



Connection Broker

Advanced Connection and Capacity Management For Hybrid Clouds

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Contacting Leostream

Leostream Corporation
271 Waverley Oaks Rd
Suite 206
Waltham, MA 02452
USA

<http://www.leostream.com>
Telephone: +1 781 890 2019

To submit an enhancement request, email features@leostream.com.
To request product information or inquire about our future directions, email sales@leostream.com.

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Patents

Leostream software is protected by U.S. Patent 8,417,796.

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Chapter 1: Overview

Installing the Connection Broker

The Connection Broker is packaged as an RPM file that can be installed on any virtual or physical machine running a 64-bit CentOS or Red Hat Enterprise Linux operating system, latest version 7.

The Connection Broker installation process automatically creates a user named `leo` and installs the Connection Broker in the `/home/leo` directory. By default, the `leo` user does not have an assigned password.

If you need to log in as the `leo` user, log in as `root` and assign a password to the `leo` user using the following command.

```
passwd leo
```

See the [Leostream Installation Guide](#) for complete instructions on installing the Connection Broker.

Hardware or Virtual Resource Requirements

Build your Linux machine to the specifications required by your selected operating system and apply the latest updates prior to installing the Leostream Connection Broker. In addition to the operating system requirements, the Connection Broker requires the following resources.

- 2.0 Gbytes of RAM
- At least 20 Gbytes of hard drive space
- One NIC, ideally with Internet connectivity



When installing the Connection Broker on a virtual machine, adding a second CPU does not improve Connection Broker performance. In addition, VMware requires extra resources to manage the second, unused CPU and the extra overhead may degrade the overall performance of the Connection Broker on that platform. To improve Connection Broker performance, build a Connection Broker cluster.

The Connection Broker uses the operating system libraries, such as OpenSSL, whenever possible, with one exception. The Connection Broker application installs and uses Apache Web Server version 2.4.38.

The Connection Broker Internal Database

The Connection Broker application includes a PostgreSQL database, which is adequate for proof-of-concept deployments. The internal database is running PostgreSQL version 9.5.5 and is not accessible from outside of the Connection Broker.

In production, Leostream recommends switching to an external Microsoft SQL Server or PostgreSQL

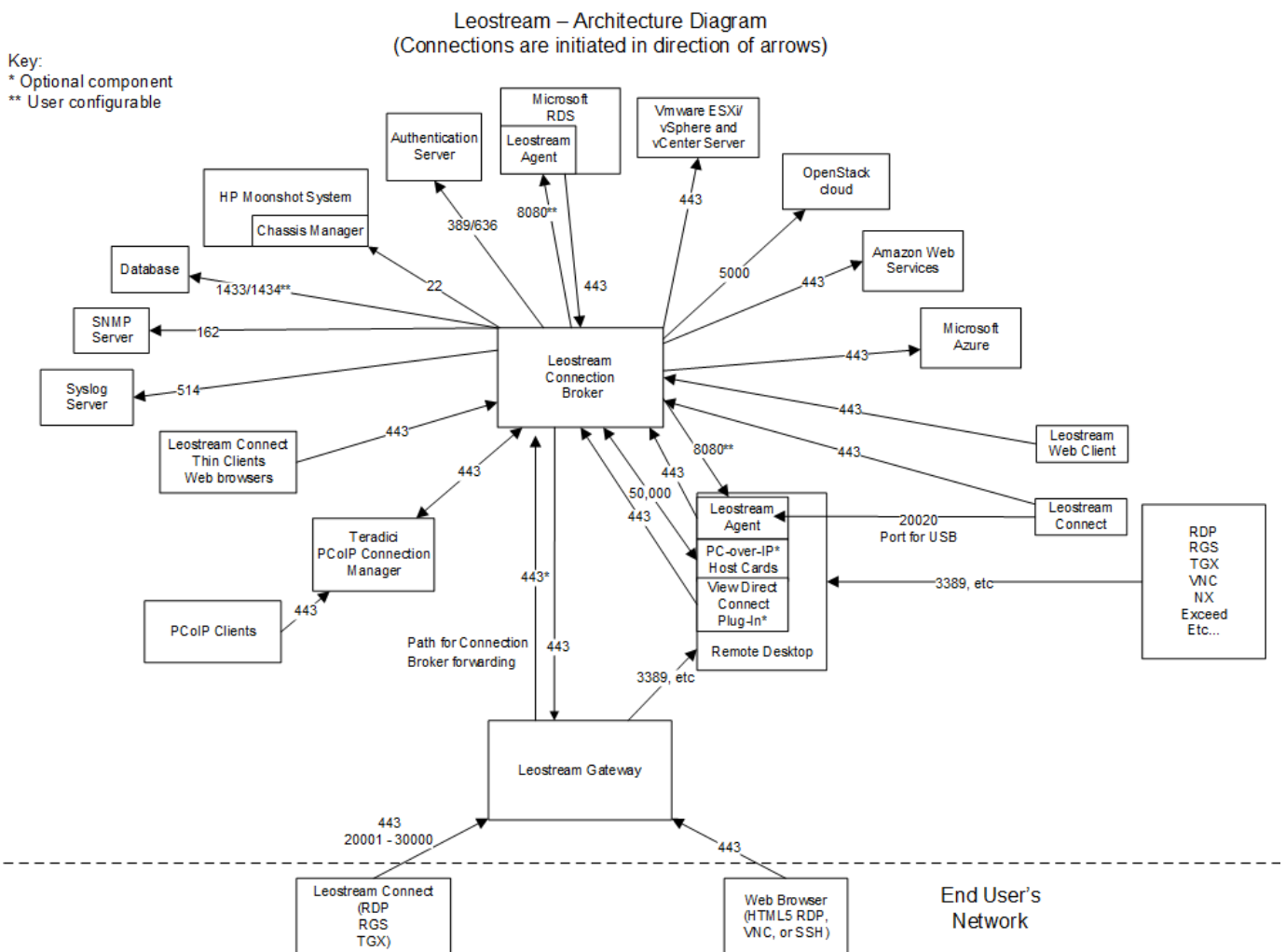
database and creating a Connection Broker cluster for high availability. Leostream supports PostgreSQL version 9.1, or higher, and Microsoft SQL Server 2012, 2014, or 2016 when connecting to an external database.

Connections to External Systems

The Connection Broker communicates with a number of external systems, such as:

- Authentication servers, such as Microsoft Active Directory servers
- Virtualization and cloud platforms, such as those provided by VMware or AWS
- Databases

The following figure provides a schematic of the ports the Connection Broker uses to communicate with various systems.



Chapter 2: Using the Administration Menu

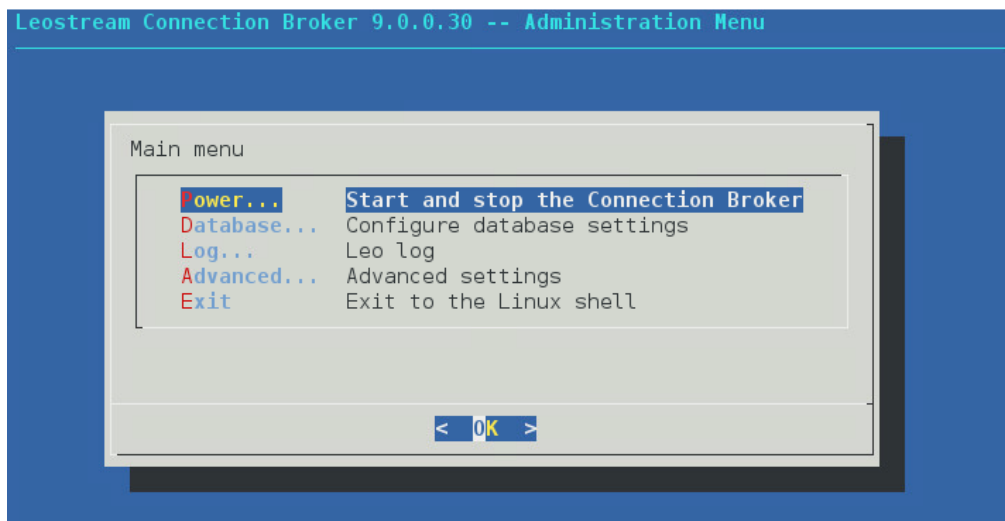
The Connection Broker Administration Menu provides options for configuring your Connection Broker application within the Linux operating system. All setup related to managing your hosted desktop environment is performed in the Connection Broker Administrator Web interface.

Opening the Administration Menu

To access the Connection Broker Administrator Menu, log into the machine running your Connection Broker as the `root` user and issue the following command.

```
su - leo
```

The **Administration Menu**, shown in the following figure, opens.



Main Menu Options

The following table describes the options available in the **Main menu**.

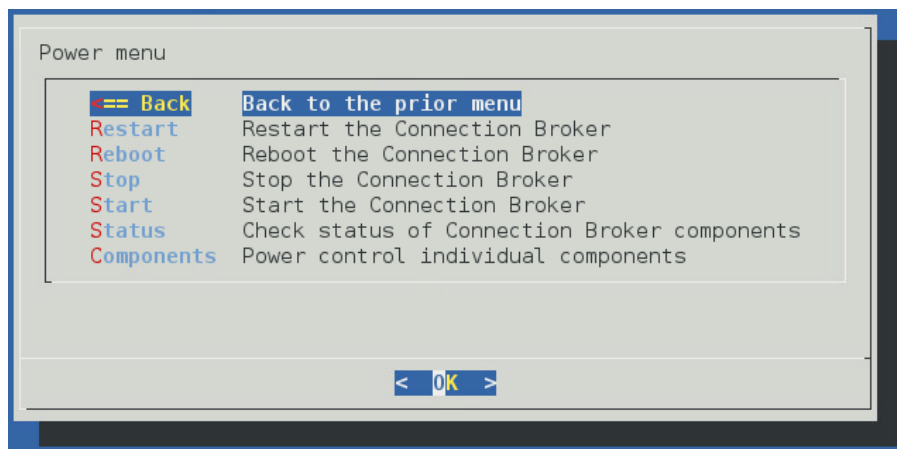
Menu Name	Description	Purpose
Power	Start and stop the Connection Broker	Opens the Power menu , which contains options for starting, stopping, or restarting the Connection Broker as a whole, or individual components
Database	Configure database settings	Opens the Database menu , which contains options for purging the internal database
Log	Leo log	Opens the Log menu , which contains options for viewing or clearing various Connection Broker logs.
Advanced	Advanced settings	Opens the Advanced settings menu, which contains options for enabling and disabling SSH and debug mode.
Exit	Exit to the Linux shell	Returns to the Linux shell



In all sub-menus, the **<== Back** option returns you to the parent menu.

Power Options

Selecting **Power** from the **Main menu** opens the **Power menu**, shown in the following figure.



The following table describes the options available in the **Power menu**.

Menu Name	Description	Purpose
Restart	Restart the Connection Broker application	Restarts the Connection Broker application and all its components. When selected, a sub-menu prompts you to confirm or cancel the restart.
Reboot	Reboot the Connection Broker virtual machine	Power cycles the entire Connection Broker virtual machine.
Stop	Stop the Connection Broker	Stops the Connection Broker. When selected, a sub-menu prompts you to confirm or cancel the stop.
Start	Start the Connection Broker	Starts the Connection Broker. When selected, a sub-menu prompts you to confirm or cancel the start.
Status	Check status of Connection Broker components	Displays information about the status of the various Connection Broker components, including the network, internal database, redis, web server, and work queue.
Components	Power control individual components	Start, stop, or restart individual components of the Connection Broker. Opens the Component power menu for selecting which components to control. See the following table for a description of available components.

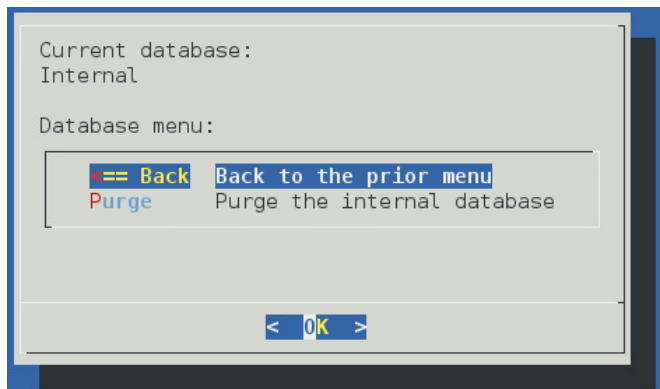
The following table lists the different components that can be restarted.

Component Name	Description
Httpd	Web server
Db	Internal database server
Queue	Work queue

Selecting any of these components opens a submenu with options to **Restart**, **Stop**, or **Start** the component.

Database Options

Selecting **Database** from the **Main menu** opens the **Database menu**, shown in the following figure.

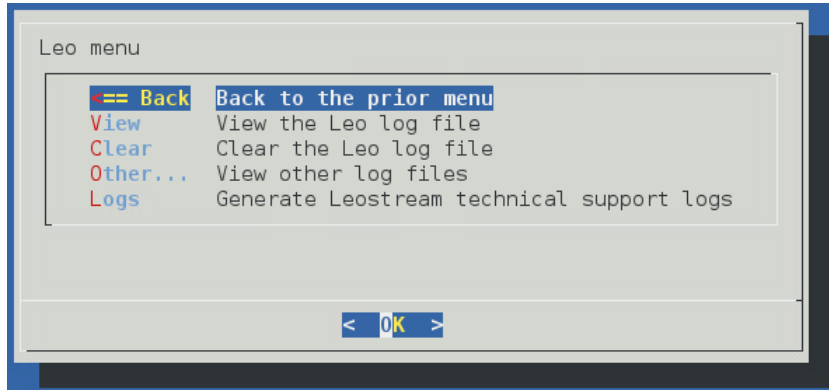


The following table describes the options available in the **Database menu**.

Menu Name	Description	Purpose
Purge	Purge the internal database	Clears all data from the internal database. This option does not apply if your Connection Broker is attached to an external PostgreSQL or Microsoft SQL Server 2012 or 2014 database. A sub-menu prompts you to confirm or cancel the purge.
Switch	Switch to internal database	Switches the Connection Broker from storing information in an external database to storing in an internal database. This option does not appear if your Connection Broker is already pointing to an internal database. A sub-menu prompts you to confirm or cancel the switch.

Log Options

Selecting **Log** from the **Main menu** opens the **Leo menu**, shown in the following figure.

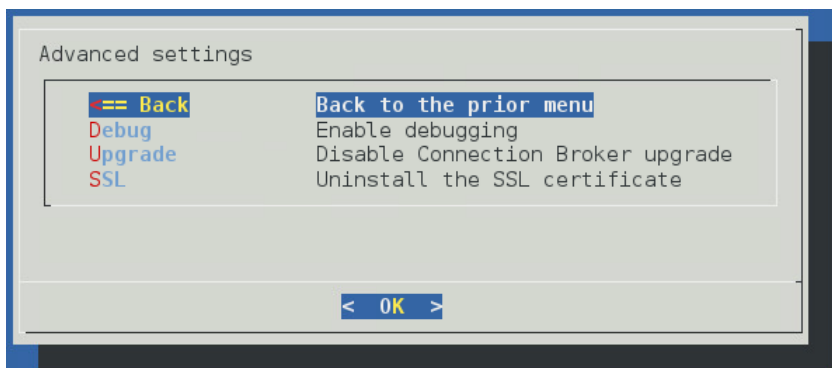


The following table describes the options available in the **Log menu**.

Menu Name	Description	Purpose
View	View the Leo log file	Displays the Leo log file in the console window. Press the space bar to scroll through the log. Press <Enter> to close the Leo log file and return to the Log menu.
Clear	Clear the Leo log file	Erases all entries in the Leo log file. When selected, a sub-menu prompts you to confirm or cancel the operation.
Other	View other log files	Opens a sub-menu listing other available logs. Select a log from the list to open that log file in the console. Press the space bar to scroll through the log. Press <Enter> to close the Leo log file and return to the Log menu.
Logs	Generate Leostream technical support logs	Packages the Connection Broker logs into a ZIP-file that can be sent to Leostream Technical Support. To obtain the ZIP-file, SSH into your Connection Broker (using a tool such as WinSCP) and navigate to the <code>/home/leo</code> directory.

Advanced Settings

Selecting **Advanced** from the **Main menu** opens the **Advanced settings**, shown in the following figure.




The following table describes the options available in the **Advanced settings menu**.

Menu Name	Description	Purpose
Debug	Enable debugging Disable debugging	Enables or disables debug-mode for your Connection Broker. Debug mode stores additional logs sometimes required by Leostream support.
Upgrade	Disable Connection Broker upgrade Enable Connection Broker upgrade	Toggles the availability of the Check for updates option on the > System > Maintenance page. Disable Connection Broker upgrades after moving your Connection Broker into production.
SSL	Uninstall the SSL certificate	Removes the SSL certificate from your Connection Broker, and restarts the Web service. Note: Selecting this option immediately removes the certificate without prompting for confirmation. This option appears only after you install an SSL certificate into your Connection Broker.

Chapter 3: Updating the Connection Broker

Leostream periodically provides updates for the Connection Broker application.

 Before updating your production environment, test the new Connection Broker version in a proof-of-concept environment.

Apply updates using the Connection Broker Administrator Web interface. Follow your standard update procedures to install security or upgrade patches for the underlying operating system.


Procedural Guidelines

Use the following guidelines when preparing for a Connection Broker update.

1. Determine a maintenance window when user activity will be low to update your Connection Brokers.
2. If you are running your Connection Broker on a virtual machine, use the tools provided in your virtualization platform to snap shot all Connection Brokers in the cluster.

After you prove out your updated environment, you can delete any Connection Broker snapshots to minimize the disk footprint.

3. If you are using an external database, use your standard database backup mechanisms to backup the SQL Server database used by your Connection Broker cluster.
4. If replication is turned on for the SQL Server database, turn database replication off. If you are using a mirrored database, you do not need to disable database mirroring.

 Do not proceed with the upgrade if replication is turned on for the Connection Broker database.

5. Update one of your Connection Brokers as described in the following section.

The update process modifies the database schema to support the new Connection Broker version.

6. After the update of the first Connection Broker completes, log into that Connection Broker's Administrator Web interface and perform a spot check to ensure that the updated broker is functioning properly
7. If you have additional Connection Brokers, follow the update procedure for the remaining Connection Brokers in your cluster.

8. After all Connection Brokers are updated, go to the > **System** > **Job Queue** page. Ensure that all Pending jobs are associated with site IDs assigned to one of the Connection Brokers currently in the cluster.

If any Pending job is assigned to a site ID that is not associated with a Connection Broker currently in the cluster, use the **Settings** link on the > **System** > **Job Queue** page to delete all work queue jobs associated with that Site ID. The Connection Broker reassigns all Pending jobs to new site IDs.

Updating the Connection Broker

Online Connection Broker updates are delivered from the Leostream repository. If your Connection Broker does not have internet access, please contact support@leostream.com to obtain a file that can be used to perform an offline upgrade.

You can check for and apply available Connection Broker updates, as follows.

1. Log into the Connection Broker Administrator Web interface with a user whose Leostream role gives them access to the update options on the > **System** > **Maintenance** page.
2. On the > **System** > **Maintenance** page, select the **Check for updates** option.

If the update options are disabled or not shown, your Leostream support license has expired and you are no longer eligible for Connection Broker updates. Contact sales@leostream.com to renew your Leostream support license.

3. Click **Next**.
4. If the next page indicates that an update is available, click the link to return to the > **System** > **Maintenance** page.
5. Select the **Install Connection Broker update** option.
6. Click **Next**.
7. Click the **Install** button to finish the update.

Chapter 4: Creating Production Deployments

To ensure a production-class deployment of your overall hosted desktop environment, create systems that ensure the redundancy, resiliency, and scalability of your deployment, including:

- Create a Connection Broker cluster that contains sufficient Connection Brokers to handle user logins in the event that a server hosting one of the Connection Broker fails. For added resiliency, when building the Connection Broker cluster, ensure that you place individual Connection Brokers on different servers.
- Establish a schedule for backing up your Connection Broker database. Implement your site standard database backup procedure, to ensure that your data is protected.
- Create weekly snapshots of each Connection Broker virtual machine. By backing up the entire Connection Broker virtual machine, you do not need a separate backup procedure for the underlying Connection Broker operating system.
- Create monthly clones of each Connection Broker virtual machine. Leostream recommends storing these backups in an off-site location. Test your restore process to ensure that the media can be read, and that procedures are correctly documented.
- Use DNS to configure your Connection Broker IP addresses. Your DNS will round-robin between Connection Brokers during normal operation.
- Never perform a Connection Broker upgrade, or an upgrade of the operating system, without first taking a snapshot of your existing Connection Broker virtual machine. Also, test upgrades in an isolated deployment, before rolling out to your production environment.