



Junosphere

Guide for Users

Release

2.7



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Junosphere Guide for Users

2.7

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About the Documentation

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Documentation and Release Notes

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.

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Documentation Conventions

Table 1 on page ix 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 x defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<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@# set system domain-name <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"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	stub <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.	broadcast multicast (<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.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Enclose a variable for which you can substitute one or more values.	community name members [<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

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, 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

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

Overview

- [Getting Started with Junosphere on page 3](#)

CHAPTER 1

Getting Started with Junosphere

- [Understanding Junosphere on page 3](#)
- [Using the Junosphere Interface on page 4](#)
- [User Access on page 6](#)
- [Using the Login Page on page 6](#)
- [Changing Your Password on page 7](#)
- [Junosphere E-mails on page 8](#)
- [Buying Capacity on page 9](#)

Understanding Junosphere

Junosphere is a cloud-based, virtualization environment where multiple virtual machines representing network devices can be connected and configured to create network topologies. To use the cloud, you create or upload a topology file that defines devices, interfaces, and their interconnections. You also can upload standard configuration files for each network device and use the resulting virtual network exactly like a physical network.

Junosphere has two types of users: bank administrators and users. This guide is for users. There is a separate guide (*Junosphere Guide for Bank Administrators*) for bank administrators. Users have access to Junosphere topologies and the virtualization environment. Bank administrators are users with additional privileges of adding more users, assigning users to resources, and dividing capacity among users.

Junosphere stores the virtual machine units capacity (the number of virtual machine units times the number of days) to use the network in banks and sandboxes. Think of a bank as a container of sandboxes. The capacity held by banks is divided into sandboxes, or work areas, where specified users can reserve time to use the cloud.

Junosphere holds one or more topology file sets in libraries for users of a bank, a sandbox, or all public users. A topology file set is made up of a topology file and a collection of configuration files, one for each device described in the topology file.

Junosphere enables customers, partners, developers, and educational institutions to easily experiment, model, and educate by leveraging the flexibility, cost efficiency, and simplicity of a cloud-based delivery model.

Junosphere service can be purchased in two different ways, depending on specific user needs: pay-per-use and an annual plan. The pay-per-use service allows the customer to prepay for a limited amount of capacity, which is spent every time a topology is run. Once that capacity is used up, it can be replenished with another purchase. This service is offered in three products designed to satisfy specific user needs:

Annual plan capacity facilitates OPEX planning by providing Junosphere capacity for an entire year. Operators have maximum control of capacity pools assigned to diverse teams and projects. The bank administrator can customize the minimum guaranteed capacity for each sandbox to ensure baseline availability, and also the maximum utilization of VM Units in each sandbox to prevent unauthorized abuse of consumption.

The flexible capacity allocation system maximizes the usage of available VM units shifting capacity from inactive sandboxes to those which experience temporary spikes of demand. These allocation algorithms ensure best usage of the capacity pool at every moment providing excellent granularity management.

Additionally, all the annual plan SKUs provide a la carte overflow capacity. The 50 and 100 annual plan SKUs also include unlimited connector capacity.

Using the Junosphere Interface



NOTE: Junosphere is best viewed with Mozilla Firefox 14.0 or less and IE 7.0, 8. Later versions of Firefox are also known to work. Users who use Internet Explorer 9.0 should use the Compatibility View in the browser while accessing the Junosphere interface.

Table 3 on page 4 is a guide to the elements of the Junosphere interface.

Table 3: Junosphere Conventions




Conventions	Description and Examples
Bank Icon 	Appears in the top toolbar and on the side toolbar to perform functions related to bank definition and capacity management. To open the Bank and Sandbox list in the left toolbar, click Bank at the top of the page. To access sandboxes, click on the arrow that appears on the left side of the bank icon contained in the left toolbar. To add a sandbox, right-click the bank name.
Topology Wizard Icon 	Appears in the top toolbar. Enables you to launch the Topology Wizard.
Sandbox Icon 	Appears in the side toolbar under its corresponding bank. It is used to enable toolbox functions and to manage and activate topologies.

Table 3: Junosphere Conventions (*continued*)





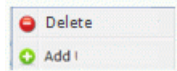


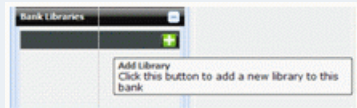
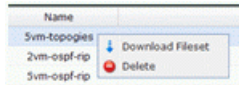


Conventions	Description and Examples
Add Icon 	Enables you to add an element.
Plus Icon 	This icon expands an element.
Minus Icon 	This icon closes an element.
Close Icon 	This icon closes a window or page.
Click on icon objects	To open a Details page about a user, bank, or sandbox, click on its corresponding icon and name. Clicking on the icon name does not expand the list of objects underneath it. To do so, use the arrow.
Right click on objects 	<p>Right-click on objects, such as banks, sandboxes, libraries, and users, to enable creation and deletion menus. The red minus sign enables you to delete an object, such as a library. The green plus button creates another object.</p> <p>For example, the green arrow on a library accordion tab creates another library. The red arrow deletes a library.</p>
Expansion Arrow 	<p>On the left of object icons, Junosphere displays an arrow. Click the arrow to see other objects available inside the icon.</p> <p>For example, click the arrow next to a customer to display its banks; click the arrow next to the bank to see its sandboxes.</p>
Accordion Tabs 	<p>An accordion tab contains properties of Junosphere objects and enables the functions specified on each accordion tab.</p> <p>To open the accordion tab, click on the + sign on its extreme right; click the - sign to close it.</p>
Green + Sign 	The green + sign, available in library accordion tabs, enables you to create new libraries and upload new topology files.
Other Right-click Functions 	<p>Right-click on list elements inside accordion tabs to enable additional function menus.</p> <p>Examples: Right-click on a topology to download or delete it. Right-click on a user inside a sandbox to edit its properties.</p>

Table 3: Junosphere Conventions (*continued*)

Conventions	Description and Examples
Help Icon 	To display Junosphere help, click the Junosphere icon and then click the ? icon. Click on the ? icon to toggle help between Junosphere and Junos Space.
Logout Icon 	To log out, click the icon in the upper right corner of the page.

- Related Documentation**
- [Using the Login Page on page 6](#)
 - [Understanding Junosphere on page 3](#)
 - [Understanding Banks on page 15](#)
 - [Understanding Sandboxes on page 17](#)

User Access

When using Junosphere, there are several common activities that require separate credentials for logging in. This section lists the various activities and the necessary credentials. The first two sets of credentials are provided to you by your bank administrator. The rest are set by Juniper and cannot be changed, except where indicated.

- To log in to Junosphere: username: *username*; pwd: *password*
- To join an active topology through the Junosphere Access Portal: username: *username*; pwd: *password*
- To log into a Juniper virtual MX device: username: *root*; pwd: *Clouds*.
- To log into any other Juniper virtual network device: username: *juniper*; pwd: *Clouds*
- To log in to a J-web interface: username: *juniper*; pwd: *Clouds*
- To VNC in to CentOS: pwd: *Clouds* (no username is needed)
- To log in to Junos Space from CentOS: username: *super*; pwd: *123juniper* and change the password

Using the Login Page

If you are a user, you receive an e-mail from your bank administrator with the URL to the Login page of the user interface, a username, and a password. The username can be your e-mail address or the bank administrator can choose another username.

To use the login page:

1. Log in to the user interface. See the *Junosphere Release Notes* for supported browsers.
2. Accept the End User License Agreement (EULA) the first time you log in to Junosphere.

If this is the first time that you have logged in, the Required Settings dialog box appears, listing the required settings and recommended downloads.

3. Click **OK**.

The landing page appears.

4. Click the **Bank** icon in the upper left of the page.

The bank(s) to which you belong appears, listing the sandboxes to which you have been added.



NOTE: A user does not need capacity to be able to log in and access the sandboxes. As long as the user is created, the user can log in. If the user is not assigned to any sandbox, the user cannot see any banks. Only when the user is assigned to a particular sandbox for a bank can the user see the bank and the sandbox.

Related Documentation

- [Changing Your Password on page 7](#)
- [Understanding Junosphere on page 3](#)
- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)

Changing Your Password

You can change or reset your password.

To change your password using the Space application:

1. Click the profile icon for User Preference in the upper right corner of the screen.
The Change Local Password screen appears.
2. Type your old password and new password (twice).
3. Click **Change**.



NOTE: Clicking **Change** logs you out of the current session. If you have other sessions running, each session is disabled until you log in again with the new password.

If you forget your password, you can request a password reset from Junosphere's login page.

To reset your password:

1. Click the link on the login page.
2. Enter your username.

3. Click **Reset Password**.

A new password will be sent to you via e-mail.



NOTE: If you do not remember your username, contact your bank administrator.

**Related
Documentation**

- [Understanding Junosphere on page 3](#)
- [Using the Login Page on page 6](#)
- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)

Junosphere E-mails

Junosphere sends the following e-mails to users:

- **Welcome to Junosphere**—Sent when an account has been created for a user. It contains the user's ID and password and some general information about the product.
- **Password reset message**—Sent to a user who requests that his or her password be reset from the Junosphere login page. The e-mail contains the user's ID, a new randomly generated password, and instructions on how the user can change his or her own password after login.
- **Bank creation notice**—Sent to all administrators of a bank once the bank has been created for them. The e-mail contains the bank's serial number and the bank's name.
- **Bank capacity notice**—Sent to all administrators of a bank when new capacity has been added to the bank. The e-mail contains the RTU serial number of the SKU purchased, the product (of the SKU), and the amount of capacity added to the bank.
- **Bank capacity expiration notice**—Sent to all administrators of a bank when the capacity in a bank is due to expire in 30 days. The e-mail provides instructions on how the administrator can purchase more capacity for the bank and reset the expiration of all the capacity in the bank.
- **Empty bank notice**—Sent to all the administrators of a bank when all of the capacity in a bank has been completely used up and there is no capacity left in the bank or any of its sandboxes. The e-mail provides a link for users to purchase more Junosphere capacity.
- **Empty bank last warning**—Sent to all users in a bank (all the administrators of the bank and all the users associated with sandboxes in the bank). This e-mail is sent when a bank has been empty (no capacity is left in the bank or any of its sandboxes) for 30 days. The e-mail provides instructions on how the user can buy more capacity and retain the bank. It also warns the user to copy all topologies and any other information, if necessary. The e-mail notifies users that if they do not buy more capacity for the

bank, then the bank, its sandboxes, libraries, and topologies will be deleted after 15 days.

- Bank deletion notice—Sent to all administrators of a bank when a bank is deleted. The e-mail tells the administrators that the bank, its sandboxes, libraries, and topologies are no longer available and provides the user with a link to purchase capacity. Typically, this e-mail is sent if a bank has remained without capacity for 15 days after the “Empty bank – last warning” notice.

These e-mails might go to your spam or junk e-mail folders or to a quarantine server:

- Spam or junk e-mail folder—Outlook users can fix this problem by going to their spam or junk e-mail folder, selecting the e-mail, selecting **Actions > Junk E-mail > Add Sender to Safe Senders List**. This automatically adds junosphereadmin-noreply@juniper.net to the Safe Senders tab of the Junk E-mail Options dialog box. Your Outlook Administrator may have an alternative way of preventing these e-mails from going to your spam/junk e-mail folder. Users of other e-mail applications should work with their e-mail administrators to fix this issue.
- Quarantine server—If it is determined that the Junosphere e-mails are being quarantined, work with your IT department to make sure that the e-mails are routed to your e-mail application.

Buying Capacity

While you can purchase access to Junosphere using Juniper Network’s usual purchase order procedure, you can also use a credit card to purchase time on Junosphere.

Table 4 on page 9 lists the different types of environments that you can purchase.

Table 4: Junosphere SKUs

SKU	Description
JUS-ANNUAL-PASS-10	10 VM unit annual plan. Includes 10 VM units at any time and 200VM units of overflow capacity. No connectors.
JUS-ANNUAL-PASS-50	50 VM unit annual plan. Includes 50 VM units at any time and 1000VM units of overflow capacity. Unlimited connectors.
JUS-ANNUAL-PASS-100	100 VM unit annual plan. Includes 100 VM units at any time and 2000VM units of overflow capacity. Unlimited connectors.
JUS-CLASS-10VM-1	10 Classroom VM units. Includes images and tools.
JUS-CLASS-10VM-30	300 Classroom VM units. Includes images and tools.
JUS-CONNECT-1	Connect and transfer data at the rate of 1 Mbs to the virtual network topology for one day.
JUS-CONNECT-30	Connect and transfer data at the rate of 1 Mbs to the virtual network topology for 30 days.

Table 4: Junosphere SKUs (*continued*)

SKU	Description
JUS-DEV-10VM-1	10 Developer VM units. Includes images and tools. Memory up to 30 GB per day.
JUS-DEV-10VM-30	30 Developer VM units. Includes images and tools. Memory up to 30 GB per day.
JUS-LAB-10VM-1	10 LAB VM units. Includes images and tools.
JUS-LAB-10VM-30	300 LAB VM units. Includes images and tools.

To make a credit card purchase, log in to the following sites:

- Junosphere Classroom:
https://learningportal.juniper.net/juniper/user_activity_info.aspx?id=5896
- Junosphere Lab:
https://learningportal.juniper.net/juniper/user_activity_info.aspx?id=5898

Both the Junosphere Lab and Classroom are purchased in increments of 10 virtual machine units. Divide the number of virtual machine units you want in your network by 10, then multiply by the number of days you wish to access Junosphere to arrive at the quantity you need. For example:

- To create a 100-node network with access for one day, order a quantity of 10 ($100 / 10 * 1$).
- To create a 30-node network with access for one month (30 days), order a quantity of 90.
- To create a 10-node network with access for one year, order a quantity of 365.

You can purchase stock keeping units (SKUs) of 10 virtual machine units or 300 virtual machines units.

You can also purchase access to Junosphere Connector. Junosphere Connector is an optional application that enables you to connect your Junosphere topology to a physical lab environment. You can purchase the ability to transfer data in units of 1 Mbps of data for one day (24 hours).

For long-term always-on access, you can buy annual plan capacity. Annual plan capacity can be purchased in increments of 10 VM units (available for a full year). These SKUs are available only through Juniper Network's purchase order process. Please contact your sales representative for details.



NOTE: If you buy 50 VM units or more with an annual plan SKU, the number of connectors is unlimited.

Ordering Junosphere using a credit card is like any other online credit card purchase. We use a credit card company to process all transactions and keep your personal information safe.

The order information is sent to Juniper Networks and entered into our order system. You will receive an e-mail with an authorization code and serial number. This can take up to three business days.

When ordering, you must provide a customer contact with an e-mail address. The contact should be someone involved with Junosphere use at your site. The contact will need to complete the following steps:

1. After the order is entered, the designated customer contact will receive an e-mail from **RTU-SENDER** with the authorization codes and next-step instructions.
2. The customer contact must follow the instructions and log in to the Juniper Networks Customer Support site, <http://tools.juniper.net/subreg>, create an account, and, if needed, enter the authorization codes and set up the Junosphere bank. If you are new to Juniper Networks, you need a Customer Support account. This will take an additional few days to process. Refer to the .pdf file in your authorization code e-mail for full instructions.
3. When a bank is created in Junosphere, the customer receives a Welcome e-mail from **Junosphere Administrator - No Reply** that includes the login credentials and a two-page Getting Started guide.
4. The customer should log in to Junosphere and set up sandboxes, user accounts, and libraries, then start using the product.

To create a new bank from a credit card access purchase:

1. Once you have your codes, create your customer profile to activate your account. To do this, access <http://tools.juniper.net/subreg> in a browser.
2. Fill out the fields for **Create a New Junosphere Bank** and apply the authorization codes.

Junosphere will be updated with the new user and bank information using your e-mail address.

To purchase more time for an existing bank:

1. Access <http://tools.juniper.net/subreg> in a browser.
2. Fill out the fields for **Add additional capacity/features to an existing Bank Configuration**.

Junosphere is updated with the purchase applying to an existing customer and bank.

To order your own bank, order separately from your company bank:

1. Enter <http://tools.juniper.net/subreg>.
2. Fill out the fields for **Create a New Junosphere Bank** and apply the authorization codes.

Junosphere creates a new bank using your e-mail address. In this case, Junosphere checks to make sure that your e-mail address does not already exist within Junosphere. If it does,

your new bank is created inside that existing Junosphere customer. If it does not, the system processes you as a new customer, using your e-mail address as the customer name.

**Related
Documentation**

- [Understanding Junosphere on page 3](#)
- [Using the Login Page on page 6](#)
- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)

PART 2

Banks and Sandboxes

- [Using Banks and Sandboxes on page 15](#)

CHAPTER 2

Using Banks and Sandboxes

- [Understanding Banks on page 15](#)
- [Selecting a Bank on page 16](#)
- [Understanding Sandboxes on page 17](#)
- [Accessing Your Sandbox on page 18](#)
- [Managing Reservations and Capacity on page 20](#)
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- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)

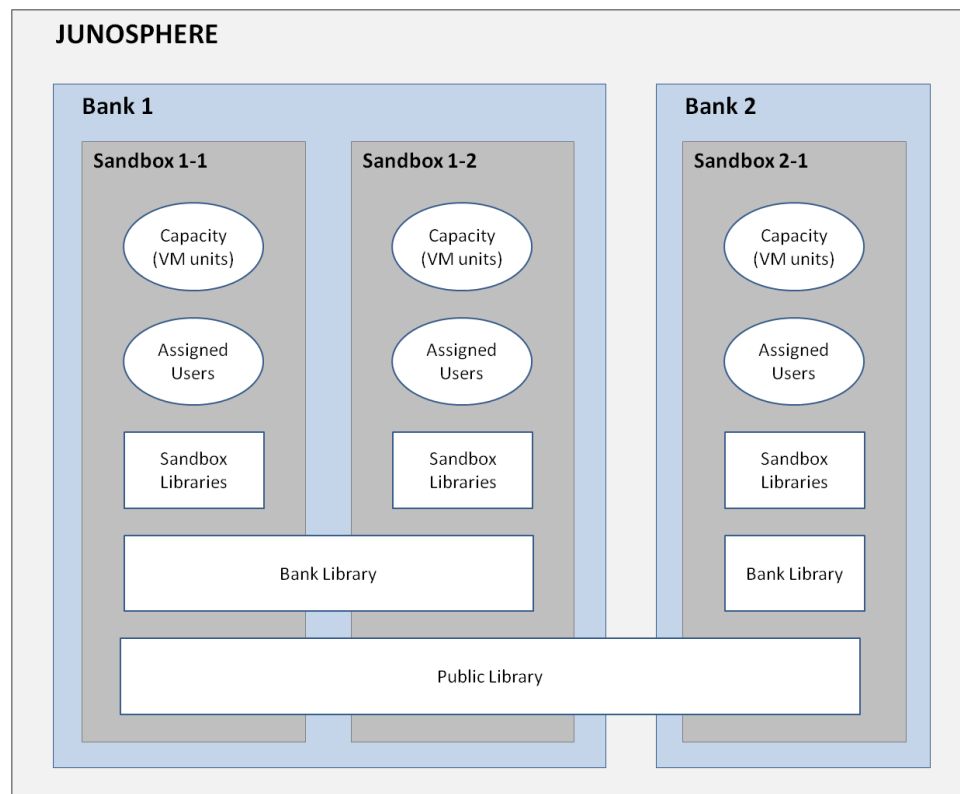
Understanding Banks

A bank is a repository of virtual machine capacity that you have purchased from Juniper. Capacity is acquired either as a fixed number of VM units for a full year (annual plan) or as an as-needed, reservation-based plan (regular capacity). Virtual machine capacity is measured in VM units, where one VM unit means the capacity to use one VM for one day (24 hours). A bank can have one or more users as administrators of the bank. To use the features of Junosphere, you work within a sandbox, which is a work area for holding capacity. It contains libraries of topology files and can have users associated with it (see [Figure 1 on page 16](#)). A bank contains one or more sandboxes. A sandbox is a work area that holds capacity, the users assigned to that sandbox, and libraries of topology files, as shown in [Figure 1 on page 16](#). The bank administrator assigns the capacity purchased for the bank to the sandboxes.

The bank administrator assigns users to the sandboxes. Every bank has a Customer Support Serial Number that you need if you contact Juniper Networks for any Junosphere-related support. This number can be found on the bank's Details accordion tab.

The libraries hold topology files etc, each of which consists of a topology file and one optional configuration file for each Junos OS device described in the topology file.

Figure 1: Components of a Bank



You will see only the banks that you can access. You see multiple names only if your company has more than one bank.

Related Documentation

- [Understanding Junosphere on page 3](#)
- [Selecting a Bank on page 16](#)
- [Understanding Sandboxes on page 17](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- *Junosphere Guide for Bank Administrators*

Selecting a Bank

To select a bank:

1. Click the **Bank** icon at the top of the page.

The Banks & Sandboxes page appears, listing all banks to which you as the user have been given access. You see the bank and the sandbox only when you are assigned to a particular sandbox.

2. Click the arrow next to a bank to display the sandboxes to which you have access.

3. Click the bank name to display information about the bank, including the customer support serial number, if you need to contact Juniper Networks support.

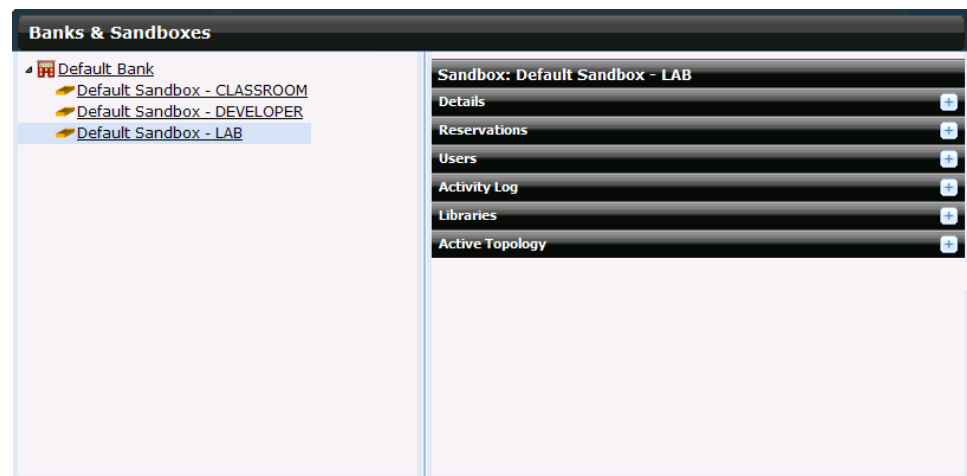
Related Documentation

- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)
- [Accessing Your Sandbox on page 18](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)
- [Building and Running Topologies on page 30](#)

Understanding Sandboxes

A sandbox is a work area holding capacity (virtual machine units), as well as the users assigned to that sandbox, and libraries of topologies. When you click on a sandbox name, a group of accordion tabs appears, as shown in [Figure 2 on page 17](#).

Figure 2: Sandbox Functions



The tabs have the following functions:

- **Details**—Lists information about the sandbox, including assigned capacity and reserved time on Junosphere.
- **Reservations**—Lists reservations and their start and end dates or times, the VM units and connectors, and other information. This tab also enables you to reserve time in the cloud for the selected sandbox.
- **Users**—Lists the users assigned by the bank administrator to this sandbox.
- **Activity Log**—Provides an audit list of Junosphere activities.

- **Libraries**—Lists the storage areas that hold topology files that define virtual devices, interfaces, and their interconnections, as well as configuration files for each Junos OS device.
- **Active Topology**—Displays the information about the virtual machines and connectors, as well as joined users, in the topology.

A sandbox is also a collection of users who work together on a topology. A single user can be part of any number of sandboxes in any number of banks and can have different privileges in each sandbox. Multiple topologies can be started by the same user in different sandboxes provided the user has the proper permissions. The only restrictions are that a user can join only one topology at a time and only one topology can be active at a time in a sandbox.



NOTE: Only bank administrators can create and delete sandboxes. You cannot make a reservation in any sandbox in a bank where the end date or time or the reservation goes past the expiration date of the bank.



NOTE: Any changes to a sandbox, such as change to the name or description, new users, additional capacity added, and so on, are automatically refreshed and can be seen by all users who are viewing the same sandbox in different browsers.

Related Documentation

- [Understanding Banks on page 15](#)
- [Accessing Your Sandbox on page 18](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)
- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)

Accessing Your Sandbox

In a sandbox, as a user you can view the assigned capacity (virtual machine units) and the reservations for using the cloud on the Details page, as shown in [Figure 3 on page 19](#).

There are two tables that provide information on capacity allocated to a sandbox. The Regular Capacity table shows the number of VM units and connectors that have been assigned to this sandbox and the number currently held for all future reservations.

The Annual Capacity table shows the minimum amount of capacity assigned to this sandbox, as well as total capacity available to be used at that point in time. Minimum

capacity is the amount that is guaranteed to a sandbox and is always available (until the bank administrator changes it). Available capacity is the total amount of capacity that is not guaranteed to other sandboxes nor currently in use by an active topology. It is always at least as large as the minimum capacity. Note that when a bank purchases annual plan capacity of at least 50 VM units, the number of connectors is unlimited.

Figure 3: Sandbox Details

Sandbox: Default Sandbox - CLASSROOM

Details

Name: Default Sandbox - CLASSROOM

Description: This is a default sandbox created by the system.

Email: s1087@sandboxes.juniper.net ☐ Enabled

Type: CLASSROOM

Regular		
Product	Available	Reserved
VM Units	45	0
Connectors	0	0

Capacity:

Annual		
Product	Minimum	Available
VM Units	0	100
Connectors	Unlimited	Unlimited

Save Changes Reset

Reservations Users Activity Log Libraries Active Topology

What you can do next depends on your permissions. The bank administrator can assign you one or more permissions:

- Topology Management—Allows you to start or stop topologies.
- Library Management—Allows you to create and delete sandbox libraries and upload topologies.
- Reservation Management—Allows you to reserve time and capacity.

If you are not assigned any permissions, you can still view information in a sandbox and join any active topology in the sandbox.



NOTE: The Details tab provides a group e-mail alias that facilitates real-time messaging between users and administrators. Use this e-mail alias to communicate special maintenance actions, availability of new topologies, requests for capacity, and other bank or sandbox activities.

To choose a topology that you want to run:

1. Click the **Libraries** accordion tab to see the libraries in which your topologies are stored:

- **Sandbox**—Holds topology file sets that are accessible only to users in this sandbox. Only users with the Library Management permission can upload a topology into a sandbox.
- **Bank**—Holds topology file sets that were uploaded by the bank administrator for use by all sandbox users in the bank.
- **Public**—Holds topology file sets that Juniper Networks makes available to everyone using this Junosphere product (Classroom, Lab, and Developer).

2. Click the tab for the appropriate library.

In the library, you can:

- Create multiple libraries within the sandbox (if you have Library Management permission).
- Select an existing topology to launch (if you have Topology Management permission).
- Upload a topology to the sandbox library (if you have Library Management permission).
- Download a topology from the library to the user's host.

You can also join a topology that is already active. See [“Joining an Active Topology” on page 39](#).



NOTE: All sandbox users can join an active topology. Multiple users who are using an active topology do not consume more capacity than one user since they are all sharing the virtual machine units.

Related Documentation

- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)
- [Using Libraries on page 23](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)
- [Building and Running Topologies on page 30](#)
- [Joining an Active Topology on page 39](#)
- [Using the Virtual Machines Tab on page 34](#)

Managing Reservations and Capacity

Since Junosphere is a cloud resource of virtual devices, before you can activate a topology the system needs to make sure it has enough resources to run the topology. A reservation ensures that those resources are ready and waiting for you.

Unlike regular capacity, an annual plan provides dedicated capacity for a full year that is accessible only by the customer who ordered it. Therefore, if there is sufficient capacity under an annual plan, no reservation is required to activate a topology, nor will one be created. If, however, the amount of capacity available to a sandbox under an annual plan is insufficient to start a topology, a reservation for regular capacity is required to cover the capacity shortfall.

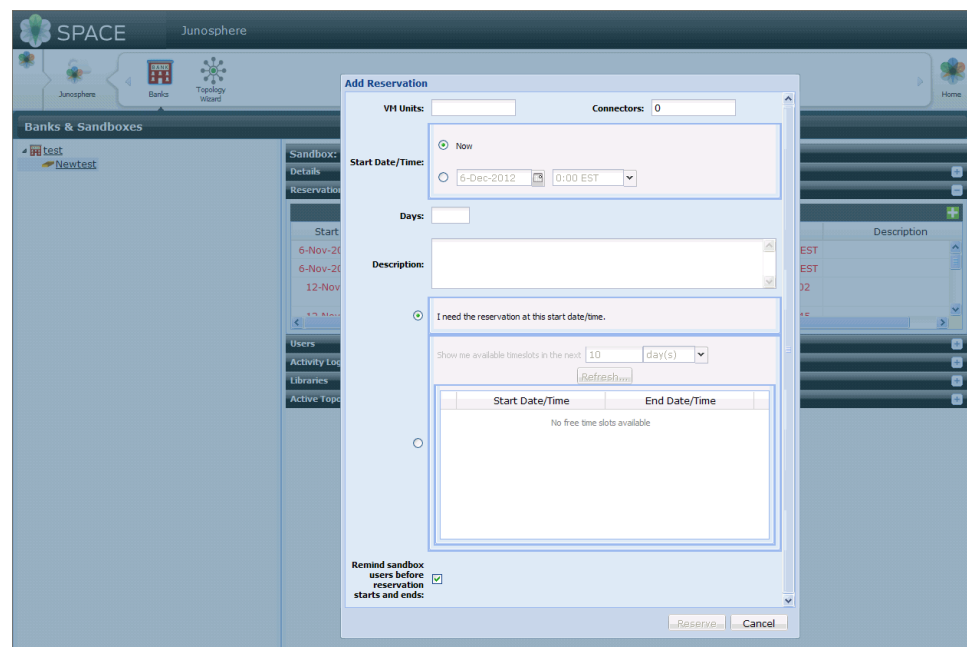
The Reservation Management permission allows you to reserve one or more time periods for using a specified number of virtual machine unit times for a specified number of days (capacity). You can also reserve capacity for Junosphere Connector. Junosphere Connector is optional and is used to connect the Junosphere virtual network to a physical network. You can make multiple reservations for a sandbox.

To be available for reservations, a sandbox must have capacity applied to it by the bank administrator. Users cannot assign additional capacity to sandboxes; only bank administrators can do that.

To manage reservations:

1. From the sandbox, click the **Reservations** accordion tab to display the Add Reservation dialog box (Figure 4 on page 21). By default, **I need the reservation at this time** is selected.

Figure 4: Adding a Reservation



2. To add a reservation, enter the following:
 - The number of virtual machine units.
 - The number of connectors.
 - A starting time of **Now** or a starting date and time (the time zone that appears in the menu is the time zone set in the operating system of your host).

- The number of days.
- A description of this reservation (optional).



NOTE: You can create a reservation that has 0 VM units, but has one or more connectors.

3. If desired, click or unclick the **Remind me before reservation starts and ends** check box.



NOTE: If you leave this check box checked (default) and the reservation start time is at least 24 hours away, you will receive an e-mail 24 hours before the reservation is scheduled to start.

You will also receive a reminder reservation two hours before the reservation is scheduled to expire.

4. Click **Reserve** to make the reservation.



NOTE: When you reserve virtual machines, include the number of CentOS images and third-party applications that will be virtual machines. A maximum of 25 simultaneous users can join a topology via secure access.



NOTE: If you do not need to connect your Junosphere topology to a physical network, enter zero for the number of connectors.

To view available time slots:

1. Click the button next to the **Show me available time slots** section.
2. Enter the number of days to display.
3. Click **Refresh**.

The available time slots for the specified period appear.

4. You can also select a time slot and click **Reserve** to make a reservation.

To cancel a reservation, click **Cancel**.



NOTE: When a reservation is created (but not yet started), the Reserved Capacity (in the Details accordion tab) shows the total amount of capacity that has been reserved (for all future reservations in the sandbox). Once the reservation starts, the Available Capacity is decreased by the amount of that particular reservation.

You can cancel a reservation up to one hour before the start time without penalty. Within an hour of start time, you cannot cancel the reservation, even though you might see a dialog box with the option to cancel.

At the end of your reservation time slot, Junosphere shuts down the active topology and frees up virtual machine resources.

To modify a reservation, cancel the existing reservation and set up a new one. If a reservation is active, you can increase the number of virtual machines or add a connector by adding an overlapping reservation for the same time period.

**Related
Documentation**

- [Understanding Sandboxes on page 17](#)
- [Using Libraries on page 23](#)
- [Accessing Your Sandbox on page 18](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Using Libraries on page 23](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)

Using Libraries

Libraries are where you store and access topology file sets. You can view the libraries you have access to in a sandbox. There are three types of libraries:

- **Sandbox**—Holds topology file sets accessible only to users in this sandbox. Any user in a sandbox can upload a topology into that sandbox.
- **Bank**—Holds topology file sets uploaded by the bank administrator for use by all sandbox users in the bank.
- **Public**—Holds topology file sets that Juniper Networks makes available to everyone using this Junosphere product (Classroom, Lab, and Developer).



NOTE: Only a bank administrator can upload a topology to a bank library or delete it.

To create a new sandbox library:

1. Click the **Libraries** menu tab.
2. Click the **Sandbox** tab to display the sandbox libraries.
3. Click the plus sign (+) to add a new library.

This gives you a new area to store topologies. For example, you can have three libraries:

- MPLS topologies
- VPN topologies
- FW topologies

Only users with library permission can delete sandbox libraries.

To delete a sandbox library:

1. Click the **Libraries** accordion tab.
2. Click the **Sandbox** tab to display the sandbox libraries.
3. Click the + sign on a library name accordion tab to display a tab with a minus sign in a red circle.
4. Click the minus sign in a red circle to delete the library.
5. Confirm the deletion.



NOTE: Deleting a library will also delete all the topologies contained within the library.

**Related
Documentation**

- [Understanding Sandboxes on page 17](#)
- [Accessing Your Sandbox on page 18](#)
- [Managing Reservations and Capacity on page 20](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)
- [Using the Virtual Machines Tab on page 34](#)

Understanding Permissions

The bank administrator can assign one or more of the following roles to you:

- Topology Management (start or stop topologies)

Because there can only be one active topology at a time in a sandbox, the bank administrator might want to restrict the number of users who can start and stop a topology. Starting a topology activates the virtual machine capacity that your company has reserved.

In a classroom situation, the instructor might be the only one assigned to start or stop permissions. Students can then join an active topology.



NOTE: All users of a sandbox can join an active topology. Multiple users using an active topology do not consume more capacity than one user since they are all sharing the virtual machine units.

- Library Management (create new libraries)

Provides the ability to create, update, and delete a library within the sandbox library for topology organization.

Only users with Library Management permission can upload topologies to a library or delete topologies from a library. All users, however, can download topologies (provided the topology is marked downloadable by the creator of the topology).

- Reservation Management (reserve time and capacity)

Allows users to reserve a time period to use a specified number of virtual machine units (capacity). A sandbox must have a reservation in order to activate a topology. Since Junosphere is a cloud resource of virtual devices, by reserving your time, you know that those resources are ready and waiting for you. Once your reservation occurs, your sandbox capacity is decreased.

Related Documentation

- [Understanding Sandboxes on page 17](#)
- [Using Libraries on page 23](#)
- [Accessing Your Sandbox on page 18](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- [Understanding Permissions on page 24](#)
- [Viewing the Activity Log on page 26](#)
- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)

Viewing the Activity Log

The Activity Log displays messages about sandbox activity. For example, messages display when you assign capacity to a sandbox, make a reservation, or start a topology, as shown in [Figure 5 on page 26](#).

Figure 5: Activity Log

Timestamp	User	Record
29-Jun-2012 13:09 EDT	super	Stopping sandbox's active topology.
29-Jun-2012 13:09 EDT	super	Stopped active topology as the sandbox's reservation has expired.
28-Jun-2012 13:39 EDT	user	User joined sandbox's active topology.
27-Jun-2012 13:09 EDT	user	Starting topology "2VJX Topology" from sandbox library "1vm-topology".
27-Jun-2012 13:09 EDT	user	Reserved 2 VMs and 0 connectors for 2 days starting from 27-Jun-2012 17:09 UTC.
13-Jun-2012 14:31 EDT	super	Stopping sandbox's active topology.

Related Documentation

- [Understanding Sandboxes on page 17](#)
- [Using Libraries on page 23](#)
- [Building and Running Topologies on page 30](#)

PART 3

Topologies

- [Connecting to the Topology on page 29](#)

CHAPTER 3

Connecting to the Topology

- [Understanding Virtual Machines on page 29](#)
- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Saving Topologies from a Library on page 37](#)
- [Joining an Active Topology on page 39](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)
- [Accessing Junos Space Using CentOS in a Junosphere Topology on page 42](#)
- [Saving Changes to a Topology on page 43](#)
- [Leaving an Active Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)
- [Using the Connectors Tab on page 45](#)
- [Understanding Additional Information on page 46](#)

Understanding Virtual Machines

To obtain maximum benefits from Junosphere, it is recommended that you have a good understanding of the different types of virtual machines available in the system. There are several places you can go to for additional information:

1. From the [Learning Portal Home](#) page or the [Training Courses](#) page, click **Learning Paths** under Resources in the right navigation pane. On the Juniper Networks Learning Paths page, you can select your particular track. For example, the Service Provider Routing and Switching Learning Path lists all of the relevant courses for someone working in a Service Provider environment. The basic three courses on the list (for JNCIA certification) are Junos Routing Essentials, Introduction to the Junos Operating System, and Networking Fundamentals.
2. You can also get to the Training Courses page from the [Education](#) page by clicking **Courses** under Get Trained.
3. Routers and networking technology—Juniper Networks offers certification for different skill levels in:
 - [Service Provider Routing and Switching](#)

- [Enterprise Routing and Switching](#)
- [Junos Security](#)
- 4. [VJX Virtual Router](#)
- 5. [Junos Space](#)
- 6. [VSRX Services Gateway](#)
- 7. VPTX Packet Transport Switch
- 8. VMX Universal Edge Router
- 9. Ecosystem Partners, including:
 - [Cariden MATE](#)
 - [Packet Design Route Explorer](#)
 - [WANDL - IP/MPLSView](#)
 - [Mu Studio Performance](#)
 - [Spirent TestCenter](#)

For additional information about these products, please contact our partners directly.

Building and Running Topologies

Junosphere is a cloud-based, virtualization environment in which multiple virtual machines representing network devices can be connected and configured to create network topologies. A topology file set defines the properties necessary to build your network in the cloud.

There are three ways to build or use topologies:

- Using the Topology Wizard to create a new topology
- Using existing topologies supplied in the public libraries in Junosphere
- Using vmm scripting to create a new topology or modify an existing topology

Each of these methods produces a file set that includes a topology.vmm file that defines the virtual devices, such as routers, virtual distributed Ethernet (VDEs), and related connections between the devices within a single topology. The file set can also contain a configuration file for each Junos OS virtual network that is defined in the topology.vmm file.

To use the Topology Wizard to design your topology, refer to the *Junosphere Network Topology Guide* for more information about how to create and use the topologies.



NOTE: When creating a topology, the maximum transmission unit (MTU) in the VJX interface must be set to 1200. Otherwise, it cannot route BGP packets.

To start a topology:

1. Create a reservation for the number of virtual machine units and the number of days needed. The topology cannot start until the reservation is active. If an annual plan exists and there is sufficient capacity, you do not need a reservation. If the capacity available under the annual plan is insufficient, however, you will need to create a reservation just for the amount of capacity need to cover the shortfall.



NOTE: You must have Topology Management permission to start or stop a topology.

2. Select the **Libraries** accordion tab to see the libraries where your topology file sets are stored.

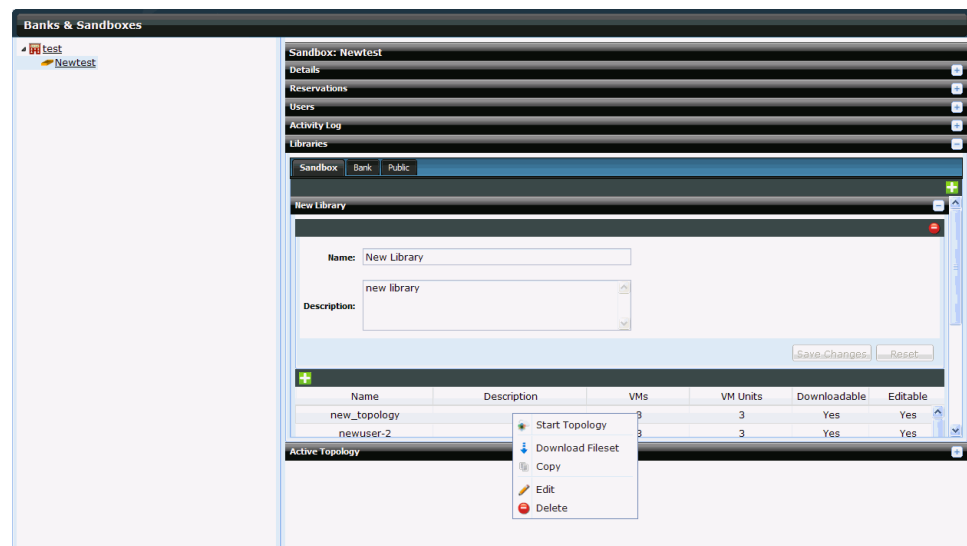
Public libraries provided by Juniper Networks provide topology examples available to all Junosphere users. The bank libraries are created and managed by the bank administrator and are available to all users within the bank. The sandbox topologies are created by the sandbox users who have permission to do so and are accessible only within the particular sandbox.

3. Select the appropriate **Libraries** tab (Sandbox, Bank, or Public).
4. Right-click the topology you want to start, assuming you have Topology Management permission (if you do not, you can join a started topology, but not start one).
5. Select **Start Topology** from the pop-up menu to begin building that topology in the Junosphere cloud.



NOTE: If you do not see the **Start Topology** option when you right-click the topology filename, you do not have the Topology Management permission in the sandbox; see [“Managing Reservations and Capacity” on page 20](#).

Figure 6: Starting a Topology



When a topology is started, open the **Active Topology** accordion tab to view the status of the starting topology. The active topology screen is automatically refreshed with any changes.

A series of messages appears in the **Details** tab, showing the progress of the loading of the virtual machines, as shown in [Figure 7 on page 33](#).

When the topology is loaded, the **Join** button appears and the virtual machines are displayed in the **Virtual Machines** tab.

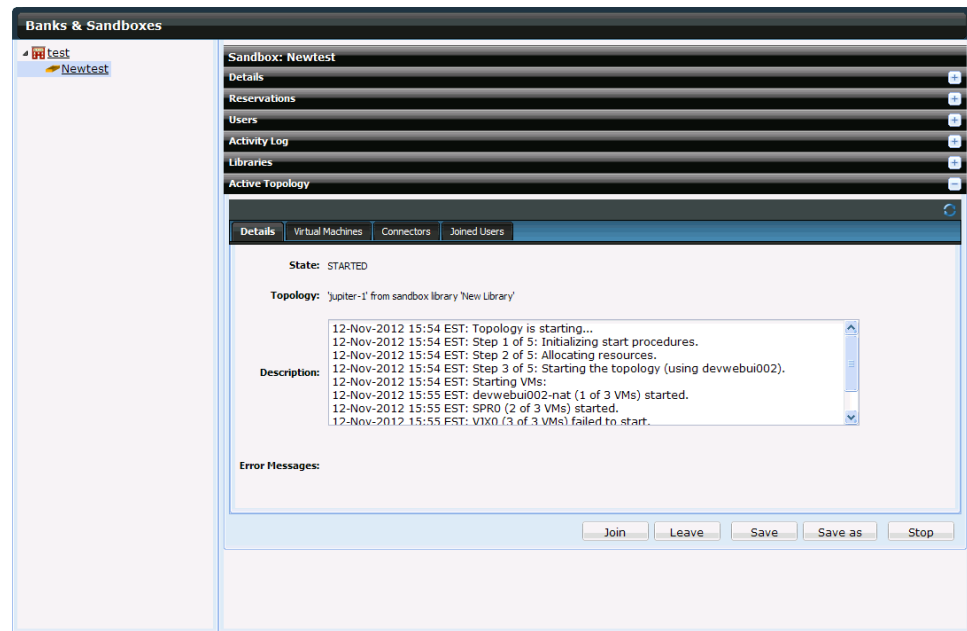
The Junosphere topology parser can detect errors in the topology file. If there is an error in the topology, then the error message appears as soon as the you click **Start Topology**. The topology will not start. Review the topology file for errors and correct them.

When you log out of Junosphere, or the portal times out due to inactivity, the active topologies remain active. You can log out of Junosphere and work directly on your virtual machines using the command-line interface (CLI) via a telnet or SSH session, web-based J-Web interface, or by establishing remote access to the CentOS server. The timeout is a security feature.

If a topology is already active, click **Join** to launch the Network Connect software to add your host to that topology. See [“Joining an Active Topology” on page 39](#).

To stop an active topology, click **Stop** in the Active Topology window. The active topology screen is automatically refreshed with any changes.

Figure 7: Active Topology Details Tab



Related Documentation

- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)
- [Managing Reservations and Capacity on page 20](#)
- [Using Libraries on page 23](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
- [Saving Changes to a Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)
- [*Junosphere Network Topology Guide*](#)

Using the Virtual Machines Tab

The Active Topology accordion tab appears when you launch a topology. In that tab, you can use the Virtual Machines tab to:

- View the active virtual machines.
- Obtain the IP or console address of a virtual machine.
- Stop a virtual machine.
- Reset or rebuild a virtual machine.

To stop, reset, or rebuild a virtual machine:

1. Click the check boxes of the virtual machines you want to change in the Virtual Machine window.
2. Click the appropriate button to stop, reset, or rebuild the virtual machine.

Reset 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 and returns the selected virtual machine to the state it was in when it was first started. Rebuild eliminates any changes to the contents of the virtual machine's virtual disk and restarts the virtual machine with the original disk. The rebuild pertains only 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.

Related Documentation

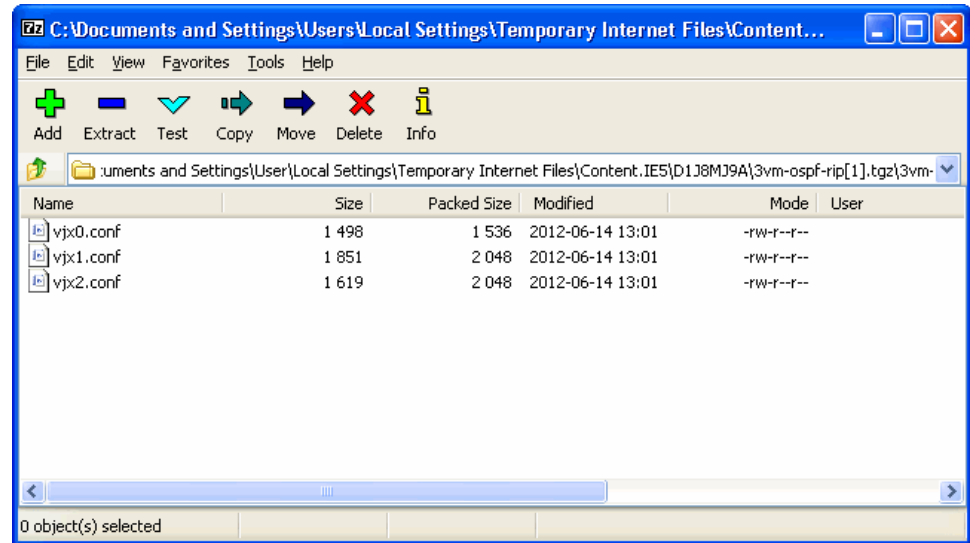
- [Understanding Sandboxes on page 17](#)
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- [Saving Topologies from a Library on page 37](#)
- [Joining an Active Topology on page 39](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)
- [Using the Connectors Tab on page 45](#)

Uploading Topologies

A topology file set is a compressed file (.zip or .tgz) that contains topology.vmm and all configuration files for the pertinent vms. You can create this file in Linux or Apple, or by using 7zip or WinZip (or other generic compression tool) in Windows. You can upload a topology file set (a .zip file or .tgz file) consisting of:

- A **topology.vmm** topology configuration file
- A Junos OS CLI **.conf** configuration file for each Junos OS virtual device (optional).
These files are stored in the configset folder, as shown in [Figure 8 on page 35](#).

Figure 8: Configset File Contents

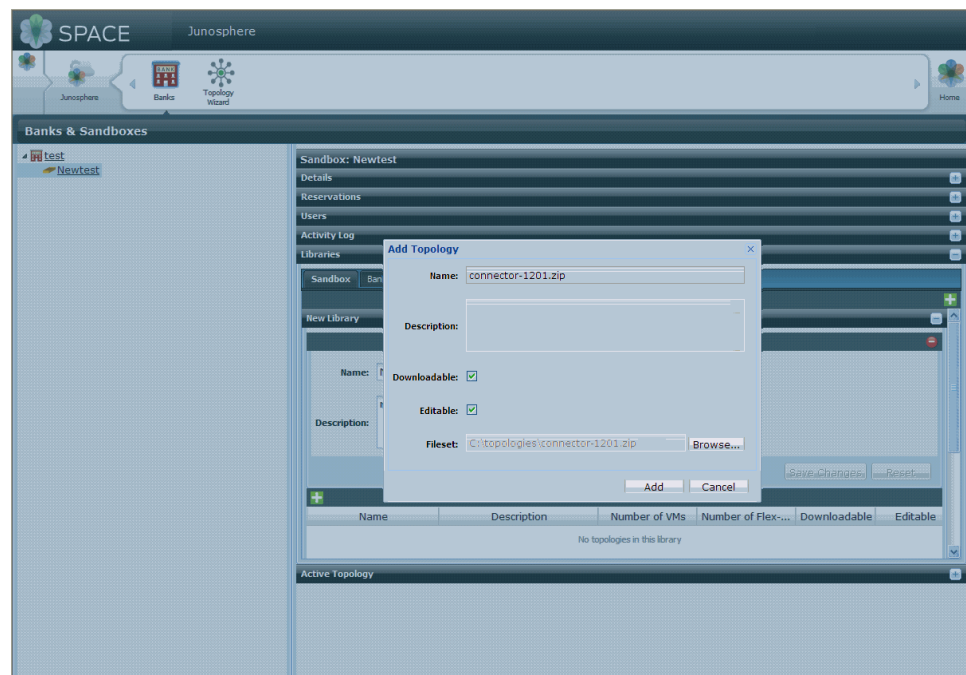


You upload a file set to a sandbox library for all users with access to that sandbox, as shown in [Figure 9 on page 36](#). Bank administrators can upload files to the bank library for all bank users to use.



NOTE: See the *Junosphere Network Topology Guide* for more information.

Figure 9: Uploading a Topology File



To upload a **.tgz** topology file set:

1. Click the **Libraries** accordion tab.
2. Click the **Sandbox** accordion tab to display the sandbox libraries.



NOTE: Users cannot add or modify bank or public libraries. See the [Junosphere Network Topology Guide](#) for more information.

3. Right-click a specific **Libraries** tab.
4. Click the green box with a **+** sign.
The **Add Topology** box appears.
5. Name the topology and add a description.
6. Check the box to indicate whether a file can be downloaded or edited.
7. Browse to the location of the file to upload.
8. Select the file set and click **Upload**.

Once a topology is loaded, all users with access to that library can see it.



NOTE: You must upload a topology file set with the **.tgz** or **.zip** compression file extension.

All topologies have two properties: editability and downloadability. Both of these properties are specified when a topology is uploaded into a library.

- **Editability**—Changes made to a topology marked as editable can be saved by any user. A topology not marked as editable cannot be saved by any user.
- **Downloadability**—A topology marked as downloadable can be downloaded by any user (by right-clicking on the topology and selecting Download file set) and can also be saved as a different filename by any user. A topology not marked as downloadable cannot be downloaded or saved by any user. Downloaded topology file sets are in **.zip** format only.

To delete a topology file set:

1. Click the **Libraries** accordion tab.
2. Click the **Sandbox** tab to display the sandbox libraries.
3. Right-click a specific library tab.
4. Right-click a topology and select **Delete**.
5. Confirm your deletion.

To download a topology, see “[Saving Topologies from a Library](#)” on page 37.

Related Documentation

- [Understanding Banks on page 15](#)
- [Understanding Sandboxes on page 17](#)
- [Using Libraries on page 23](#)
- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
- [Saving Changes to a Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)

Saving Topologies from a Library

You can save a topology only to the bank or sandbox library where the topology is running. [Table 5 on page 37](#) through [Table 8 on page 38](#) list the permissions that bank administrators and users need to be able to save editable and downloadable topologies.

Table 5: Saving Topologies that Cannot Be Edited

	Public Library	Bank Library	Sandbox Library
Bank Administrator	-	x	x
Users	-	-	x

Table 6: Saving Editable Topologies

	Public Library	Bank Library	Sandbox Library
Bank Administrator	x	x	x
Users	x	x	x

Table 7: Saving a Topology that Cannot Be Downloaded

	Public Library	Bank Library	Sandbox Library
Bank Administrator	-	x (to bank and sandbox libraries)	x (to bank and sandbox libraries)
Users	-	-	x (to sandbox library)

Table 8: Saving a Downloadable Topology

	Public Library	Bank Library	Sandbox Library
Bank Administrator	x (to bank and sandbox libraries)	x (to bank and sandbox libraries)	x (to bank and sandbox libraries)
Users	x (to sandbox library)	x (to sandbox library)	x (to sandbox library)

Legend:

x – permission to perform action.

- – no permission to perform action.

To download a topology file set:

1. Click the **Libraries** menu tab.
2. Click the **Sandbox** tab to display the sandbox libraries.
3. Right-click a specific **Library** tab.
4. Right-click the topology you want to download.
5. Select **Download Topology**.
6. Click **Save**.
7. Browse to the location to which you want to download.
8. Name the topology and click **Save**.

Related Documentation

- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)

- [Saving Changes to a Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)

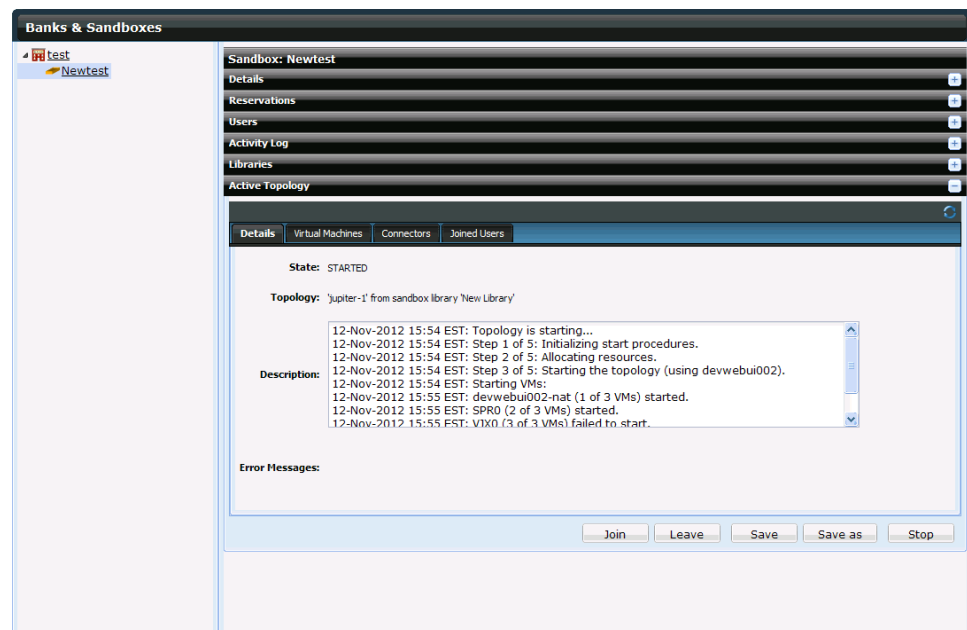
Joining an Active Topology

Once a topology is active, you **must** join it to reach the virtual network you built in the cloud. You connect your host to the topology by creating a Network Connect secure sockets layer (SSL) virtual private network (VPN) connection from your host to the topology you started.

To join an active topology:

1. Make sure that pop-ups are enabled on your web browser.
2. View the Active Topology accordion tab to see the topology you loaded, as shown in [Figure 10 on page 39](#).

Figure 10: Joining a Topology

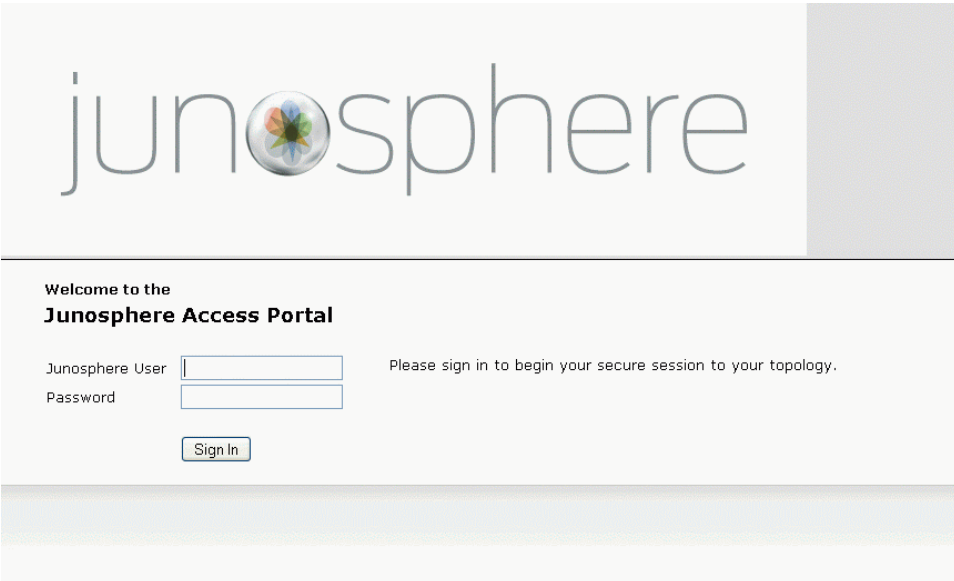


3. Click **Join** to display the Junosphere Access Portal page, as shown in [Figure 11 on page 40](#).



NOTE: After you click **Join**, a message might appear indicating that you do not have the correct Java plug-in. Follow the instructions in the displayed dialog box to install the correct plug-in.

Figure 11: Junosphere Access Portal

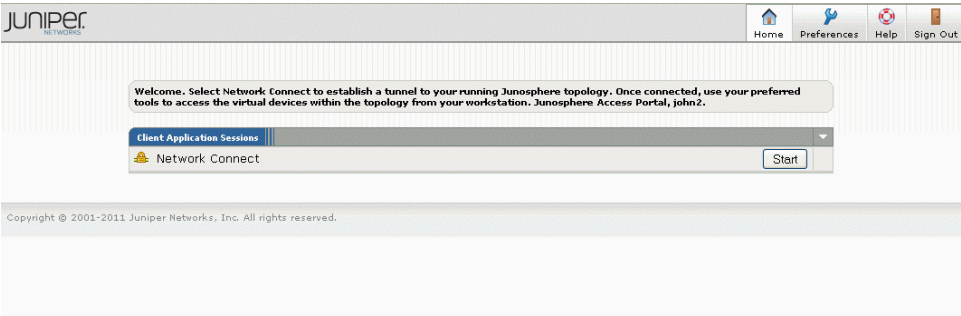


The image shows the Junosphere Access Portal login page. At the top, the word "junosphere" is displayed in a large, lowercase, sans-serif font, with a small globe icon replacing the letter 'o'. Below this, the text "Welcome to the Junosphere Access Portal" is centered. Underneath, there are two input fields: "Junosphere User" and "Password". To the right of these fields, a message reads: "Please sign in to begin your secure session to your topology." Below the input fields is a "Sign In" button. The page has a light gray background with a darker gray header and footer area.

4. Log in using the login ID and password e-mailed to you by your bank administrator. This is the same username and password as your Junosphere login.

The Network Connect page appears, as shown in [Figure 12 on page 40](#).

Figure 12: Network Connect



The image shows the Juniper Network Connect page. At the top, the Juniper logo is on the left, and navigation links (Home, Preferences, Help, Sign Out) are on the right. Below the header, a message box says: "Welcome. Select Network Connect to establish a tunnel to your running Junosphere topology. Once connected, use your preferred tools to access the virtual devices within the topology from your workstation. Junosphere Access Portal, john2." Below this, there is a section titled "Client Application Sessions" with a dropdown menu showing "Network Connect" and a "Start" button. At the bottom, a copyright notice reads: "Copyright © 2001-2011 Juniper Networks, Inc. All rights reserved."

5. Click **Start** to create a Secure Access SSL VPN to the internal management Ethernet of the topology.

You can then use a program such as telnet, SSH, or VNC to connect to the virtual machine units in the cloud.



NOTE: All sandbox users can join an active topology. Multiple users using an active topology do not consume more capacity than one user since users are all sharing the same virtual machine units. A maximum of 25 simultaneous users can join a topology via secure access.

Related Documentation

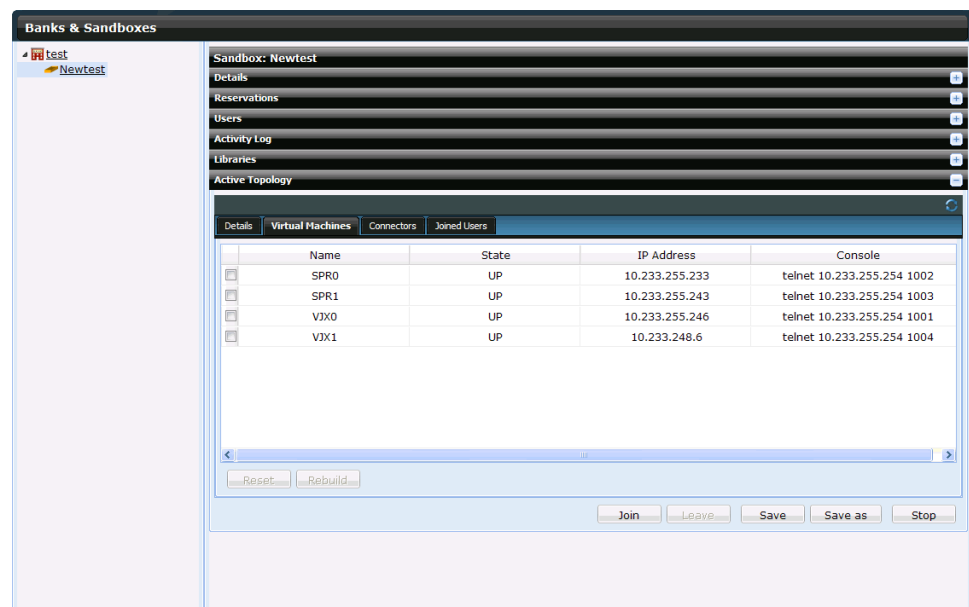
- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Saving Topologies from a Library on page 37](#)
- [Saving Changes to a Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)

Connecting to a Junos OS Virtual Machine

To connect to a Junos OS virtual machine:

1. Click the **Active Topology** accordion tab and select the **Virtual Machine** tab to display connection information to the console port and management Ethernet (ge 0/0/0) of your virtual machines, as shown in [Figure 13 on page 41](#).

Figure 13: Virtual Machine Connection Information



2. Either telnet to the console port or SSH to the management IP address of the virtual machine.
3. If you connect to a Junos OS product, you will see a CLI prompt. Log in using **root** (for VMX device) or **juniper** (for all other devices) as the username and **Clouds** as the password.
4. Enter **cli** to start using the Junos OS environment.
5. Make configuration changes in edit mode, then commit to implement the changes on the Junos OS device.

Related Documentation

- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
- [Saving Changes to a Topology on page 43](#)
- [Leaving an Active Topology on page 43](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)

Accessing Junos Space Using CentOS in a Junosphere Topology

This section describes the procedure for accessing Junos Space using CentOS in a Junosphere topology. The procedure requires VNC software to be installed on your system. The VNC viewer is free and can be downloaded from the [RealVNC website](#).

To access Junos Space:

1. Edit or create the topology that you want to use to access Junos Space.
2. Add a CentOS VM to the topology.
3. Save and start the topology.
4. Follow the instructions in ["Joining an Active Topology" on page 39](#) to join the topology.
5. Open the VNC application to get to the CentOS VM.
6. Enter the IP address of the CentOS VM and append :1 at the end. For example, **10.233.246.1:1**.
7. Enter **Clouds** for the password.
8. Once you have VNCed into the CentOS, click the globe icon on the top menu to open a web browser.
9. Enter the **https://<ip address of the Space VM>** and press **Enter**. For example, **https://10.233.246.1**.
10. Accept the warning messages and confirm to accept the security warnings. If you get a timeout message, click the **Retry** button.
11. Once you see the Space login screen, log in as administrator with:
 - Username: super
 - Password: 123juniper

Saving Changes to a Topology

An **interface ge-0/0/0** configuration is added to each **.conf** configuration file when the topology is started. Remove the **interface ge-0/0/0** configuration from the configuration file to avoid having duplicate IP addresses.

To save your Junos OS **.conf** configuration changes:

1. Use the **commit** command in Junos OS while the topology is running to save changes to a configuration file.
2. Wait 5 minutes to ensure that the commit command is fully executed in all of the router databases.
3. On the Junosphere **Active Topology Details** tab, click **Save** or **Save As** to store the configuration information of all of the routers in the topology to Junosphere.
4. Right-click the topology file and select **Download file set** to download the zipped topology file set from Junosphere to your local PC.
5. Unzip the **zip** file. This results in a **topology.vmm** file and a directory with one or more **.conf** files in it.
6. Edit each **.conf** file, removing the **interface ge-0/0/0** configuration.
7. Save the **.conf** files.
8. Zip the **topology.vmm** file and the directory with the **.conf** files to form a **.zip** file.

The next time you upload the **.zip** file and start the topology, the new configuration is implemented.

Related Documentation

- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)
- [Using the Connectors Tab on page 45](#)

Leaving an Active Topology

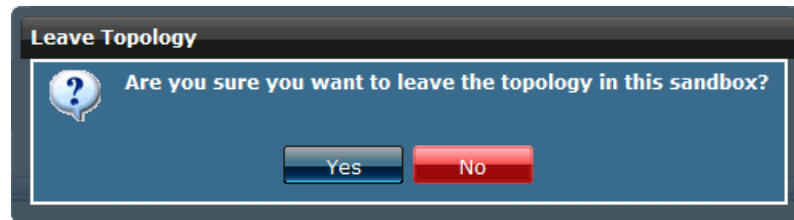
Junosphere enables you to leave an active topology, but keeps the topology running and does not affect other users. You can reconnect with the active topology at a later time.

To leave a topology:

1. Go to the Active Topology accordion tab

2. Click the **Leave** button.

The following dialog box appears.



3. Click **Yes**.

Related Documentation

- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
- [Saving Changes to a Topology on page 43](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)
- [Saving Changes to a Topology on page 43](#)
- [Using the Connectors Tab on page 45](#)
- [Signing Out and Stopping Your Active Topology on page 44](#)

Signing Out and Stopping Your Active Topology

To disconnect from your active topology:

1. Click **Sign Out** on the Junosphere Access Portal page.
2. Click **Stop** on the Virtual Machines tab of the Active Topology accordion tab to remove the topology from active memory.



NOTE: Be sure to sign out and stop the topology or new users might be prevented from launching a new topology. Users with topology management permissions and bank administrators can stop topologies.

Related Documentation

- [Building and Running Topologies on page 30](#)
- [Using the Virtual Machines Tab on page 34](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)

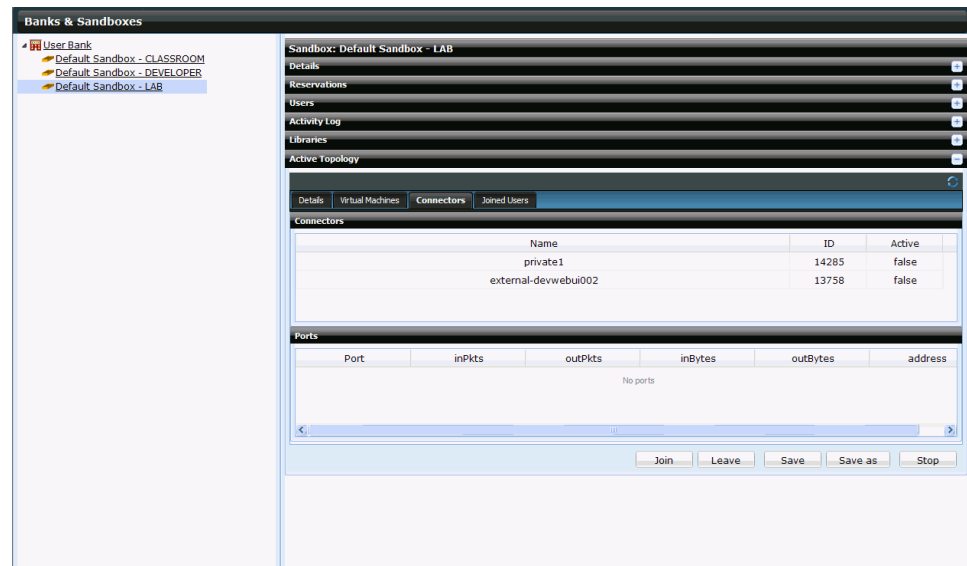
- [Saving Changes to a Topology on page 43](#)
- [Connecting to a Junos OS Virtual Machine on page 41](#)
- [Using the Connectors Tab on page 45](#)
- [Saving Changes to a Topology on page 43](#)
- [Using the Connectors Tab on page 45](#)
- [Leaving an Active Topology on page 43](#)

Using the Connectors Tab

The **Connectors** tab 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), as shown in [Figure 14 on page 45](#). Select a connector to view the details in the Ports window. This tab also shows virtual distributed Ethernet (VDE) information that you might need for troubleshooting.

The **Connectors** tab is located in the Active Topology accordion tab.

Figure 14: Connectors Tab



The Ports section of the tab 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.
- Address—The address of the port.

Related Documentation

- [Building and Running Topologies on page 30](#)
- [Uploading Topologies on page 34](#)
- [Joining an Active Topology on page 39](#)
- [Saving Topologies from a Library on page 37](#)
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- [Running the Junosphere Connector in Windows on page 56](#)
- [Running the Junosphere Connector in Linux on page 60](#)

Understanding Additional Information

The following is miscellaneous information that you might need to know about Junosphere:

- To change your permission(s), contact your bank administrator by clicking the **Bank** icon **Details** tab.
- To change your password, click the **User Preferences** icon in the upper right of the screen.
- To determine who has what permissions (to find a peer to start a topology file, for example), click the **Sandbox Users** accordion tab.
- Make sure that the e-mail address in your user profile is correct. Otherwise, you will not receive group e-mails from the bank administrator or other users.
- To display Junosphere help, click the **Junosphere** icon and then click the **?** icon. Click the **?** icon to toggle help between Junosphere and Junos Space.

Related Documentation

- [Understanding Junosphere on page 3](#)
- [Building and Running Topologies on page 30](#)
- [Buying Capacity on page 9](#)

PART 4

Running the Junosphere Connector

- [Using the Junosphere Connector on page 49](#)

CHAPTER 4

Using the Junosphere Connector

- [Prerequisites for Using the Junosphere Connector in Windows on page 49](#)
- [Establishing the Physical Connection on page 54](#)
- [Launching and Joining a Topology on page 55](#)
- [Running the Junosphere Connector in Windows on page 56](#)
- [Running the Junosphere Connector in Linux on page 60](#)

Prerequisites for Using the Junosphere Connector in Windows

- [Installing the Junosphere Connector on page 49](#)
- [Installing the VMware Player on page 49](#)

Installing the Junosphere Connector

To install and run the Junosphere connector you must have admin privileges in Windows or be logged in as **root** in Linux.

1. Download and unzip [Junosphere Connector](#).
2. Save the connector files to a location to which you have access permission.
3. Extract the connector files to your desktop.

Installing the VMware Player

This section describes the procedure for installing the VMware Player and configuring it to run the Junosphere Connector.

To install and run the Junosphere Connector, you must have admin privileges in Windows or be logged in as **root** in Linux.

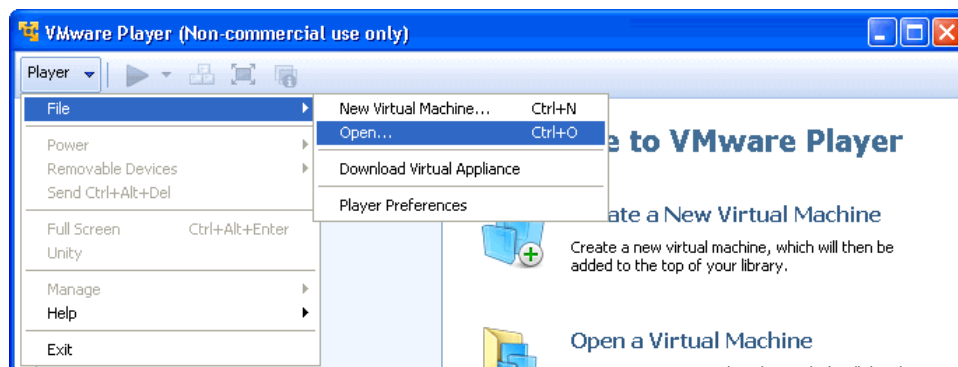
1. Download the [VMware Player](#).
2. Follow the prompts on the screen to install the VMware Player.
3. Double-click the VMware Player icon ([Figure 15 on page 50](#)) to launch VMware Player.

Figure 15: VMware Player Icon

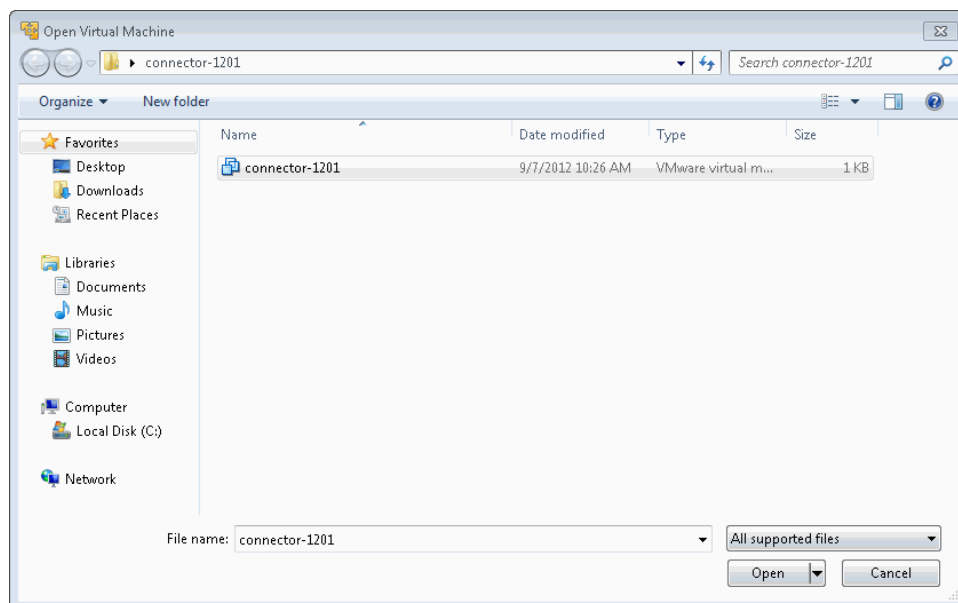


The VMware Player dialog box appears.

Figure 16: VMware Player Dialog Box

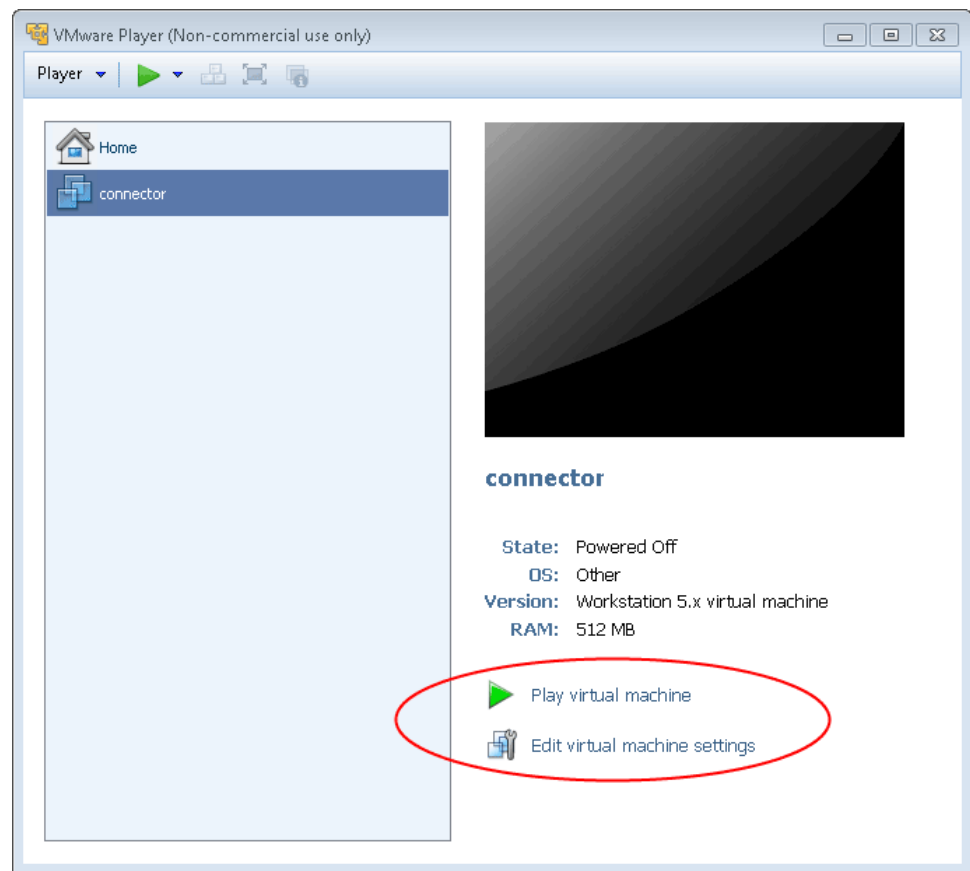


4. In the VMware Player dialog box (Figure 16 on page 50), select **Player > File > Open**. The following dialog box appears.



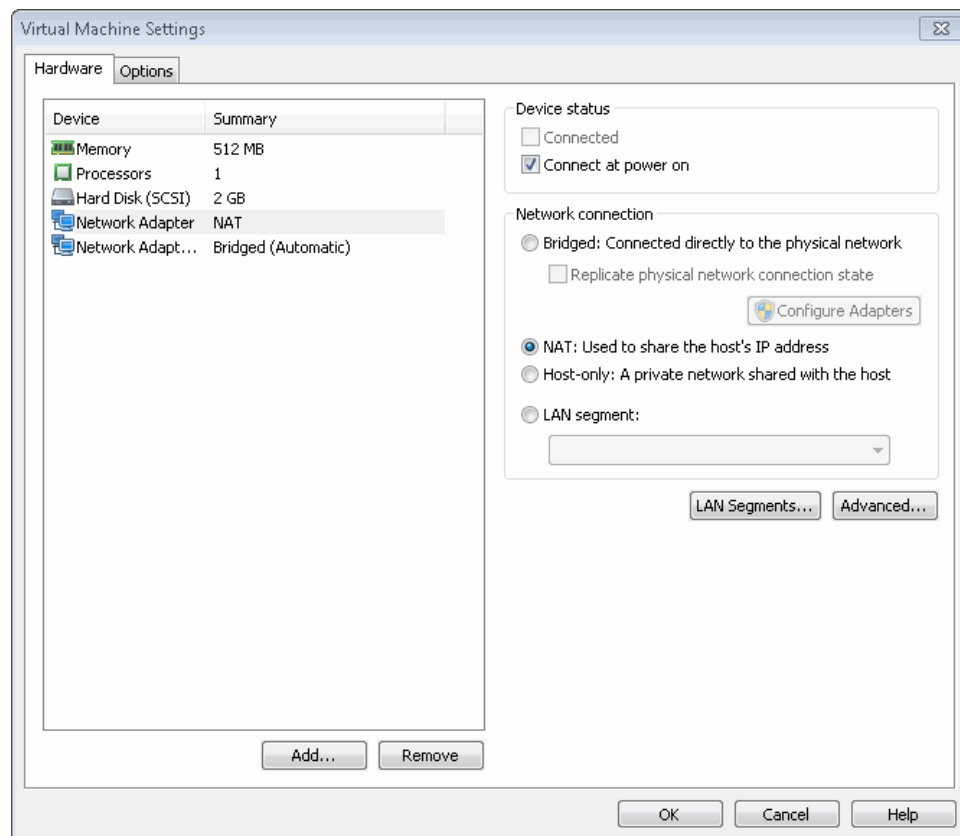
5. Select **connector-1201** and click **Open**. The VMware Player interface should look like Figure 17 on page 51.

Figure 17: Configuring the Connector



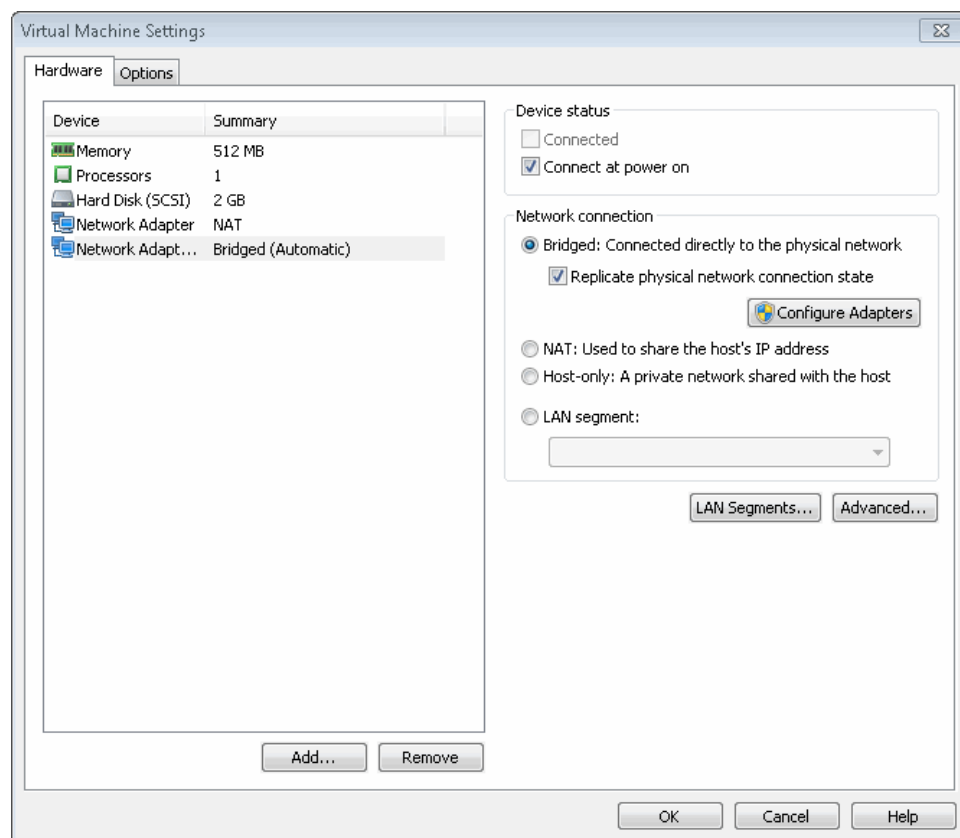
6. Click **Edit virtual machine settings**. The Virtual Machine Settings dialog box appears.

Figure 18: Virtual Machine Settings Dialog Box

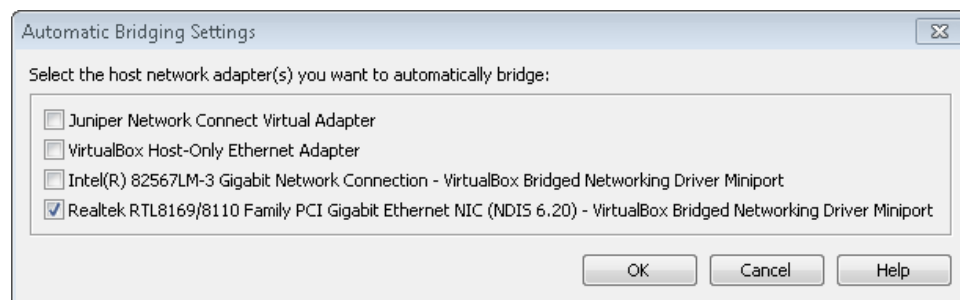


7. Set the first Network Adapter to NAT.
8. Set the second Network Adapter to Bridged: Connect directly to the physical device. The dialog box should resemble [Figure 19 on page 53](#).

Figure 19: Network Adapter Set to Bridge



9. Click **Configure Adapters**. A dialog box similar to the following appears, listing the adapters that are available to your machine.

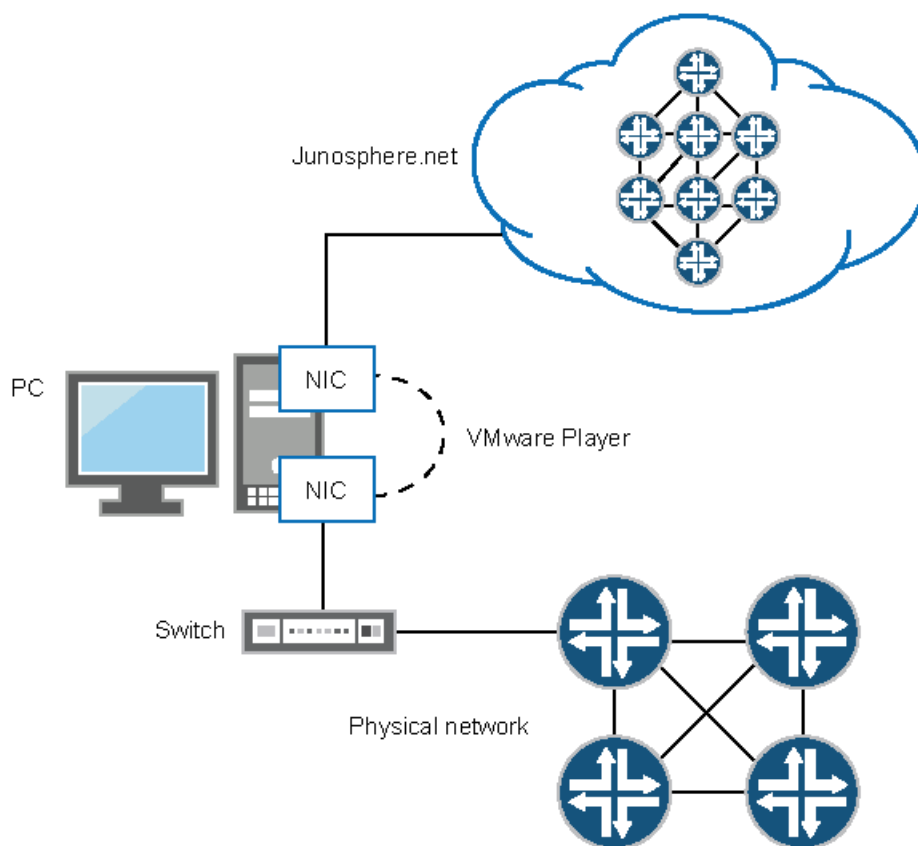


10. Select the adapter that you want to bridge and click **OK**.
11. Click **OK** in the VMware Virtual Machine Settings dialog box. The dialog box shown in [Figure 17 on page 51](#) appears again.

Establishing the Physical Connection

Before you configure the Junosphere Connector in Windows or Linux, make the physical connection. The diagram in [Figure 20 on page 54](#) shows a typical connection.

Figure 20: Junosphere Physical Connection



The computer you are using to log into Junosphere must have two Ethernet cards: eth0 and eth1.

- eth0 is used to connect to the UI and user topology via Network Connect
- eth1 is used to connect to the external device that will talk to the virtual network topology via Junosphere Connector

To establish the physical connection:

1. To connect your LAN to eth1, connect one end of a cable to eth1.
2. Connect the other end to a switch.
3. Connect your other physical devices to that switch.

Related Documentation

- [Prerequisites for Using the Junosphere Connector in Windows on page 49](#)

- [Installing the Junosphere Connector on page 49](#)
- [Installing the VMware Player on page 49](#)
- [Launching and Joining a Topology on page 55](#)
- [Running the Junosphere Connector in Windows on page 56](#)
- [Running the Junosphere Connector in Linux on page 60](#)

Launching and Joining a Topology

To use the Junosphere Connector, the computer used to access Junosphere needs to have a web browser.

1. Go to Junosphere and start your topology. For information on starting and running a topology, see the *Junosphere Network Topology Guide*. Make sure the reservation used to run this topology includes a Connector.
2. When the Join button is active, click it to join the topology.

Related Documentation

- [Prerequisites for Using the Junosphere Connector in Windows on page 49](#)
- [Installing the Junosphere Connector on page 49](#)
- [Installing the VMware Player on page 49](#)
- [Establishing the Physical Connection on page 54](#)
- [Running the Junosphere Connector in Windows on page 56](#)
- [Running the Junosphere Connector in Linux on page 60](#)

Running the Junosphere Connector in Windows

Before you can run Junosphere Connector, you must have an existing reservation for a topology or an annual plan of at least 50 VM units (which provides unlimited connectors). To run the Junosphere Connector in Windows:

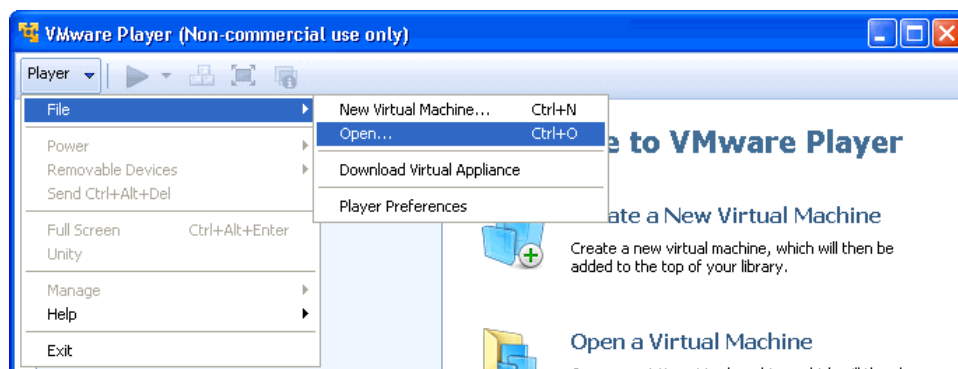
1. Double-click the VMware Player icon (Figure 21 on page 56) to launch VMware Player.

Figure 21: VMware Player Icon

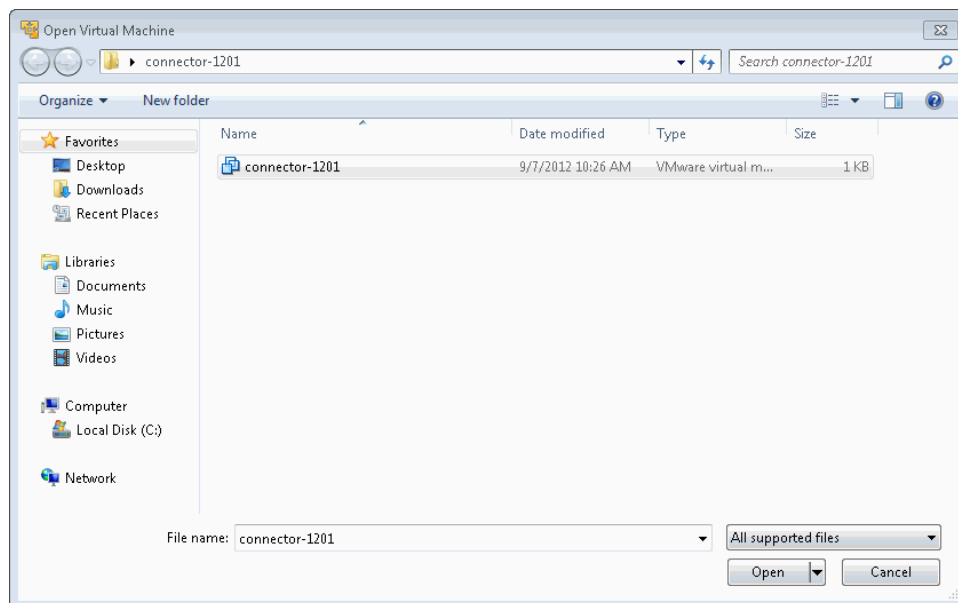


The VMware Player dialog box appears.

Figure 22: VMware Player Dialog Box

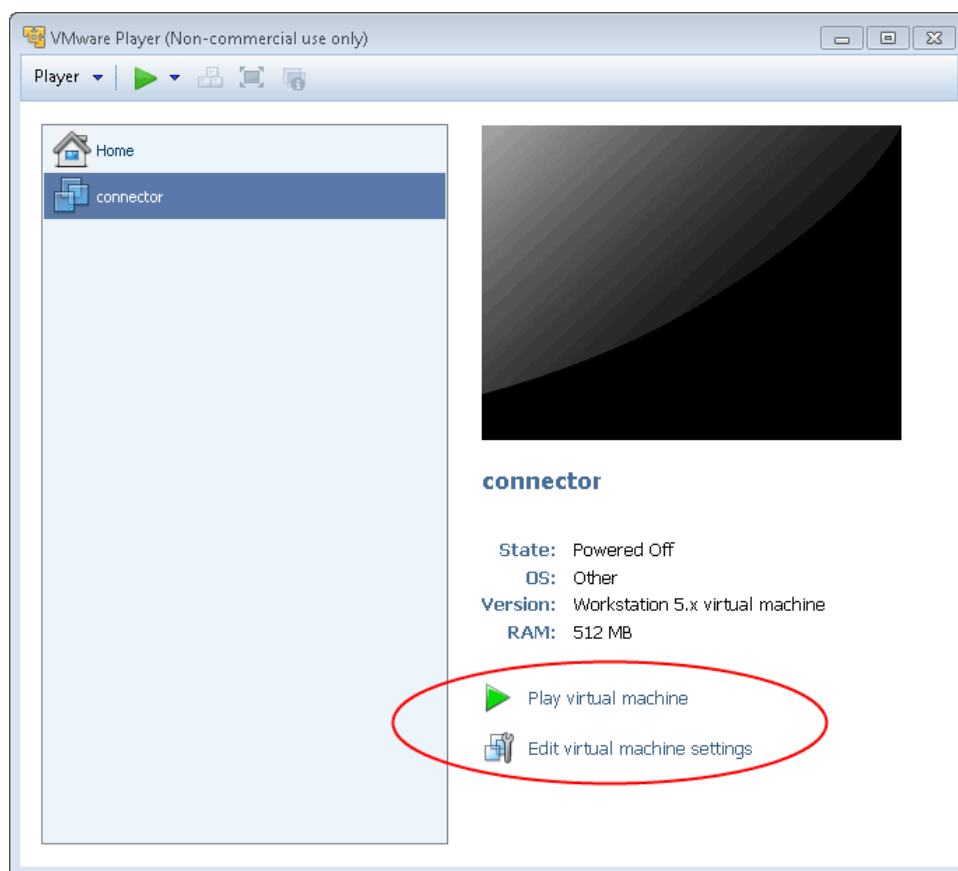


2. In the VMware Player dialog box (Figure 22 on page 56), select **Player > File > Open**. The following dialog box appears.



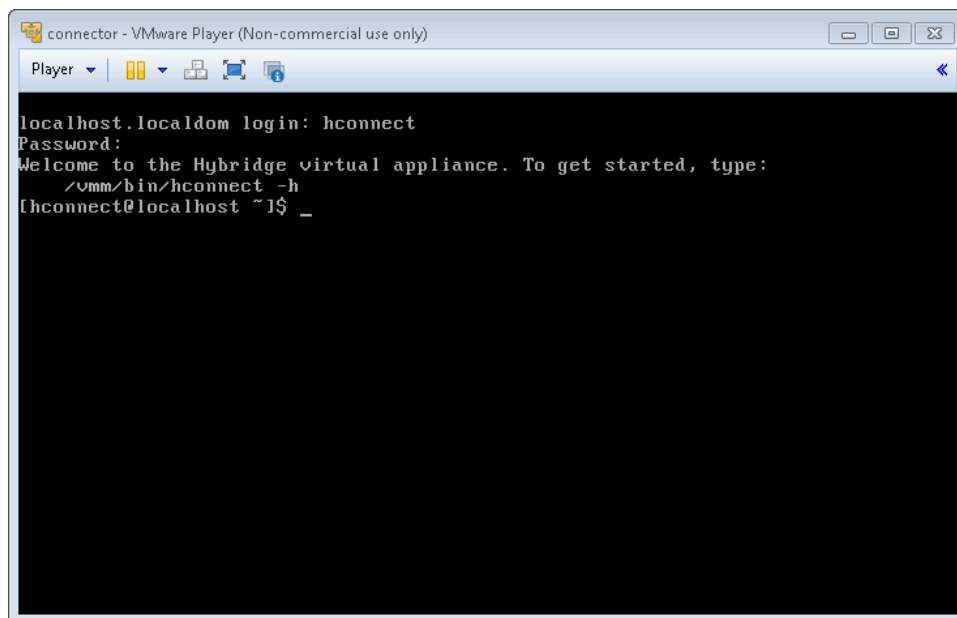
3. Select **connector-1201** and click **Open**. The VMware Player interface should look like [Figure 23 on page 57](#).

Figure 23: Configuring the Connector



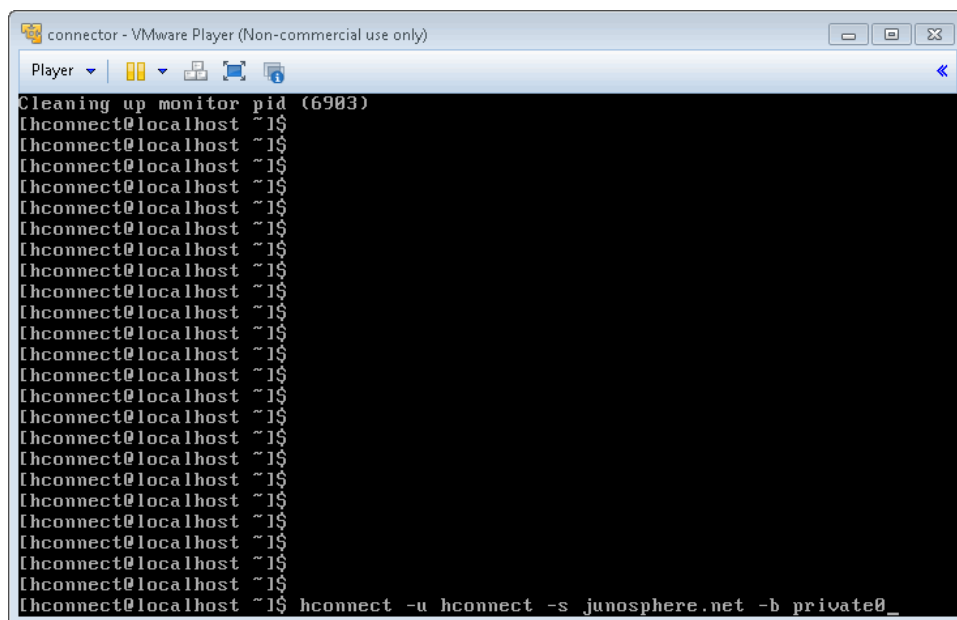
- Click **Play virtual machine** to power on the connector.
- Open a command prompt and log in using **hconnect** as the username and password, as shown in [Figure 24 on page 58](#).

Figure 24: Command Prompt with Connector Credentials



6. In the command prompt, type **hconnect -u hconnect -server junosphere.net -b private0**.

Figure 25: Command Prompt with hconnector Credentials





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

At this point, the virtual topology should be communicating with the physical device.

In Junosphere, the Active Topology Connectors tab should resemble the following figure, with the Active column of *private0* showing **true**.

Figure 26: Active Column Showing True

The screenshot shows the Junosphere web interface. On the left, there's a sidebar with 'Banks & Sandboxes' and a tree view showing 'test' and 'hntest'. The main area displays 'Sandbox: Newtest' with tabs for Details, Reservations, Users, Activity Log, Libraries, and Active Topology. The 'Active Topology' tab is selected, showing sub-tabs for Details, Virtual Machines, Connectors, and Joined Users. The 'Connectors' sub-tab is active, displaying a table with the following data:

Name	ID	Active
external-webui028	184	false
private0	186	true
private1	188	false
private2	183	false

Below the connectors table is a 'Ports' section with a table that currently shows 'No ports'. At the bottom of the interface are buttons for Join, Leave, Save, Save as, and Stop.



WARNING: To prevent IP address conflicts between your physical lab and your Junosphere topology, make sure you configure the IP address of your Junosphere VMs before you launch the Junosphere Connector.

Related Documentation

- [Managing Reservations and Capacity on page 20](#)
- [Joining an Active Topology on page 39](#)
- [Prerequisites for Using the Junosphere Connector in Windows on page 49](#)
- [Installing the Junosphere Connector on page 49](#)
- [Installing the VMware Player on page 49](#)
- [Establishing the Physical Connection on page 54](#)
- [Launching and Joining a Topology on page 55](#)

- [Running the Junosphere Connector in Linux on page 60](#)

Running the Junosphere Connector in Linux

Before you can run Junosphere Connector, you must have successfully started and joined a topology. For information on starting and running a topology, see the *Junosphere Network Topology Guide*.

Download and Install the Junosphere Connector

To install and run the Junosphere Connector, you must be logged in as **root**.

1. Download the [Junosphere Connector](#).
2. Extract the .zip file to a directory where you can access the Junosphere Connector .vmx file. For example: **unzip connector-1201.zip**

Download and Install the VMware Player

To install and run the VMware Player you must be logged in as **root**.

1. Download the [VMware](#) for the appropriate OS on your PC.
2. Run the VMware Player bundle by entering the following command, using the appropriate version number for your VMware Player:

```
[root@skyvm4 VMwarePlayer]# ./ 5.0.0-812388.x86_64.bundle
```

```
Extracting VMware Installer...done.
```

3. 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
```

4. Press Install 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%
```

Configuring VMware Player to Use eth1 as Bridge

1. Enter the following command to view the vmnet-bridge processes on your 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. Enter the following command to stop the vmnet-bridge process so you can start a new process on the second Ethernet (eth1):

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

```
Example: kill -9 4138
```

3. Enter the following command to start a new vmnet-bridge process on the interface (eth1) that will be used to send or forward traffic from a physical device:

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

Launching and Configuring VMware Player

1. Open a terminal window and log in as **root**.
2. Enter the following command to launch VMware Player:
vmplayer &
3. Open the Junosphere Connector .vmx file in VMware Player by selecting **File > Open**.
 - a. Navigate to the Junosphere Connector .vmx file.
 - b. Select the Junosphere Connector .vmx file and click **Open**.
4. Click **Edit virtual machine settings**.
5. In the Virtual Machine Settings dialog box, change the Network Adapter from Bridged to **NAT**.
6. Set Network Adapter2 to **Bridged**.
7. Click **Save**.

Establishing the Physical Connection

The computer you are using to log into Junosphere must have two Ethernet cards: eth0 and eth1.

- eth0 is used to connect to the UI and user topology via Network Connect.
- eth1 is used to connect to the external device that will talk to the virtual network topology via Junosphere Connector.

To establish the physical connection:

1. To connect your LAN to eth1, connect one end of a cable to eth1.
2. Connect the other end to a switch.
3. Connect your other physical devices to that switch.

Launching and Joining a Topology

For information on starting and running a topology, see the *Junosphere Network Topology Guide*.

1. When the topology is active, click **Join**.
2. On the Junosphere Access Portal page, enter your username and password and click **Sign In**.
3. Click **Start** to launch the Secure Access SSL VPN and connect to your topology.

Running the Junosphere Connector in Linux

To start the Junosphere Connector:

1. Open a terminal window and log in as **root**.
2. Enter the following command at the prompt to launch VMware Player if not already running:
vmplayer &
3. Select **connector** and click **Play virtual machine**.
4. At the command prompt, log in as **user=hconnect; password=hconnect**. The following information appears:

Last login: Thu Mar 10 18:19:01 2011

Welcome to the Junosphere Connector virtual appliance. To get started, type:

5. To connect to your bridge on your virtual topology, Issue the following commands:

/vmm/bin/hconnect -c <customer name> l-b <bridge to connect to> -s <pod to connect to>

Example[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 Hybrid 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: If Junosphere Connector fails to start, check to make sure you successfully joined and started Network Connect. You should see a lock/key icon at the bottom of your screen. Junosphere Connector will fail if it cannot reach the NAT IP (10.233.255.254). If you successfully join the topology, at the prompt you should be able to successfully ping 10.233.255.254.

At this point, packets from your VDE in your topology will now go to your switch and then to your physical device.

In Junosphere, the Active Topology Connectors tab should resemble [Figure 26 on page 59](#), with the Active column of private0 showing “true”.



WARNING: To prevent IP address conflicts between your physical lab and your Junosphere topology, make sure you configure the IP address of your Junosphere VMs before you launch the Junosphere Connector.

Related Documentation

- [Managing Reservations and Capacity on page 20](#)
- [Joining an Active Topology on page 39](#)
- [Prerequisites for Using the Junosphere Connector in Windows on page 49](#)
- [Installing the Junosphere Connector on page 49](#)
- [Installing the VMware Player on page 49](#)
- [Establishing the Physical Connection on page 54](#)
- [Launching and Joining a Topology on page 55](#)
- [Running the Junosphere Connector in Windows on page 56](#)

PART 5

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