Login page.

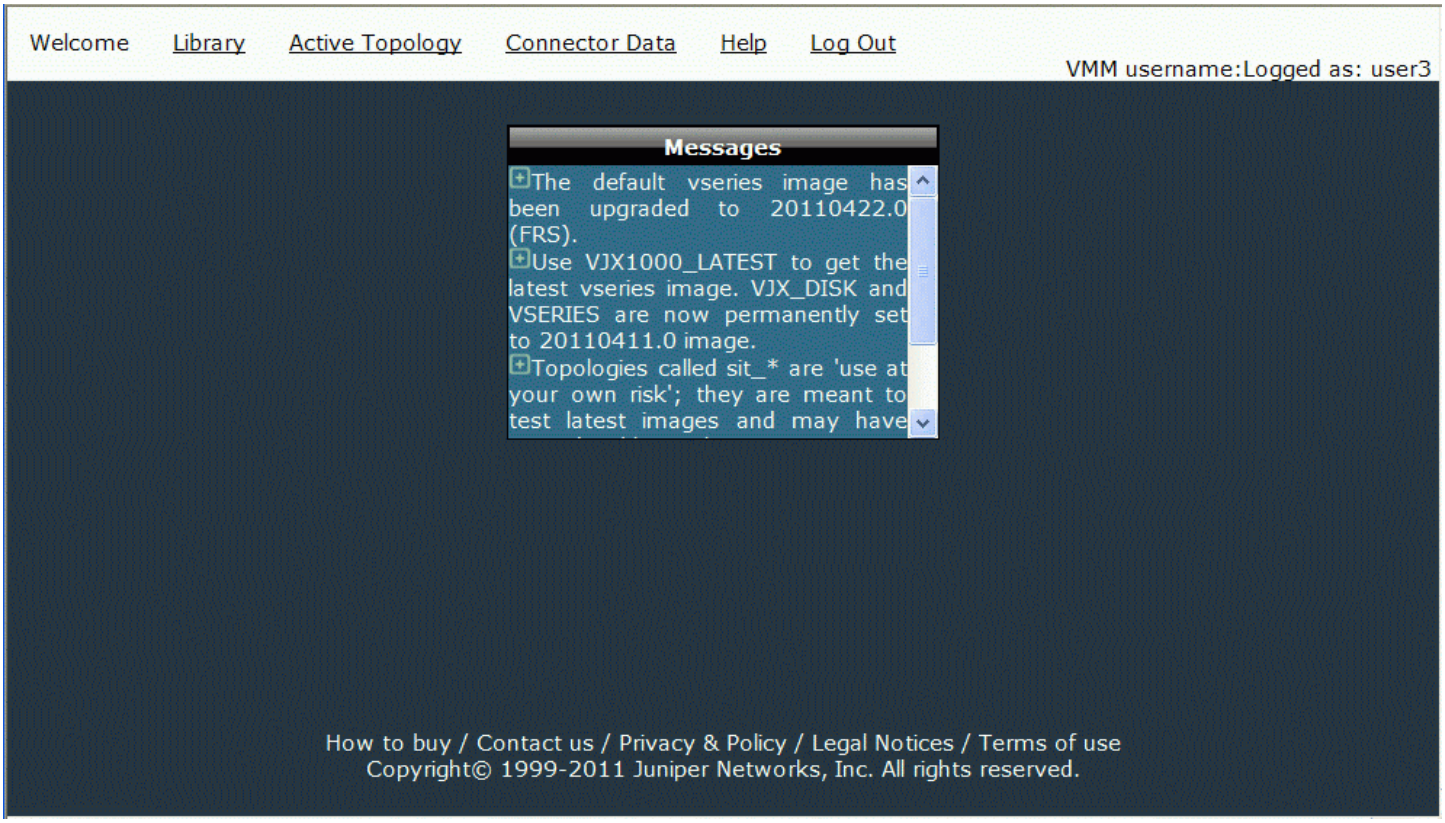
Figure 1: Logging In to the User Interface



Using the Announcements Page

The page displays a scroll-down box with system and operational messages you should review.

Figure 2 The Announcements Page



Using the Library Page

The Library page lists your topologies and shows their status. In order for you to use a topology, it should be active and started.

Initially, the page should show a library of topologies. (The topologies may have been loaded for you by the Sales Engineer.) Select the appropriate topology by clicking **Activate** and then clicking **Start**. Starting a topology is a request to boot a number of virtual machines. This may take some time depending on the number of virtual machines in the topology.

Starting and Stopping a Topology

To start a topology:

1. Click **Activate**.
2. Click **Start**.

To stop a topology:

1. Click **Save** or **Save As** if you want to save changes and have the privileges to save.
2. Click **Stop**.
3. Click **Deactivate**.

Until a topology is activated, you will only see certain buttons. Once you activate a topology, all the buttons will appear. Click the appropriate button to perform the following functions:

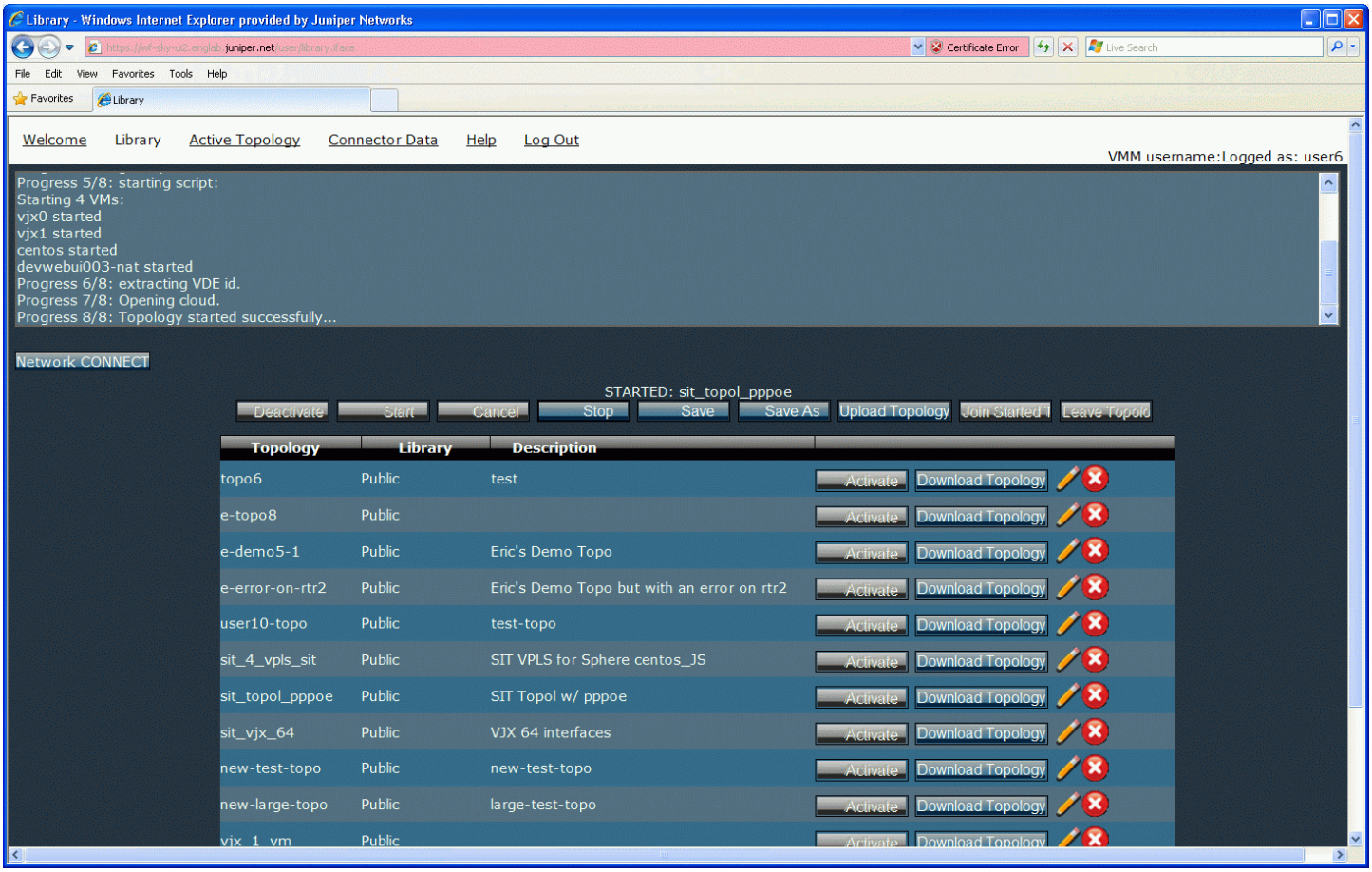
- Network Connect — Connects to the (Secure Access) Access Portal login page.
- Deactivate — Tars and zips the topology files and removes them from the active directory.
- Start — Launches the active topology with its configuration file set. The file set consists of:
  - A .vmm topology configuration file
  - A Junos OS CLI .conf configuration file for each Junos virtual device (optional)
- Stop — Stops the active topology.
- Save — Saves the active topology to the library.
- Save As — Saves the active topology to another library or renames the file.
- Upload Topology — Uploads a topology from a local network.
- Joined Started Topology – For use in educational settings, allows students to connect to the topology of an instructor. Allows students to access the Active Topology and Connector Data screens of the instructor.
- Leave Topology – Allows a user to leave another's topology.

The Topology Listings dialog box has the following functions:

- Topology — Lists all topologies.
- Library — The library that contains each topology file set.
- Description – Describes the topology.
- Activate — Extracts the topology from the database and places it in the active directory.
- Download Topology— Downloads the topology to a local network.
- Pencil icon — Use to view the topology file set, including the topology.vmm file and configuration files for the network devices.
- Delete — Removes a topology.

Figure 3 on page 5 shows the Library page.

Figure 3: User Library Page



Saving Device Configurations

Just as with a physical Junos OS device, Junos OS CLI configuration changes are made in edit mode and then committed to implement the changes on the router. They will persist and be used by the router as long as the router virtual machines in the topology remain “Started.” To save configuration changes for re-use when restarting a topology in the future, files must be saved in the configuration file set stored as part of the topology definition in the user’s library.

To save configuration file changes in the library, click **Save** on the Library page to save the revised file set to the library. The next time the topology is started, the configuration file set will be applied, as specified by the install command in the .vmm topology definition file.

For example, the .vmm topology file can have the following section:

```
vm "vrouter002" {
hostname "vrouter002" ;
VJX1000_LATEST
//description - interface to the outside world
 interface "em0" { EXTERNAL;};
// description - link between vrouter002 and vrouter001
interface "em1" { bridge "private0"; };
// description - link between vrouter002 and vrouter003
interface "em2" { bridge "private1"; };
```

```
// description - configuration file to load on the router
install "ENV(HOME)/active/configset/vrouter002.conf" "/root/junos.conf";
};
```

The name of the configuration file that the router will save when you make any changes is: vrouter002.conf.

If you make the name of the configuration file the same as the name that the router will save (vrouter002.conf, for example), then if you start, make configuration changes, save, stop, and restart your topology; the router will restart with the latest or saved configuration changes. If you make the name of the configuration file something different, then if you start, make configuration changes, save, stop, and restart the topology; the router will restart with the *original* configuration and not the *saved* configuration.

You can also click **Save As** to save the configuration set to a different library (or to rename it in the same library), or click **Download** to save the configuration file set to a local directory.

NOTE: After using Save As, you are still working on the same (original) active topology. To work on a topology with a new name, you must Stop and Deactivate the current topology and Activate and Start the newly created topology.

The File Set Details Page

From the Library page, click the pencil icon to display the File Set Details page for a topology.

You can update the file set name, library, and description.

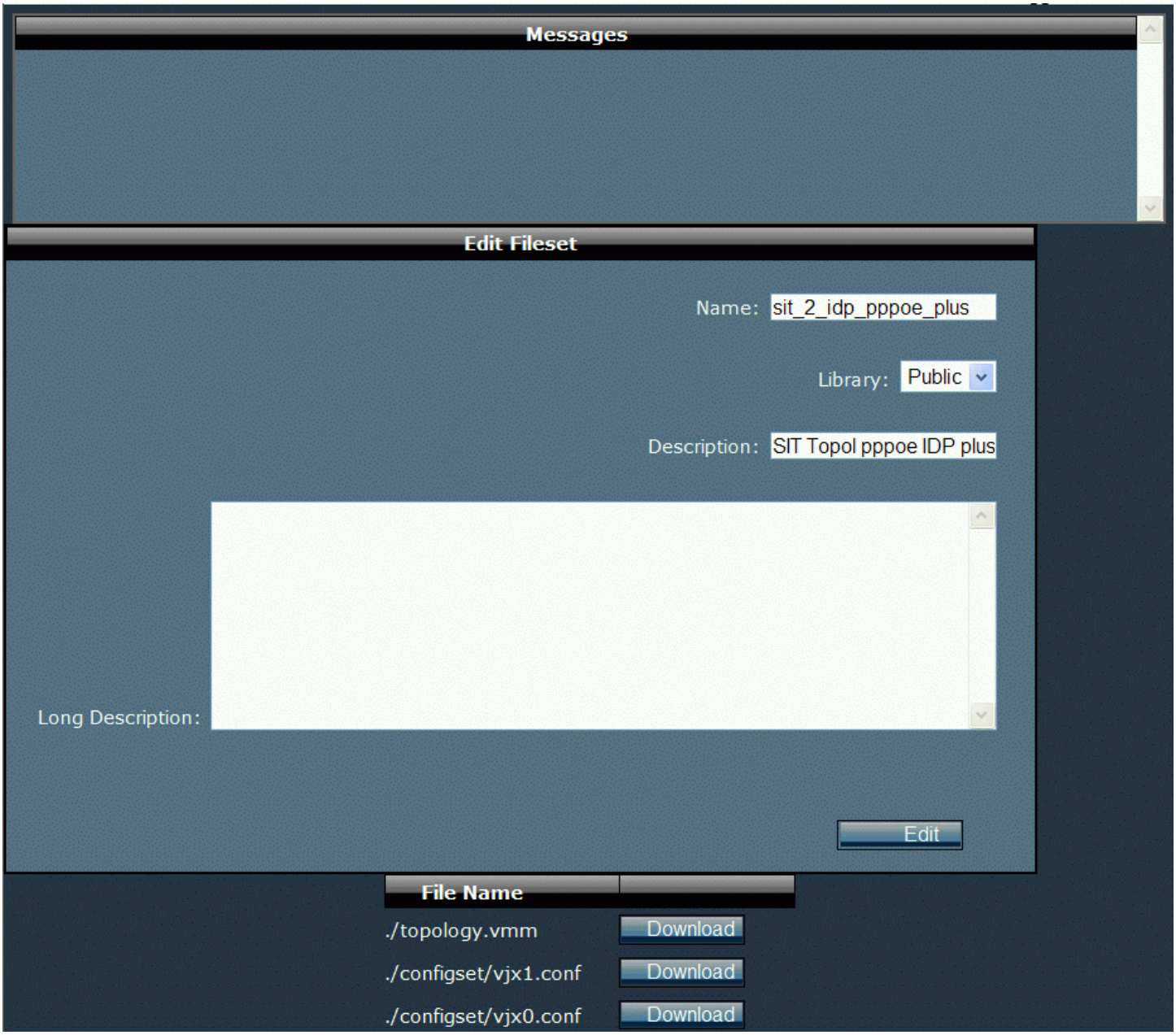
The topology file set consists of:

- A .vmm topology configuration file
- A Junos OS CLI .conf configuration file for each Junos OS virtual device

Click **Download** to download a file locally for editing or backup.

Figure 4 on page 7 shows the File Set Detail page.

Figure 4: The File Set Detail Page

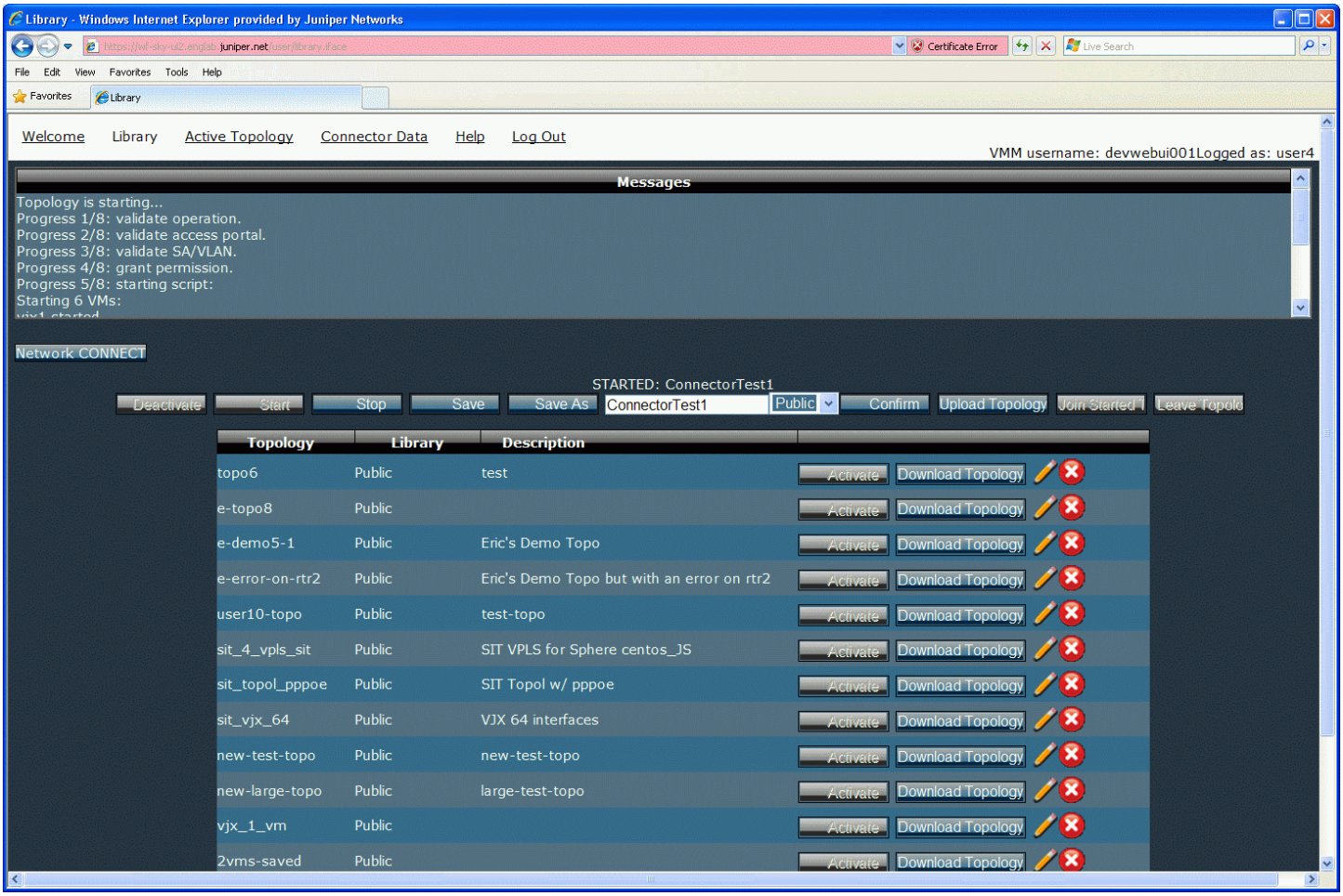


Library Save As Button

Click the Topology **Save As** button to save a copy of the topology to a different library or with a different name.

Figure 5 on page 8 shows the Save As button.

Figure 5 : Save As Button



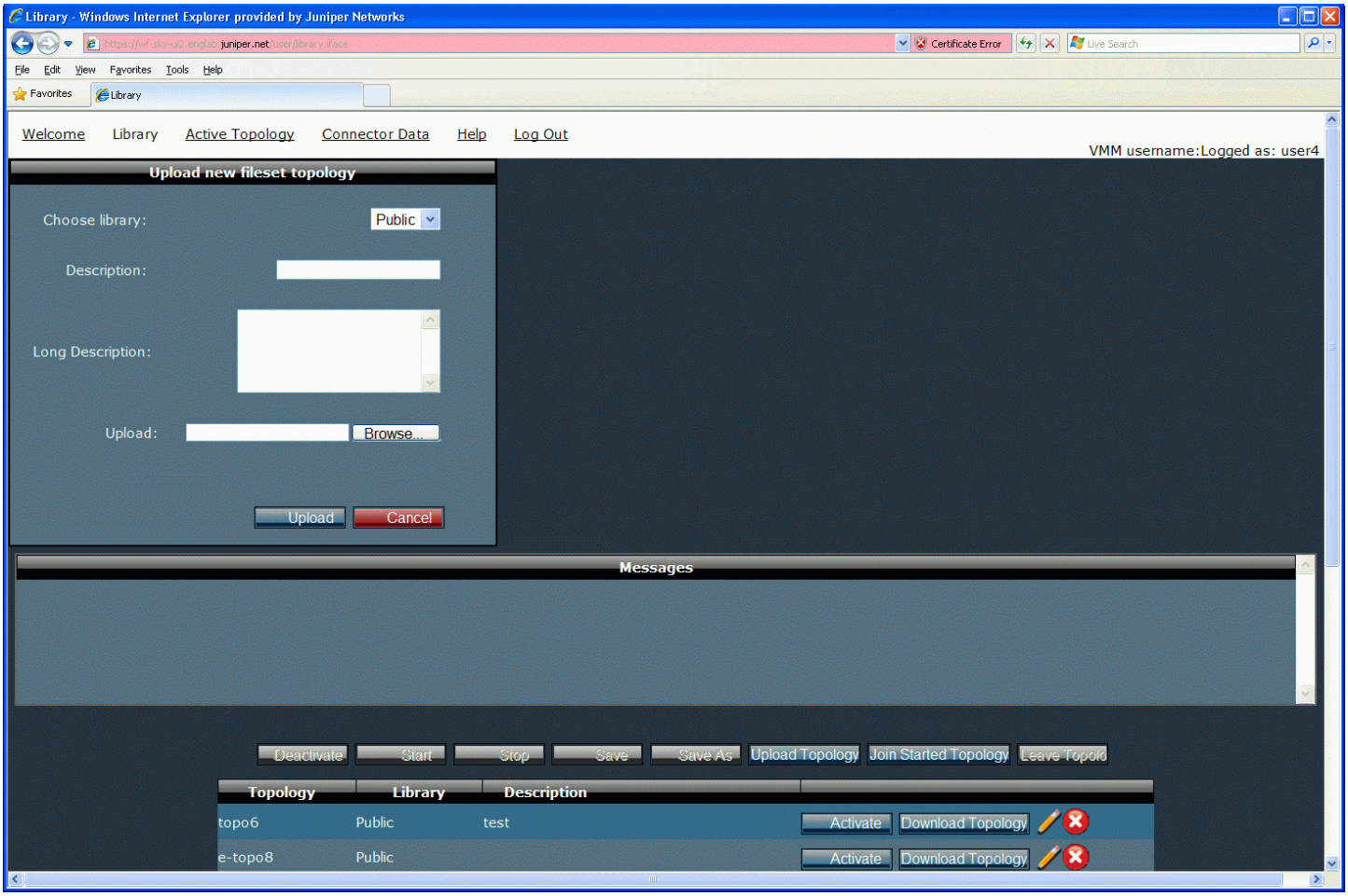
Topology Upload Page

Use the Topology Upload page to upload a topology from a local directory:

1. Select the library you want to use in the upload.
2. Enter a description for the topology.
3. Select the file to upload.

Figure 6 on page 9 shows the Upload page for uploading topologies from a local directory.

Figure 6: Upload Page

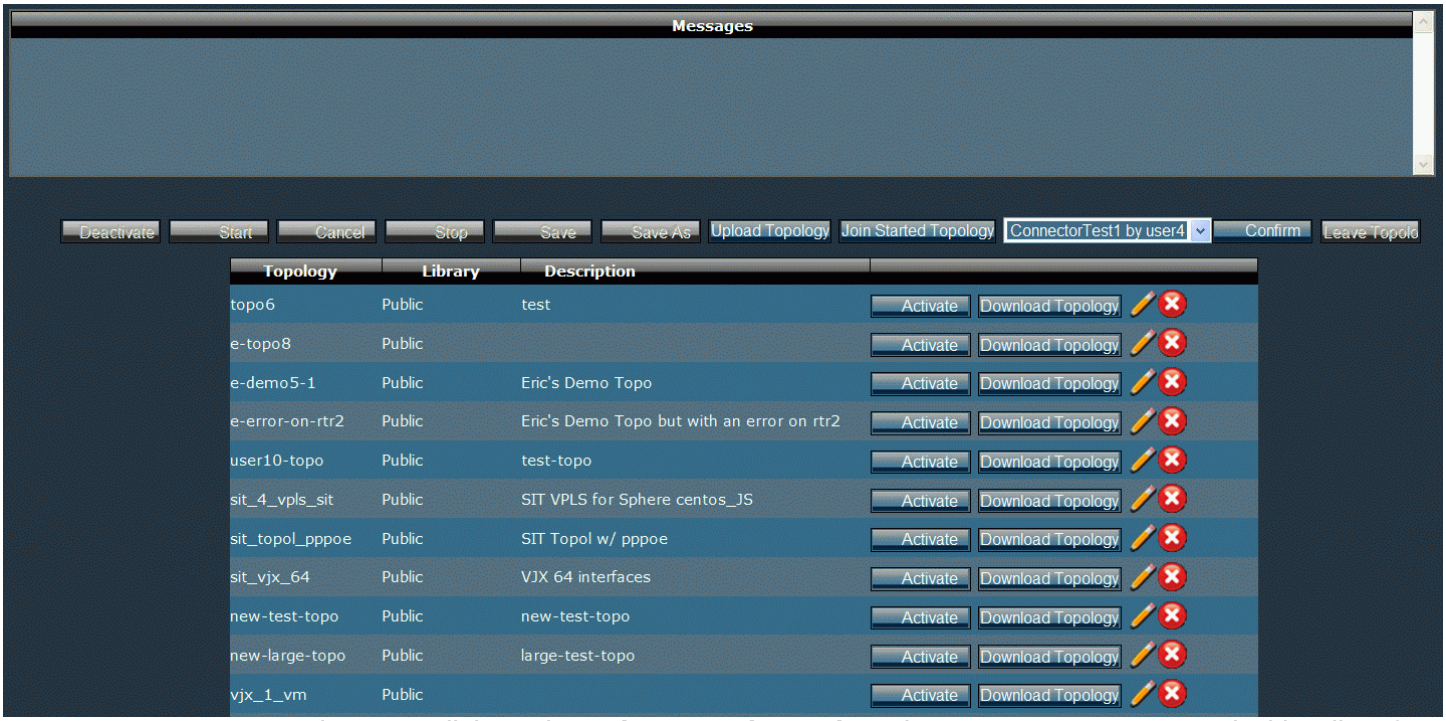


Joining a Started Topology

The Join a Started Topology function allows a user to share a topology with other users in a specified group. The users in the group can connect to the shared topology and use the Active Topology and Connector Data screens of the sharing user, as well as the virtual machines of the topology.

This function is especially useful in an educational setting, when an instructor wants to share a topology with a group of students. The sharing permissions are set up upon request by the Junosphere administrator.

Figure 7 Joining a Started Topology Page



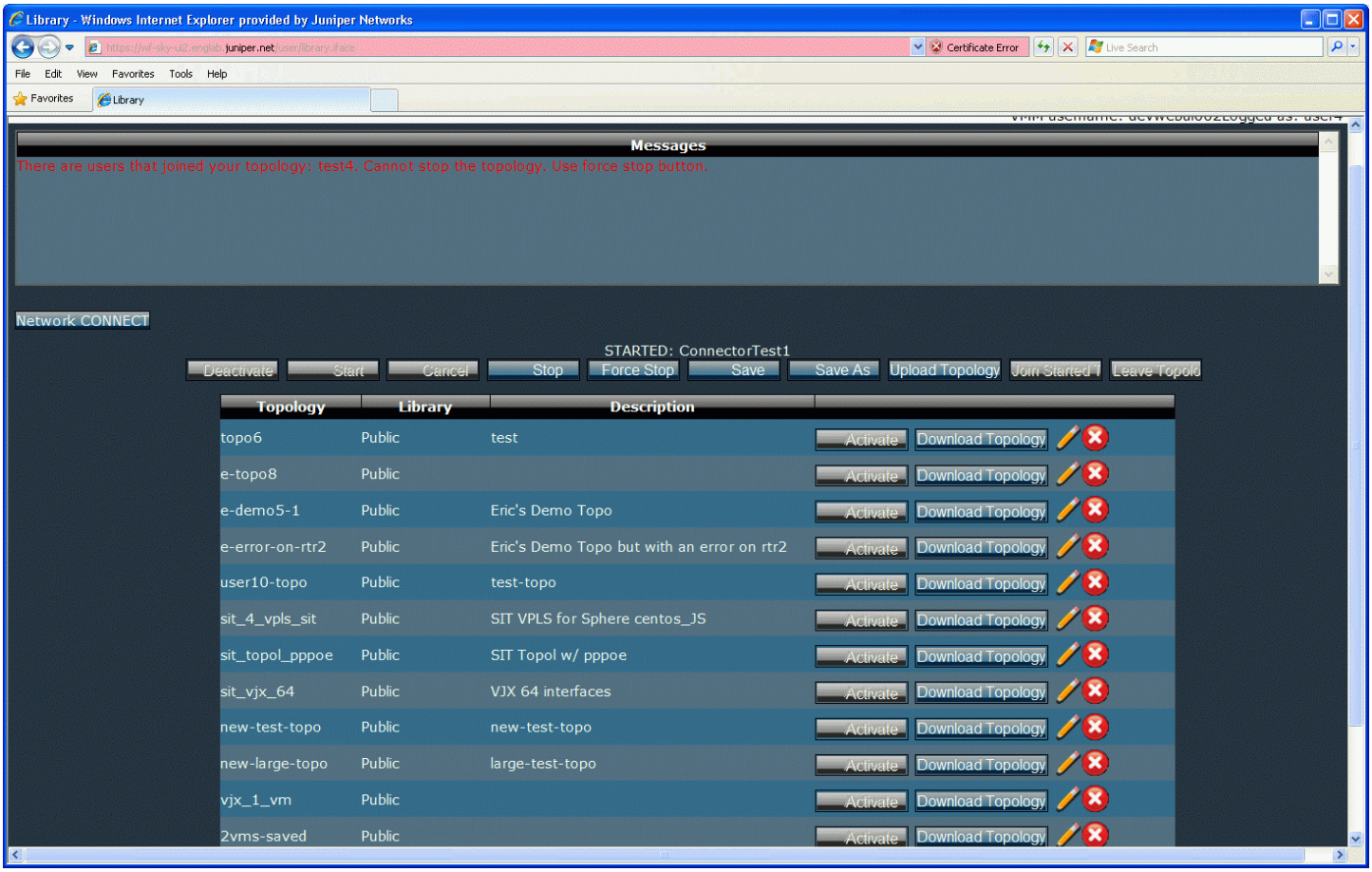
When you click on the **Join Started Topology** button, you are presented with a list of available shared topologies and their owners. Pick one of the topologies from the list and click Confirm. The interface displays that you have joined the topology.

When the interface connects to the started topology, it also displays the **Network Connect** button. Use the **Network Connect** button to connect to the shared cloud. You can then use a program such as telnet, SSH, or vnc to connect to the virtual machines in the cloud.

If the sharing user granted Allow Shared Control permissions, then the **Power on Reset** and **Rebuild** buttons on the Active Topology page should be visible and working. If the sharing user did not allow shared control, the buttons are grayed out.

If the sharing user should stop a topology with active joined users, a message displays warning that users are still joined to this topology. It warns that you have to use the **Forced Stop** button. Users will also receive a message indicating that the sharing user stopped the joined topology.

Figure 8 Stopping a Started Topology Page



Library Download Button

Click the **Download** button to save a topology to a local directory.

Figure 9 on page 11 shows the download dialog box for downloading topologies to a local directory.

Figure 9: Download Dialog Box

Using the Topology Page

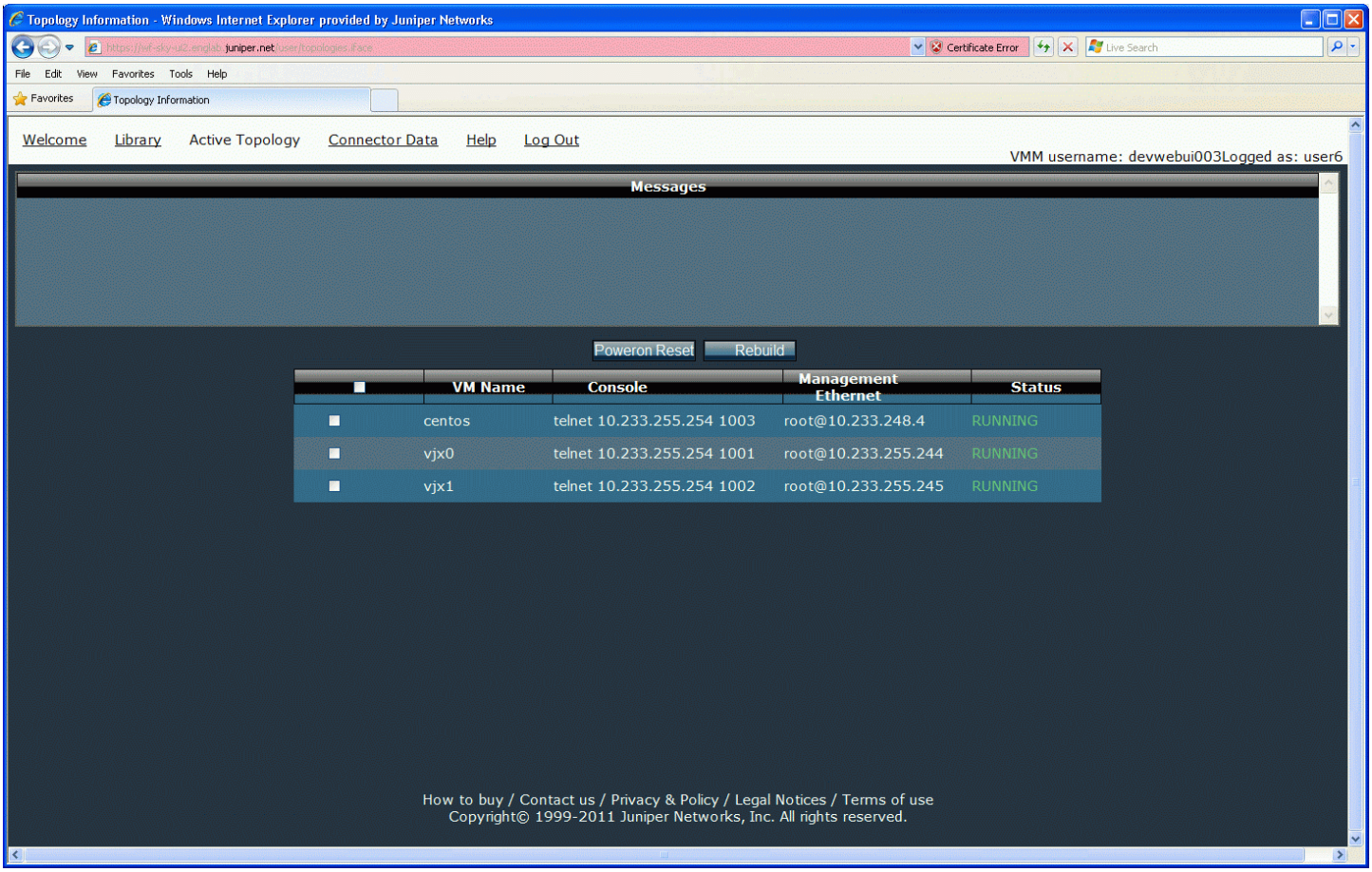
Use the Topology page to review the active topology. The page lists each virtual machine for the active topology. You can view the information to connect to the console port or management Ethernet of each virtual machine.

The following are the functions available from the Topology page:

- Messages — Lists systems news from the Junosphere administrator.
- Poweron Reset — This is the functional equivalent of turning the power off or on for the device. The device will restart as if the system was rebooted but the contents of the virtual machine's virtual disk are retained.
- Rebuild — Restores the original disk image. Resets the selected virtual machine to the state it was in when it was first started. Rebuild will eliminate any changes to the contents of the virtual machine's virtual disk and restart the virtual machine with the original disk. The rebuild only pertains to the restoration of the original disk image. If you configured a Junos OS configuration (for a Junos OS virtual machine), saved that configuration, and your topology.vmm file refers to that configuration, the network device will boot with that preserved configuration.
- VM Name — The names of the virtual machines in the active topology.
- Console — The telnet command to use to reach the console port of each virtual machine.
- Management Ethernet — The IP address of the Management Ethernet port and initial username to use when connecting via SSH.
- OS — Lists the OS of the virtual machine.
- Status — Indicates whether the virtual machine is running.

Figure 10 on page 13 shows the Topology page.

Figure 10: Topology Page



Connecting to the Network Topology

You can connect to the virtual machines in the network topology to:

- View the status of each virtual machine.
- See details on what images are running.
- Start and stop virtual machines.
- Change virtual machine configurations.

You connect to the virtual network by:

- Establishing an SSL VPN connection to the virtual network.
- Using a program such as telnet, SSH, or vnc to connect to the virtual machines.

To connect to the network topology:

1. On the Topology page of the Junosphere interface, view the IP address and connection information for the Console port or management Ethernet of the virtual device.

2. With a topology active, on the Library page click **Connect** to go to the Junosphere Access Portal page.

   Once the topology is started, you can use the portal URL for the duration of the session. The portal URL might change in a future session.

3. Enter your username and password and click **Sign In**.

   The Network Connect page appears.

4. Click the Network Connect Start button.

   Network Connect establishes a Secure Access SSL VPN to the internal management Ethernet of the topology. Traffic will be directed only to the local management Ethernet over that tunnel.

5. Connect to the virtual device using an appropriate communications program such as telnet, SSH, or vnc.

6. Log in to the virtual device using the default username and password.

7. If you are connecting to a Junos OS network device, enter ***cli*** to start using the Junos OS environment.

Just as with a physical Junos OS device, configuration changes are made in edit mode and then committed to implement the changes on the router. To save your changes to the library, click **Save** on the interface's Library menu. The device will reboot with the active configuration.

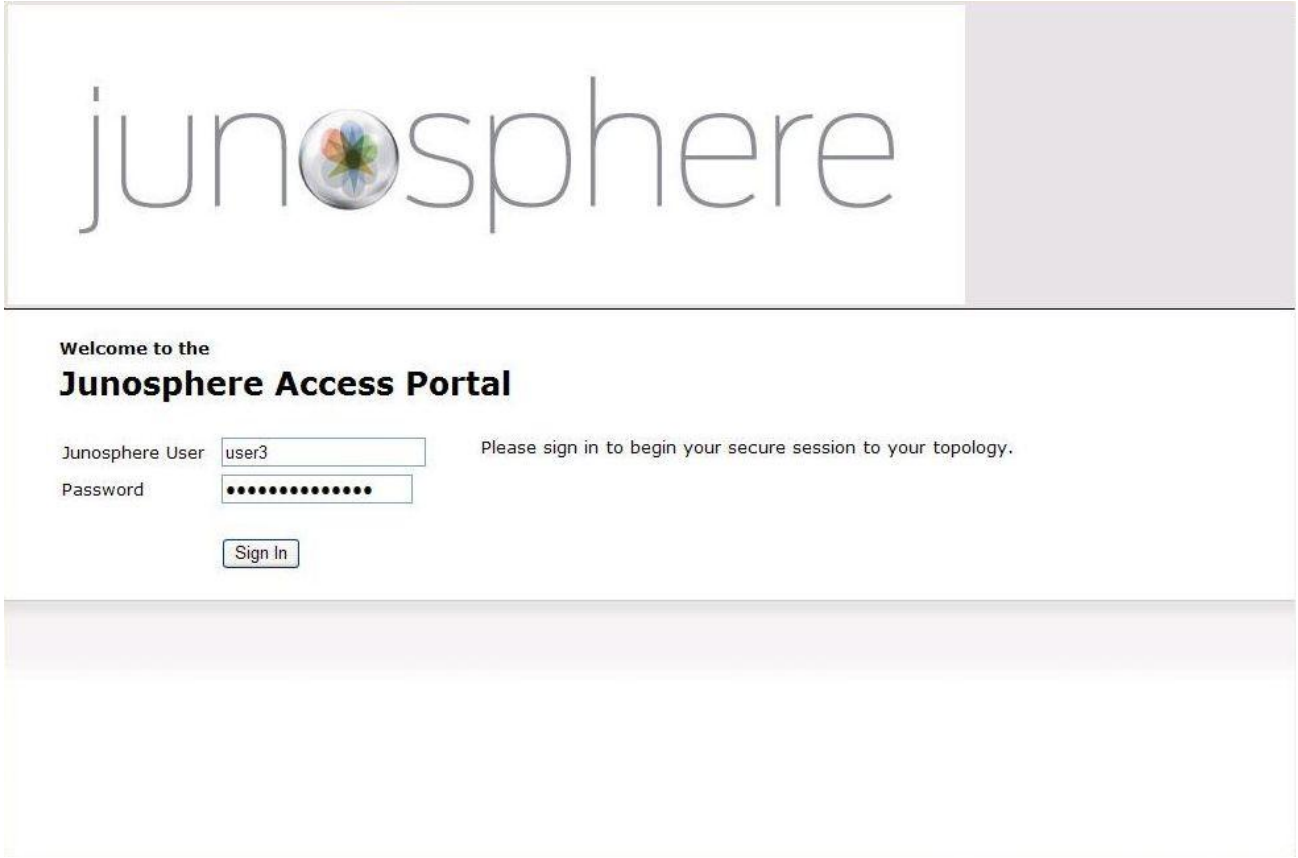
Details on using these pages are specified in the following sections.

The Junosphere (Secure Access) Access Portal Page

Use the Junosphere Access Portal page to log in to the secure access to your virtual topology. Enter the username and password mailed to you by the Junosphere administrator. The Network Connect page displays.

Figure 11 on page 15 shows the Access Portal page.

Figure 11: Junosphere Access Portal Page

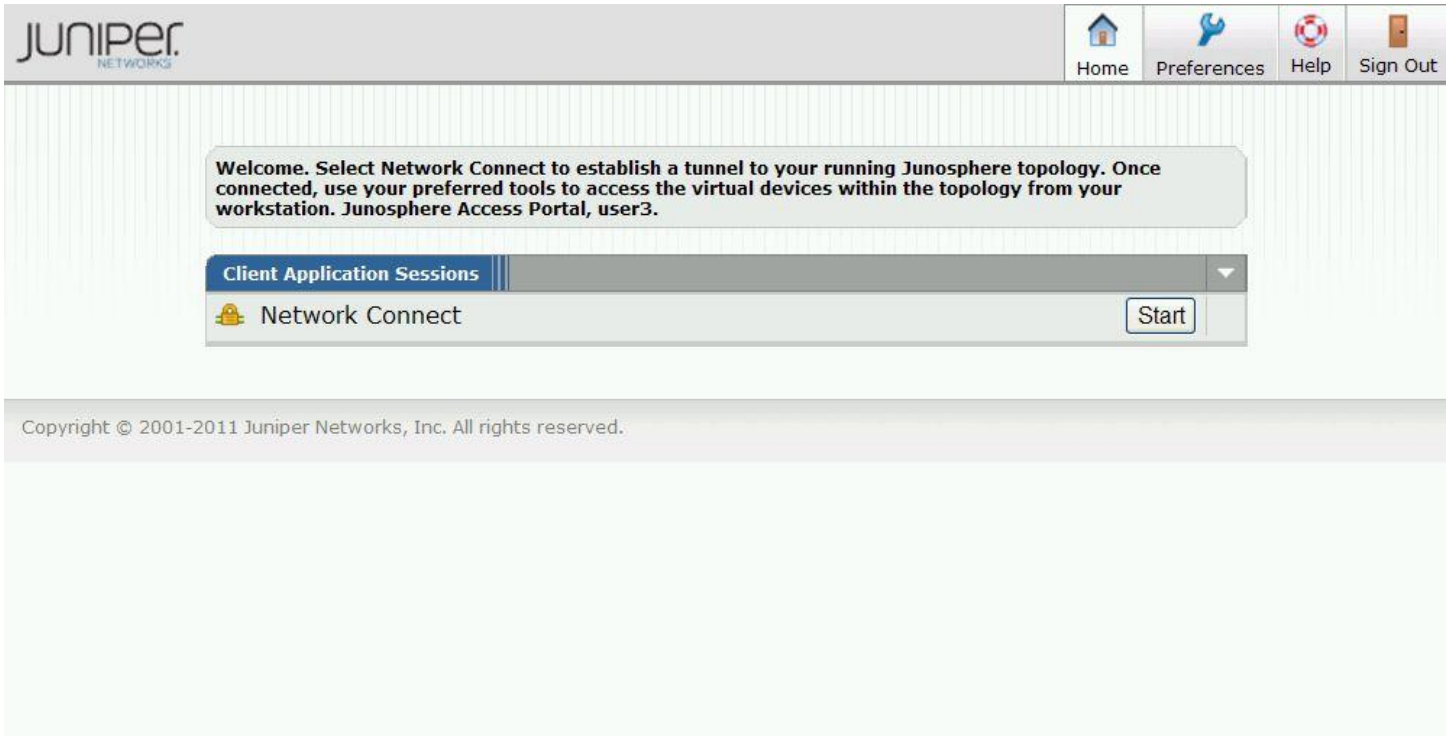


The Network Connect Page

Click the **Start** button on the Network Connect page to connect to the virtual devices in the network topology. Network Connect establishes a Secure Access SSL VPN to the internal management Ethernet of the topology. Traffic will be directed only to the local management Ethernet over that tunnel. Connect to a virtual device through the tunnel using an appropriate communications programs such as telnet, SSH, or vnc.

Figure 12 on page 16 shows the Network Connect page.

Figure 12: Network Connect Page



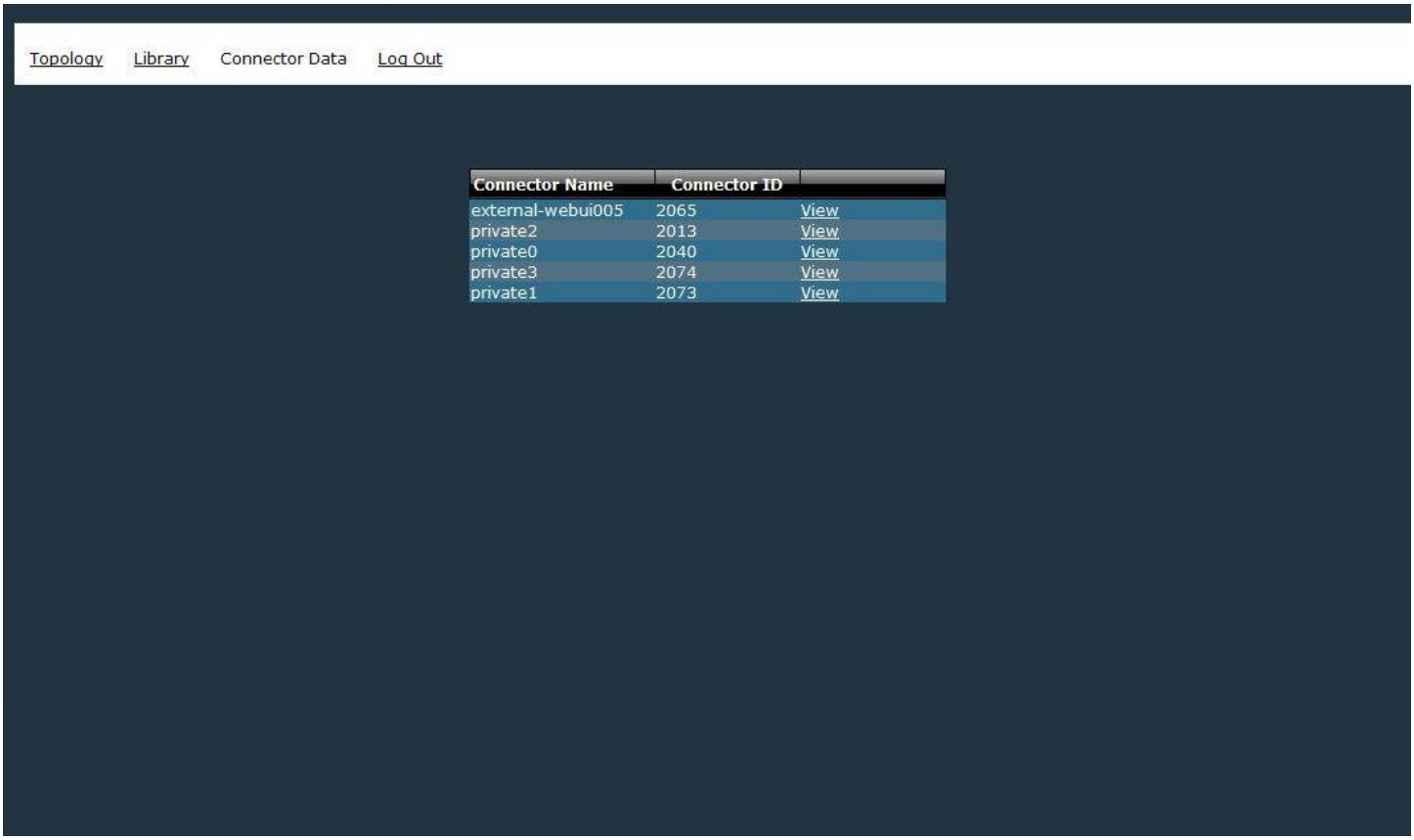
Junosphere Connector Page

The Junosphere Connector page shows the points in the private topology to which you can connect a Junosphere Connector tunnel (and thereby connect an external physical network into the virtual topology). Select a connector to view the details. Click **View** to display the View Connector page.

NOTE: You can only use Junosphere Connector if you buy SKU access.

Figure 12 on page 17 shows the Junosphere Connector page.

Figure 13: Junosphere Connector Page



View Connector Page

The View Connector page shows details of traffic between a chosen Junosphere connector and a physical device. The page includes the following fields:

- Port — Virtual interface ID on each bridge to which the connector is attached.
- Packets In — The incoming traffic, in packets
- Bytes In — The incoming traffic, in bytes
- Packets Out — The outgoing traffic, in packets
- Bytes Out — The outgoing traffic, in bytes

Part 2

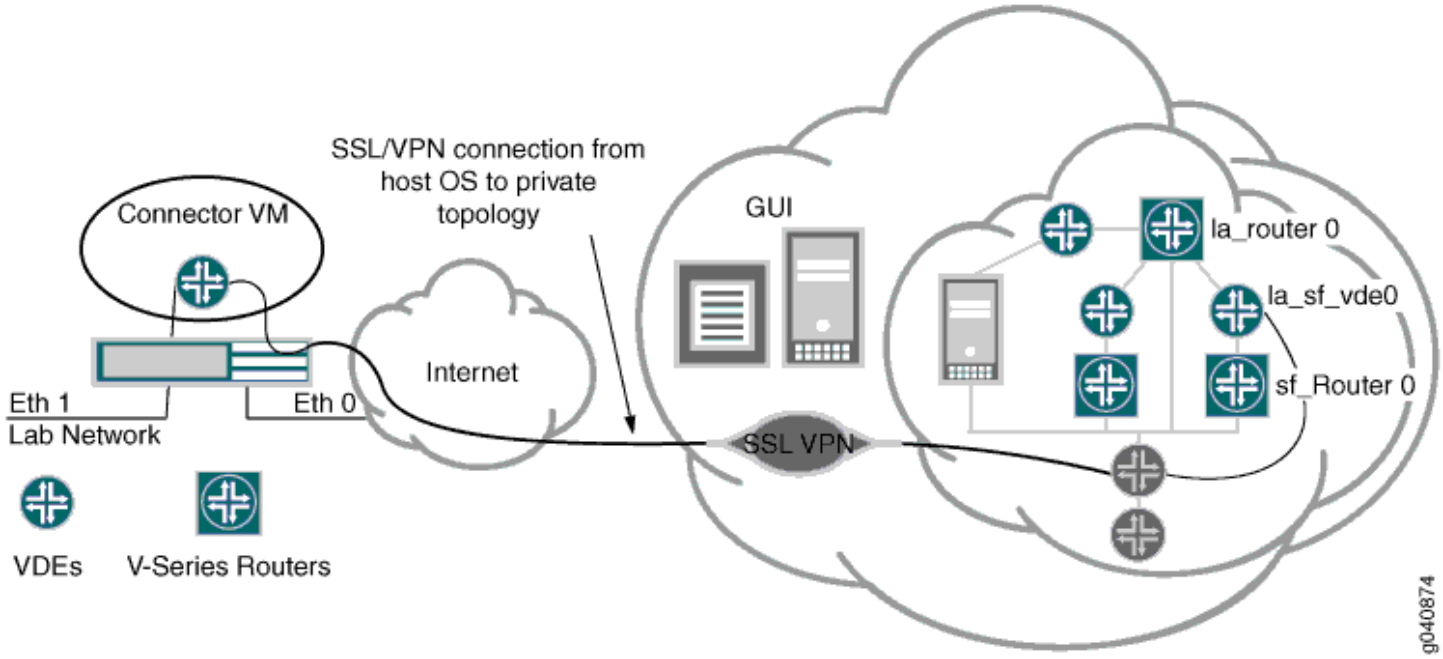
JUNOSPHERE CONNECTOR

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 14 on page 18 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 14: 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 and eth1 as up but without an IP address.

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.

Installing the VMware Player

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

Downloading VMware Player

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

Download the VMware Player from http://www.vmware.com/products/player/overview.html.

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.

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

   When the wizard completes, 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*
```

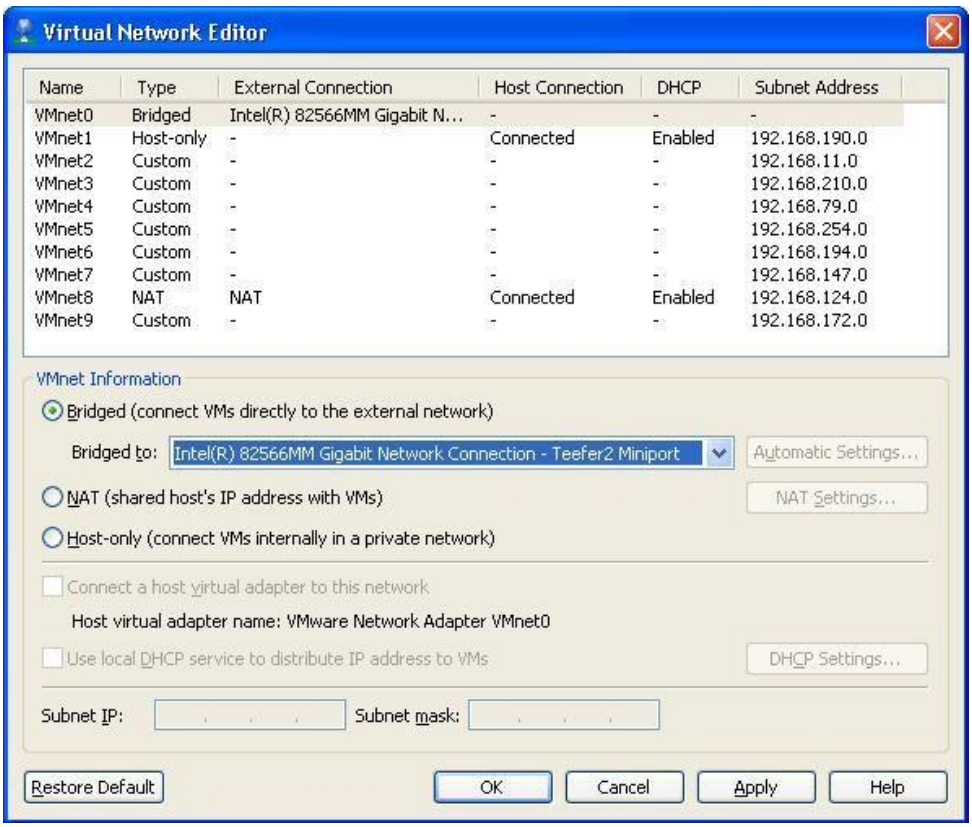
5. Extract the network.cab file.

   How 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 15 on page 22 shows the Virtual Network Editor.

Figure 15 : 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 VMPlayer on Linux

To start VMPlayer 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 VM Player.
   a. Log in as root in a terminal window.
   b. Enter **vmplayer &**.

```
vmplayer &
```

   The Welcome to the VMPlayer window appears.

Starting VMPlayer in Windows

To start VMPlayer in Windows:

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

Activating the Junosphere Topology

Before you can start Junosphere Connector, you must have the active topology running as follows:

1. Run the topology for the VDE you want to access:
   a. Sign in to the user interface.
   b. From the Library page, activate and start the topology you want to access.
   c. Review the VDE information:
      i. Display the Junosphere Connector page to show a list of VDEs for the active topology.
      ii. Note the VDE to which you want to connect.
2. Run a Secure Access session.
   a. With a topology active, on the Library page click **Connect** to go to the Junosphere Access Portal page.
   b. Enter your username and password and click **Sign In**..

      The Network Connect page appears.
   c. Click the Start button to launch the Secure Access SSL VPN and connect to your topology.

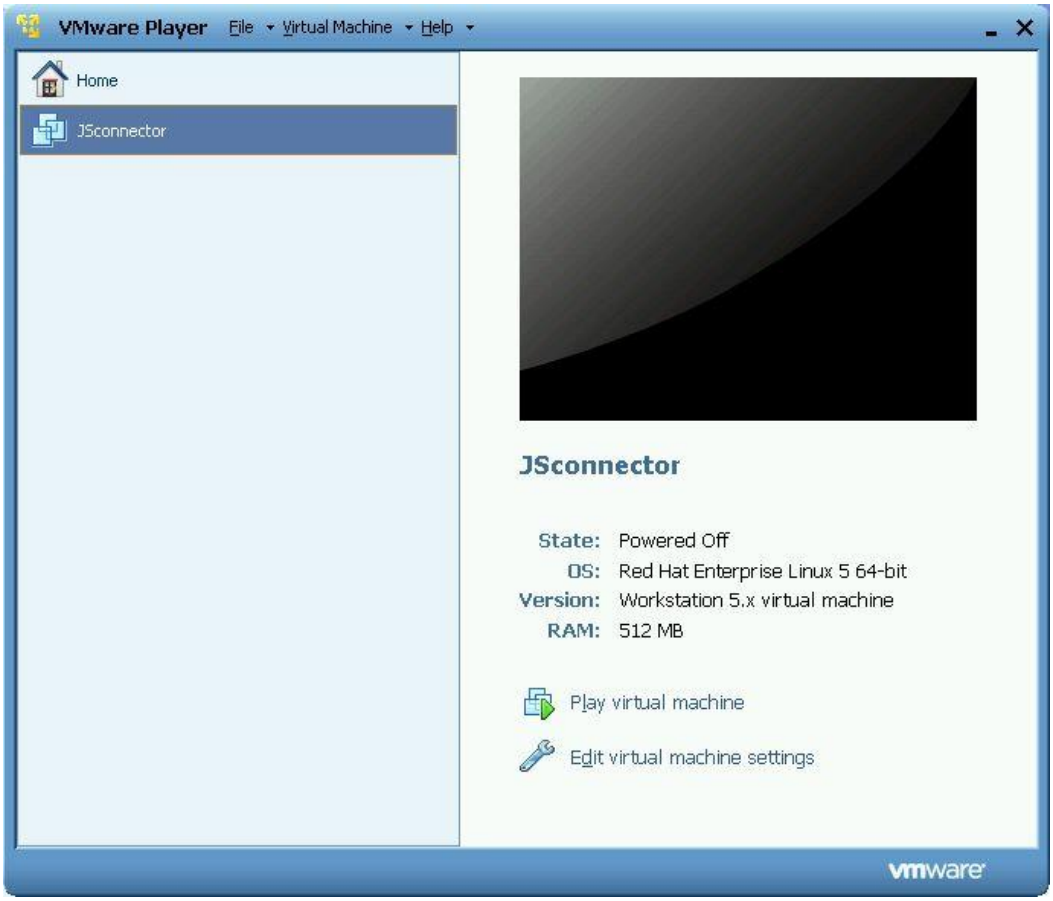
Configuring and Starting Junosphere Connector

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 16 on page 24 shows the JSconnector Virtual Machine.

Figure 16: 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.

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>
```

3. Locate the literal command you need to enter on the Junosphere Connector View page for your active technology.
4. 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 VDE) 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
```

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 devices to that switch.

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

Configuring VmWare ESX to Work with the Image

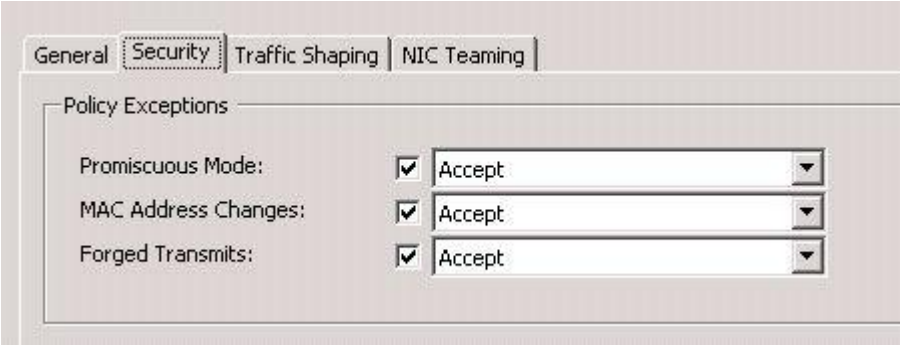
ESX has a security feature that by default rejects any promiscuous mode connections to a switch. Junosphere Connector requires a promiscuous connection to allow all packets coming from the customer side to be tunneled into the virtual switch chosen for your Junosphere topology.

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 of the virtual switch to which the port group is assigned.
4. Edit the properties of the port group:
   a. Choose the security tab.
   b. Select accept from the promiscuous drop-down box and click **Accept**.

You will now be able to use the Junosphere Connector. The following image shows the promiscuous drop-down box.



Index

#, comments in configuration statements, xi
[ ], in configuration statements, xi
| (pipe), in descriptions, x
< >, in syntax, x
Access Portal page, 14
active topology, 12
brackets, angle, in descriptions, x
brackets, square, in configuration statements, xi
bridging
  to the external network, 22
  VDE switches, 18
  vmnet, 20
Case Management tool, xii
CentOS 5.4 Linux, 18
CLI, access, 14
comments, in configuration statements, xi
committing
  configuration changes, 14
configuration
  changing, 13
  committing changes, 14
  deactivating, 6
  Ethernet port, 20, 21
  for virtual machines, 4
  renaming, 6
  saving, 5
  VMware Player, 19, 21
connecting
  hconnect, 25
  to Access Portal login page, 4
  to LAN, 25
  to physical network, 16
  to the virtual machines, 1, 4, 13
console port, connection, 12
conventions, text and syntax, x
customer support, xi
Customer Support Center, xi
customer support, contacting JTAC, xi
deactivating, configuration, 6
DHCP, 24
disk image, rebuild, 12
documentation, xi
documentation, comments on, xi
downloading, topology, 11
End User License Agreement, 1
ESX switch security, 26
eth0, as management port, 19
eth1, configuration, 20
Ethernet port
  changing default, 19
  configuration, 20, 21
file set
  details, 6
  edit, 4
  installation, 5
font conventions, x
hardware
  connecting to, 25
  requirements, 18
hconnect, 25
icons defined, notice, x
image
  rebuild, 12
install command, configuration, 5
installation
  wizard, VMware Player, 20
JTAC, xii
Juniper Networks Community Forum, xii

Junos OS environment
  CLI, 14
Junosphere Connector
  configuration, 23
  defined, 18
  installation, 19
  requirements, 19
  using, 25
Junosphere Connector page, 16
Junosphere, overview, 1
Knowledge Base, xi
LAN, connecting to, 25
library
  of topologies, 3
  topology file set, 4
Linux
  installation on, 19
logging in, 1, 2
management Ethernet, and VPN, 14
management port, 12, 19
manuals, comments on, xi
Network Connect page, 14, 15
network setup, initial, 24
network.cab file, 21
notice icons defined, x
physical network, connector, 16
portal URL, duration, 14
power off or on, 12
promiscuous mode, 26
proxy, 25
rebuild, original disk image, 12
renaming
  configuration, 6
  topology, 7
saving
  configuration, 5
  configuration changes, 6
  topology, 3
secure access, 14
sharing topologies, 9
SSH
  connection, 12
SSH tunnel, 18
SSL VPN connection, 1, 13, 15
starting, VMware Player, 23
stopping, topology, 3
support, technical, xi
switching
  bridge, 18
  Virtual Distributed Ethernet, 18
syntax conventions, x
technical bulletins, xii
technical support, contacting JTAC, xi
telnet, connection, 12
topology
  active, 12
  downloading, 11
  edit file set, 4
  joining, 9
  saving, 3
  starting, 3
  upload, 8
topology.vmm file, 4
traffic details
  with physical network, 17
upload, topology, 8
Virtual Distributed Ethernet (VDE), 18
virtual interface port, 17
virtual machine
  configuration, 4
  connection, 12, 13
  status, 12

Virtual Network Editor, 21
vmnet bridge, processes, 20
vmnetcfg.exe, 21
VMware Player
  configuration, 19, 21
  login, 19
  starting, 23
VPN connection, 1, 13
vSphere client, 26
Windows, installation on, 20