



Junosphere

Guide for Users

Release

2.3



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Junosphere Guide for Users

2.3

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Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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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.

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

Documentation Conventions

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> .

In order to open a case with JTAC for Junosphere, you must provide the bank serial number. To find the serial number, double-click on 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](#)
- [Using the Login Page on page 6](#)
- [Changing Your Password on page 6](#)
- [Using the Notification Message Box on page 7](#)

Understanding Junosphere

Junosphere is a virtualization environment where multiple virtual machines representing network devices can be connected and configured to create network topologies. To use the cloud, you upload a topology file defining devices, interfaces, and their interconnections. You also upload standard configuration files for each network device. You can 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 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 days capacity (the number of virtual machine 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.

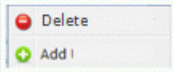



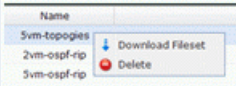


There are three Junosphere products designed to satisfy specific user needs:

- Junosphere Lab—Enables you to create and run exact replicas of physical networks within the virtual environment. Users can model, test, and experiment with new features, topologies, or services with no risk and with dramatically reduced costs.
- Junosphere Classroom—Enables you to cost effectively educate students, employees, or partners on the principles and operation of Junos OS, routing protocols, and networking, without the expense of building, maintaining, or operating a physical lab.
- Junosphere Developer—A cloud-based means for developers to test their applications against Junos OS nodes and Junos Space. It prevents the need to provide free or heavily subsidized test gear to developers, thus speeding the test cycle and reducing barriers to development on Junos OS platforms.

Using the Junosphere Interface

The following table is a guide to the elements of the Junosphere interface.

Conventions	Description and Examples
Bank Icon 	This icon can be seen on 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.
Customer User Icon 	This icon can be seen on the top toolbar and on the side toolbar to manage user creation, properties, and permissions.
Sandbox Icon 	This icon can be found on the side toolbar under its corresponding bank. It is used to enable toolbox functions and to manage and activate topologies.
Plus Icon 	This icon adds or 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.

Conventions	Description and Examples
<p>Right click on objects</p> 	<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>
<p>Expansion Arrow</p> 	<p>On the left of object icons, Junosphere displays an arrow. Click the arrow to see other objects available inside it.</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>
<p>Accordion Tabs</p> 	<p>An accordion tab contains properties of Junosphere objects and enables the functions specified on each of those accordion tabs.</p> <p>To open the accordion tab, click on the + sign on its extreme right; click the - sign to close it.</p>
<p>Green + Sign</p> 	<p>The green + sign, available in library accordion tabs, enables you to create new libraries and upload new topology files.</p>
<p>Other Right-click Functions</p> 	<p>Rightclick 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>
<p>Help Icon</p> 	<p>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.</p>
<p>Logout Icon</p> 	<p>To log out, click the icon in the upper right corner of the page.</p>

- Related Documentation**
- [Using the Login Page on page 6](#)
 - [Viewing the Message Center on page 22](#)
 - [Understanding Junosphere on page 3](#)
 - [Understanding Banks on page 11](#)
 - [Understanding Sandboxes on page 13](#)

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 should be your e-mail address.

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.

The Notifications page appears, showing the **Banks** icon.

3. Read any messages in the Notification Message box.
4. Click the **Bank** icon in the upper left of the page.



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 6](#)
- [Using the Notification Message Box on page 7](#)
- [Understanding Junosphere on page 3](#)
- [Understanding Banks on page 11](#)
- [Understanding Sandboxes on page 13](#)

Changing Your Password

You can change, recover, 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.

To recover your password:

- User—Request a reset from your bank administrator (to find your bank administrator, click on the bank name to display the Details page and look under the Administration entry in the list).
- Bank administrator—To reset the password:
 1. Click on the **Customers and Users** icon.
 2. Click on the arrow next to the Customer name.
 3. Click the user's name.
 4. Select the password box and type the desired password.
 5. Confirm the password.
 6. Click the **Save Changes** button.

To reset your password:

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

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.

**Related
Documentation**

- [Understanding Junosphere on page 3](#)
- [Using the Login Page on page 6](#)
- [Viewing the Message Center on page 22](#)
- [Understanding Banks on page 11](#)
- [Understanding Sandboxes on page 13](#)

Using the Notification Message Box

This page displays a message box with system-wide and operational messages from the Junosphere Administrator that you should review. This is the main landing page when you log in.

**Related
Documentation**

- [Understanding Junosphere on page 3](#)
- [Using the Login Page on page 6](#)
- [Changing Your Password on page 6](#)
- [Viewing the Message Center on page 22](#)
- [Understanding Banks on page 11](#)

- [Understanding Sandboxes on page 13](#)
- [Viewing the Activity Log on page 21](#)

PART 2

Banks and Sandboxes

- [Using Banks and Sandboxes on page 11](#)

CHAPTER 2

Using Banks and Sandboxes

- [Understanding Banks on page 11](#)
- [Selecting a Bank on page 12](#)
- [Understanding Sandboxes on page 13](#)
- [Accessing Your Sandbox on page 14](#)
- [Managing Reservations on page 17](#)
- [Using Libraries on page 19](#)
- [Understanding Permissions on page 20](#)
- [Viewing the Activity Log on page 21](#)
- [Viewing the Message Center on page 22](#)

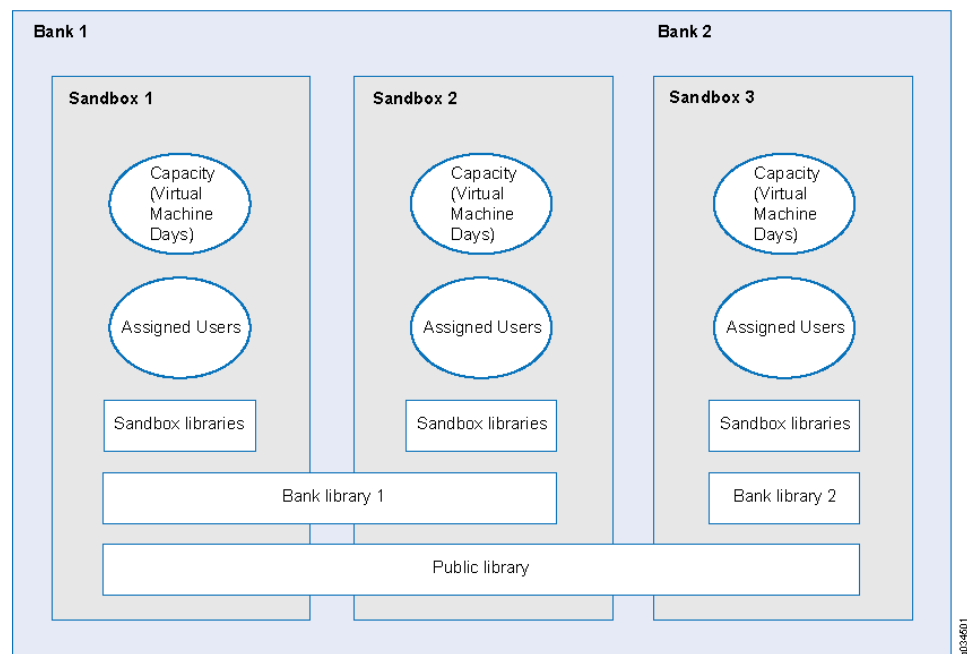
Understanding Banks

A bank is an amount of prepaid capacity (the number of virtual machine times the number of days) that you can use. Think of a bank as a container of sandboxes. A sandbox is a work area holding capacity, the users assigned to that sandbox, and libraries of topology files, as shown in [Figure 1 on page 12](#). The bank administrator assigns the capacity purchased for the bank to the sandboxes.

The bank administrator assigns users to the sandboxes.

The libraries hold topology files that define virtual devices, interfaces, and their interconnections as well as configuration files for each Junos OS device.

Figure 1: Components of a Bank



You will see only the banks that you can access. Usually, you see only the name of your company as the bank name. 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 12](#)
- [Understanding Sandboxes on page 13](#)
- [Managing Reservations on page 17](#)
- [Using Libraries on page 19](#)
- [Junosphere Guide for Bank Administrators](#)

Selecting a Bank

To select a bank:

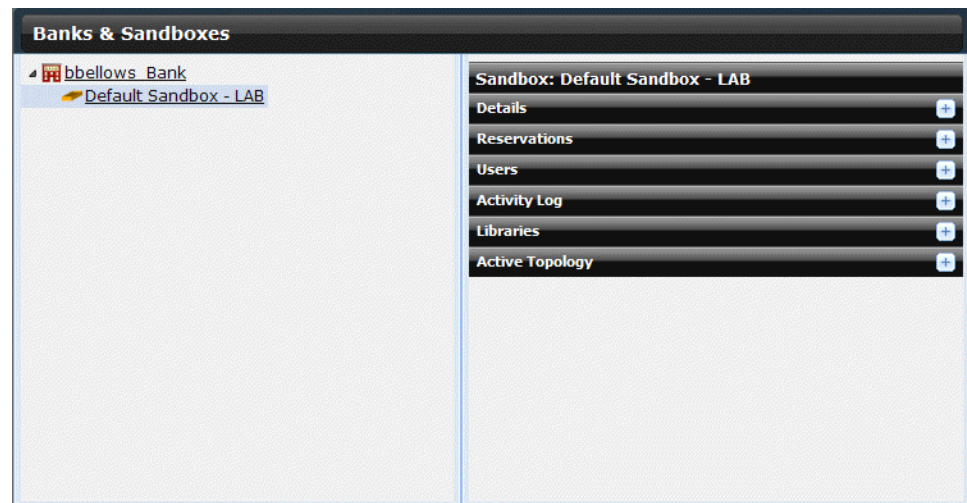
1. Click the **Bank** icon at the top of the page.
The Banks and Sandboxes page appears, listing all banks to which you as the user have been given access. Banks and sandboxes provide groups of time and capacity (virtual machine days) in Junosphere. You see the bank and the sandbox only when you are 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 11](#)
 - [Understanding Sandboxes on page 13](#)
 - [Accessing Your Sandbox on page 14](#)
 - [Managing Reservations on page 17](#)
 - [Using Libraries on page 19](#)
 - [Understanding Permissions on page 20](#)
 - [Viewing the Activity Log on page 21](#)
 - [Viewing the Message Center on page 22](#)
 - [Running Topologies on page 25](#)

Understanding Sandboxes

A sandbox is a work area holding capacity (virtual machine days), 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 13](#).

Figure 2: Sandbox Functions



- **Details**—Lists information about the sandbox, including assigned capacity and reserved time on Junosphere.
- **Users**—The users assigned by the bank administrator to this sandbox.
- **Activity Log**—An audit list of Junosphere activities.
- **Libraries**—Storage areas that hold topology files that define virtual devices, interfaces, and their interconnections, as well as configuration files for each Junos device.

- **Message Center**—A page that displays operational messages for this sandbox from the bank administrator.
- **Active Topology**—A tab that displays the information about the virtual machines and connectors 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. Multiple topologies can be started in different sandboxes as well by the same user (provided the user has permissions). The only restrictions are that a user can join only one topology from one host, and only one topology can be active at a time per 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/time or the reservation goes past the expiration date of the bank.

**Related
Documentation**

- [Understanding Banks on page 11](#)
- [Accessing Your Sandbox on page 14](#)
- [Managing Reservations on page 17](#)
- [Using Libraries on page 19](#)
- [Understanding Permissions on page 20](#)
- [Viewing the Activity Log on page 21](#)
- [Viewing the Message Center on page 22](#)
- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)

Accessing Your Sandbox

In a sandbox, as a user you can view the assigned capacity (virtual machine days) and the reservation for using the cloud on the Details page, as shown in [Figure 3 on page 15](#).

Figure 3: Sandbox Details

Banks & Sandboxes

▸ Bellsouth Bank
▸ Default Sandbox - LAB

Sandbox: Default Sandbox - LAB

Details

Name: Default Sandbox - LAB

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

Email: s297@sandboxes.juniper.net ☐ Enabled

Type: LAB

	Product	Available Capacity	Reserved Ca
Capacity:	Junosphere Lab	92	26
	Junosphere Connector	5	2

Save Changes Reset

Reservations Users Activity Log Libraries Active Topology

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

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



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/sandbox activities. This e-mail may go to your spam/junk e-mail folders. Outlook users can fix this problem by going to their spam/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 email applications should work with their e-mail administrators to fix this issue.

To choose a topology that you want to run:

1. Click the **Libraries** menu to see libraries where your topologies are stored:
 - 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).

2. Click on a library tab.

In the library, you can:

- Create multiple libraries within the sandbox library (if you have Library permission).
- Select an existing topology to launch (all users).
- Upload a topology to the sandbox library (all users).

You can also join a topology that is already active. See [“Joining an Active Topology” on page 33](#).



NOTE: All sandbox users 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 days.

**Related
Documentation**

- [Understanding Banks on page 11](#)
- [Understanding Sandboxes on page 13](#)
- [Using Libraries on page 19](#)
- [Managing Reservations on page 17](#)
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- [Joining an Active Topology on page 33](#)
- [Using the Virtual Machines Tab on page 28](#)

Managing Reservations

The Reservation Management permission allows you to reserve one or more time periods for using a specified number of virtual machines times a specified number of days (capacity).



NOTE: 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.

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.

You can make multiple reservations for a sandbox.

A reservation for more than 30 days becomes a **priority reservation**. Priority reservations receive priority treatment for virtual machine availability. Make a priority reservation when you want to ensure the available of capacity at any time for the period you select and want to control the daily use of capacity. Priority reservations cannot be canceled.

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.

To manage reservations as seen in [Figure 4 on page 17](#):

Figure 4: Adding a Reservation

1. Click **Reservations** on the Sandbox Details page to display the Create Reservation window. By default, **I need the reservation at this time** is selected.

2. To add a reservation, enter the following:

- The number of virtual machines.
- The number of connectors.
- The number of days.
- A starting time of **Now** or a starting date, time, and time zone (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).

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



NOTE: Include in the number of virtual machines you reserve 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 appears.

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

You can modify or cancel a regular reservation up to one hour before the start time without penalty. If you cancel a reservation within an hour of the start, the reserved capacity will be used. Priority reservations cannot be canceled. Once the topology start time occurs, you cannot delete your reservation. This supports optimal resource sharing and prevents overbooking.

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

A priority reservation cannot be canceled. A reservation cannot be canceled within one hour of its start time.

Canceling a reservation up to one hour before it starts will return any unused capacity (virtual machines and connectors) to the sandbox Available Capacity.

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 13](#)
- [Using Libraries on page 19](#)
- [Accessing Your Sandbox on page 14](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Using Libraries on page 19](#)
- [Understanding Permissions on page 20](#)
- [Viewing the Activity Log on page 21](#)

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 the Junosphere Administrator (superuser) can upload a topology to the Public library or delete it, and 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 on the **plus** sign on a library name accordion tab to display a tab with a minus sign in a red circle.
4. Click on the minus sign in a red circle to delete the library.
5. Confirm the deletion.

**Related
Documentation**

- [Understanding Sandboxes on page 13](#)
- [Accessing Your Sandbox on page 14](#)
- [Managing Reservations on page 17](#)
- [Understanding Permissions on page 20](#)
- [Viewing the Activity Log on page 21](#)
- [Using the Virtual Machines Tab on page 28](#)

Understanding Permissions

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

- 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 who can start and stop a topology. Starting a topology activates the virtual machine capacity your company has reserved.

In a classroom situation, the instructor might be the only one assigned 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 days.

- Library Management (create new libraries)

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

All users can upload topologies to a sandbox library or download downloadable topologies.

- Reservation Management (reserve time and capacity)

This permission allows you to reserve a time period to use a specified number of virtual machines (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 bank capacity is decreased.

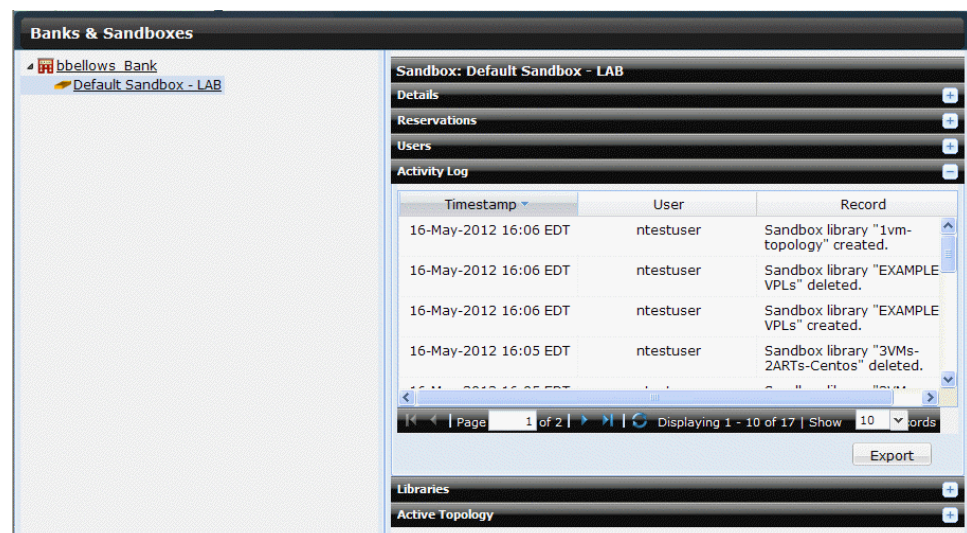
Related Documentation

- [Understanding Sandboxes on page 13](#)
- [Using Libraries on page 19](#)
- [Accessing Your Sandbox on page 14](#)
- [Managing Reservations on page 17](#)
- [Using Libraries on page 19](#)
- [Understanding Permissions on page 20](#)
- [Viewing the Activity Log on page 21](#)
- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)

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 21](#).

Figure 5: Activity Log



Related Documentation

- [Using the Notification Message Box on page 7](#)
- [Understanding Sandboxes on page 13](#)
- [Using Libraries on page 19](#)

- [Viewing the Message Center on page 22](#)
- [Running Topologies on page 25](#)

Viewing the Message Center

The Message Center displays operational messages for users of this sandbox. A bank administrator or Junosphere Administrator can post a message.

Related Documentation

- [Using the Notification Message Box on page 7](#)
- [Understanding Sandboxes on page 13](#)
- [Using Libraries on page 19](#)
- [Viewing the Activity Log on page 21](#)
- [Running Topologies on page 25](#)

PART 3

Topologies

- [Connecting to the Topology on page 25](#)

CHAPTER 3

Connecting to the Topology

- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)
- [Creating New Topologies on page 31](#)
- [Saving Topologies from a Library on page 31](#)
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- [Connecting to a Junos OS Virtual Machine on page 35](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)
- [Using the Connector Page on page 39](#)
- [Understanding Additional Information on page 40](#)
- [Ordering with a Credit Card on page 40](#)

Running Topologies

Junosphere is a virtualization environment where multiple virtual machines representing network devices can be connected and configured to create network topologies. A topology file set contains the instructions to build your network in the cloud.

The topology file set (in .tgz format) consists of:

- The **topology.vmm** configuration file that defines the virtual devices, such as routers, their interfaces, and their interconnections within a single topology.
- A configuration file for each Junos OS virtual machine that is defined in the **topology.vmm** file. For the VJX1000 virtual machines, these would be the Junos OS configuration (**.conf**) files.

Refer to the *Junosphere Network Topology Guide* for more information about how to create and use the **topology.vmm** file.

To start a topology:

1. Create a reservation for the number of virtual machines and the number of days needed. The topology cannot start until the reservation is active.



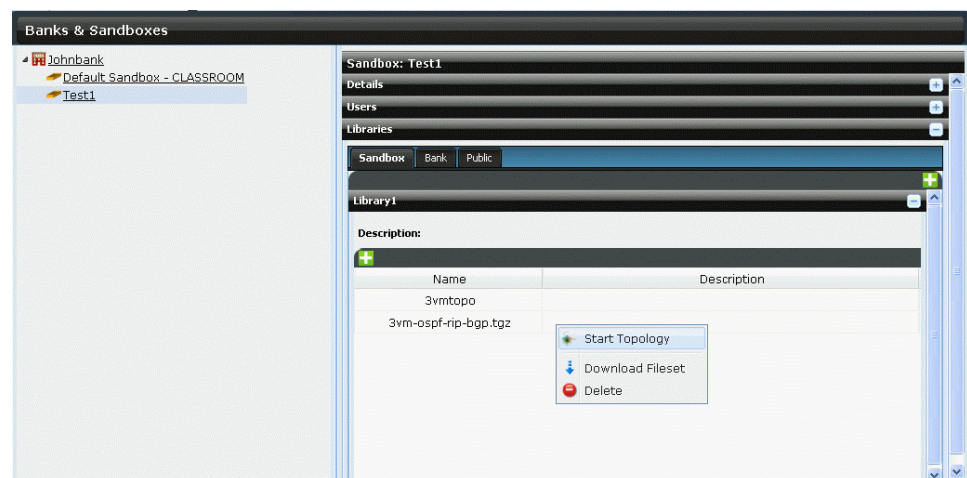
NOTE: You must have Topology Management permission to start or stop a topology.

2. Click the **Library** menu to see the libraries where your topology file sets are stored.
Public libraries provided by Juniper 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. Choose the **Library** tab you want to access.
4. Right-click on 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. Click the **Start Topology** menu selection to begin building that topology in the Junosphere cloud.



NOTE: If you do not see the Start Topology option when you right-click on the topology filename, this means that you do not have a reservation; see [“Managing Reservations” on page 17](#).

Figure 6: Starting a Topology



Once a topology is started, open the Active Topology accordion tab to view the status of the starting topology.

A series of messages displays in the **Details** tab, showing the progress of the loading of the virtual machines, as shown in [Figure 7 on page 27](#).



NOTE: Click the circular arrow icon in the Active Topology window to refresh the Details tab and view the latest information.

When the topology is loaded, the **Join** button appears and the virtual machines display in the **Virtual Machine** tab.

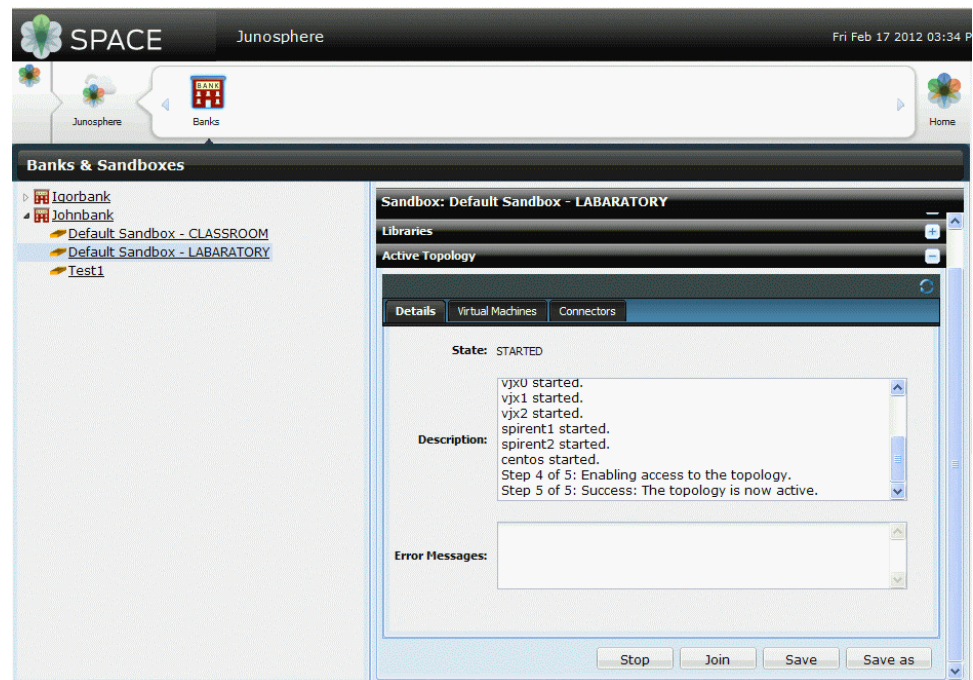
If an error message displays, stop and deactivate your topology. Review the topology file.

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 telnet or the J-Web interface. 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 33](#).

To stop an active topology, click **Stop** on the Active Topology window.

Figure 7: Launching a Topology



Related Documentation

- [Understanding Banks on page 11](#)
- [Understanding Sandboxes on page 13](#)
- [Managing Reservations on page 17](#)
- [Using Libraries on page 19](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)

- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)

Using the Virtual Machines Tab

The Active Topology accordion window appears when you launch a topology. In that window, 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 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.

Related Documentation

- [Understanding Sandboxes on page 13](#)
- [Accessing Your Sandbox on page 14](#)
- [Running Topologies on page 25](#)
- [Uploading Topologies on page 29](#)
- [Saving Topologies from a Library on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Connecting to a Junos Virtual Machine on page 35](#)
- [Using the Connector Page on page 39](#)

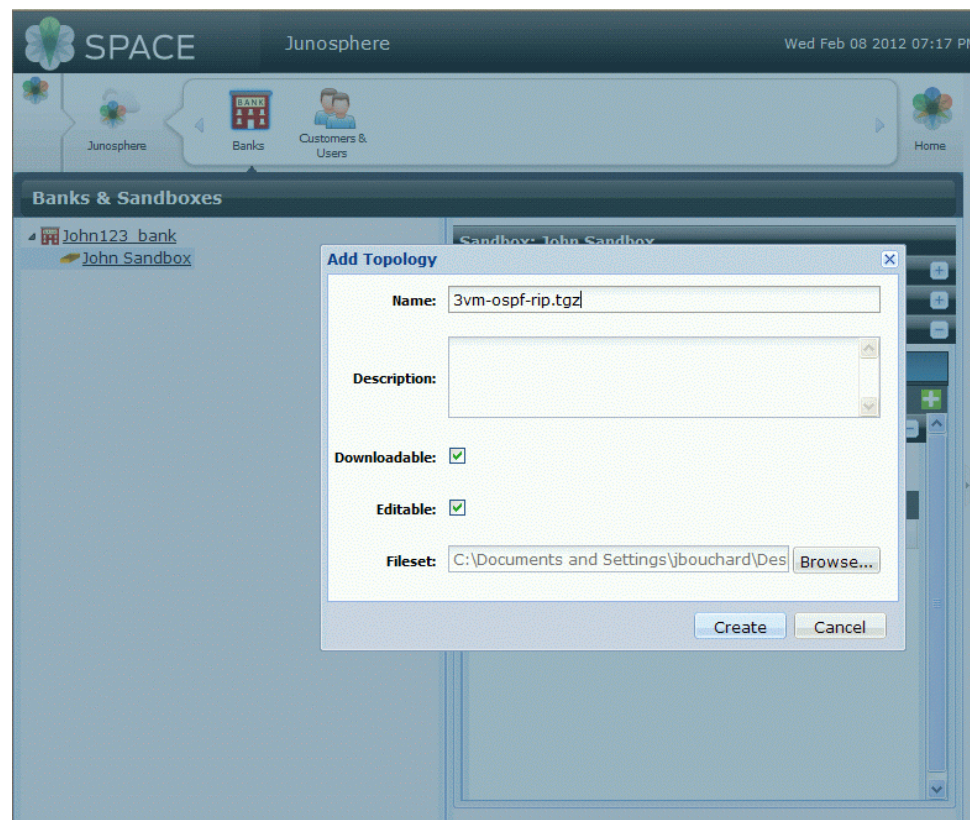
Uploading Topologies

You can upload a topology file set (a **.tgz** file) consisting of:

- A **.vmm** topology configuration file
- A Junos OS CLI **.conf** configuration file for each Junos OS virtual device (optional)

You upload a file set to a sandbox library for all users with access to that sandbox, as shown in [Figure 8 on page 29](#). Bank administrators can upload files to the bank library for all bank users to use.

Figure 8: Uploading a Topology File



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

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



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

3. Right-click a specific **Library** 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 compression file extension.

All topologies have two properties: whether you can edit or download them. Both of these properties are specified when a topology is uploaded into a library.

- **Editable**—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.
- **Downloadable**—A topology marked as downloadable can be downloaded by any user (by right-clicking on the topology and selecting Download Fileset), 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.

To delete a .tgz 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 a topology and select **Delete**.
5. Confirm your deletion.

To download a topology, see [“Saving Topologies from a Library” on page 31](#).

Related Documentation

- [Understanding Banks on page 11](#)
- [Understanding Sandboxes on page 13](#)
- [Using Libraries on page 19](#)
- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)

- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)

Creating New Topologies

In addition to using an existing topology from the library, you can create new topologies by:

- Coding a new **.vmm** file.
- Modifying an existing topology file to fit your network.
- Using third-party tools or helper applications to model your network and create a **.vmm** file.

Refer to the *Junosphere Network Topology Guide* for more information about creating or modifying a topology. Refer to the online help for information about third-party tools and applications.

Related Documentation

- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)

Saving Topologies from a Library

All topologies have two properties: they can be edited or they can be downloaded. Both of these properties are specified when a topology is uploaded into a library. The properties affect how you can save the file from a Library:

- **Editable**—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.
- **Downloadable**—A topology marked as downloadable can be downloaded by any user (by right-clicking on the topology and selecting Download Fileset) 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.

You can only save to the bank or sandbox library where the topology is running.

Table 3: Saving Topologies that Cannot Be Edited

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

Table 4: Saving Editable Topologies

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

Table 5: 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 6: 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 **.tgz** 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**

- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)
- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)
- [Connecting to a Junos Virtual Machine on page 35](#)

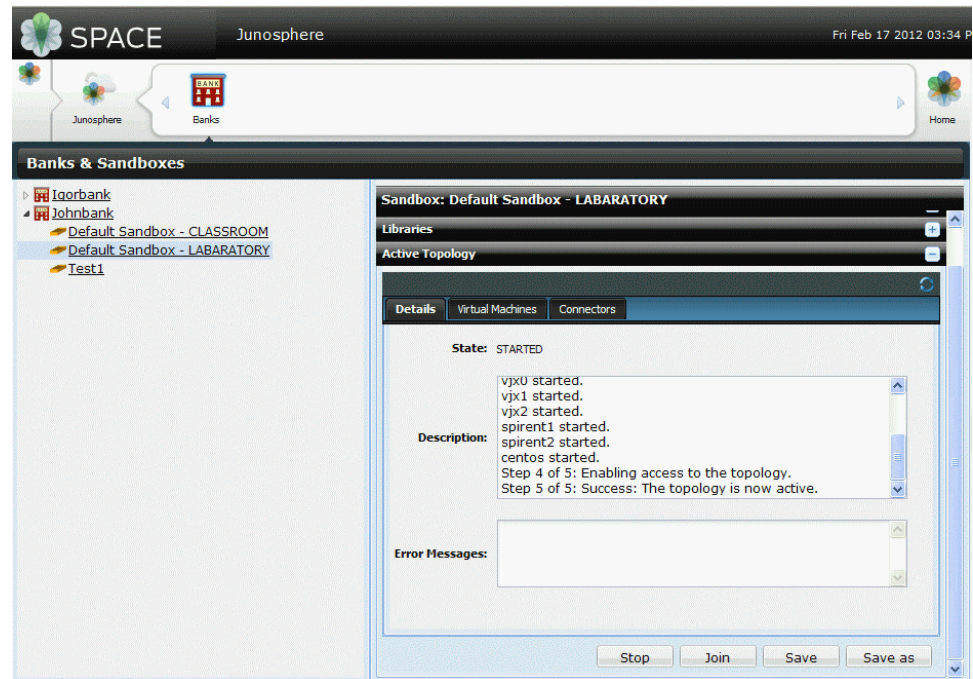
Joining an Active Topology

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 SSL VPN connection from your host to the topology you started.

To join an active topology:

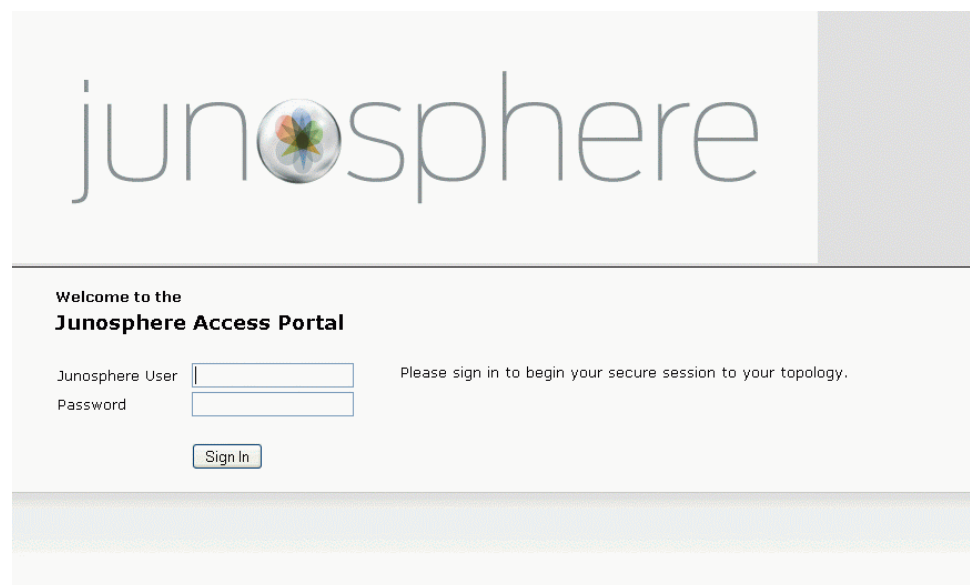
1. View the Active Topology page to see the topology you loaded, as shown in [Figure 9 on page 34](#).

Figure 9: Joining a Topology



2. Click **Join** to display the Junosphere Access Portal page, as shown in [Figure 10 on page 34](#).

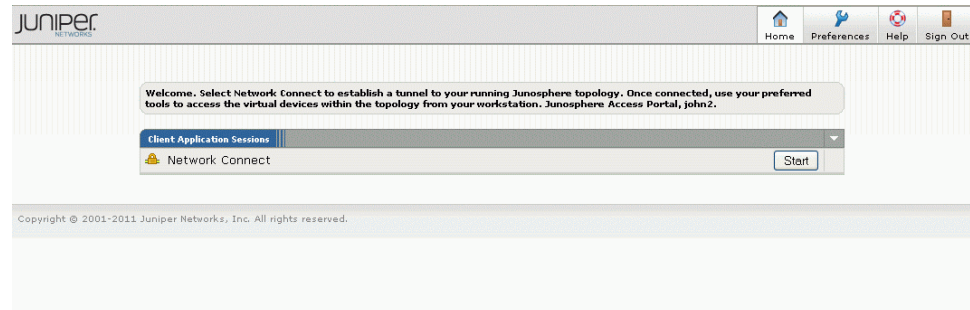
Figure 10: Junosphere Access Portal



3. 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 11 on page 35](#).

Figure 11: Network Connect



4. 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 machines 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 days. A maximum of 25 simultaneous users can join a topology via secure access.

Related Documentation

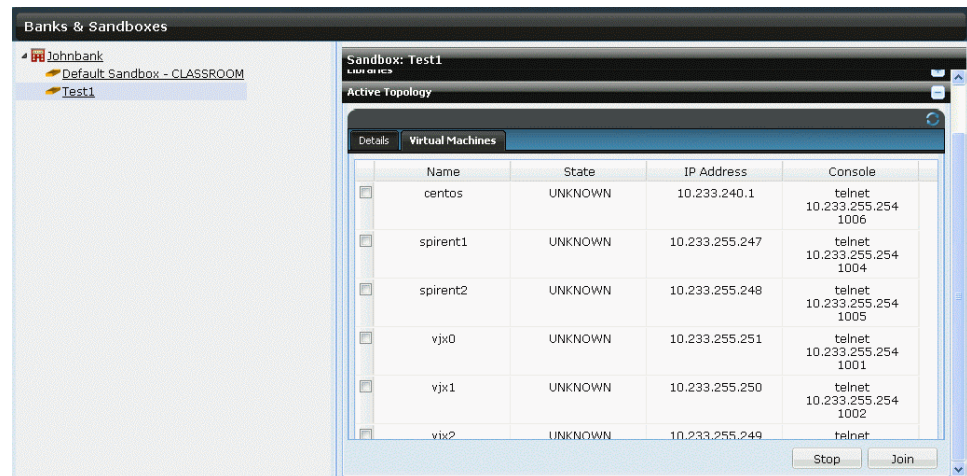
- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
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- [Connecting to a Junos Virtual Machine on page 35](#)

Connecting to a Junos OS Virtual Machine

To connect to a Junos OS virtual machine:

1. Click the Active Topology page and choose 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 12 on page 36](#).

Figure 12: Virtual Machine Connection Information



2. Either telnet to the console port or SSH to the management console of the virtual machine.
3. If you connect to a Junos OS product, you will see a CLI prompt. Log in using **root** and a password of **Clouds**.
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

- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)
- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)

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. Download the **.tgz** topology file set from the virtual machine to your local PC.
3. Untar and unzip the **.tgz** file. This results in a **topology.vmm** file and a topology file set directory with the **.conf** files in it.
4. Edit each **.conf** file, removing the **interface ge-0/0/0** configuration.
5. Save the **.conf** files.
6. Tar and zip the **topology.vmm** and topology file set directory to form a **.tgz** file.

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

Related Documentation

- [Running Topologies on page 25](#)
- [Using the Virtual Machines Tab on page 28](#)
- [Uploading Topologies on page 29](#)
- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)
- [Saving Changes to a Topology on page 37](#)
- [Signing Out and Stopping your Active Topology on page 37](#)
- [Connecting to a Junos Virtual Machine on page 35](#)
- [Using the Connector Page on page 39](#)

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 Library page to remove the topology from active memory.



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

**Related
Documentation**

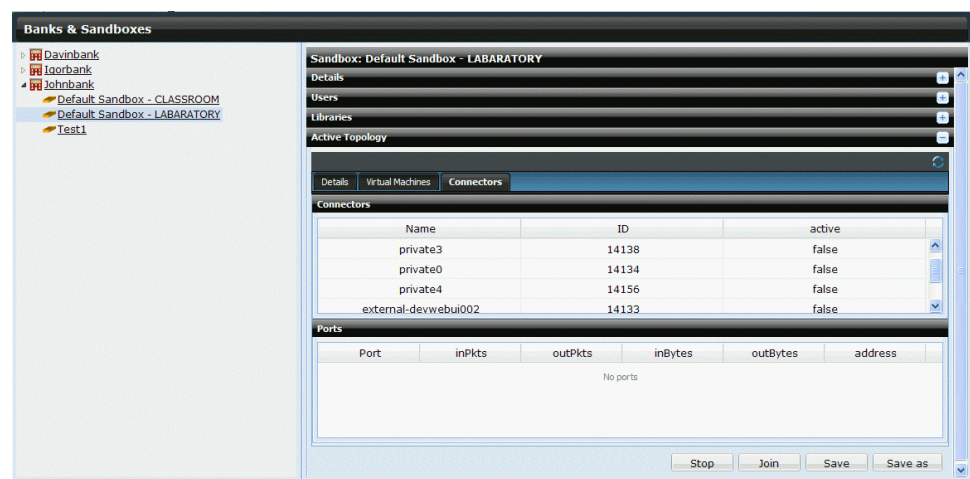
- [Running Topologies on page 25](#)
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- [Using the Connector Page on page 39](#)

Using the Connector Page

The Connectors 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), as shown in [Figure 13 on page 39](#). Select a connector to view the details in the Ports window. The page also shows virtual distributed Ethernet (VDE) information that you might need for troubleshooting.

The Connectors page is located inside the Active Topology accordion tab, inside the Connectors accordion tab.

Figure 13: Connector Page



The Ports window 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.

For more information about connectors, see the *Junosphere Connector Guide*.

Related Documentation

- [Running Topologies on page 25](#)
- [Uploading Topologies on page 29](#)
- [Creating New Topologies on page 31](#)
- [Joining an Active Topology on page 33](#)
- [Saving Topologies from a Library on page 31](#)
- [Saving Changes to a Topology on page 37](#)

- [Signing Out and Stopping your Active Topology on page 37](#)
- [Connecting to a Junos Virtual Machine on page 35](#)

Understanding Additional Information

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

- If you need to change your permission, contact your bank administrator, found by clicking the **Bank** icon **Details** tab.
- To change your password, click on the **User Preferences** icon in the upper right of the screen.
- If you need to know who has what permissions (to find a peer to start a topology file, for example), click the **Sandbox User** 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](#)
- [Running Topologies on page 25](#)
- [Using a Credit Card on page 40](#)

Ordering with a Credit Card

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.

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 based in increments of 10 virtual machines. Divide the number of virtual machines 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 machines days or 300 virtual machines days.

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

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 the 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, 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 their 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 11](#)
- [Understanding Sandboxes on page 13](#)

PART 4

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