



# **Connection Broker**

**Where Virtual Desktops Meet Real Business**

## **Connection Broker Virtual Appliance Administrator's Guide**

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## Chapter 1: Overview

### What is a Virtual Appliance?

A virtual appliance is a virtual machine image that contains both the application, and the underlying operating system. A virtual appliance is not a virtual machine, but a software stack that runs within a virtual machine to comprise a complete application.

You can think of a virtual appliance like you would a physical appliance, such as an SSL VPN. To install a typical physical appliance, you plug in the box and configure the application. Similarly, for a virtual appliance, you *plug* it into your virtualization layer and configure the application using, typically, a Web interface. With a virtual appliance, you do not need to manage, patch, or upgrade the underlying operating system.

The Leostream™ Connection Broker is a virtual appliance that runs inside a virtual machine powered by a VMware®, Citrix®, or Microsoft® virtualization layer. The Connection Broker virtual appliance consists of the following components:

- CentOS Linux® 5.3
- Apache 1.3.41 Web Server
- OpenSSL version 0.9.8k

### Why Use a Virtual Appliance?

A virtual appliance simplifies and economizes the installation and maintenance of an application. A typical software installation requires you to assemble the compatible hardware and supporting software (such as operating system, etc.) necessary for the software to run. A virtual appliance, however, contains all the pieces necessary to run the virtual machine and application, eliminating the procurement and licensing costs associated with typical software installations.

In addition, by running in a virtual machine, the virtual appliance is easily backed up and replicated using standard techniques provided by the virtualization layer.

The Leostream Connection Broker virtual appliance provides the following benefits.

- Easy installation – simply import the virtual appliance
- Streamlined implementation – the virtual appliance contains the essentials necessary for Leostream, without adding the bulk of other components
- Simplified updates – no need to monitor and patch components; simply update the appliance
- No additional license requirements – the Connection Broker runs on a Linux operating system

### Virtual Resource Requirements

The Connection Broker requires virtual resources equivalent to the following hardware:

- 1500 MHz or faster Intel® Pentium® IV processor (or equivalent)
- 1.0 Gbytes memory
- 8 Gbytes of hard drive space
- Bridged Ethernet adapter, ideally with Internet connectivity

## Installation

The Connection Broker runs as a virtual appliance within the following virtualization platforms:

- VMware Server version 2.0.x
- VMware Workstation 6.5.2 and higher
- VMware ESX and ESXi 3.5
- VMware vSphere 4
- Citrix XenServer™ 5.x
- Microsoft Hyper-V™ Server 2008
- Microsoft Windows Server® 2008 R2 Hyper-V

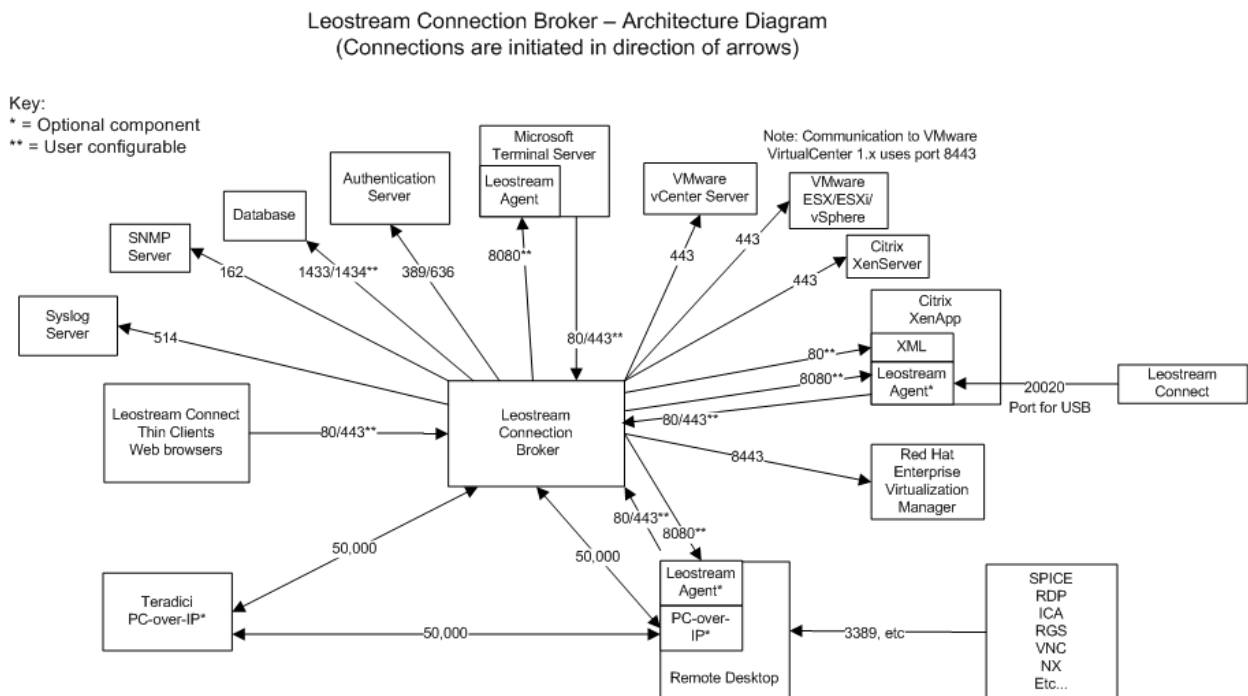
See the [Installation Guide](#) for complete instructions on downloading and installing the Connection Broker.

## 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 layers, such as those provided by VMware, Citrix, and Microsoft
- Databases
- and more...

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



## The Connection Broker Welcome Page

After you install and start your Connection Broker virtual appliance, the Connection Broker displays the **Welcome Page** in the virtual appliance console, as shown in the following figure.

```
Welcome to Leostream version 6.3.38.0

To configure Leostream remotely, please open a
Web browser and point it to the following URL:

    http://10.110.37.30/

For support please go to:

    http://www.leostream.com/support/

To login please type:

    Ctrl+C
```

The **Welcome page** displays the IP address to use when accessing the Connection Broker Administrator Web interface. Enter this URL into your Web browser to configure your Connection Broker. If the console cannot obtain an IP address from DHCP, you can manually configure the network using the Administration Menu (see [Network Options](#)).



When using your Connection Broker in a production environment, Leostream recommends using a static IP address.

## Chapter 2: Using the Administration Menu

The Connection Broker Administration Menu provides various options for configuring your Connection Broker virtual appliance. This chapter describes the Administration Menu found in Connection Broker version 7.0. Previous versions of the Connection Broker Administration Menu contain similar features, but the menu labels may vary.

### Opening the Administration Menu

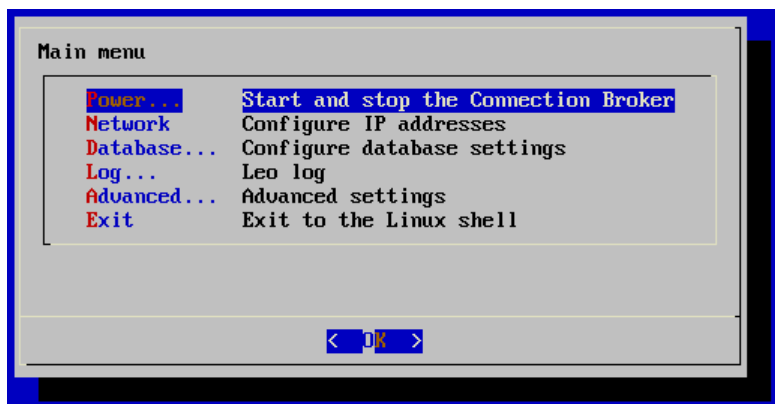
To access the Administration Menu from the **Welcome page** in the virtual machine console:

1. Type Ctrl-C to go to the Leostream administrator login page, shown in the following figure.

```
Leostream Connection Broker
Linux kernel 2.6.18-8.1.8.el5 on an i686
Log in as user 'leo' with password 'leo'

leostream login: _
```

2. Enter the username and password for the administrator account. The default username is **leo**, and password is **leo**. The **Main menu** of the Leostream Administration Menu, shown in the following figure, opens.



 If you are running the Connection Broker in a VMware virtualization layer, do not use Alt-F2 or Alt-F1 to switch between console screens.

### Returning to the Connection Broker Welcome Page

To return to the Connection Broke **Welcome page**, first ensure that you are currently at the **Main menu** level of the Administration Menu.

1. In the **Main menu**, select **Exit**
2. Hit **<Enter>**. The Linux shell opens.
3. In the Linux shell, type `exit` at the prompt
4. Hit **<Enter>**. The Leostream **Welcome page** opens.



## Connection Broker Virtual Appliance Guide

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

Menu Name	Description	Purpose
<b>Restart</b>	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.
<b>Reboot</b>	Reboot the Connection Broker virtual appliance	Power cycles the entire Connection Broker virtual appliance.
<b>Stop</b>	Stop the Connection Broker	Stops the Connection Broker. When selected, a sub-menu prompts you to confirm or cancel the stop.
<b>Start</b>	Start the Connection Broker	Starts the Connection Broker. When selected, a sub-menu prompts you to confirm or cancel the start.
<b>Components</b>	Power control individual components	Start, stop, or restart individual components of the Connection Broker. Opens the <b>Component power menu</b> for selecting which components to control. See the following table for a description of available components.

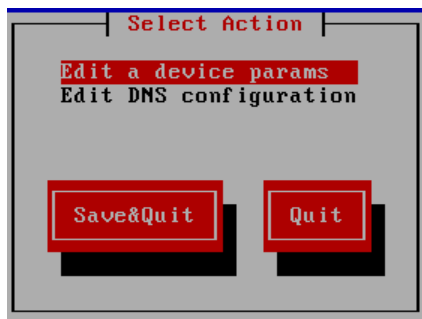
The following table lists the different components that can be restarted.

Component Name	Description
<b>Httpd</b>	Web server
<b>Db</b>	Internal database server
<b>Queue</b>	Work queue
<b>Vcenter</b>	VirtualCenter agent, for Connection Brokers installed in a VMware environment
<b>Network</b>	Network

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

## Network Options

Selecting **Network** from the **Main menu** opens the following menu.



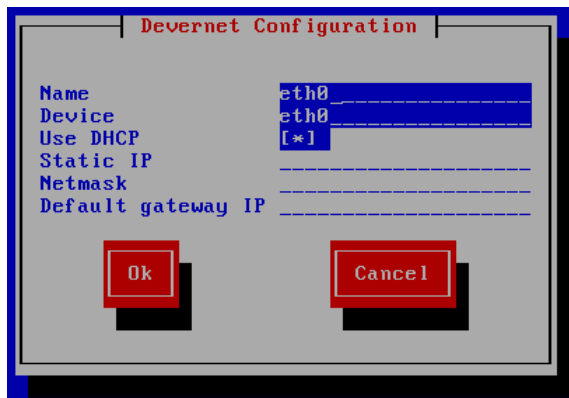
## Setting the Connection Broker IP Address

To configure the Connection Broker IP address:

1. Select **Edit a device params** from the **Network** menu and hit **<Enter>**. The **Select a Device** menu, shown in the following figure, opens.



2. Select the appropriate network adaptor and hit **<Enter>**. The **Devernet Configuration** menu, shown in the following figure opens.



3. Scroll down to the **Use DHCP** option and hit the spacebar to deselect this option.
4. Enter in the network information for your Connection Broker in the **Static IP**, **Netmask**, and **Default gateway IP** edit fields.

If you have multiple network adaptors and enter a gateway on more than one network, the Connection Broker uses the gateway associated with the second (*eth1*) network.

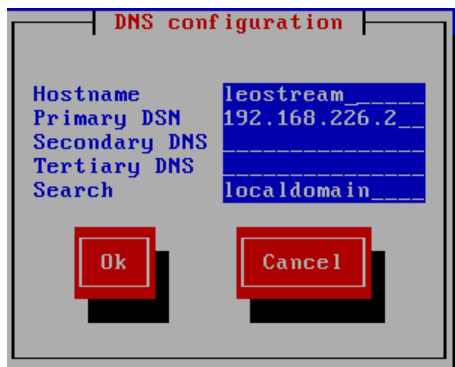
5. Select **Ok** to accept the changes and return to the **Select a Device** menu.
6. Select **Save** to return to the **Select Action** menu.
7. Select **Save&Quit**.

When prompted to restart the Connection Broker, select **OK**. This prompt is only a reminder to restart your Connection Broker; you must manually restart your Connection Broker (see [Power Options](#)).

## Specifying Your DNS

To enter information about your DNS:

1. Select **Edit DNS configuration** from the **Network** menu and hit **<Enter>**. The **DNS configuration** menu, shown in the following figure, opens.

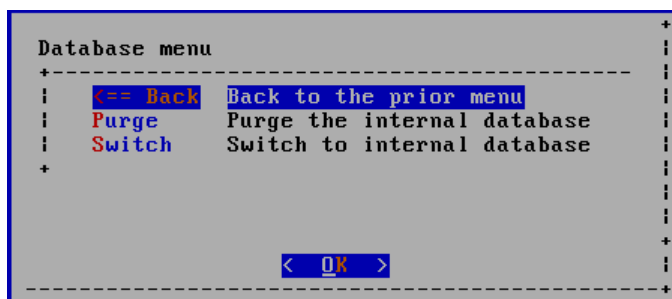


2. Enter your domain name in the **Hostname** edit field.
3. Enter the IP address of your primary DNS in the **Primary DNS** field.
4. If applicable, enter the IP addresses of your secondary and tertiary DNS in the **Secondary DNS** and **Tertiary DNS** edit fields, respectively.
5. Enter the DNS search path in the **Search** edit field.
6. Select **Ok** to accept the changes and return to the **Select a Device** menu.
7. Select **Save** to return to the **Select Action** menu.
8. Select **Save&Quit**.

When prompted to restart the Connection Broker, select **OK**. This is only a reminder to restart your Connection Broker. You must manually restart your Connection Broker (see [Power Options](#)).

## Database Options

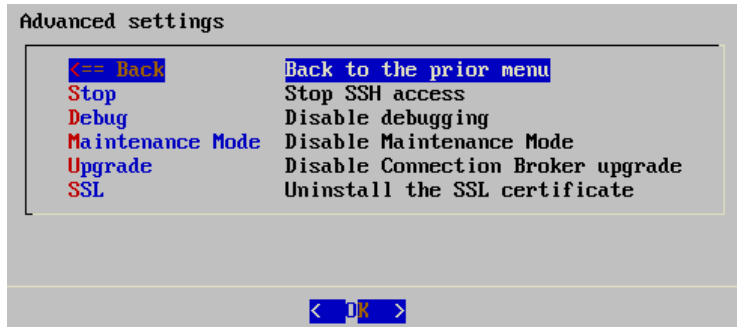
Selecting **Database** from the **Main** menu opens the **Database** menu, shown in the following figure.





## 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
<b>Start</b> <b>Stop</b>	Start SSH access Stop SSH access	Starts or stops SSH access to your Connection Broker. When selected, a sub-menu prompts you to confirm or cancel the operation.
<b>Debug</b>	Enable debugging Disable debugging	Enables or disables debug-mode for your Connection Broker. Debug mode stores additional logs sometimes required by Leostream support.
<b>Maintenance Mode</b>	Disable maintenance mode Enable maintenance mode	Enables or disables maintenance mode, which is used when upgrading Connection Brokers in a cluster. Please, contact support@leostream.com for instructions on using this option.
<b>Upgrade</b>	Disable Connection Broker upgrade Enable Connection Broker upgrade	Toggles the availability of the <b>Check for updates</b> option on the <b>&gt; System &gt; Maintenance</b> page. Disable Connection Broker upgrades after moving your Connection Broker into production.
<b>SSL</b>	Uninstall the SSL certificate	Removes the SSL certificate from your Connection Broker, and restarts the Web service. <b>Note:</b> 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: Using Shell Accounts

The Connection Broker provides two default shell accounts, which you can use to execute commands in the Connection Broker console.

### Accessing the Linux Shell

1. Type Ctrl-C to go to the Leostream administrator login page, shown in the following figure.

```
Leostream Connection Broker
Linux kernel 2.6.18-8.1.8.el5 on an i686
Log in as user 'leo' with password 'leo'

leostream login: _
```

2. Enter the username and password for the administrator account. The default username is **leo**, and password is **leo**. The **Main menu** of the Leostream Administration Menu opens.
3. Select **Exit**, as shown in the following figure.

```
Main menu
-----
Power...   Start and stop the Connection Broker
Network... Configure IP addresses
Database... Configure database settings
Log...     Leo log
Advanced... Advanced settings
Exit...    Exit to the Linux shell
-----
< OK >
```

4. Press <Enter> and you will exit to the Linux shell.

Alternatively, in step 2, enter the credentials for the root account, described in the following section. The root account logs directly into the Linux shell, bypassing the Leostream Administration Menu.

### Connection Broker Virtual Appliance Accounts

The Connection Broker virtual appliance has two default accounts: an administrator account and the root account. By default, the Connection Broker assigns the following user names and passwords to these accounts.

- administrator
  - User name: leo
  - Password: leo
- root
  - User name: root
  - Password: leostream

Leostream recommends that you change the passwords for these two accounts, as soon as you begin working with your Connection Broker.

To change the administrator account:

1. From the Connection Broker virtual machine console, press Ctrl-C.

2. Enter the username `leo` and password `leo`. The Leostream Connection Broker **Administration Menu** opens.
3. From the **Main menu**, select **Exit** to go to the Linux shell.
4. Use the `passwd` command to change the password.

To change the root account:

1. From the Connection Broker virtual machine console, press Ctrl-C.
2. Enter the username `root` and password `leostream`. Alternatively, use the `su root` command, if you are already logged into the Linux shell with the administrator account.
3. At the `#` prompt, use the `passwd` command to change the password.

## Resetting Passwords for Local Users and Administrators

A *local user* is any user that is defined in the Connection Broker instead of being imported from an authentication server such as Microsoft Active Directory. You can use the Linux shell to reset the password of any local Connection Broker user, including the default Connection Broker Web interface administrator.

See the section “The Local Connection Broker Administrator” in the [Connection Broker Security Review](#) document for complete instructions. The [Connection Broker Security Review](#) document can be downloaded from the Leostream [Downloads & Documentation](#) page.

# Chapter 4: Moving, Cloning, and Updating the Virtual Appliance

Because the Connection Broker is a virtual appliance, you move, clone, and update the appliance, as a whole. You never need to update components inside the appliance, or copy parts of the file system.

## Moving the Connection Broker Virtual Appliance

Because the Connection Broker is a self-contained virtual appliance, you can move the Connection Broker anywhere in the hierarchy of your virtual machine inventory. Use the standard methods provided by your virtualization platform's management tools to move the Connection Broker to the desired location.

You can use any of the standard features, such as vMotion or XenMotion, provided by your virtualization platform to move the Connection Broker between hypervisors.

## Cloning the Connection Broker Virtual Appliance

Because Leostream does not license by the server, you can build as many Connection Broker virtual appliance as you need to support your environment. As your Leostream deployment grows, you may find that cloning the Connection Broker is faster than installing a new virtual appliance. Cloning is also useful for creating back-ups and templates for your Connection Brokers.

## Cloning Standalone Connection Brokers with an Internal Database

Consider the following practices when creating standalone Connection Broker clones

- **Licensing:** The Leostream Connection Broker is licensed by active named users, and each standalone Connection Broker is assumed to manage a unique set of active named users.
  - If you are cloning the Connection Broker to use as a backup, the clone can retain the original license file.
  - However, if you are cloning the Connection Broker for a new deployment, you must enter a new license key into the cloned appliance.
- **Configuration Data:** Standalone Connection Brokers store all configuration information and data internally. Therefore, if you are creating a clone to use as a backup, any configuration or data changes made in the original Connection Broker are not reflected in the clone.
- **Networking:** Your virtualization platform automatically assigns a unique MAC address to a Connection Broker clone. However, you must manually manage the IP address. You should never run multiple Connection Brokers with the same static IP address.
  - *Best practice:* Switch the Connection Broker to using DHCP before cloning the appliance.
  - If you clone a Connection Broker with a static IP address, ensure that only one of the Connection Brokers is powered up at any given time. Change the IP address of the powered on Connection Broker before powering up the clone.



If two running Connection Brokers use the same IP address, changing the network settings of one Connection Broker causes you to lose network connectivity to the other Connection Broker. In addition, the modified network settings on the original Connection Broker are typically not retained after you reboot the Connection Broker.

To resolve this problem:

- 1) Turn off the Connection Broker that should be using this IP address
- 2) Change the IP address of the running Connection Broker
- 3) Power on the original Connection Broker.

### Cloning Clustered Connection Brokers with a Microsoft SQL Server Databases

Your virtualization platform automatically assigns a unique MAC address to a Connection Broker clone. When cloning a new Connection Broker to add to a cluster, you must manually track and configure Connection Broker properties such as the license key, IP address, and Site ID. In particular, consider the following practices when creating Connection Broker clones to add to clusters.

- **Licensing:** The Leostream Connection Broker is licensed by active named users. Because all Connection Brokers in a cluster manage the same set of users, they can all use the same license key. Therefore, you do not need to enter a new license into the cloned Connection Broker.
- **Networking:** Although the Connection Broker does not prevent it, you should never run multiple Connection Brokers with the same static IP address.
  - *Best practice:* Switch the Network Configuration of the Connection Broker you are going to clone to DHCP. After creating the clone, switch the original Connection Broker back to its original IP address and provide a static IP address for the new Connection Broker.
  - If you clone a Connection Broker with a static IP address, ensure that the Connection Broker already assigned that IP address is powered off before creating a clone. As soon as the clone is created and powered on, give it a new static IP address. Then, power on the original Connection Broker.
  - If you have multiple Connection Brokers with the same static IP address, changing the IP address of one of the Connection Broker typically causes you to lose network connectivity to the original Connection Broker. In this case, you cannot access the Administrator Web interface. If you encounter this problem:
    - 1) Turn off the Connection Broker that should be using this IP address
    - 2) Change the IP address of the running Connection Broker
    - 3) Power on the original Connection Broker.
- **Database Connectivity:** All Connection Brokers in a cluster share the same Microsoft SQL Server database. Each Connection Broker in the cluster is uniquely identified by its *site ID*.
  - *Best practice:* Remove the Connection Broker you are going to clone from the cluster, before creating a clone. After you create the clone, you can reattach the original Connection Broker to the database using its previous site ID. Attach the cloned Connection Broker to the database using a new site ID.
  - If you do clone a Connection Broker that is attached to a SQL Server database, the cloned Connection Broker has a duplicate site ID. If you power on both of these Connection Brokers, only one appears in the > **System** > **Cluster Management** page because the cluster allows only a single Connection Broker per unique site ID. If you encounter this problem:
    - 1) Power off the Connection Broker that should be using the duplicated site ID.
    - 2) Go to the > **System** > **Maintenance** page for the running Connection Broker.
    - 3) Use the **Switch to another database** option to change the site ID for this Connection Broker
    - 4) Power on the original Connection Broker.

You should now see both Connection Brokers in the > **System** > **Cluster Management** page.

### Updating the Connection Broker Virtual Appliance

Leostream periodically provides update files that contain all the required updates for the Connection Broker virtual appliance. Applying updates is conceptually similar to updating the firmware in a hardware appliance. You never need to worry about separately updating the underlying operating system or any other components of appliances. All updates are included in the single file.

You can easily apply the update file using the Connection Broker Administrator Web interface.



Leostream recommends taking a snapshot of your Connection Broker virtual machine prior to installing an update. Also, qualify the Connection Broker update in a pre-production environment before you roll the new version into production.

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

### Updating Connection Brokers in a Cluster

If you have several Connection Brokers clustered around a common Microsoft SQL Server 2005 or 2008 database, you must individually update all Connection Brokers in the cluster.



Performing the steps in the following procedure out-of-order may result in Connection Broker being placed in maintenance mode. Once in maintenance mode, you cannot access the Administrator Web interface of certain versions of the Connection Broker.

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

To update a cluster of Connection Brokers:

1. Determine a maintenance window when user activity will be low to update your Connection Brokers.
2. Use the tools provided in your virtualization platform to snap shot all Connection Brokers in the cluster.
3. Use your standard database backup mechanisms to backup the SQL Server database used by your Connection Broker cluster.
4. Go to the **Edit Center** page for each of the centers defined on the **> Resources > Centers** page. Change the **Refresh interval** to **Manual**.
5. After setting all the refresh intervals to manual, go to the **> System > Job Queue** page and ensure that there are no running center scan jobs. Possible center scan jobs include `poll`, `poll_power_state`, `scan`, and `hda_status`. If any of these jobs are running, wait for these jobs to finish before proceeding with step 6.
6. If replication is turned on for the SQL Server database, turn database replication off.



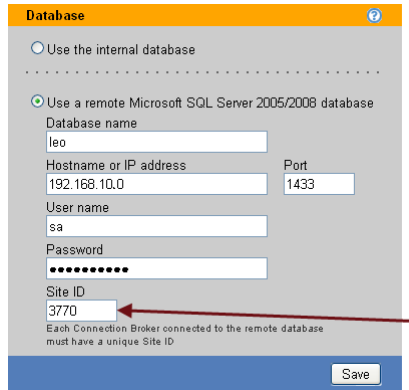
Do not proceed with the upgrade if replication is turned on for the Connection Broker database.


7. Switch all but one Connection Broker back to using an internal database, as follows.
  - a. Go to the **> System > Maintenance** page.
  - b. Select the **Switch to another database** option.
  - c. Click **Next**. The following **Database** form opens.

The screenshot shows a web form titled "Database" with a help icon. It contains two radio button options. The first option, "Use the internal database", is selected. The second option, "Use a remote Microsoft SQL Server 2005/2008 database", is unselected. Below the second option are several input fields: "Database name" with the value "leo", "Hostname or IP address", "Port" with the value "1433", "User name", "Password", and "Site ID" with the value "9137". A note below the Site ID field reads: "Each Connection Broker connected to the remote database must have a unique Site ID". A "Save" button is located at the bottom right of the form.


- d. For each Connection Broker, note the entry in **Site ID** field. You need these values later in the upgrade process to reconnect the Connection Brokers to the SQL Server database.
  - e. Select the **Use the internal database** option.
  - f. Click **Save**.
8. Update the Connection Broker that remains attached to the SQL Server database. Depending on your Connection Broker version, follow the procedure in one of the following sections.
  - [Updating Connection Broker 6.0 through 6.4](#)
  - [Updating Connection Broker 6.5 and Later](#)

The update process modifies the database schema in the SQL Server database to support the new Connection Broker version.
9. Follow the procedures referenced in step 8 to update the Connection Brokers that are attached to their internal databases.
10. After all Connection Brokers are updated, switch each Connection Brokers from their internal databases back to the SQL Server database, as follows.
  - a. Go to the **> System > Maintenance** page.
  - b. Select the **Switch to another database** option.
  - c. Click **Next**. The **Database** form opens.
  - d. Select the **Use a remote Microsoft SQL Server 2005/2008 database** option.
  - e. In the **Database name** field, enter the name of the SQL Server database that is connected to the Connection Broker you updated in step 8.
  - f. Enter the hostname, user name, and password for the Microsoft SQL Server instance that contains this database.
  - g. For each Connection Broker, in the **Site ID** edit field, shown in the following figure, enter the site ID noted in step 7-d



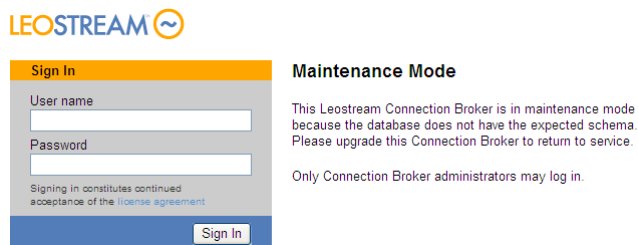
 When switching each Connection Broker back to the SQL Server database, ensure that you assign each Connection Broker to the same Site ID it had before you removed it from the cluster. Maintaining the same site ID ensures that each Connection Broker picks up any work queue jobs that were previously assigned to that site ID.

11. After all Connection Brokers are reattached to the SQL Server database, 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 associated with a Site ID that is not associated with a Connection Broker currently in the cluster, check if any of the following are true.
  - a. Did you reattach a Connection Broker to the SQL Server database using a different Site ID then it had when you first removed it from the cluster? If so, you can use the **Switch to another database** option on the **> System > Maintenance** page to update the Connection Broker site ID.
  - b. Do you no longer have a Connection Broker associated with that Site ID? If not, 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.

 Any Connection Brokers that you do not switch back to an internal database before beginning the upgrade are placed into *maintenance mode* after the first Connection Broker is upgraded. In some cases, you cannot log in to the Administrator Web interface of a maintenance mode Connection Broker to perform an upgrade. If a maintenance mode Connection Broker is blocking all logins, use the procedure in [Removing a Maintenance Mode Connection Broker from the Cluster](#).

### Updating Connection Brokers in Maintenance Mode

A Connection Broker remains in maintenance mode as long as the database version the Connection Broker is attached to is either higher or lower than the version expected by the Connection Broker. The **Sign In** page indicates when a Connection Broker is in maintenance mode, as shown in the following figure.



A maintenance mode Connection Broker blocks all end- user logins.

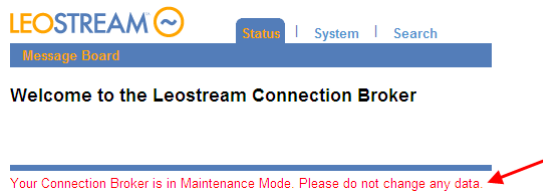
Some Connection Broker versions, allow the following administrative users to log in to the Connection Broker Administrator Web interface.

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- The local Connection Broker Administrator
- Any user with a role that allows **Full access** to the > **System** > **Maintenance** page

If you are allowed to log in to the Administrator Web interface, the bottom of each page indicates that the Connection Broker is in maintenance mode, as shown in the following figure.



✓ After logging in to a maintenance mode Connection Broker, do not make any configuration changes. These Connection Brokers are attached to a SQL Server database with an updated Leostream schema and, therefore, configuration changes made in a maintenance mode Connection Broker may not save correctly.

### **Updating a Maintenance Mode Connection Broker from the Web Interface**

If you can successfully log in to the Connection Broker Administrator Web interface, the maintenance mode Connection Broker can be updated from the > **System** > **Maintenance** page.

To update the maintenance mode Connection Broker:

1. Log into the Administrator Web interface as a user with the appropriate administrative privileges.
2. Go to the > **System** > **Maintenance** page.
3. Follow the procedure in one of the following two sections, depending on your Connection Broker version.
  - [Updating Connection Broker 6.0 through 6.4](#)
  - [Updating Connection Broker 6.5 and Later](#)

After a maintenance mode Connection Broker is updated, the Connection Broker exits maintenance mode and accepts all user logins.

### **Removing a Maintenance Mode Connection Broker from the Cluster**

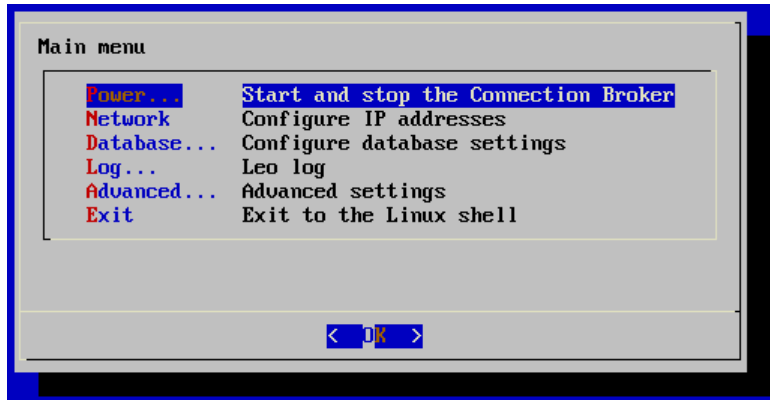
If administrative users cannot log in to a maintenance mode Connection Broker, you can take the Connection Broker out of maintenance mode by removing it from the cluster, as follows.

1. In the Connection Broker virtual appliance console's **Welcome Page**, type `Ctrl-C` to go to the Leostream administrator login page, shown in the following figure.

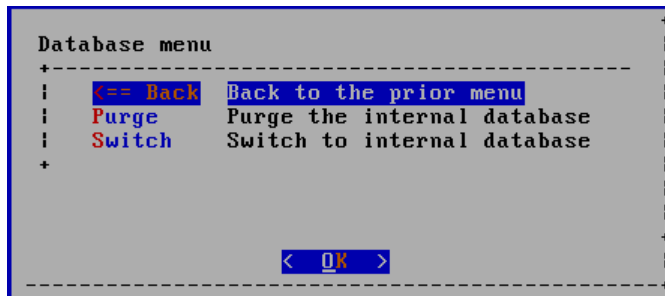
```
Leostream Connection Broker
Linux kernel 2.6.18-8.1.8.el5 on an i686
Log in as user 'leo' with password 'leo'

leostream login: _
```

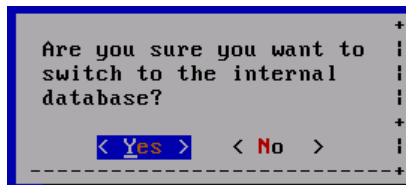
2. Enter the username and password for the administrator account. The default username is **leo**, and password is **leo**. The **Main menu** of the Leostream Administration Menu, shown in the following figure, opens.



3. Highlight **Database** from the **Main menu**
4. Select **OK** to open the **Database menu**, shown in the following figure.



5. Highlight **Switch** to switch the Connection Broker back to its internal database.
6. Select **OK**.
7. Select **Yes** from the configuration menu, shown in the following figure.



8. After the Connection Broker finishes switching back to its internal database, the Connection Broker is no longer part of the cluster and is no longer in maintenance mode. To upgrade the Connection Broker, follow the instructions in one of the following sections, depending on your Connection Broker version.
  - [Updating Connection Broker 6.0 through 6.4](#)
  - [Updating Connection Broker 6.5 and Later](#)

## Updating Connection Broker 6.0 through 6.4



If you are updating a Connection Broker that is attached to a Microsoft SQL Server database, refer to [Updating Connection Brokers in a Cluster](#) before proceeding with the following steps for each Connection Broker in the cluster.

To update Connection Broker versions 6.0 through 6.4:

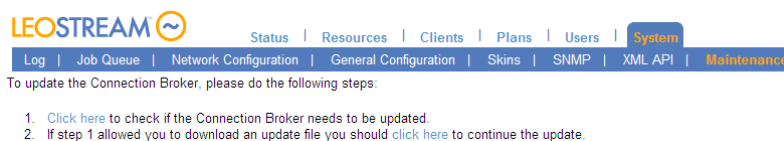
## Connection Broker Virtual Appliance Guide

1. Go to the > **System** > **Maintenance** page.
2. Select the **Check for updates** option.

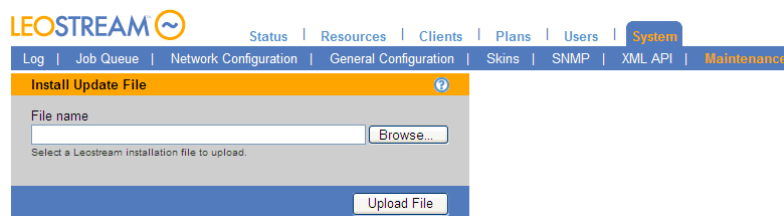


If the **Check for updates** option is disabled, your Leostream support license has expired and you are no longer eligible for Connection Broker updates. Contact [sales@leostream.com](mailto:sales@leostream.com) to renew your Leostream support license.

3. Click **Next**. The following page opens.



4. If you do not have the Connection Broker update file, click the **Click here** link in the first step to check for updates. A new Web browser opens, indicating the update file available for your Connection Broker.
5. Download the updated file. Once the file is downloaded, close the browser and return to the Connection Broker Web interface.
6. Click the **Click here** link in the second step of the update process shown in step 3. The following **Install Update File** form opens.



7. Browse for the update file you downloaded in step 5.
8. Click **Upload File**. The Connection Broker checks the new file, and then opens a form indicating the current version number and the new version number.
9. Click **Install version x.x.x.x** in this form to finish the installation.

The Connection Broker restarts after installing the update file. After the restart is complete, sign back in to the Connection Broker Administrator Web interface.

To determine if the update was successful, check the Connection Broker version number at the bottom-left of every page of the Connection Broker Web interface.

You can also remotely determine the Connection Broker version by querying:

```
http://cb-address/version
```

where *cb-address* is your Connection Broker IP address.


## Updating Connection Broker 6.5 and Later



If you are updating a Connection Broker that uses a Microsoft SQL Server database, please refer to [Updating Connection Brokers in a Cluster](#) before proceeding with the following steps for each Connection Broker in the cluster.

Connection Broker 6.5 and higher provides the following three methods for updating the Connection Broker.

- [Automatically Updating the Connection Broker](#) – Downloads any available update files from the Leostream Web site and installs them into the Connection Broker.
- [Downloading a Connection Broker Update File](#) – Provides a link to any available update file on the Leostream Web site, which can be downloaded for future use.
- [Manually Installing a Connection Broker Update File](#) – Provides an option to install any update file, for example, the file downloaded from the Leostream Web site.

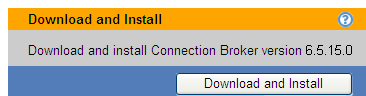
 If the update options are disabled, your Leostream support license has expired and you are no longer eligible for Connection Broker updates. Contact [sales@leostream.com](mailto:sales@leostream.com) to renew your Leostream support license.

### ***Automatically Updating the Connection Broker***

If your Connection Broker can access the Leostream Web site and a new Connection Broker update file is available, the **Update Connection Broker to version x.x.x.x** option appears on the **> System > Maintenance** page. The *x.x.x.x* in the prompt indicates the version number of the available update.

To automatically update the Connection Broker to this new version:

1. Select the **Update Connection Broker to version x.x.x.x** option.
2. Click **Next**. The **Download and Install** page, shown in the following figure, opens.



3. Click the **Download and Install** button to perform the update.

The Connection Broker automatically begins to download the update file from the Leostream Web site. After the download completes, the Connection Broker installs the update file and, finally, restarts.

The Connection Broker error logs contain `notice` level information about the speed and progress of the update file download. See [Log Options](#) for information on accessing Connection Broker logs from the console.

### ***Downloading a Connection Broker Update File***

If your Connection Broker can access the Leostream Web site and a new Connection Broker update file is available, the **Download Connection Broker update for version x.x.x.x** option appears on the **> System > Maintenance** page. The *x.x.x.x* in the prompt indicates the version number of the available update.

To download the update file, select the **Download Connection Broker update for version x.x.x.x** option and click **Next**. The Connection Broker immediately downloads the file.

If your Connection Broker cannot access the Leostream Web site, you can download the current update file from any machine with internet access at the following Web site:

[http://www.leostream.com/cb/update\\_cb.php](http://www.leostream.com/cb/update_cb.php)

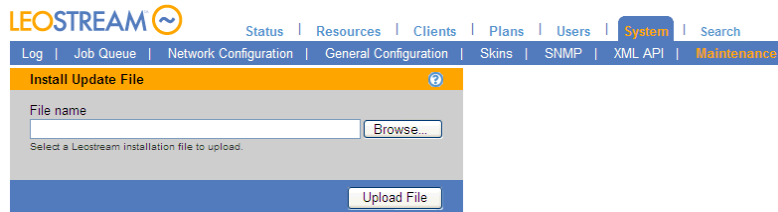
You can use the update file to update any Connection Broker using the **Install Connection Broker update** option.

### ***Manually Installing a Connection Broker Update File***

After you obtain a Connection Broker update file, you can install it into any Connection Broker, as follows.

1. Select the **Install Connection Broker update** option on the **> System > Maintenance** page.

2. Click **Next**. The following **Install Update File** form opens.



The screenshot shows the LEOSTREAM web interface. At the top left is the LEOSTREAM logo. To its right is a navigation menu with links for Status, Resources, Clients, Plans, Users, System (highlighted), and Search. Below this is a secondary menu with links for Log, Job Queue, Network Configuration, General Configuration, Skins, SNMP, XML API, and Maintenance. The main content area is titled 'Install Update File' and contains a 'File name' input field with a 'Browse...' button next to it. Below the input field is the text 'Select a Leostream installation file to upload.' At the bottom of the form is an 'Upload File' button.

3. Browse for the update file or enter the full path to the update file.
4. Click **Upload File**. The Connection Broker checks the new file, and opens a form indicating the current version number and the new version number.

Click **Install version x.x.x.x** in this form to finish the installation.

# Chapter 5: Creating Production Deployments

The Leostream Connection Broker is a production-class virtual appliance. To ensure a production-class deployment of your overall VDI, 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 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.