leostream

Remote Desktop Access Platform

Using the Leostream® Connect Client

Leostream Software Client for Microsoft® Windows®, Linux®, and macOS® devices

Version 202x
March 2025

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Patents

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

Contents

Chapter 1: Overview

Supported Operating Systems

The Leostream® Connect software client allows users to log into the Connection Broker and access their resources from laptops, desktops, and certain thin clients. There are two versions of Leostream Connect.

You can install Leostream Connect on any Microsoft Windows operating system version currently covered by Mainstream Support under the Microsoft Fixed Lifecycle Policy, or in service under the Microsoft Modern Lifecycle Policy.

The Java version of Leostream Connect on Linux requires the following additional software be installed on your client device.

- A desktop environment
- A JDK version 1.8 or higher

Leostream Connect is packaged with a graphical installer that runs on the following operating systems or derivation of these operating systems.

- Apple macOS
- CentOS
- Debian
- Fedora
- SUSE Linux Enterprise
- Red Hat Enterprise Linux
- Ubuntu

Using this Document

This document describes configuring and using the Leostream Connect client.

- **Administrators**:
    - See **Chapter 2: Leostream Connect General Configuration** for information on general Leostream Connect options.
    - See **Chapter 3: Leostream Connect Role Settings** for information on how Connection Broker Role settings change the end user experience in Leostream Connect.
    - See **Chapter 4: Leostream Connect Policy-Specific Settings** for information on policy options found in the Connection Broker that pertain to Leostream Connect.
    - See **Chapter 5: Authentication Methods** for information about the different authentication methods supported by Leostream Connect for Windows.
    - For information on configuring different display protocols for use with Leostream Connect, see the Leostream **Working with Display Protocols** guide.
- **End users**:
    - See **Chapter 6: Using the Microsoft® Windows® version of Leostream Connect** if you are running the Windows version of Leostream Connect.
    - See **Chapter 7: Using the Java™ version of Leostream Connect** if you are running the Java version of Leostream Connect.

Installation

See the **Leostream Installation Guide** for details on installing Leostream Connect.

 Certain installation scenarios require extra privileges, for example:

- To install the Windows version of Leostream Connect with additional tasks, you must be logged into the client device as a user with Administrator privileges.
- To install the USB redirection feature for the Java version of Leostream Connect, you must run the installer as `root`.

Chapter 2: Leostream Connect Settings

This chapter describes the Leostream Connect options on the Connection Broker **> System > Settings** page that allow you to customize the appearance and behavior of the Leostream Connect clients communicating with your Connection Broker. These options apply to the Windows and Java versions of Leostream Connect, except where noted.

Customizing the Leostream Connect User Interface

This section describes Leostream Connect settings that are controlled globally via settings in the Connection Broker. You have additional control over the look-and-feel of each client instances, for example:

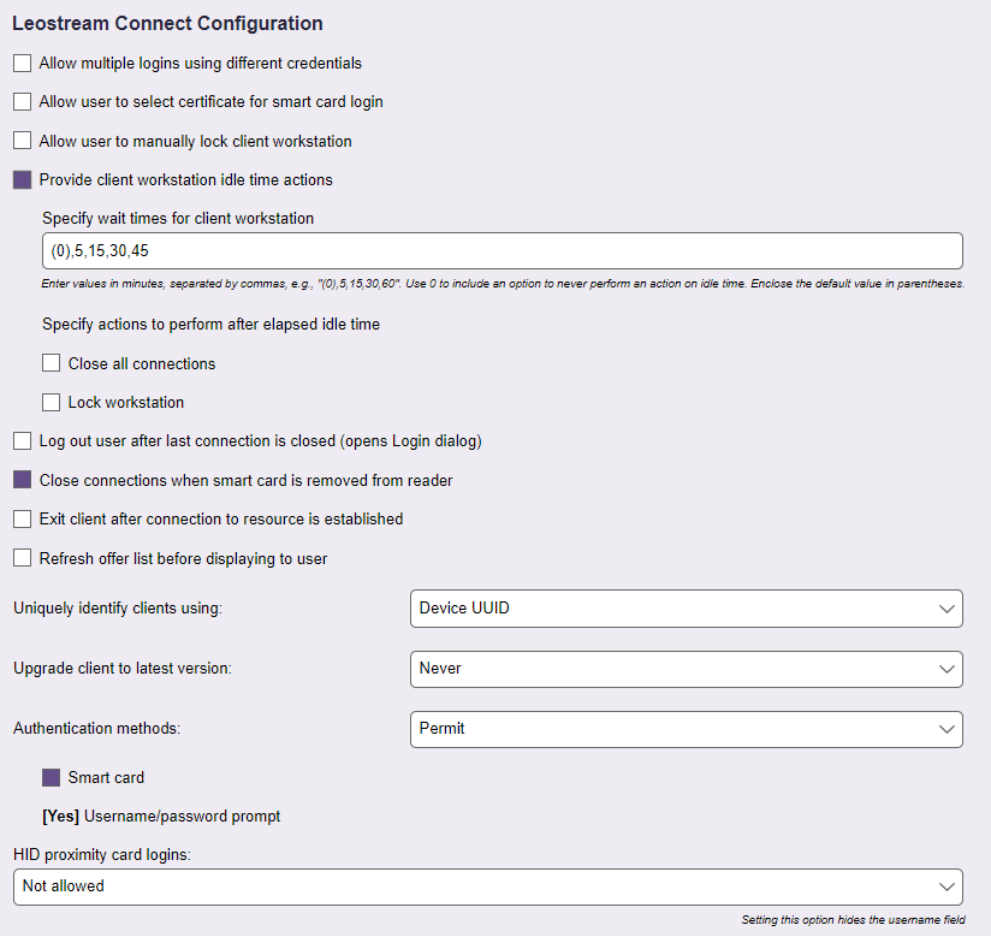
- You can use the `lc.conf` file to modify the appearance of the Java version of Leostream Connect to match your corporate standards. For a list of `lc.conf` parameters that control the appearance of the Java version of Leostream Connect, see **Common UI Controls** in "Writing lc.conf Files".

- You can customize the icon displayed on the Windows version of Leostream Connect to match your corporate standard. For instructions, see **Branding Leostream Connect for Windows**.

To open the **Leostream Connect Configuration** options:

1. Go to the **> Systems > Settings** page in the Connection Broker.

2. Scroll down to the **Leostream Connect Configuration** section, shown in the following figure.



The options in this section are as follows:

- **Allow multiple logins using different credentials:** (*Applies to the Windows version of Leostream Connect, only.)* Select this option to allow a user to log into Leostream Connect with multiple sets of credentials, simultaneously. Leostream Connect displays the desktops offered to all logged in users in the same resource dialog (see **Using Multi-User Mode**).

- **Allow user to select certificate for smart card login**: (*Applies to the Windows version of Leostream Connect, only.)* Select this option if end users have smart cards that contain multiple certificates, and they must be able to select which certificate to use during login. With this option unchecked, the Connection Broker always uses the first valid certificate on the smart card.

- **Allow user to lock client workstation**: (*Applies to the Windows version of Leostream Connect, only.)* Select this option if users need to use Leostream Connect to lock their client workstation session. With this option selected, the Leostream Connect hover menu contains a **Lock Workstation** option.

  If Leostream Connect is running in the client device's shell, when the user selects this option, their remote sessions are hidden and Leostream Connect opens the **Unlock Workstation** dialog. If Leostream Connect is *not* running in the client device's shell, Leostream Connect uses the native

Windows locking mechanism to lock the client device. The user enters their credentials to unlock their session. See **Locking the Session** for more information.

- **Provide client workstation idle time actions**: Select this option to allow the user to automatically lock their client workstation or close all open desktop connections when the client device running Leostream Connect is idle for a specified length of time. See **Using Client-Side Idle Actions** for more information.

- **Log out user after last connection is closed (opens Login dialog):** *(Applies to the Windows version of Leostream Connect, only.)* Select this option to specify that Leostream Connect should automatically log out the user after the user closes, either by disconnecting or logging out, their last resource connection. After the user is logged out, the Leostream Connect **Login** dialog automatically opens**.**

- **Close connection when smart card is removed from reader**: (*Applies to the Windows version of Leostream Connect, only.)* Select this option to automatically disconnect all of the user's connections when they remove their smart card from the reader. This setting applies only when the **Smart card** authentication method is selected (see **Specifying Authentication Methods**).

- **Exit client after connection to resource is established**: Select this option to automatically exit the user's Leostream Connect session after the connection to their resources is established. If the user is launching a connection to a resource they are managing for another user, Leostream Connect will not automatically exit after the connection is established. This option applies only when the user launches one of their resources.

- **Refresh offer list before displaying to user:** Select this option to instruct Leostream Connect to perform an automatic refresh of the user's offered desktops when the user opens their offer list, ensuring that any desktops that are no longer available are removed from the list.

- **Uniquely identify clients using**: Select the primary client characteristic to use when identifying unique clients on the **> Resources > Clients** page.

  Client devices that register with the Connection Broker have the option to provide one or more of the following attributes.

  - Device UUID – An ID unique to the client hardware
  - Client UUID – An ID unique to the software client that handles the user login
  - MAC address – The client device MAC address
  - Serial number – The client device serial number

  When a client device registers with the Connection Broker and, for example, **Device UUID** is selected, the Connection Broker searches the **Device UUID** column on the **> Resources > Clients** page for a client with the provided device UUID. If the Connection Broker finds the device UUID, the Connection Broker assumes a record for the registering client already exists. If the Connection Broker does not find the device UUID, the Connection Broker creates a new client record for the registering client.

If clients register without providing the selected characteristic, the Connection Broker searches the **Device UUID**, **Client UUID**, **MAC Address**, and **Serial Number** columns on the **> Resources > Clients** page, in order. When a client registers, if the Connection Broker finds a client on the **> Resources > Clients** page that matches the value for any of these attributes of the registering client, the Connection Broker assumes a record for the registering client already exists. If the Connection Broker does not find a match for any of these attributes, the Connection Broker creates a new client record for the registering client.

- **Upgrade client to latest version:** Use this option to push new versions of Leostream Connect out to your client devices (see **Upgrading Leostream Connect**).

- **Authentication methods:** Select the types of credentials users can present to the Connection Broker for login (see **Specifying Authentication Methods**).

- **HID proximity card logins:** Use this option to allow users to log into the Connection Broker using an RF IDeas proximity card reader and HID proximity card (see **HID Proximity Card Authentication with RF IDeas pcProx© Readers**).

- **Allow username/password override for proximity cards:** Select this option to allow users with proximity cards to revert to username/password authentication. If this option is not selected, users must login using their proximity card at any client device with an attached proximity card reader.

- **Show message at startup:** Select this option to display a message to all Leostream Connect users when the client starts (see **Adding Message Text**).

Hiding the Domain Field

You can use the **Add domain field to login page** option on the Connection Broker **> System > Settings** page to toggle the visibility of the **Domain** field on Leostream Connect.

When the **Add domain field to login page** option is selected, the **Domain** field is included on the **Login** dialog. The field is included as an edit field if your Connection Broker contains a single authentication server or if the **Show multiple domains as a drop-down list** option is unchecked. You can check this option to display the **Domain** field to a drop-down menu when using multiple domains.

When the **Domain** field is hidden, the user cannot select which domain to log into. If your Connection Broker includes more than one authentication server, ensure that none of your authentication servers set the **Include domain in drop-down** menu in the **Edit Authentication Server** form to **Yes, as default**. If you specify a default authentication server and do not display the **Domain** field, users in other authentication servers cannot log into the Connection Broker using Leostream Connect.

 If you uncheck the **Login name unique across domains** option on the Connection Broker **> System > Settings** page, do not hide the **Domain** field on the **Login** dialog. If you hide the **Domain** field and have mutliple authentication servers, some users will not be able to log into the Connection Broker

Upgrading Leostream Connect

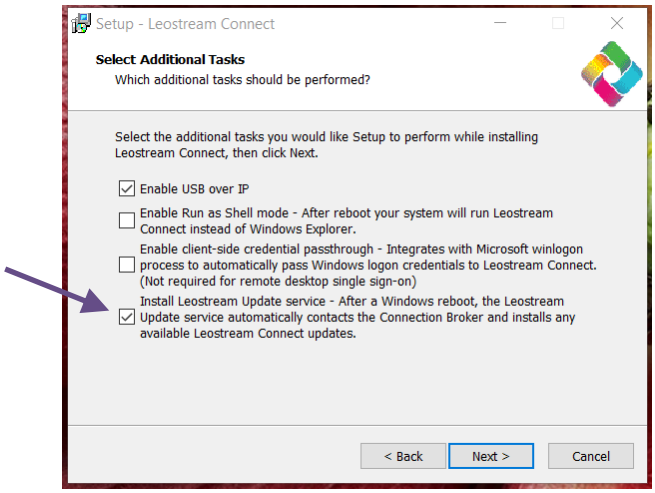
After Leostream Connect is installed on a client device, it can be automatically upgraded to the version available on the Connection Broker **> Dashboards > Downloads** page.

To push upgrades out to all client devices that log into a particular Connection Broker, select one of the following options from the **Upgrade client to latest version** drop-down menu on the Connection Broker **> System > Settings** page.

- **Never**: The Connection Broker never pushes updates out to Leostream Connect.
- **Always**: When an end user launches Leostream Connect, the client warns the user that an update is in process. Leostream Connect restarts when the update is finished.
- **Prompt user**: When the user launches Leostream Connect, the client prompts the user to install the update.

The user logged into the client device must have the privileges required to install Leostream Connect, for example, the user needs administrator rights if you enabled USB over IP when originally installing Leostream Connect.

On client devices running a Windows operating system, if your users do not have the necessary rights on their client devices, you must include the Leostream Update service when installing Leostream Connect. The Leostream Update service is available as an additional installer task, as shown in the following figure.



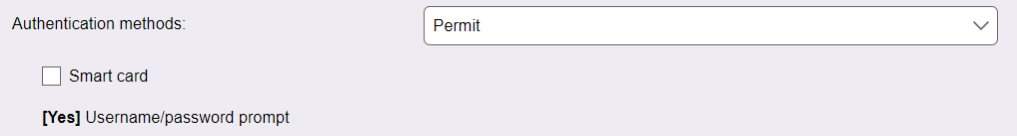
After the client device is rebooted, if the Leostream Update service is installed, the service automatically contacts the Connection Broker to find any available updates. If the service finds an update, and the **Upgrade client to latest version** drop-down menu is set to **Always** or **Prompt user**, the service installs the update. If the **Upgrade client to latest version** drop-down menu is set to **Never**, the Leostream Update service ignores any available update.

Specifying Authentication Methods

This section applies to the Windows version of Leostream Connect, only.

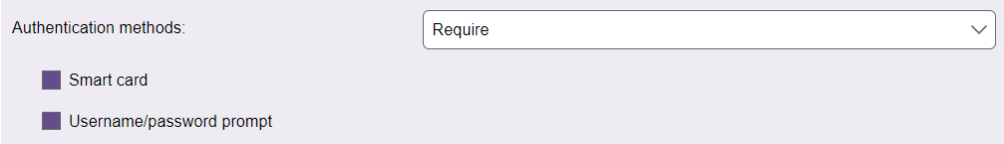
The **Leostream Connect Configuration** section on the **> Systems > Settings** page allows you to configure the type of identification a user can provide when authenticating with the Connection Broker.

When the **Authentication methods** drop-down menu is set to **Permit**, users are always allowed to authenticate using their user name and password. By default, the Connection Broker alternatively allows the user to authenticate via a smart card. If users should not be allowed to log in using a smart card, uncheck the **Smart card** checkbox, as shown by the following figure.



To require the user to provide their user name and password as well as a smart card:

1. Select **Require** from the drop-down menu in the **Authentication Methods** section.
2. Check the **Smart card** and **Username/password prompt** checkboxes, for example:



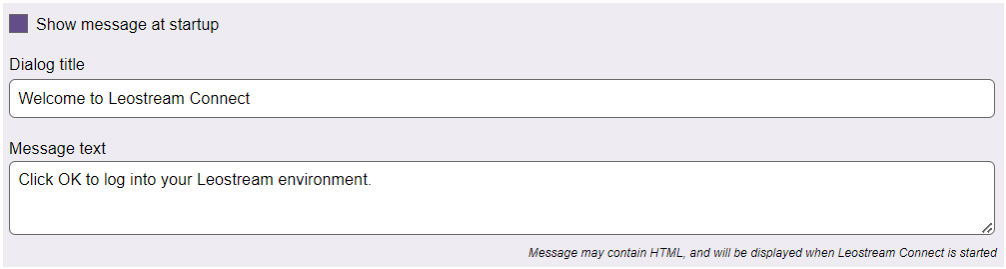
When both authentication methods are selected, the client prompts the user for their username and password, as well as to insert a smart card.

See **Chapter 5: Smart Card and Biometric Support** for information on integrating Leostream Connect with different types of smart cards and biometric readers.

You do not need to check the **Smart card** option to allow authentication using proximity cards. Proximity card logins are considered a subset of username/password authentication. Use the **HID proximity card logins** drop-down menu to enable proximity card logins, as described in **HID Proximity Card Authentication with RF IDeas pcProx© Readers**.

Adding Message Text

To display a message to users when they launch Leostream Connect, select the **Show message at startup** checkbox on the Connection Broker **> System > Settings** page, shown in the following figure.

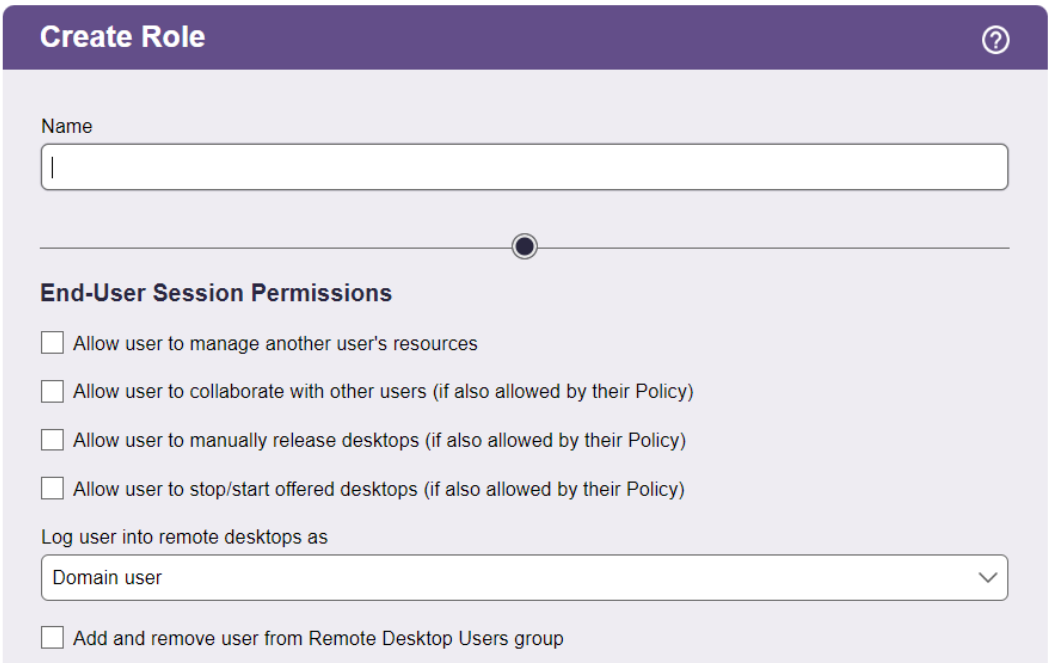


In the **Dialog title** edit field, enter the text to display in the title bar of the information dialog that launches when Leostream Connect starts. Enter text in HTML format, including links, into the **Message text** field.

When the user runs Leostream Connect, the message text appears in a dialog prior to the user being asked for their credentials. After the user clicks **OK**, the **Login** page opens.

Chapter 3: Leostream Connect Role Settings

Roles are defined in the Connection Broker **> Configuration > Roles** page. The session permissions in each role, shown in the following figure, determine the actions that users with this role are allowed to perform when they log in using Leostream Connect. Not all end-user session permissions apply to Leostream Connect logins.



The session permissions that apply to Leostream Connect are as follows. See "Chapter 10: Configuring User Roles and Permissions" in the **Connection Broker Administrator's Guide** for a complete description of user roles.

- **Allow user to manage another user's resources**: (*This option applies to the Windows version of Leostream Connect, only.*) Select this option if a user with this role should be able to view the desktops offered to another user and log into those desktops. Use this option for users that are allowed to perform administrative tasks on another user's desktop, or for users that need to log into their own desktop using different credentials from those they provided when logging into the Connection Broker.

- **Allow user to collaborate with other users**: Select this option to allow users to invite other Leostream users to collaborate on their remote session. Collaboration is currently supported by NoMachine, HP ZCentral Remote Boost, and Mechdyne TGX. See the "Session Shadowing and Collaboration" section in the **Leostream Guide on Using Display Protocols** for more information.

- **Allow user to manually release desktops**: (*This option applies to the Windows version of Leostream Connect, only.*) Select this option if a user with this role should be able to manually release their desktop back to its pool. By default, when a user connects to a desktop, the

Connection Broker assigns that desktop to that user. When a desktop is assigned to a user, the Connection Broker will not offer that desktop to another user.

If a user manually releases one of their desktops back to its pool, the Connection Broker unassigns the desktop from that user. If the user is logged into that desktop when they release it, they remain logged in. However, because the user is no longer assigned to the desktop, the Connection Broker now considers them as a rogue user. In addition, because the desktop is back in its pool, the Connection Broker may offer that desktop to another user. If this new user tries to connect to the desktop, and their policy is set to log off rogue users, the new user will forcefully log out the original user.

If the **Allow user to manually release desktops** option is selected, the user is allowed to release any of their assigned desktops. The user's policy then indicates which of their desktops the user can actually release. If the **Prevent user from manually releasing desktop** option is selected for a pool in the user's policy, the user is not able to release desktops from this pool, even though their role gives them the permission.

 The user can never release a desktop that is hard-assigned to them.

- **Allow user to restart offered desktops**: Select this option if a user with this role should be able to restart their desktop. If the **Allow user to restart offered desktops** option is selected, the user is allowed to restart any of their assigned desktops. The user's policy then indicates which of their desktops the user can actually restart. If the **Allow user to reset offered desktop** option for a pool in the user's policy is set to **No**, the user cannot restart the desktops in this pool, even though their role gives them the permission.

- **Login user as**: (*Requires a Leostream Agent on the remote desktop.*) Use this option indicate if the Connection Broker should log the user into the remote desktop using a domain account or local user account. Use local users to support, for example, LDAP or non-domain users that need to login to remote desktops. Options in the **Login user as** drop-down include.

    - **Domain user**: When using an Active Directory domain user account, the Connection Broker uses the domain name specified by the authentication server on the **> Setup > Authentication Servers** page that authenticated the user when they logged into the Connection Broker.

    - **Local user:** When logging in as a local user, the Connection Broker requires an existing user account on the remote desktop. This user account must have the same login name as the user that logged into the Connection Broker. When using this option, you must manually create the appropriate account in the **Users** section of the **Local Users and Groups** node in the **Computer Management** dialog.

      If you want the Connection Broker to manage the local user account, use one of the following two options.

    - **Local user (create on login):** You can instruct the Connection Broker to automatically create local user accounts, to avoid having to manually create the accounts on each

remote desktop. When this option is selected, the Connection Broker automatically creates an appropriate local user on the desktop the first time the user logs in. If an appropriate user account already exists, the Connection Broker uses that account.

If a user account exists on the remote desktop, the Connection Broker uses that account. If that user account has a different password from the password used to log into the Connection Broker, the Connection Broker changes the password for the local user on the remote desktop.

- **Local user (create on login; delete user on logout):** You can instruct the Connection Broker to automatically create and delete local user accounts, to avoid having to manage the accounts on each remote desktop. When this option is selected, the Connection Broker automatically creates an appropriate local user account on the desktop the first time the user logs in. The Connection Broker removes the user account as soon as the user logs out of the desktop.

  The Connection Broker does not delete the profile folder associated with the user. Any information stored in the profile folder can be recovered by the desktop's administrator.

   When the user subsequently logs into the desktop, the Connection Broker creates a new local user account. Because this is a new account, the Windows desktop does not associate this user with the profile created the last time the user logged in. If user's need persistent access to their profile, use the **Local user (create on login)** option.

- **Local user (create on login; delete user and profile on logout):** When this option is selected, the Connection Broker automatically creates an appropriate local user account on the desktop the first time the user logs in. The Connection Broker removes the user account and the user's profile folder as soon as the user logs out of the desktop.

   Because the user's profile folder is deleted, the user loses all information stored locally in their profile folder.

- **Add and remove user from Remote Desktop Users group**: (*Requires a Leostream Agent on the remote desktop.*) Use this option if your users are not already members of the Remote Desktop Users group on their offered Windows desktops and you plan to connect users to their desktops using RDP.

  By default, Windows desktops do not provide remote access using RDP. After you enable remote access for a particular desktop, you must indicate which users are allowed to remotely log into that desktop by placing those users (one of their group memberships) in the Remote Desktop Users group.

  When a user is part of the Remote Desktop Users group, they can remotely log into the desktop from any client. To restrict the user to log in only through the Connection Broker, do not manually add users to the Remote Desktop Group and, instead, select the **Add and remove user from Remote Desktop Users group** option. With this option selected, the Connection Broker automatically adds the user to the Remote Desktop Users group when the log into the desktop

from the Connection Broker. When the user logs out, the Connection Broker automatically removes the user from the Remote Desktop Users group.

 The Connection Broker takes control of the user's membership in the Remote Desktop Users group. If the user was already a member of the Remote Desktop Users group before they logged into the desktop, the Connection Broker removes the user from that group when they log out of the desktop. The Connection Broker adds the user back to the Remote Desktop Users group the next time they log into the Connection Broker.

Chapter 4: Leostream Connect Policy Settings

Connection Broker policy settings allow you to control the user's experience, including:

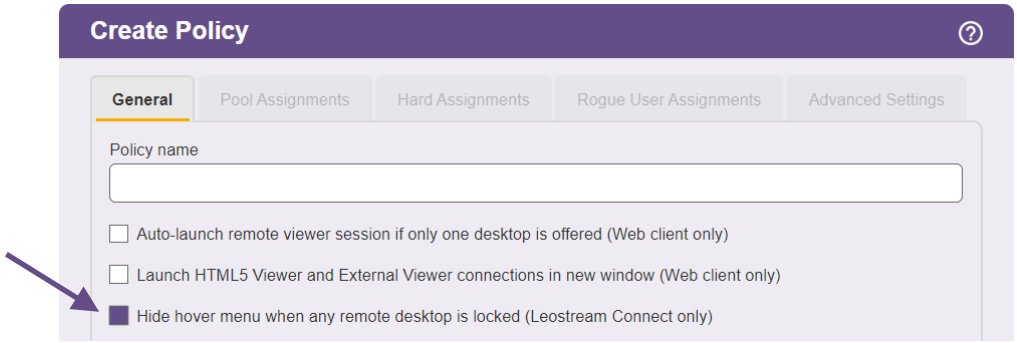
- The display names for the list of resources offered by Leostream Connect
- How many desktops the user can connect to, and how long they can continue to connect to new desktops
- If the user can restart or release their desktop
- The display protocol used to connect to each desktop
- What USB device the user can connect to their remote desktop

Except where noted, policy settings apply to the Windows and Java versions of Leostream Connect. The following sections describe policy options that directly pertain to Leostream Connect. For a complete description of all Connection Broker policy options, see the Connection Broker Administrator's Guide.

Hiding the Hover Menu

A Connection Broker policy option allows you to hide the Leostream Connect hover menu after the user locks one of their connected desktops. By hiding the hover menu, you ensure that no additional desktops can be launched after a connected desktop is locked.

To enable this feature, select the **Hide hover menu when any remote desktop is locked** option in the **General Policy Settings**, shown in the following figure.



The hover menu is hidden if *any* connected desktop is locked. The locked desktop does not need to be at the forefront or the current focus.

Restricting the Leostream Connect Dialogs to Single Selections

By default, if the user is assigned to a policy that offers multiple desktops, the **Connect** dialog opens and the user may select any number of desktops. To turn the **Connect** dialog into a single-selection dialog, uncheck the **Allow multiple selections in Leostream Connect dialogs** option.

This option replaces the functionality of the `single_desktop_only lc.conf` parameter for the Java version of Leostream Connect.

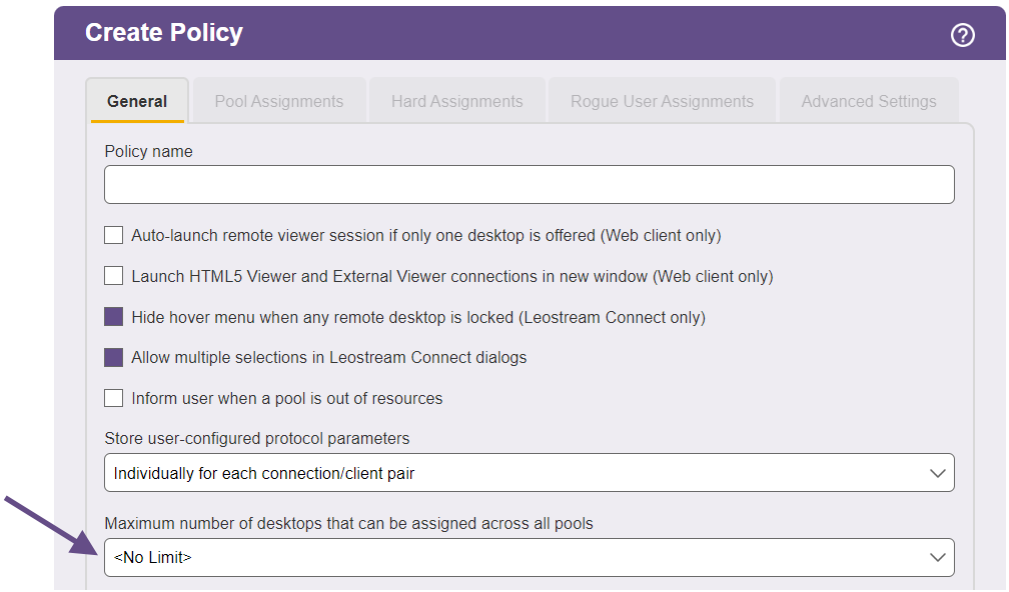
Limiting the Number of Assigned Desktops

By default, end users can be assigned to all of the desktops offered to them by Leostream Connect. To conserve resources, you can limit the number of desktops assigned to a particular user, as follows.

1. Go to the **> Configuration > Policies** page.

2. Select the **Edit** action for the appropriate policy. The **Edit Policy** form opens.

3. Select the maximum number of desktops that can be simultaneously assigned to a particular use from the **Maximum number of desktops assigned** drop-down menu, shown in the following figure. The `<No Limit>` option allows the user to connect to all of their offered resources.



When the user logs into Leostream Connect, they can continue to connect to desktops until they reach the number selected in the **Maximum number of desktops assigned** drop-down menu. After that point, when the user tries to connect to another desktop, the client issues a warning.

On the Windows version of Leostream Connect, the **Connect** options in the Leostream Connect system tray menu are disabled after the user reaches their maximum number of assigned desktops.

Depending on the user's policy settings, a desktop may remain assigned to the user after they logout or disconnect from the desktop. Leostream Connect factors in that assignment when determining if the user can connect to a new desktop.

For example, consider a policy that offers two desktop, but limits the user to be assigned to one desktop. The policy also keeps the desktop assigned to the user when they disconnect from the desktop.The first

time the user logs into Leostream Connect, they connect to one of their offered desktops. The user then disconnects from the desktop, and exits Leostream Connect. At this point, they remain assigned to the desktop. The next time they log into Leostream Connect, they are offered two desktops, but the only desktop Leostream Connect allows them to connect to is the desktop they are already assigned, i.e., the one the user disconnected from in their last Leostream Connect session.

Expiring the User's Session

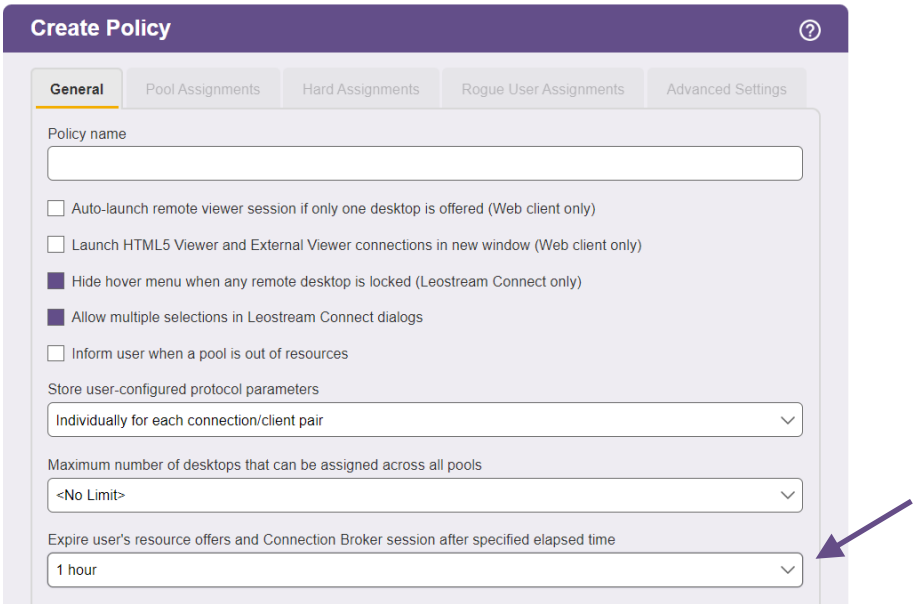
By default, end users can connect to additional desktops until they exit Leostream Connect. You may, for security purposes, want to limit how long the user can launch new connections. Leostream policies allow you to expire the user's session in two ways: after a specified length of time or when the user locks their remote desktop.

After a user's session expires, they can continue to use any desktops they already launched, with the exception of attaching any additional USB devices. If the user attempts to launch a new resource or attach a USB device to any connected desktop after their session expires, Leostream Connect automatically issues a warning and logs out the user. To launch additional resources, the user must log back into the Connection Broker.

Expiring the User's Session Based on Time

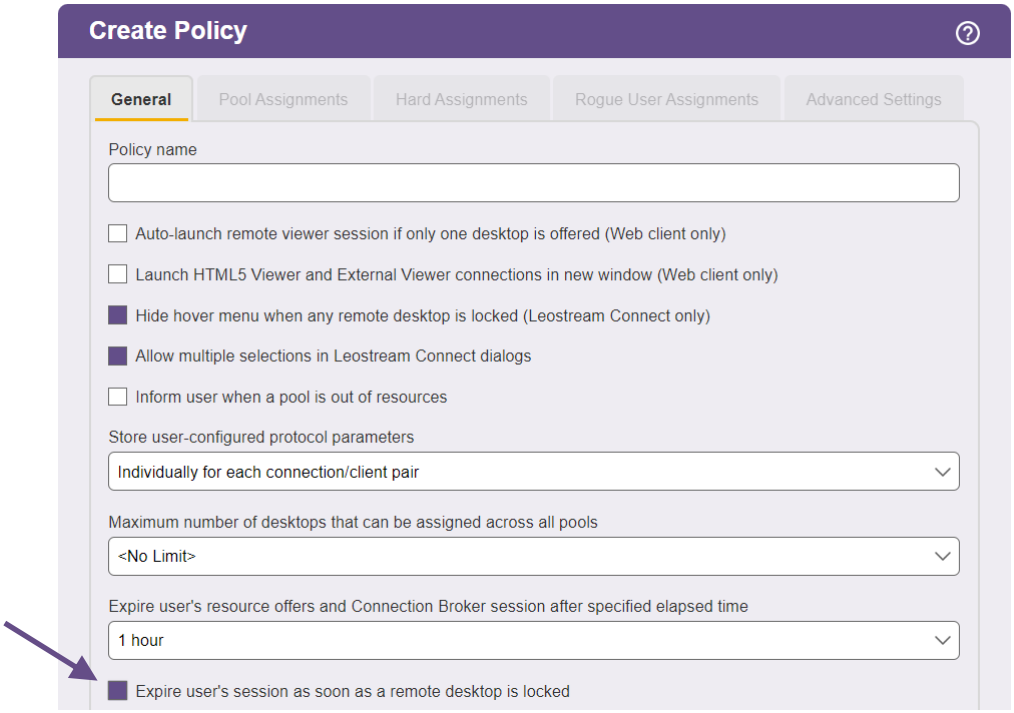
To expire the user's session after a specified elapsed time:

1. Go to the **> Configuration > Policies** page.
2. Select the **Edit** action for the appropriate policy. The **Edit Policy** form opens.
3. Use the **Expire user's resource offers and Connection Broker session after specified elapsed time** drop-down menu, shown in the following figure, to indicate when the user's session expires.



Expiring the Users Session Based on Lock Events

To expire the user's session after the user locks one of their remote desktops, the remote desktop must have an installed and running Leostream Agent. Then, in the user's policy, select the **Expire user's session as soon as a remote desktop is locked** option, as shown in the following figure.



Unlocking the remote desktop reinitializes the session and the user can connect to additional desktops without logging back in to Leostream.

Listing Desktops

If an end user is offered multiple resources, you can define the format used to display the resource name, as follows:

1. Go to the **> Configuration > Policies** page.
2. Select the **Edit** action for the appropriate policy. The **Edit Policy** form opens.
3. For all desktop pools, as well as for hard-assigned desktops, select an option from the **Display to user as** drop-down menu.

You can display desktops to users as any of the following:

- The desktop name, as shown in the **Name** column on the **> Resources > Desktops** page.
- The desktop's display name, as defined on the **Edit Desktop** page for the offered desktop.
- The desktop's Windows machine name
- The name of the desktop's pool
- The name of the desktop's pool followed by the desktop's name
- The name of the desktop's pool followed by the desktop's display name
- The name of the desktop's pool followed by the desktop's Windows machine name
- The display name of the desktop's pool
- The display name of the desktop's pool followed by the desktop's name
- The display name of the desktop's pool followed by the desktop's display name
- The display name of the desktop's pool followed by the desktop's Windows machine name

Allowing Users to Restart Desktops

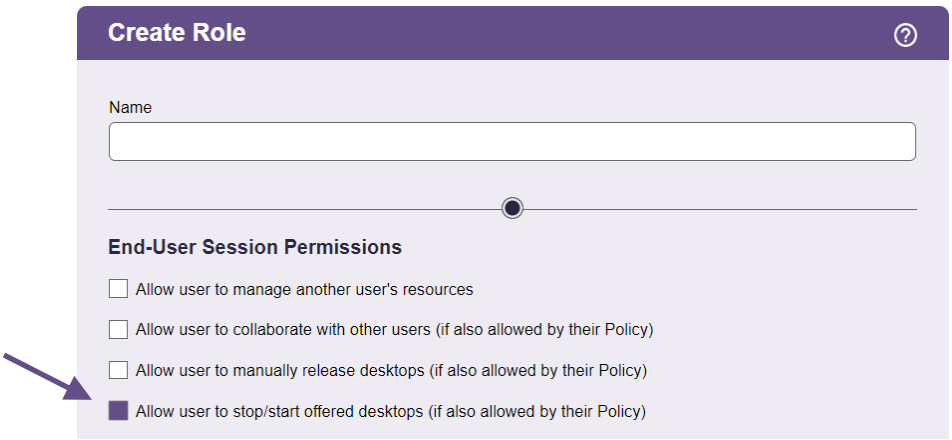
The Connection Broker allows end users to restart their remote desktops if the user is assigned a role *and* a policy that provide sufficient restart permissions. The user's role tells the Connection Broker if the user is allowed to restart any of their desktops. The user's policy then indicates which of the user's offered desktops they can restart, and how the Connection Broker should perform the restart.

To create a role that gives the user permission to restart their desktops:

1. Go to the **> Configuration > Roles** page.

2. Select **Create Role** to add a new role or **Edit** to add this permission to an existing role.

3. In the **Session Permissions** section, select the **Allow user to stop/start offered desktops** option, shown in the following figure.

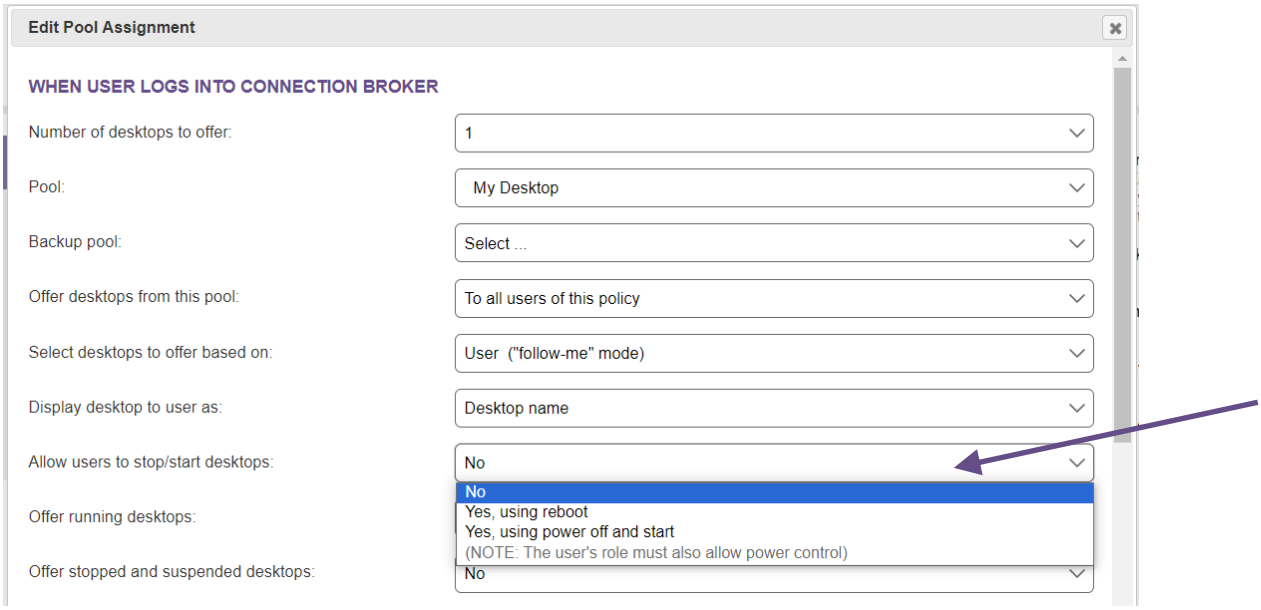


4. Click **Save**.

Each pool in the user's policy indicates if desktops in that pool can be restarted, and how the Connection

Broker performs the restart action, as follows.

1. Go to the **> Configuration > Policies** page.
2. Select the **Edit** action for the appropriate policy. The **Edit Policy** form opens.
3. Go to the **Pool Assignments** tab.
4. For the pool where you want to enable power control, select the **Edit** option for the kabob menu at the left.
5. Select an option from the **Allow users to stop/start offered desktops** drop-down menu, shown in the following figure.



The **Yes, using reboot** option attempts to gracefully shut down the user's desktop. If the user's desktop is a virtual machine, **Yes, using reboot** first tries to reboot the VM's operating system. If a reboot cannot be done, **Yes, using reboot** performs a guest shutdown and power up. The **Yes, using power off and start** option forcefully shuts down the desktop.

If the user's desktop is a physical machine, select the **Yes, using reboot** option and ensure that the Leostream Agent is installed on the desktop.

Users access the restart action differently for the Windows and Java version of Leostream Connect.

- The Windows version of Leostream Connect provides power control options in the Leostream Connect system tray menu.
- The Java version of Leostream Connect provides power control buttons on the **Connect** dialog.

Restricting Users from Releasing Desktops

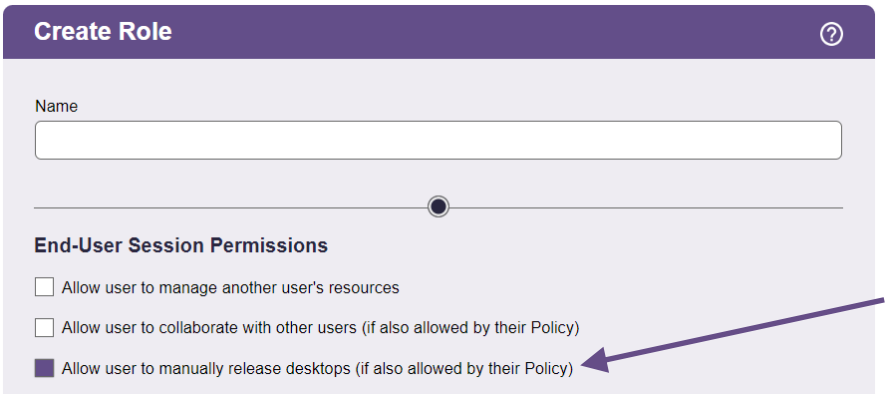
This option applies to the Windows version of Leostream Connect, only.

When the Connection Broker assigns a desktop to a particular user, that desktop is no longer part of any pool and, therefore, cannot be offered or assigned to another user. The Connection Broker assigns the desktop to a user as soon as the user requests a connection to that desktop. Release plans in Connection Broker policies determine how long the desktop remains assigned to the user, and when the desktop is released to its pool.

You can optionally allow the user to manually release their desktop back to its pool. After the user releases their desktop, the Connection Broker considers that user as a *rogue user* for as long as they remain logged into the remote desktop.

The user's role tells the Connection Broker if the user is allowed to release any of their desktops. To create a role that gives the user permission to release their desktops:

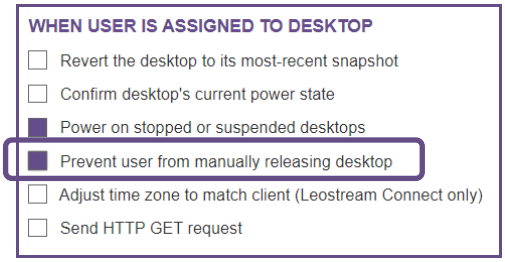
1. Go to the **> Configuration > Roles** page.
2. Select **Create Role** to add a new role, or **Edit** to add this permission to an existing role.
3. In the **Session Permissions** section, select the **Allow user to manually release desktops** option, shown in the following figure.



4. Click **Save**.

By default, a user with this role can release all of their assigned desktops using the **Release** or **Disconnect and Release** options in the Leostream Connect system tray menu. See **The Leostream Connect System Tray Menu** for information on these options.

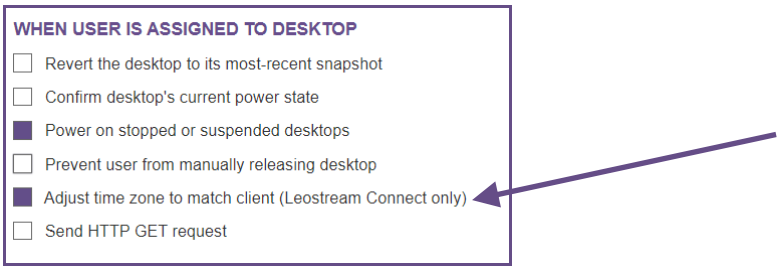
To prohibit users from releasing desktops from a particular pool, select the **Prevent user from manually releasing desktop** option in the **When User is Assigned to Desktop** section of the **Edit Policy** page, shown in the following figure.



Leostream Connect does not include the **Release** and **Disconnect and Release** options in the system tray menu for desktops assigned from a pool that prevents the user from manually releasing its desktops.

Setting Time Zones on Remote Desktops

For users connecting to Windows remote desktops – from either the Windows or Java version of Leostream Connect – you can set the time zone of the remote desktop to match that of the client device by selecting the **Adjust time zone to match client** check box shown in the following figure.



Selecting this option changes the time zone of the remote desktop to the same time zone as on the user's client.

The time zone is not reverted when the user logs out or disconnects. Therefore, if another user logs in to the same desktop with a policy that does not adjust the time zone, that user will see the time zone set for the previous user. To ensure that your end-users see the correct time zone, select this option for all policies that could assign a particular desktop.

⚠ Adjusting the desktop's time zone may adversely affect scheduled tasks.

Building Protocol Plans for Leostream Connect

Connection Broker protocol plans determine which display protocol is used when a user logs in through Leostream Connect. Available protocol plans are displayed on the **> Configuration > Protocol Plans** page.

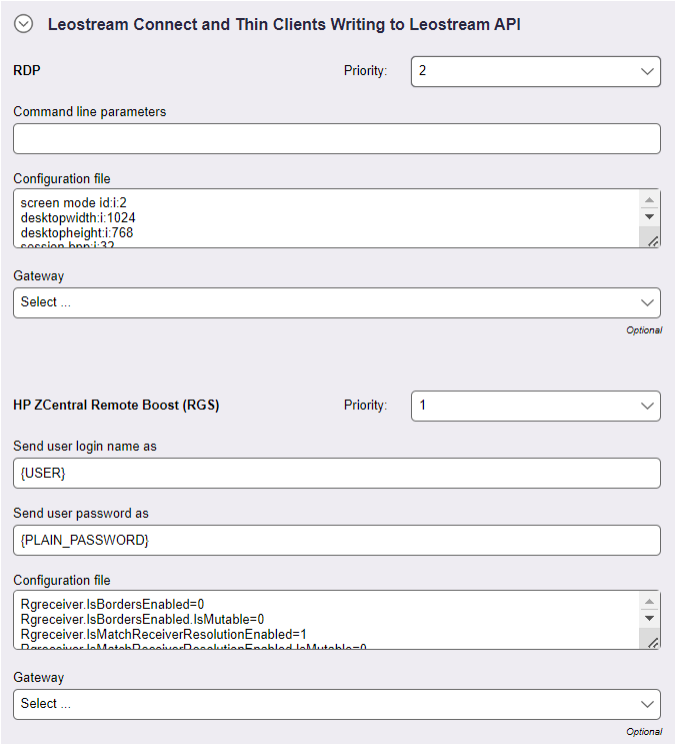
You apply your protocol plans to the individual pools in each policy. The **Leostream Connect and Thin Clients Writing to Leostream API** section in the protocol plan defines which display protocols Leostream Connect can use to connect to a particular pool of desktops. This section contains subsections that define the configuration settings for each protocol, as follows:

- The **Priority** drop-down menu determines the order in which Leostream Connect tries to establish a connection using each protocol. Select **Do not use** to prohibit Leostream Connect from using a protocol.

- The **Command line parameters** and **Configuration file** fields define the settings used when establishing a connection with the selected protocol.

Create protocol plans that define the experience you want to provide for different groups of users. For example, if all users connect to their desktops using RDP, create a single protocol plan that gives RDP the highest priority. If another group of users connects using HP ZCentral Remote Boost, create a second protocol plan that gives RGS the highest priority, as shown in the following figure.

In the following example, Leostream Connect first tries to establish a connection to the remote desktop using Remote Boost. If a Remote Boost connection cannot be established, Leostream Connect then tries RDP, which has a priority of 2. The Connection Broker uses a port check on the display protocols port to determine if the remote desktop supports a particular display protocol. The Connection Broker does not check if the display protocol client is installed on the user's client device.



For complete information on using display protocols with Leostream Connect, see the Leostream guide for **Working with Display Protocols**, available on the Leostream Documentation Web site.

USB Device Management

The Connection Broker allows you to manage the USB devices that different users are allowed to attach to their remote desktops. You must manually install any drivers required by your particular devices on the remote desktop. Leostream Connect does not control how the device and associated applications run or perform on the remote desktop.

Leostream USB redirection is available for Windows and Linux operating systems.

Installation Requirements

The Leostream USB management feature requires functionality on the client device and remote desktop.

- On the client side, you must install Leostream Connect with the **Enable USB over IP** task is selected.
- On the desktop side, you must install the Leostream Agent, and the **Enable USB over IP** task must be selected during installation.

Not all released versions of the USB drivers are backwards compatible. Leostream recommends keeping all Leostream Agents and Leostream Connect clients at their latest versions in order to ensure that all USB drivers are compatible. See the Leostream **Downloads** page for the current versions.

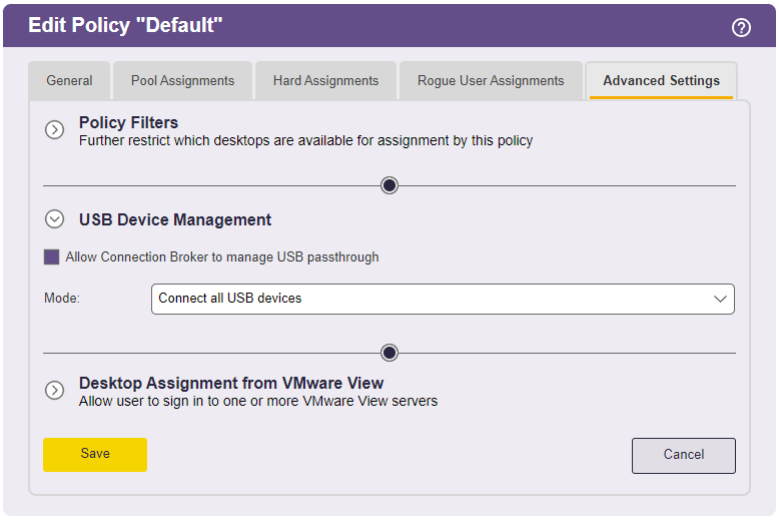
USB device passthrough options are not available for macOS or for Linux operating systems running kernel versions higher than 6.10.

You must disable UEFI Secure Boot if you plan to use the Leostream USB drivers. The Leostream USB module cannot be loaded if secure boot is enabled.

Defining USB Policies

The USB passthrough feature is enabled in the Connection Broker by your Leostream license. If your Connection Broker does not include the USB passthrough feature, contact **sales@leostream.com**.

By default, policies do not change the USB settings of the user's client. To override the client settings on a policy-by-policy basis, go to the **Advanced Settings** tab for a policy and select the **Allow Connection Broker to manage USB passthrough** option, as shown in the following figure.



Use the **Mode** drop-down menu to constrain which USB devices end users can assign to desktops, as follows:

- **To pass through all USB devices to the desktop**: Select **Connect all USB devices**.

  Selecting this option redirects all USB devices with the exception of USB keyboards and USB mice, which are never redirected to the remote desktop.

- **To block all USB devices from being passed through to the desktop**: Select **Block all USB devices**.

  Selecting this option blocks the keyboard and mouse from passing through to PCoIP devices. If you want to block all USB devices except the keyboard and mouse from passing through to a PCoIP device, select Connect specific USB devices from the **Mode** drop-down and select Human Interface Devices from the **Device Class** drop-down menu. Alternatively, enter the **Vendor ID** and **Product ID** of specific human interface devices.

- **To specify particular devices to pass through**: Select **Connect specific USB devices**. Specify the USB devices the Connection Broker can passthrough, as follows:

  - Select an item from the **Device Class** drop-down menu to pass through an entire class of devices.

  - Enter a **Vendor ID** and **Product ID** to pass through a specific type of device.

If you are upgrading from an old version of the Connection Broker, the device checkboxes convert to the new settings, as follows:

- **External Disk** = 08 - Mass Storage from the **Device Class** drop-downs
- **Camera** = 06 - Imaging or 0E - Video from the **Device Class** drop-down
- **Printer** = 07 - Printer from the **Device Class** drop-down
- **Security Device** = 0B - Smart Card from the **Device Class** drop-down

 Leostream Connect uses port 20020 for USB traffic. Ensure that this port is open. On Windows client devices, the Leostream Connect installer automatically adds an exception for this port to the Windows Firewall. You must manually open USB port 20020 when running Norton Antivirus™ software from Symantec Corporation..

Printer Redirection

When using the Windows version of Leostream Connect, Microsoft RDP provides native printer redirection. To redirect all client printers, include the following line in the RDP configuration file found in the user's protocol plan.

```
redirectprinters:i:1
```

If you are using RDP to redirect printers, you do not need to enable printer redirection through Leostream Connect. For cases that do not use RDP or do not use RDP to redirect printers, the Connection Broker provides two methods for attaching printers to the remote desktop.

1. Redirect USB printers attached to the client
2. Assign network printers based on the client's location

Redirecting USB Printers

You can use Leostream Connect USB redirection to redirect USB printers from the client to the remote desktop. When redirecting printers, ensure that the appropriate printer drivers are installed on the remote desktop. To enable USB printer redirection:

1. Enable Connection Broker USB device management, as described in **USB Device Management**.
2. In the **USB Device Passthrough** section of the user's policy, select Connect specific USB devices from the **Mode** drop-down
3. Select 07 - Printer from the **Device Class** drop-down. Alternatively, you can redirect all USB devices, or specify a particular printer by vendor and product ID.

Attaching Network Printers

Connection Broker Printer Plans allow you to attach network printers to the end user's Windows remote desktops based on the location of the client device. Using this *location-based printing* feature, you can:

- Register printers in Microsoft® Active Directory® servers with the Connection Broker
- Manually register a network printer with the Connection Broker
- Create printer plans, consisting of a group of printers with one default printer
- Assign printer plans to clients using locations defined in the Connection Broker
- Provide end-users with access to the network printers physically closest to their client device, no

matter what type of client device and remote viewer protocol they are using

See "Attaching Network Printers" in the Connection Broker Administrator's Guide for complete instructions.

Drive Redirection

The Windows version of Leostream Connect supports dynamic tags for the `drivestoredirect` parameter in the Microsoft RDP file, allowing you to redirect specific drive types to the remote desktop. To use these tags:

1. Go to the protocol plan that contains the RDP configuration file that should redirect drives.
2. In the **Configuration file** edit field for RDP, remove the following line, which redirects all printers:

   ```
   redirectprinters:i:1
   ```

3. Enter one of the following lines to the configuration file:

   `drivestoredirect:s:*`: Redirects all drives, including any drives that are subsequently connected

   `drivestoredirect:s:{DRIVE:CD}`: To redirect all CD drives

   `drivestoredirect:s:{DRIVE:DVD}`: To redirect all DVD drives

   `drivestoredirect:s:C:;D:;DynamicDrives`: Redirects the specified drives. In this example, the C and D drives are redirected. The `DynamicDrives` tag indicates RDP should redirect subsequently connected.

Chapter 5: Smart Card, Biometric and Proximity Card Support

Leostream Connect supports smart card, fingerprint, and proximity card authentication methods, including:

- Java™ smart cards used in conjunction with AET **SafeSign Identity Client**® software.
- Italian Carta Sanitaria and Carta Operatore smart cards and ACOS5 smart cards used in conjunction with bit4id Card Manager Admin software and readers.
- Common Access Cards (CAC) used in conjunction with ActivIdentity® ActivClient™ security software.
- Smart cards compatible with the IAS (Identification, Authentification et Signature) middleware (Pilote Carte IAS), jointly developed by Dictao and Gemalto. This feature includes support for French CPS (health care professional's card) certificates.
- Fingerprint authentication when using the DigitalPersona® Pro for Active Directory® fingerprint identity solution from DigitalPersona, Inc.
- Proximity card authentication when using the XyLoc system from Ensure Technologies.

Using Smart Cards with Leostream Connect

 Smart card authentication applies to the Windows version of Leostream Connect, only.

Leostream Connect supports single sign-on using a variety of smart cards and readers. When authenticating a smart card user, the Connection Broker identifies the user by matching the information on the smart card's certificate to a record in your authentication servers.

The Connection Broker begins searching for a user based on the first certificate on the card, and continues looking through the remaining certificates until it finds a match. You can alternatively allow the user to select which certificate to use for authentication by selecting the **Allow user to select certificate for smart card login** option in the **Leostream Connect Configuration** section on the **> System > Settings** page.

For each certification, the Connection Broker attempts to identify the user based on one of the following attributes. In order:

1. Distinguished Name (DN)
2. NT Principal Name (UPN)
3. Email address

If the Connection Broker does not find any of the above attributes, the Connection Broker searches the smartcard for a value in the CN string and retrieves characters up to the first forward slash (/). The Connection Broker then matches that value against the **Match login name against this field** value found on the **> Setup > Authentication Servers > Edit Authentication Server** page.

The Connection Broker assigns a policy and offers desktops based on the matched user's identity. The user is prompted for their smart card PIN when they log into their desktop.

Configuring the Connection Broker to Use Smart Cards

By default, Leostream Connect optionally allows users to authenticate via smart cards when a smart card reader is attached to the user's client. You can require or disallow smart card authentication using the **Leostream Connect Configuration** options on the **> System > Settings** page (see **Specifying Authentication Methods**).

Using AET SafeSign Identity Client® Software

To use Leostream Connect in conjunction with Java smart cards:

1. If necessary, install the drivers that come with your reader onto the client, to ensure that the operating system can communicate with the reader.

2. Install the client software, provided by AET, on each client and remote desktop. Leostream Connect requires this software in order to read the certificate from the card. Using the certificate, Leostream Connect identifies the user and passes that information to the Connection Broker, in order to retrieve the user's policy and desktop.

3. If you are using SSL, install the appropriate root certificate into the Connection Broker. The Connection Broker requires a certificate from an authority that recognizes the certificate on the smart card. Obtain an appropriate root certificate from your certificate authority and use your VMware virtualization layer console to load that certificate into the Connection Broker. (Do not use the **> System > Maintenance** page to load this certificate.)

 If you are installing the AET client onto a 64-bit machine you must install the 64-bit version of the software.

Using bit4id Card Manager Admin Software

To use Leostream Connect in conjunction with Italian Carta Sanitaria and Carta Operatore smart card or ACOS5 smart cards:

1. Install the drivers that come with your reader onto each client, to ensure that the operating system can communicate with the reader.

2. Install the bit4id Card Manager Admin software onto each client and remote desktop. This software contains the SysGillo PKCS #11 software Leostream Connect requires in order to read

the certificates from the card. Leostream Connect searches for this library in your client's system directory. If you do not install this library into the system directory, Leostream Connect attempts to locate the path for the library in the registry.

Using CAC with ActivIdentity ActivClient Security Software

Leostream Connect currently supports Common Access Cards (CAC) when used with the ActivIdentity ActivClient security software. To use CAC in conjunction with Leostream Connect:

1. Install the drivers that come with your smart card reader onto each client, to ensure that the operating system can communicate with the reader.

2. Install the ActivClient security software on the client and remote desktop. This software provides the DLLs required by Leostream Connect to read the x.509 certificates from the CAC.

Using IAS Middleware

To use Leostream Connect in conjunction with smart cards compatible with IAS middleware:

1. If necessary, install the drivers that come with your reader onto the client, to ensure that the operating system can communicate with the reader.

2. Install the Pilote Carte software on each client. Leostream Connect requires this software in order to read the certificate from the card. Using the certificate, Leostream Connect identifies the user and passes that information to the Connection Broker, in order to retrieve the user's policy and desktop.

Using SafeNet® iKey 1000 USB Tokens

To use Leostream Connect in conjunction with SafeNet iKey 1000 USB two-factor authentication tokens:

1. Install the drivers that come with your USB token onto the client, to ensure that the operating system can communicate with the device.

2. Install the iKey Component software on each client. Leostream Connect requires this software in order to read the certificate from the device. Using the certificate, Leostream Connect identifies the user and passes that information to the Connection Broker, in order to retrieve the user's policy and desktop.

Using Smart Cards Containing Multiple Certificates

When using Microsoft Vista® operating systems, users with a smart card containing multiple certificates can select which certificate to use for authentication. To invoke this behavior in Leostream Connect, enable the **Allow user to select certificate for smart card login** option on the **> System > Settings** page.

With this option enabled, when a user logs into Leostream Connect using a smart card containing multiple certificates, a dialog opens allowing them to select one of the certificates. They can then click **Login** to complete the login.

When the **Allow user to select certificate for smart card login** option is unchecked, Leostream Connect always authenticates using the first valid certificate on the smart card. Also,

 If the remote desktop is not running a Vista operating system, the desktop ignores the smart card selection.

Trouble-Shooting Smart Card Connections

If smart card connections are not completing, consider the following.

- Does the smart card contain a valid certificate for the user? If the certificate does not match the domain, or the card simply does not contain a certificate, an error dialog appears.
- Is your smart card reader capable of reading all of the types of smart cards you are using?

  Perform the following simple test prior to installing Leostream Connect. Insert a smart card into a reader and then establish an RDP connection to another desktop. If your reader is functioning properly, the RDP connection redirects the smart card to the destination machine. The remote desktop reads the card and prompts the user for their credentials.

Using DigitalPersona® Pro with Leostream Connect

The Connection Broker supports fingerprint authentication with Leostream Connect when using the DigitalPersona® Pro for Active Directory® fingerprint identity solution from DigitalPersona, Inc.

 If using the Java version of Leostream Connect, you must use version 2.0 or higher.

When using fingerprint authentication with the Connection Broker:

1. The user enters their username and, optionally, password into Leostream Connect.
2. Leostream Connect sends the username to the Connection Broker.
3. The Connection Broker responds with the desktops to offer to that user.
4. When the user selects their remote desktops and clicks **Connect**, Leostream Connect opens a connection to that desktop. The DigitalPersona GINA opens on the remote desktop.
5. The user swipes their fingerprint, for example, using the DigitalPersona U.are.U® fingerprint reader.

6. The DigitalPersona Pro for Active Directory Workstation software redirects the fingerprint on the client to the remote desktop, and signs the user in.

If the user logs into multiple desktops, they must swipe their fingerprint on each remote desktop.

Installation Requirements

To use DigitalPersona Pro for Active Directory, install the following components:

- DigitalPersona Pro for Active Directory Server 4.2.4 on your domain controller, where your Active Directory server is installed.
- DigitalPersona Pro for Active Directory Workstation 4.2.5 on your remote desktops.
- DigitalPersona Pro for Active Directory Workstation 4.2.5 on your client desktops, where Leostream Connect is installed and the fingerprint reader is connected.

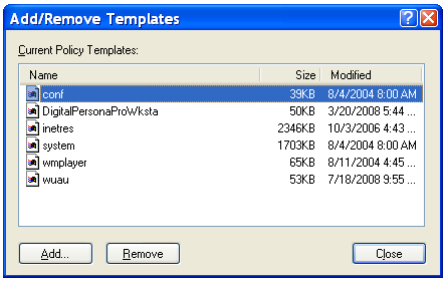
Configuring DigitalPersona Pro for Active Directory Workstation Software

Fingerprint support with Leostream Connect requires that you allow the client desktop to redirect the fingerprint data to the remote desktop. To allow this behavior, configure the DigitalPersona Pro for Active Directory Workstation software on the client desktops, as follows:

1. Open the **Group Policy Object Editor** by running the following command:

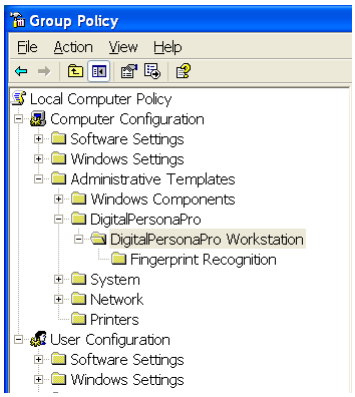
   `gpedit.msc`

2. In the left-hand panel, open the **Computer Configuration** node, if it is not open by default.
3. Right-click on the **Administrative Templates** folder.
4. Select **Add/Remove Templates** from the right-click menu. The following dialog opens.



5. In the **Current Policy Templates** list, select **DigitalPersonaProWKsta**. This `.adm` file is located in `C:/Windows/inf`.
6. Click **Add** to return to the **Group Policy Object Editor**

7. In the **Group Policy Object Editor** navigate to **Computer Configuration > Administrative Templates > DigitalPersonaPro > DigitalPersonaPro Workstation**, as shown in the following figure.

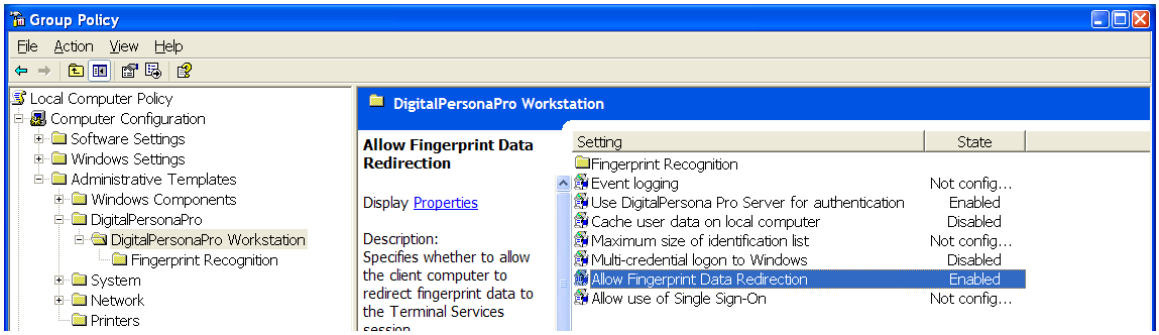


8. In the **Settings** list on the right-hand side, select Allow Fingerprint Data Redirection.

9. Click the **Properties** link to the left of the list. The **Allow Fingerprint Data Redirection Properties** dialog opens.

10. In the **Setting** tab, select the **Enabled** radio button.

11. Click **OK** in the **Fingerprint Data Redirection Properties** dialog. Your **Group Policy Object Editor** appears, as follows:



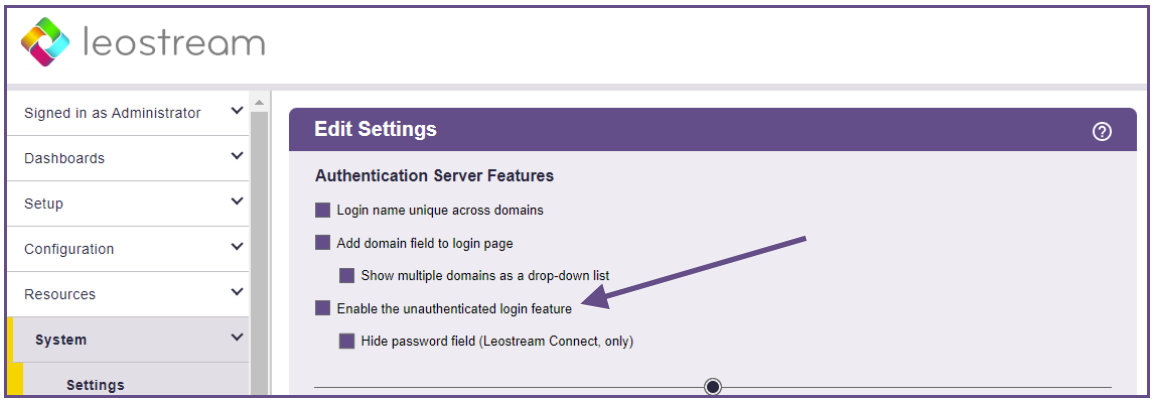
Leostream Connect does not require any specific setup to the DigitalPersona Pro for Active Directory Workstation software on the remote desktops.

Unauthenticated Fingerprint Logins

To allow a user to login using fingerprints without requiring an additional password, enable unauthenticated logins for Leostream Connect, as follows:

1. Go to the **> System > Settings** page. The **Edit Settings** page opens.

2. In the **Authentication Server Features** section, select the **Enable the unauthenticated login feature** option, as shown in the following figure.



3. Optionally select the **Hide password field (Leostream Connect, only)** option to remove the password edit field from the Leostream Connect login dialog.

4. Click **Save** on the **Edit Settings** page.

In this mode, when a user opens Leostream Connect, the **Login User** dialog displays only the fields for entering their username and domain, if applicable.

When the user clicks **Login**, the Connection Broker identifies the user based on the user name and domain, and offers the user their appropriate desktops. The remote desktop then prompts the user to swipe their fingerprint when they login.

XyLoc Proximity Card Authentication

Leostream and **Ensure Technologies** have partnered to provide an integrated proximity card solution for VDI using the Leostream Connection Broker with XyLoc proximity cards. Proximity card authentication provides ease-of-use and additional security for VDI environments. The healthcare industry, in particular, uses proximity card authentication to increase HIPAA compliance.

In this solution, the XyLoc software retrieves the user's information from their XyLoc proximity card and unlocks the client device. On unlock, Leostream Connect automatically grabs the user identity from the XyLoc software and logs the user into the Connection Broker. The Connection Broker then authenticates the user based on those credentials and offers the user their resources. If the user is offered a single resource, Leostream Connect automatically connects the user to their resource using single sign-on. From the user's perspective, they approach the client device and are automatically logged into their desktop.

Leostream Connect uses the personal name associated with the XyLoc card as the user login name.

To integrate the two products, first configure your XyLoc system independently of Leostream. When configuring your XyLoc users, you should select the **Must Enter Password** mode for each user. Other modes, such as the **Select User** mode can produce unexpected results under some conditions, for example, if the user manually disconnects from their desktop or if the user's password expires.

After the XyLoc software and sensors are installed on your client devices, you can add Leostream Connect, as follows.

1. Log into the client device as the XyLoc generic system user. This user should be different from any of the users that log in to Leostream.

2. Install Leostream Connect as described in the Leostream Installation Guide. During the installation, ensure that you do not select any of the following extra tasks:

    - Enable Run as Shell mode
    - Enable client-side credential passthrough
    - Enable USB over IP – If your XyLoc device is attached to the client via a USB port. If XyLoc uses a different port, you may enable Leostream USB support.

3. Start Leostream Connect and configure your Connection Broker address in the **Options** dialog (see **Configuring the Connection Broker Address**).

4. Add Leostream Connect to the list of programs that run on logon.

5. Log out of the client device.

When a user approaches the client with an active XyLoc proximity card, the client device automatically unlocks and Leostream Connect automatically logs the user into their remote desktop, if the Connection Broker offers them a single desktop. By default, when the user with the XyLoc card moves away from the client device, the XyLoc software locks the client device and Leostream Connect automatically disconnects the user from their desktop.

The XyLoc sensor attached to the client device occasionally loses connection with the user's XyLoc proximity card even though the user remains near the client device. In these cases, the XyLoc system locks the screen and Leostream disconnects the user's desktop. As soon as the XyLoc sensor picks up the proximity card, the user reconnects to their desktop without losing work. However, the end-user experience suffers due to the delay in reconnecting to the session.

You can improve the end-user experience by instructing Leostream to keep the desktop connection open for a pre-defined period of time, as follows.

1. Open the Registry Editor on the client device

2. Navigate to the following key:

    `HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect`

3. Inside of this key, add a new `DWORD` value

4. Name the value `DisconnectOnLockTimeout`

5. Set the value's data, in decimal, to the number of seconds to keep the user's connection open

after the XyLoc system locks the users screen. You can delay the disconnect for up to one hour, or 3600 seconds.

For example, with the `DisconnectOnLockTimeout` value set to 20, when the user turns away from the client device and blocks their XyLoc card from the sensor, the XyLoc software locks the client device, but Leostream Connect keeps the user's desktop session open. If, within 20 seconds, the user turns back to the client device and re-establishes the connection between the proximity card and sensor, XyLoc unlocks the screen and the user instantly sees their desktop connection. If the user does not re-establish the connection between the proximity card and sensor in 20 seconds, Leostream Connect disconnects the user's desktop session.

By default, Leostream Connect operates in conjunction with XyLoc on any client device where both products are installed. You can uncouple the two products, as follows.

1. Open the Registry Editor on the client device
2. Navigate to the following key:

   `HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect`

3. Inside of this key, add a new `DWORD` value
4. Name the value `XyLocSupportEnabled`
5. Set the value's data to zero.

HID Proximity Card Authentication with RF IDeas pcProx© Readers

Leostream Connect seamlessly integrates with the **RF IDeas pcProx© proximity card readers**, allowing users with existing HID proximity cards to connect easily to the Leostream Connection Broker and backend resources.

Leostream currently supports the USB model of the RF IDeas pcProx© readers. The serial versions of the pcProx Readers are not supported.

Enabling Proximity Card Logins in the Connection Broker

To allow users to log in using proximity cards, enable the feature, as follows.

1. Go to the **> System > Settings** page.
2. Select one of the following options from the **HID proximity card logins** drop-down menu.

   - **ID stored in Active Directory**: The Connection Broker identifies the user by matching the HID provided by Leostream Connect against HIDs stored in a field in Active Directory (see **Proximity Card Logins with HID Numbers Stored Active Directory**). Users log in by tapping

their proximity card and entering their Active Directory password.

- **ID stored in Connection Broker**: The user enrolls their HID with the Connection Broker the first time they log into Leostream Connect. The Connection Broker then stores the HID to identify the user on future logins (see **Proximity Card Logins with HID Numbers Stored in Connection Broker**). Users subsequently log in by tapping their proximity card and entering their Active Directory password.

- **ID and PIN stored in Connection Broker**: The user enrolls their HID with the Connection Broker and specifies a Personal Identification Number (PIN) the first time they log into Leostream Connect. The Connection Broker then stores the user's HID and password to identify and authenticate the user on future logins (see **Proximity Card Logins with HID Numbers and PINs Stored in Connection Broker**). Users subsequently log in by tapping their proximity card and entering their PIN.

3. If users are allowed to bypass proximity card authentication and, instead, provide their username and password to log in to Leostream, select the **Allow username/password override for proximity cards** option. If this option is not selected, the user must present a proximity card to log in to Leostream from a client device with an attached proximity card reader.

4. If you want users to log out when they tap their proximity card a second time, select the following options.

   - **Close connections when smart card is removed from reader:** With this option selected, Leostream Connect interprets the second tap as a "smart card removal" and automatically disconnects the user from all their open desktops.

   - **Log out user after last connection is closed (opens Login dialog):** With this option selected, after the **Close connections when smart card is removed from reader** option disconnects from all desktops, Leostream Connect automatically logs out the user.

5. Click **Save** on the **Edit Settings** form.

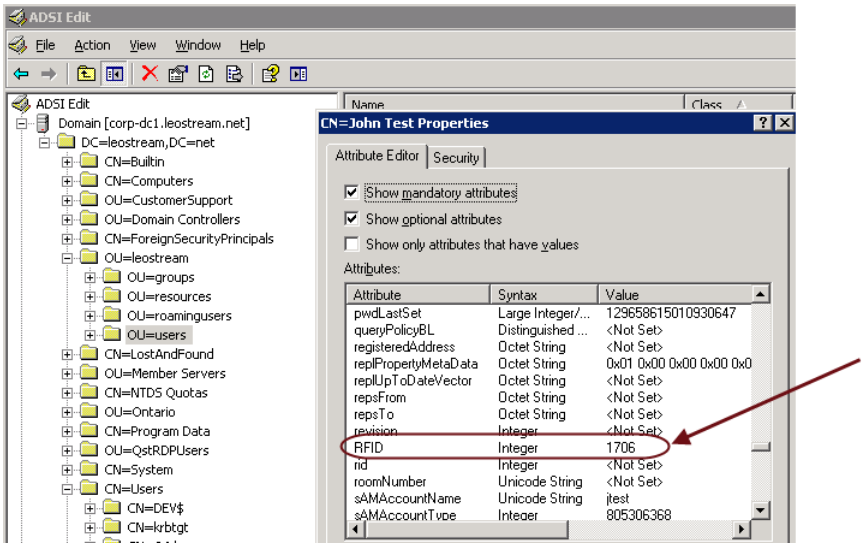
 You do not need to select the **Smart card** authentication method to allow users to login using proximity cards. The Connection Broker considers the proximity card login as a form of username and password login.

Proximity Card Logins with HID Numbers Stored Active Directory

If you select **ID stored in Active Directory** from the **HID proximity card logins** drop-down menu, you must add a custom Active Directory attribute to your authentication server and register each user's ID in that attribute.

You can use the Active Directory Schema editor to add the attribute and assign it to the appropriate class. Please consult your Active Directory documentation for more information.

After adding the attribute, use the ASDI Edit snap-in to assign values to the new attribute for each user. For example, the following figure shows a value assigned to the new attribute **RFID** for the John Test user.



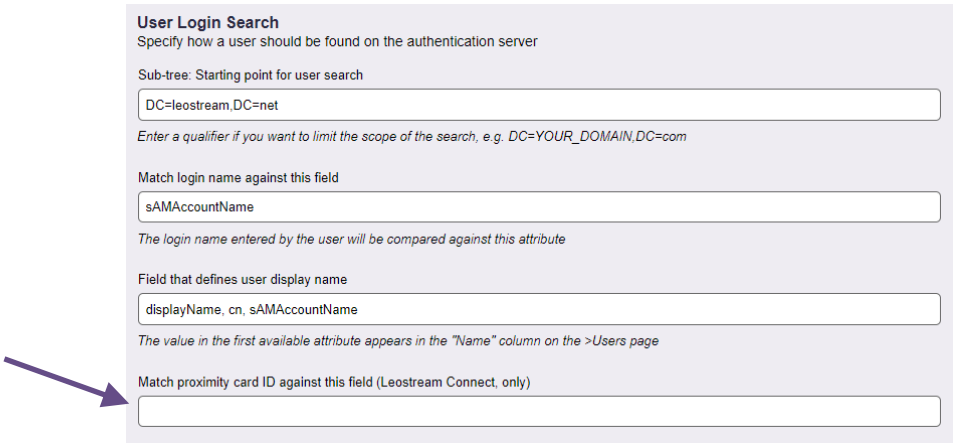
You must then tell the Connection Broker the name of the Active Directory attribute that contains the card IDs, as follows.

1. Go to the **> Setup > Authentication Servers** page.

2. Edit the Active Directory authentication server that contains the custom attribute.

3. In the **Edit Authentication Server** form, scroll down to the **User Login Search** section.

4. Enter the attribute name into the **Match proximity card ID against this field (Leostream Connect, only)** field, as shown in the following figure.



5. Click **Save** on the **Edit Authentication Server** form.

In this configuration, if the client device has an RF IDeas pcProx card reader plugged into its USB port, Leostream Connect prompts for the user to tap their card. After the user taps their proximity card, they are prompted for their Active Directory password.

Leostream Connect passes the user's proximity card ID and password to the Connection Broker. The Connection Broker identifies the user by matching that ID against the IDs registered in your custom Active Directory attribute. After the Connection Broker finds a match, it authenticates the user using their username and password, and sends the username back to Leostream Connect.

Proximity Card Logins with HID Numbers Stored in Connection Broker

If you select **ID stored in Connection Broker** from the **HID proximity card logins** drop-down menu, the user must enroll their HID number with the Connection Broker the first time they tap their proximity card. To enroll a proximity card:

1. Launch Leostream Connect. It displays the prompt for the proximity card.

2. Tap the proximity card on the RF IDeas pcProx card reader. Leostream Connect opens the **Proximity Card Enrollment** dialog.

3. Enter the username, password, and domain for the user associated with the tapped proximity card.

4. Click **Enroll**.

The Connection Broker stores the users HID number in the user's Connection Broker record, found on the **> Resources > Users** page. To see the stored HID, click the **Edit** link associated with the user's record. The **Edit User** form opens and displays the user's stored HID.

The Connection Broker uses the password and username provided during enrollment to log the user into their remote desktop. The Connection Broker does not store the user's password. Therefore, for single sign-on to the remote desktop after enrollment, when the user subsequently taps their proximity card, the Connection Broker prompts them to re-enter their password.

Proximity Card Logins with HID Numbers and PINs Stored in Connection Broker

If you select **ID and PIN stored in Connection Broker** from the **HID proximity card logins** drop-down menu, the user must enroll their HID number with the Connection Broker and set their PIN the first time they tap their proximity card. When using a PIN, the user does not need to enter their Active Directory password on subsequent logins. To enroll a proximity card with a PIN:

1. Launch Leostream Connect. It displays the prompt for the proximity card.

2. Tap the proximity card on the RF IDeas pcProx card reader. Leostream Connect opens the **Proximity Card Enrollment** dialog.

3. Enter the username, password, and domain for the user associated with the tapped proximity card, then set and confirm the PIN to associate with this card.

4. Click **Enroll**.

The Connection Broker stores the users HID number, PIN, and password in the user's Connection Broker record, found on the **> Resources > Users** page. To see the stored HID, click the **Edit** link associated with the user's record. The **Edit User** form opens and displays the user's stored HID.

 The PIN and password are never displayed with the user's record.

The Connection Broker uses the password and username provided during enrollment to provide single sign-on to the user's remote desktop. By storing the password, when the user subsequently taps their proximity card to log in, the Connection Broker prompts them only for their PIN.

During a user login, if the user's password in AD is different from the password stored in the Connection Broker, the Connection Broker prompts the user to re-enroll their HID card.

Resetting the Users Stored HID or PIN

If the Connection Broker is storing the user's HID and, optionally, PIN and the user needs to reset one of these values, you must clear the existing HID number out of the Connection Broker. To clear the user's enrolled HID and PIN:

1. Go to the **> Resources > Users** page.

2. Click the **Edit** link associated with the user whose HID and PIN you want to reset.

3. In the **Edit User** form, select the **Clear the HID proximity card number** option.

4. Click **Save**.

When a user does not have a stored value, the **HID proximity number** field in the **Edit User** form displays ***no value***.

Overriding Proximity Card Logins with Username and Password Credentials

If the **Allow username/password override for proximity cards** option is selected on the Connection Broker **> System > Settings** page, users can choose to provide their username and password to log in to Leostream, in lieu of tapping their proximity card.

With this option selected, the **Click here to enter username/password** link appears on the **Login** dialog. Click the link to enter a username and password.

When the user logs out, the **Login** dialog again prompts for a proximity card.

Chapter 6: Using the Microsoft® Windows® version of Leostream Connect

Running Leostream Connect and Connecting to Resources

To run Leostream Connect, double-click on the Leostream Connect icon. For instructions on running Leostream Connect from the command line, see **Running Leostream Connect for Windows from the Command Line**.

Logging into Leostream Connect

The appearance of the **Login User** dialog depends on the Connection Broker configuration.

Authenticating with Username/Password

If you can authenticate with a username/password, the **Login** dialog includes the **User name** and **Password** edit fields. Depending on the Connection Broker settings on the **> System > Settings** page, the **Login** dialog may also contain a **Domain** field. The **Domain** field can be either an edit field or a drop-down menu containing the list of available domains.

Authenticating with Username/Password and Smart Cards

If you must provide a username/password and enter a smart card, the **Login** dialog includes the **User name** and **Password** edit fields and optionally the **Domain** field, as well as a prompt indicating that the user must insert their smart card.

Authenticating with Smart Cards

If you authenticate using only a smart card, the **Login** dialog prompts you to insert your smart card.

Insert your smart card into the smart card reader to log into Leostream Connect. If an invalid or unknown smart card is inserted into the reader, Leostream Connect issues a warning.

Authenticating with Fingerprints

If you can authenticate using a fingerprint reader, login to Leostream Connect as directed by the **Login** dialog. After you log into Leostream Connect, a dialog on the remote desktop prompts you to swipe your fingerprint.

Accessing the Login Menu from the System Tray

You can use the Leostream Connect system tray menu to access the **Login User** dialog, as follows:

1. Right-click on the Leostream Connect icon in the system tray.
2. Select the **Login** option.

If a user is already logged into Leostream Connect, the system tray menu does not contain a **Login** option. Instead, select the **Switch User** option to open the **Switch User** dialog, which allows a new user to log into Leostream Connect.

In the dialog that opens:

1. Enter any necessary credentials, such as username, password, domain, etc.
2. Click **Login**.

Connecting to Desktops

By default, if the Connection Broker offers you a single desktop, Leostream Connect automatically connects you to that resource when you log into the client. You can change this default by unchecking the **Connect to desktop after login** option on the Leostream Connect **Options** dialog (see **Setting Login Options**).

If you have more than one desktop, Leostream Connect opens the **Connect** dialog, listing your available connections.

To connect to one or more of your desktops:

1. Highlight the resource. Alternately, click **Select All** to select all items.
2. Click **Connect**.

Leostream Connect launches the display protocol associated with each selected desktop.

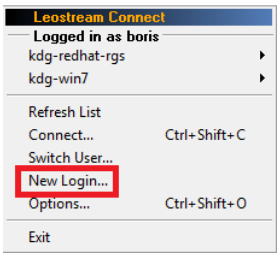
If you click **Cancel** on the **Connect** dialog, **Leostream Connect** continues to run and you remain logged into the Connection Broker, but you will not connect to any resources. Select **Connect** from the system tray menu or press Ctrl-Shift-C to reopen the **Connect** dialog and connect to your resources.

Using Multi-User Mode

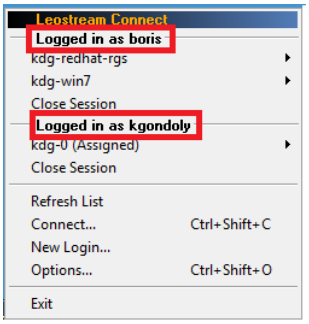
If the **Allow multiple logins using different credentials** option is selected on the Connection Broker **> System > Settings** page, you can simultaneously log into Leostream Connect with the credentials of multiple users. Leostream Connect displays the desktops offered to all logged in users. This feature is useful when you have a mixed Windows and Linux environment and you log into each environment using

different authentication servers

To use this feature, log into Leostream Connect using one set of credentials. After you log in, the Leostream Connect System Tray menu contains a **New Login** option, for example:



Selecting **New Login** opens the main Leostream Connect **Login** dialog, where you can enter a new set of credentials. After you log in with the second set of credentials, the Leostream Connect System Tray menu displays the desktops for each user, for example:



Leostream Connect uses the credentials of the user who the desktop is offered to, when connecting to a desktop.

Using Shell Mode

You can install Leostream Connect in shell mode by selecting the **Enable Run as Shell mode** task in the Installation Wizard. In this mode, `LeostreamConnect.exe` replaces `explorer.exe` in the `winlogon Shell` registry key. After a user logs into their physical client device, the Leostream Connect **Login User** dialog automatically opens. When the user logs out of their last desktop, the login dialog automatically reopens.

When the user boots a client device that has Leostream Connect installed in shell mode, Leostream Connect waits for the network to be available before opening the **Login** dialog. If the client device is experiencing networking problems, Leostream Connect opens an appropriate warning.

In shell mode, Leostream Connect must be able to communicate with the Connection Broker. If Leostream Connect cannot communicate with the Connection Broker and you are defined as an administrator on the client device, Leostream Connect prompts you for a new Connection Broker address. Otherwise, you must manually open the **Options** dialog and configure the Connection Broker address (see **Changing the Connection Broker Address**).

- If your Connection Broker uses a static IP address, enter this address into Leostream Connect as described in **Configuring the Connection Broker Address**.

- Otherwise, ensure that you have a DNS SRV record for your Connection Broker and check the **Obtain Connection Broker address automatically** option on the **Broker** tab of the Leostream Connect **Options** dialog.

Using Quick-Key Options in Shell Mode

When Leostream Connect is running in shell mode, you cannot access the Leostream Connect System tray menu. Instead, use the hover menu or the following key combinations to access Leostream Connect dialogs. These hotkeys are configurable on the **Hotkeys** page of the Leostream Connect **Options** dialog (see **Hotkey Options**).

- `Ctrl-Shift-C`: Opens the **Connect** dialog, where you can launch desktops.

- `Ctrl-Shift-L`: Locks the client workstation running Leostream Connect, if the **Allow user to lock client workstation** option is selected on the Connection Broker **> System > Settings** page.

- `Ctrl-Shift-M`: Opens the **Manage** dialog, where you can manage another user's resources.

- `Ctrl-Shift-O`: Opens the **Options** dialog, where you can modify the Connection Broker address and USB options.

- `Ctrl-Shift-X`: Exits shell mode.

Using the Shell-Mode Hover Menu

The Leostream Connect System Tray menu provides options for connecting to and disconnecting from desktops, as well as attaching and detaching USB devices and managing Leostream Connect options. When running in shell mode, end users do not have access to the System Tray. Instead, they can use the Leostream Connect hover menu.

To access the hover menu, move and hold the cursor at any edge of the primary display for two seconds. You can change the two second delay by modifying the following `DWORD` registry key. Set the registry key value in milliseconds.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect\HoverMenuDelay
```

To restrict the hover menu to appear only on certain edges, set the string registry value `HoverMenuEdge` in `HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect`. The `HoverMenuEdge` value is a comma delimited list that can contain: `all`, `left`, `right`, `top`, and `bottom`. You may specify any combination of the values. The default value is `all`.

By default, after the hover menu opens, it remains visible until the user clicks away. You can set the

DWORD value HoverMenuHideDelay in HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect to hide the hover menu automatically after an elapsed idle time. Set the registry key value in milliseconds.

The content of the hover menu is identical to that of the System Tray menu. See **Using the Leostream Connect System Tray Menu** for information on using this menu.

If you do not want to give users access to the Leostream Connect menu, set the DWORD value of the following registry key to zero.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect\HoverMenuEnabled
```

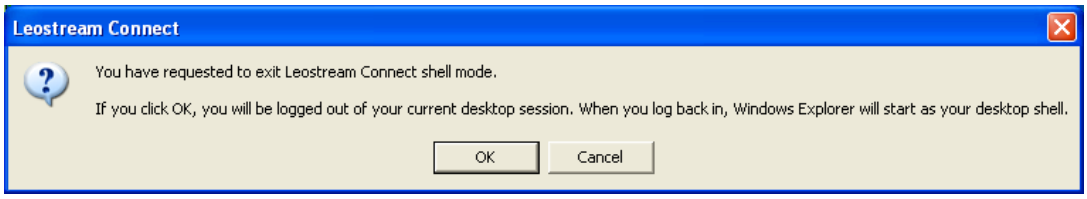
The **Exit** menu closes all desktop connections and logs the user out of the client device.

Changing the Connection Broker Address

To point Leostream Connect at a different Connection Broker, press Ctrl-Shift-O to open the **Options** dialog. Use the settings on the **General** tab to change the Connection Broker address (see **Configuring the Connection Broker Address**).

Exiting Shell Mode

To exit shell mode, press Ctrl-Shift-X. Leostream Connect prompts you to confirm that you want to exit shell mode, as shown in the following figure.



Click **OK** to exit shell mode. Leostream Connect automatically logs out the current session. You must log back in to access the explorer.exe shell.

When you log back in, Leostream Connect no longer runs in shell mode. Ensure that your Connection Broker is properly running; start Leostream Connect; and confirm that the IP address used by Leostream Connect is correct before returning to shell mode.

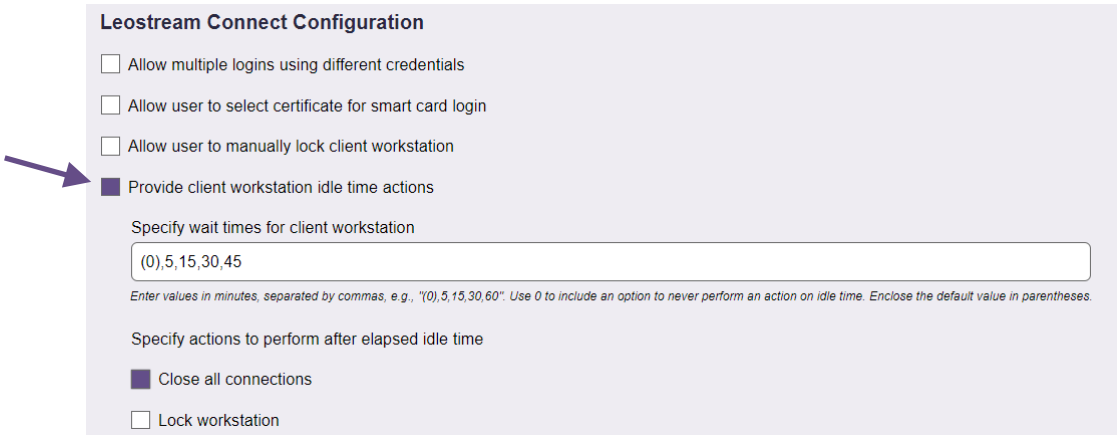
If users do not need access to the Leostream Connect menu, set the DWORD value of the following registry key to zero.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect\HoverMenuEnabled
```

Using Client-Side Idle Actions

The Connection Broker allows users to automatically lock their client device and close all their connected desktops after the client device is idle for a specified length of time.

To enable client-side idle-time actions, select the **Provide client workstation idle time actions** option on the Connection Broker **> System > Settings** page, shown in the following figure.



After selecting this option, additional settings appear that allow you to configure the default behavior for the user's client. The user can override these default values using the Leostream Connect **Options** dialog (see **Setting Client Workstation Idle-Time Options**)

1. In the **Specify wait times for client workstation** field, enter all the possible wait times the user can select from. Use a zero (`0`) to indicate the user has the option to never perform an action no matter how long the client is idle. All wait times are entered in minutes.

   Enclose the default value in braces, for example `{0}`.

2. In the **Specify actions to perform after elapsed idle time**, indicate the default actions Leostream Connect takes after the client passes its specified idle time.

   - The **Close all connections** option automatically closes all open desktop connections without prompting the user.

   - The **Lock workstation** option automatically locks the client workstation. If Leostream Connect is not installed in shell mode, the native Windows locking mechanism is used. If Leostream Connect is running in the Windows shell, Leostream Connect uses its own locking mechanism.

Locking the Client Session

Leostream Connect for Windows operating system can provide the user with an option to lock their client workstation, instead of their remote connection. To enable client-side locking, select the **Allow user to lock client workstation** option on the Connection Broker **> System > Settings** page.

With the previous option selected, the Leostream Connect system tray menu contains a **Lock Workstation** option. Selecting this option, or pressing `Ctrl-Shift-L`, locks the client workstation. The appearance of the locked workstation depends on if Leostream Connect is running in the system shell.

- If Leostream Connect is running in the system shell, the Leostream Connect **Unlock** dialog appears. In this case, the user that is logged into Leostream Connect must enter their password into the **Unlock** dialog to unlock the client workstation. Typically, this is a different user than the user that is logged into the client device.

   Only the user that locked the client workstation can unlock Leostream Connect.

- If Leostream Connect is running as an application not in the system shell, the native Windows lock screen appears. In this case, the user that is logged into the client device must enter their password to unlock the client workstation.

Client-Side Credential Passthrough

When repurposing desktops and laptops as VDI clients, end users must provide their credentials in two places:

1. When logging into their physical client device.

2. When logging into their VDI client.

Leostream Connect credential passthrough shrinks the two-step process into a single login, allowing end users to seamlessly launch their remote desktops directly after logging into their physical client device.

Credential passthrough is most effective when used in conjunction with Leostream Connect in shell mode. With these two features working together, you can lock down your fat desktops and laptop, turning them into repurposed thin clients.

To enable credential passthrough, install Leostream Connect with the **Enable client-side credential passthrough** task selected in the Installation Wizard (see the Leostream Installation Guide).

Example: Credential Passthrough with Shell Mode

If you install Leostream Connect in shell mode and with credential passthrough, end users experience the following behavior.

1. The user boots up their desktop/laptop and see the normal Windows login prompt.

2. The user enters their credentials into the Windows login prompt.

3. Because Leostream Connect is in shell mode and using credential passthrough, after the user logs in, Leostream Connect automatically starts up (without presenting a login dialog), grabs the user's Windows logon credentials, and passes those credentials to the Connection Broker.

4. If the user's policy offers them a single desktop, Leostream Connect automatically launches the remote session. If the user's policy offers them multiple resources, Leostream Connect offers the list of resources.

5. When a remote session is launched, Leostream Connect automatically signs the user into the remote session. From and end user's perspective, it's as if their original Windows login, logged them directly into the remote session.

6. When the user logs out of the remote session, they are logged out of Leostream Connect and the physical client device, going back to the original Windows login screen.

If credential passthrough is on but Leostream Connect is not in shell mode, after the user logs into their client device, they must manually launches Leostream Connect. At this point, Leostream Connect automatically starts up (without presenting a login dialog), grabs the user's Windows logon credentials, and passes those credentials to the Connection Broker. For security reasons, after the first login, end user's must re-enter their credentials to log into Leostream Connect.

Configuring Options on Microsoft® Windows® Operating Systems

Use the Leostream Connect **Options** dialog to set logging, USB, and Connection Broker options. You must start Leostream Connect to access the **Options** dialog.

To configure Leostream Connect options:

1. Right-click on the Leostream Connect icon running in the system tray.

2. Select Options.... The **Options** dialog opens.

General Options

Setting Login Options

The **Leostream Connect Startup** section on the **General** tab contains options that control Leostream Connect behavior when the user logs in. In general, leave these options selected to provide the smoothest end-user experience.

- **Login to Connection Broker**: Indicates if Leostream Connect opens the **Login User** dialog when they start Leostream Connect. If you do not select this option, after the user starts **Leostream Connect they** must select the **Login** option from the Leostream Connect system tray menu to log in.

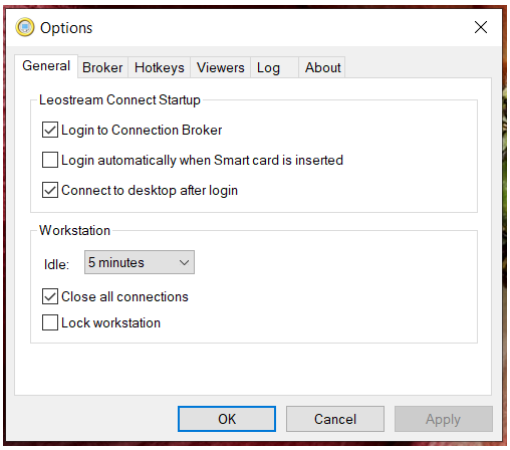
- **Login automatically when Smart Card is inserted**: If checked, when the user starts Leostream Connect, the client automatically logs in the user if a smart card reader is attached and a valid smart card is inserted in the reader. This option appears only if the **Smart card** authentication method is selected in the **Leostream Connect Configuration** section of the **> System > Settings** page.

- **Connect to desktop after login**: Indicates if the remote desktop session starts immediately after a successful login. When enabled, if the Connection Broker assigns one desktop to the user, Leostream Connect immediately connects to that desktop. If the Connection Broker assigns multiple resources, Leostream Connect opens the **Connect** dialog. If this option is disabled, the user must use the system tray menu to connect to their resources.

   Do not disable the **Connect to desktop after login** option if Leostream Connect runs in shell mode.

Setting Client Workstation Idle-Time Options

When the **Provide client workstation idle time actions** option is selected on the Connection Broker **> System > Settings** page, the **Workstation** section appears on the **General** tab, shown in the following figure.



The initial values selected in the **Workstation** section reflect the default settings on the Connection Broker **> System > Settings** page. You can modify these settings to perform actions after the client workstation has been idle for a specified length of time.

1. From the **Idle** menu, indicate how long the client should be idle before invoking the selected actions. Idle time is defined as no mouse or keyboard movement, but does not reflect CPU usage. Select **Never** to prevent Leostream from monitoring client idle time.

2. Select **Close all connections** to automatically disconnect any open desktop sessions. You remained logged into the disconnected session.

   The Connection Broker invokes the **When User Disconnects from Desktop** section of the user's Power Control and Release plans when the session is closed.

3. Select **Lock workstation** to lock the client workstation. The appearance of the locked workstation depends on if Leostream Connect is running in the client's shell.

   - If Leostream Connect is running in the client's shell, the Leostream Connect **Unlock** dialog opens. Use the credentials for the user logged into Leostream Connect to unlock the client.

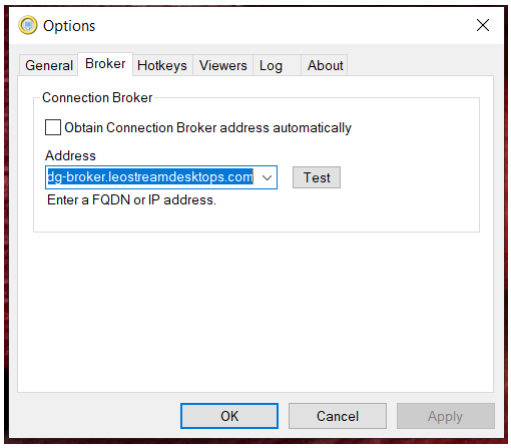
   - If Leostream Connect is *not* running in the client's shell, the native Windows operating system **Unlock** dialog opens. Use the credentials for the user logged into the client workstation to unlock the client.

Connection Broker Options

By default, Leostream Connect searches for a DNS SRV record associated with your Connection Broker. See the Leostream **DNS Setup Guide**, available on the Leostream Downloads and Documentation Web site, for instructions on creating an appropriate DNS entry for your Connection Broker. After the client starts and locates the record, it retains the record's information for the length of the TTL associated with the record. After the TTL expires, Leostream Connect queries the DNS SRV record.

If a DNS SRV record does not exist, or the Leostream Connect cannot communicate with the Connection Broker, the client displays a warning message. In this case, you must either configure a DNS SRV for your Connection Broker, or hard-code the Connection Broker address into each Leostream Connect installation. To enter a specific Connection Broker address:

1. Select the **Broker** tab, shown in the following figure.



2. Uncheck the **Obtain Connection Broker address automatically** option.

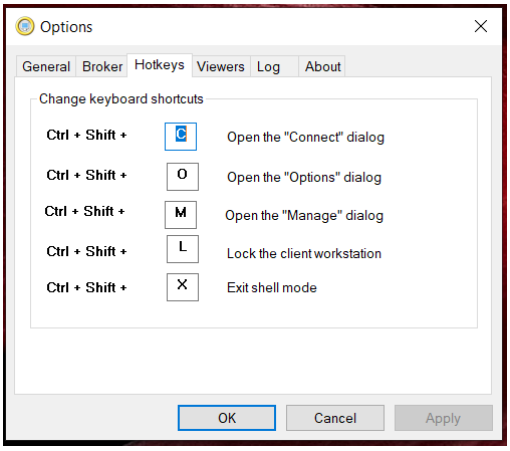
3. Enter the Connection Broker's fully qualified domain name (FQDN) or IP address in the **Address** edit field.

3. To test the Connection Broker address, click **Test**. A message opens, indicating if Leostream Connect was able to communicate with the Connection Broker.

4. Click **Apply** to store the changes and continue working with the **Options** dialog, or click **OK** to apply the changes and close the dialog.

Hotkey Options

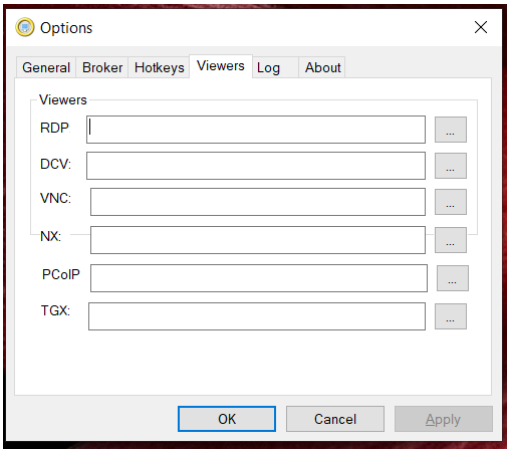
Use the **Hotkeys** tab on the **Options** dialog, shown in the following figure, to reset the letter associated with the Leostream Connect hotkeys (described in **Using Quick-Key Options in Shell Mode**.)



To reset any of the hotkeys, highlight the character in the edit field (as shown for the character to open the **Connect** dialog in the previous figure) and type the alphanumeric character to use in its place. Click **Apply** or **OK** to save your changes.

Viewer Options

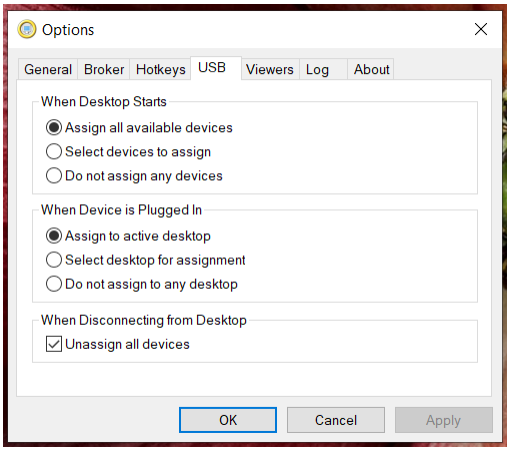
Leostream Connect attempts to discover the path to the executable for all installed display protocols on the user's client device. You can use the **Viewers** tab in the **Options** dialog, shown in the following figure, to change or add the path to any of your licensed display protocols.



For each protocol, enter or browse to the path for the appropriate executable and click **Apply** or **OK** save the changes. If a protocol you plan to use is not listed on the **Viewers** tab, your Leostream environment is not currently licensed for that display protocol. Contact **sales@leostream.com** to have the desired display protocol added to your license, at no extra charge.

USB Options

The **Options** dialog contains a **USB** tab only for users who log in with a policy that allows the Connection Broker to manage USB devices. The **USB** tab, shown in the following figure, allows you to control how USB devices are assigned to your desktops.



Assigning USB Devices When You Connect to Your Desktop

Options in the **When Desktop Starts** section allow you to configure what happens to existing USB devices when you connect to a desktop. You can choose from the following three options.

Option 1: Assign all available devices: Select this option to associate all USB devices with one desktop. If you connect to multiple desktops, the Connection Broker attaches the USB devices to the first connected desktop.

Option 2: Select devices to assign: Select this option if you want to select particular USB devices to associate with one of your desktops.

Ensure that you select option 2 if you are allowed to connect all USB devices to your remote desktop *and* you use a USB mouse or USB keyboard. Otherwise, Leostream Connect automatically redirects the mouse and keyboard to the remote machine.

With this option selected, after you select the desktop to connect, a dialog opens that you can use to indicate which USB devices to pass through.

To select USB devices:

1. Select the desktop to connect USB devices to from the **Select desktop** drop-down menu.

2. Check the boxes before the USB devices to assign to your desktop. If a device is disabled in the list, your administrator does not allow you to pass through this type of device to your connected desktops.

Mouse over any USB devices to learn more about this particular device**.**

3. Click **Connect** to launch a remote viewer to your connected desktops and assign USB devices. Click **Cancel** to stop connecting to desktops.

Option 3: Do not assign any devices: Select this option if you do not want to assign any USB devices to any of your desktops.

Assigning New USB Devices

Options in the **When Device is Plugged In** section allow you to configure what happens when you connect a USB device to your client after you are connected to a desktop. You can choose from the following three options.

Option 1: Assign to active desktop: Select this option to associate new USB devices with the desktop you are currently working with, i.e., the desktop whose remote viewer session is currently maximized.

 When you use this option, a remote viewer session must be open on your screen. Leostream Connect will not assign new USB devices to any desktop if you minimize all your remote viewer sessions.

Option 2: Select desktop for assignment: Use this option to select which desktop to associate new USB device with, as follows:

- If you are connected to a single desktop, Leostream Connect assigns the new USB device to this desktop.
- If you are connected to multiple desktops, Leostream Connect opens a dialog where you can select the desktop for attached USB devices.

Option 3: Do not assign to any desktop: Select this option if you do not want to passthrough a new USB device to any of your connected desktops.

Unassigning USB Devices

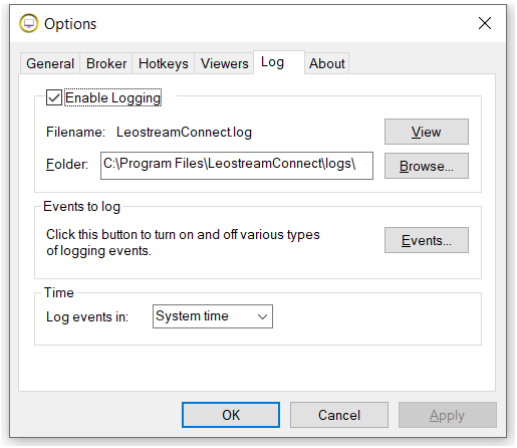
Leave the **Unassign all devices** option checked to ensure that USB devices can be reassigned to new desktops when you disconnect from its currently assigned desktop.

Leostream Connect automatically unassigns all USB devices when you exit Leostream Connect.

Log Options

To log Leostream Connect operations for debugging purposes:

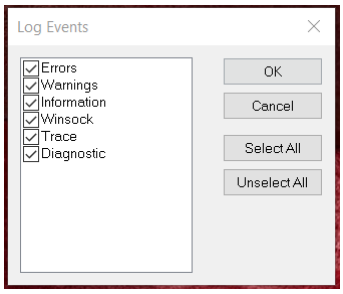
1. Select the **Log** tab, shown in the following figure.



2. Ensure that the **Enable Logging** option is selected, the default.

3. Enter a destination folder for the logs in the **Folder** edit field. Leostream Connect stores log files in this directory in a file named LeostreamConnect.log.

4. Click the **Events** button to configure the type of information to store in the Leostream Connect logs. The **Log Events** dialog, shown in the following figure, opens.



   a. Select the events to log. Use the **Select All** button to check all options, and the **Unselect All** option to remove all selections

   b. Click **OK** to store any changes, or **Cancel** to exit the dialog without saving your new selections

Ensure that the **Diagnostic** events are selected when creating logs to send to Leostream Support.

5. Use the **Log events in** drop-down menu to indicate if time stamps should be written in the desktop's system time or in UTC. If your Connection Broker is in a different time zone, logging in UTC may simplify matching Leostream Agent events to their associated Connection Broker log.

6. To view the log file, at any time, click **View**.

7. Click **Apply** to store the changes and continue working with the **Options** dialog, or click **OK** to apply the changes and close the dialog.

Leostream Connect first attempts to write the log in the directory entered in the **Folder** edit field. If it cannot write to this directory, Leostream Connect attempts to write the log into one of the following directories, in order:

1. The Leostream Connect installation folder
2. A folder named `temp` inside the Leostream Connect installation folder
3. The user's `temp` folder
4. The `root` folder

Obfuscating User Information in Logs

Leostream Connect never logs a user's password. However, usernames, domains, and desktop addresses are routinely added to the logs as Leostream Connect manages the user's session. By default, these values are written to the logs in plain text.

If you prefer, you can instruct Leostream Connect to obfuscate personal information before writing to the logs. When enabled, Leostream Connect obfuscates any personal information, including:

- User names
- Domain names
- Desktop addresses

To enable obfuscation, turn on bit 12 in the following registry key.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Leostream\Leostream Connect\TraceLevel
```

Please, contact support@leostream.com for assistance with setting this registry key.

Rotating Logs

By default, Leostream Connect maintains a single log file and continuously appends logs to that file. You can use registry keys on the client device to rotate and backup the log file, in order to limit the file size. All keys should be set for the local machine in the following location.

```
HKLM\SOFTWARE\Leostream\Leostream Connect
```

The following registry keys are supported:

- `LogBackupFrequency` – A DWORD value indicating how often to back up the logs, either:
    - 0 – Rotate the logs daily. Use `LogBackupTime` to specify the rotation time
    - 1 – Rotate logs weekly. Use `LogDayOfWeek` and `LogBackupTime` to specify the rotation time

    - 2 – Rotate the logs monthly. Use `LogDayOfMonth` and `LogBackupTime` to specify the rotation time
    - 3 (default) – Logs are never rotated
    - 4 – Rotate the logs based on file size. Use `TraceFileSize` to specify the file size

- `LogBackupTime` – A DWORD value indicating the time, in the client device's time zone, at which to back up the log file. Specify a decimal value using a 24-hour clock. For example, to back up the logs at 11pm, enter 2300.

- `LogDayOfWeek` – A DWORD value indicating the day of the week on which to back up the logs. Specify a decimal value between 1 and 7, where 1 is Sunday, 2 is Monday, and so forth. Use the `LogBackupTime` to specify the rotation time on the specified day.

- `LogDayOfMonth` – A DWORD value indicating the day of the month on which to back up the logs. Specify a decimal value for the numeric day of the month, or enter 32 to back up the logs on the last day of every month. Use the `LogBackupTime` to specify the rotation time on the specified day.

- `LogArchiveType` – A DWORD value indicating how many backup log files are retained. Set to zero to retain all backup files, or set to one to retain a specified number of backup files. Use `LogNumberOfFilesToKeep` to indicate how many backup files to retain.

- `LogNumberOfFilesToKeep` – A DWORD value indicating how many backup files to retain.

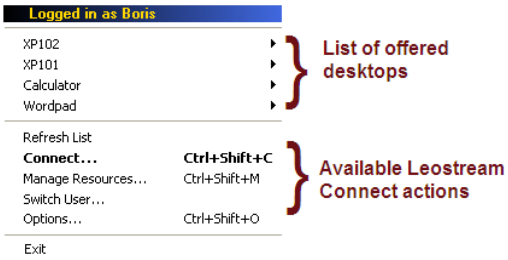
- `TraceFileSize` – When `LogBackupFrequency` is set to 4, `TraceFileSize` indicates the file size at which the log file is backed up and rotated.

About Options

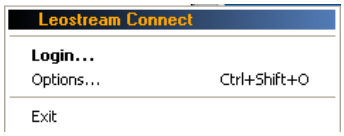
The **About** tab contains information about your Leostream Connect installation, including version number, installed options, and links to relevant Leostream Web pages.

Using the Leostream Connect System Tray Menu

Leostream Connect appears as an icon in your system tray whenever the client is running. Right-click on the Leostream Connect icon to access the Leostream Connect system tray menu. If you are currently logged into Leostream Connect, the menu lists your available desktops, followed by a list of actions, for example:



If you are not logged in, the system tray menu contains a **Login** option, as shown in the following figure.

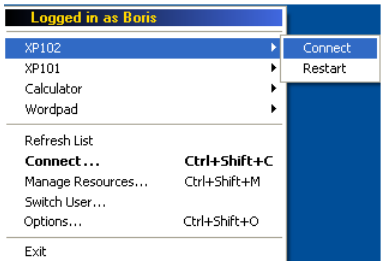


Use the **Login** option to log into the Connection Broker so that you can connect to your desktops.

Connecting to Desktops Using the System Tray Menu

After you log in to Leostream Connect, you can use the system tray menu to access the desktops offered to you by the Connection Broker, as follows:

- To connect to a particular desktop, select the name of the desktop and select **Connect**, as shown in the following figure.



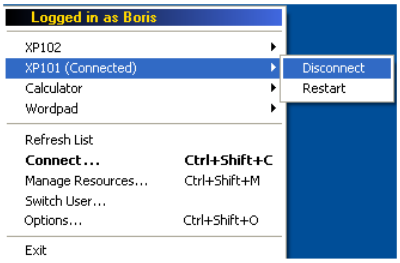
  If the **Connect** menu is disabled, you are already assigned to the maximum number of desktop allowed by the Connection Broker. To launch another desktop, you must first release one of your existing desktops.

- To restart a desktop, select the **Restart** option, shown in the previous figure.

- To update your list of offered resources, select the **Refresh List** menu item.

- To simultaneously connect to a number of desktops, select **Connect** to open the **Connect** dialog.

- To disconnect from a connected desktop, select the **Disconnect** or **Disconnect and Release** option associated with that desktop. Depending on the settings in your assigned Connection Broker policy, your system tray menu may not contain the **Disconnect and Release** option, as shown in the following figure.



When running Leostream Connect in shell mode, the **Exit** menu closes all desktop connections and logs the user out of the client device.

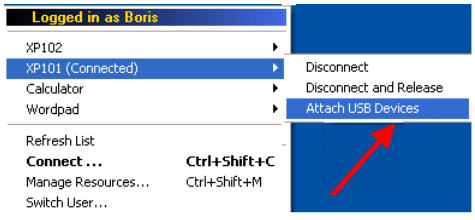
Managing USB Devices Using the System Tray Menu

After you are connected to a remote desktop, you can use the system tray menu to attach and detach USB devices.

Leostream Connect does not control how the devices or any associated applications run or perform on the remote desktop. Any drivers required by the device must be separately installed on the remote desktop.

To attach a USB device:

1. Right-click on the Leostream Connect icon in the system tray.
2. Select the name of a connected desktop to attach the USB device to.
3. Select **Attach USB Devices**, as shown in the following figure.



The **USB Passthrough** dialog opens.

If a USB device is missing from the USB Passthrough list, the device was likely grabbed by another application running on the client device. For example, Skype may grap a Webcam, making the camera invisible to Leostream Connect. Unplug and replug in the device while Leostream Connect **USB Passthrough** list is displayed, to allow Leostream Connect to see the device.

4. To select the USB devices to attach.

    1. Check the box before the desired USB devices to assign to your desktop.

    2. Mouse over any USB devices to learn more about this particular device**.**

    3. Click **Connect**.

    If you previously attached the selected USB device to another desktop, Leostream Connect prompts you to confirm that you want to move this USB device to the new desktop.

To detach a USB device from a desktop:

1. Right-click on the Leostream Connect icon in the system tray.
2. Select the name of the desktop to detach the USB device from.
3. Select **Detach USB Devices**.
4. In the dialog that opens, select the USB devices to detach.
5. Click **OK**.

Managing Resources

 This feature is available for Leostream Connect for Windows operating systems, only.

If you log into the Connection Broker with a role that has the **Allow user to manage another user's resources** option selected, the Leostream Connect system tray menu contains a **Manage Resource** option. This feature allows you to log into desktops using credentials other than those you provided to the Connection Broker.

Managing resources allows you to perform administrative tasks on desktops, including:

- Review the list of desktops that the Connection Broker offers to another user.
- Log into a desktop that is offered to another user, to perform administrative tasks on the desktop.
- Log into one of your own desktops using different credentials from what you provided to the Connection Broker.

How the Connection Broker Determines the Offered Resource List

The Connection Broker users the managing user's policy to determine what resources the managed user would see when they log in. Therefore, users should only manage resources for other users assigned to the same policy when they log into Leostream.

When you manage a user's resources, the Connection Broker uses the following logic to determine which desktops to offer you to manage.

- All desktops assigned to the managed user.

- For each pool in the **Desktop Assignment from Pools** section of the managing user's policy, the desktops determined by the **When User Logs into the Connection Broker** section after any constraints in the **Filters** section have been applied.

  When determining which desktops to offer from the pool, the Connection Broker always offers any desktops that are already assigned to the managed user. The Connection Broker then picks the remaining desktops based on the availability of desktops in the pool. Because the Connection Broker can choose any unassigned desktop from the pool, you may not see exactly the same list of desktops as would be offered to the user.

Connecting to a Managed Resource

The Connection Broker connects you to the managed desktop using the protocol set in the protocol plan of the managing user's policy.

When you log into a managed resource, the Connection Broker does *not* assign that resource over to you. Because you are not assigned to the desktop:

- The Connection Broker does not honor any settings in the **When User is Assigned to Desktop** section of the managed user's policy.

- The Connection Broker does not use the selections in the **Power control** or **Release** plan drop-down menus in the managed user's policy.

- You do not appear in the **User** column for that desktop in the Connection Broker **> Resources > Desktops** page.

- You will not appear in any resource usage reports run from the Connection Broker **> Dashboards > Reports** page.

Managing Your Own Resources

Managing your own resources allows you to log into your offered desktops using different credentials from what you provided the Connection Broker. If your Connection Broker account does not have administrative privileges for your desktop, you can use the manage resource feature to, for example, log into your desktop using administrator credentials. To manage your own resources:

1. After you log into Leostream Connect, select the **Manage Resources** menu from the system tray menu. The **Manage** dialog opens.

   By default, the **Resources** list shows your offered desktops.

2. To manage one of your desktops:

    a. Select the appropriate desktop from the **Resources** list. You can connect to one desktop at a time.

    b. Click **Connect**. Leostream Connect launches a remote session to that desktop, but does not sign you in. Instead, the Login dialog appears for that desktop.

    c. Enter credentials to log into the desktop. These can be the credentials for any user that has rights to log into this desktop.

3. To manage another desktop, repeat step 2.

 You can reopen the **Manage** dialog at any time by pressing `Ctrl-Shift-M`.

Managing another User's Resources

Managing another user's resources allows the manager to perform administrative tasks on the other user's desktop. The managing user's policy determines which resources they are allowed to manage, so ensure that managing users are offered the same policy as the users they manage. To receive a list of desktops to manage:

1. After you log into Leostream Connect, select the **Manage Resources** menu from the system tray menu. The **Manage** dialog opens.

2. To get the list of desktops offered to a particular user, simulate that user logging into the Connection Broker:

    a. Enter the user's login name in the **User name** edit field.

    b. Select the domain to log the user into from the **Domain** drop-down menu.

    The user must be in a domain defined by one of your Authentication Servers. You cannot manage resources for a user that is defined locally in your Connection Broker.

    c. Select the user's location from the **Location** drop-down menu. This menu contains all the locations defined in the Connection Broker **> Configuration > Locations** page.

    d. Click **Refresh**.

    See **How the Connection Broker Determines the Resource List** for a description of how the Connection Broker determined this list.

3. Select the desktop you want to log into from the **Resources** list. You can connect to one desktop at a time

4. Click **Connect**. Leostream Connect launches a remote session to that desktop, but does not sign

you in. Instead, the Login dialog appears for that desktop.

5. Enter credential to log into the desktop. These can be the credentials for any user that has rights to log into this desktop.

If the user is still logged into their desktop, and you are logging in with non-administrator credentials, you will not automatically log the user out. Only administrators are allowed to automatically log another user out of their desktop.

Similarly, because the Connection Broker does not assign you to the desktop you are managing, you are technically a rogue user on that desktop. The Connection Broker may offer that desktop to another user. If you are not logged into the desktop as an administrator and the Connection Broker offers that desktop to a user with a policy that logs out rogue users, the Connection Broker will automatically log you out to accommodate the new user.

Switching Users

The **Switch User** option allows you to change your user credentials after you are already logged into Leostream Connect. Selecting the **Switch User** option opens a dialog where you can enter your new credentials and click **Switch**.

Leostream Connect warns you that switching users closes any existing desktop. Click **Yes** to continue, or **No** to remain logged in as the current user.

Branding Leostream Connect for Windows

You can replace the Leostream Connect logo at the top of the **Login** dialog to brand the client with your corporate image, as follows.

1. Create a bitmap file with your corporate brand. This must be a 24-bit BMP file.

2. Save your bitmap to a file named `logo.bmp`.

3. On each client device, replace the `logo.bmp` file in the Leostream Connect installation directory with your bitmap file.

When you run Leostream Connect, your image appears on the **Login** dialog.

Create a bitmap with sufficient width to span the **Login** dialog on client devices with a high DPI. When using 96 pixels per inch, the logo should be 294 pixels wide and 40 pixels high. If your clients use 120 pixels per inch, the logo should be 392 pixels wide and 40 pixels high. At 192 pixels per inch, the logo should be 539 pixels wide.

Leostream Connect left-justifies the logo, but does not scale the logo. If you have clients with a mixture of DPI settings, ensure that any graphic in the logo renders correctly on clients with the lowest DPI.

Running Leostream Connect for Windows from the Command Line

You can run the Leostream Connect client from the command line, using the following syntax:

```
LeostreamConnect.exe -address broker_address:port options
```

Available options include the following:

- `-domain` or `-d`: The domain name to log the user into.
- `-user` or `-u`: The name of the user to login.
- `-pwd` or `-p`: The user's password.
- `-machine`: The name of the desktop to launch, for users that are offered multiple desktops. Use `*` to launch all connections.
- `-address`, `-cb`: The Connection Broker address and, optionally, port.
- `-login`: Use with the `-user`, `-pwd`, and, optionally, `-domain`, command line options to switch users without opening a confirmation dialog. Leostream Connect forcefully logs out any user that is already logged into the Connection Broker.
- `-logout`: Forcefully log out the user that is currently logged into Leostream Connect. Leostream Connect continues to run.
- `-closeall` or `-ca`: Closes all desktops that have been connected to via Leostream Connect.
- `-clearuser`**:** Forces the **Username** field to be empty when launching Leostream Connect, even if a username is specified.
- `-noprompt` or `-np`: Use in conjunction with command line arguments that finish with the **Login** or **Switch User** dialog opening, to suppress that dialog when the command finishes. For example, use with `-closeall` to prevent the **Switch User** dialog from opening after all connections are closed.
- `-exit` or `-e`: Exits Leostream Connect. If `-exit` is used in the same command as `-login` or `-logout`, the `-login` and `-logout` are ignored.
- `-help` or `?` - Display a message box describing the available command line options.

 You can use a forward slash (/) instead of a dash (-) in front of each option.

You can encode these command line options into a desktop icon, to open Leostream Connect in a particular configuration. For example, use the following command to encode a username and password into the command:

```
"C:\Program Files\LeostreamConnect\LeostreamConnect.exe" -user myUser -pwd Password
```

Where *`myUser`* is the user's user name and *`Password`* is their password.

 If you encode your username and password into the shortcut, Leostream Connect skips the **Login** dialog if no other form of authentication is required and logs you into the Connection Broker.

Chapter 7: Using the Java™ version of Leostream Connect

Running Leostream Connect and Connecting to Resources

To run the Java™ version of Leostream Connect, issue the following command:

```
java [options] -jar LeostreamConnect.jar
```

Where `java` is the full path to the Java executable. For a description of available options, see **Running Leostream Connect for Linux® from the Command Line**.

Logging into Leostream Connect

After you launch the Leostream Connect client, to log into your Leostream environment:

1. Enter your username and password in the **User name** and **Password** edit fields, respectively.

   ⚠ The Java version of Leostream Connect does not accept smart card, biometric, or proximity card logins.

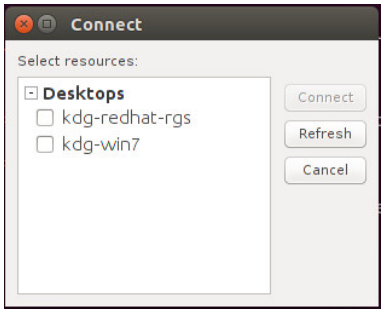
2. Enter or select a domain from the **Domain** field, if this field is shown.

3. Click **Login**.

If the Connection Broker offers you a single desktop, a connection to that desktop automatically launches. Otherwise, the **Connect** dialog opens, allowing you to select which resources to launch.

Connecting to Desktops

By default, the Java version of Leostream Connect allows you to launch multiple resources. If you are offered multiple resources, the **Connect** dialog lists the available desktops preceded by check boxes, as shown in the following figure.



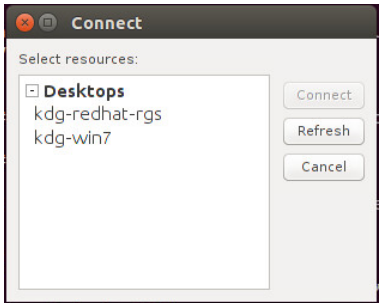
A **Restart** button appears if you are logged in as a user with a Connection Broker role and policy that allows you to restart one or more of your offered desktops (see **Allowing Users to Restart Desktops**).

To connect to one or more resources, select the checkbox associated with the resources you want to connect to.

- Click **Connect** to launch these resources
- Click **Refresh** to query the Connection Broker for an updated list of offered desktops
- If available, click **Restart** to restart the desktops before connecting. If you select multiple desktops, Leostream Connect restarts all selected desktops before opening any remote viewer. Restarting multiple desktops could take a significant amount of time.

  If you do not have permission to restart all of the selected desktops, Leostream Connect indicates which desktops will not be restarted before establishing the connection.

If you are restricted to launch a single resource, the **Connect** dialog lists the available resources in a single-selection list, as shown in the following figure.



To connect to a resource, select the resource you want to connect to.

- Click **Connect** to launch this resource
- If available, click **Restart** to restart the desktop before connecting.

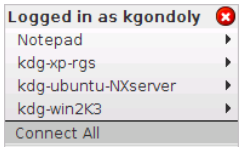
Using the Sidebar Menu

The Leostream Connect sidebar allows you to connect to and disconnect from your offered resources without having to return to the **Connect** dialog, as well as attach USB devices to your remote desktop, if applicable.

To enable the Leostream Connect sidebar, add the following lines to the `lc.conf` file.

- `sidebar_enabled = true` – Enables the sidebar. Set this value to `false` to disable the sidebar. If not specified, the default value is `false`.
- `sidebar_show_delay = seconds` – An integer value indicating the amount of time, in seconds, the user must keep their mouse at the left-most side of the screen before the sidebar opens. If not specified, this value defaults to `2`.
- `sidebar_hide_timeout = seconds` – An integer value indicating the length of time, in seconds, that the sidebar remains open after the mouse leaves the sidebar. If not specified, this value defaults to `1`.

To open the sidebar, hold the mouse anywhere along the edge of the client's display. If you are connected to a remote desktop that is not in full screen mode, place the mouse at the edge of the physical display, not at the edge of the remote session. The following figure shows an example of the sidebar.



In this menu:

- The top row displays the name of the current user. Click the red X in this row to close the sidebar.
- The middle rows display your offered resources. Each item has a **Connect** or **Disconnect** submenu. Select these items to establish a connection to the resource, or disconnect from an existing connection.

  When using HP RGS to manage USB device on the remote desktops, the Leostream Connect sidebar menu contains additional menus that allow you to select which remote desktop should have access to all USB devices. See **USB Passthrough with HP RGS** for more information.
- Any resource that is already connected is preceded by a green dot.

- Use the **Connect All** option to launch a connection to all resources.
- Use the **Disconnect All** option to disconnect from any existing resource connections.

Simulating Shell Mode

The Windows version of Leostream Connect can be used in the `shell` registry key to create a shell-mode installation. However, the Java version of Leostream Connect requires that you simulate shell mode using a script.

The script automatically launches Leostream Connect when the user logs in to the Linux desktops, and effectively disables the **Cancel** button by placing the call to launch Leostream Connect in a `while` loop. For example:

```
if [ -f /opt/leostreamconnect/LeostreamConnect.jar ] ; then
   echo "Launching LSCj.... "
   while :
      do
        java -jar /opt/leostreamconnect/LeostreamConnect.jar
      done
   echo "exiting LSCj ...."
fi
```

Place this script in `/etc/X11/xinit/initrc.d`.

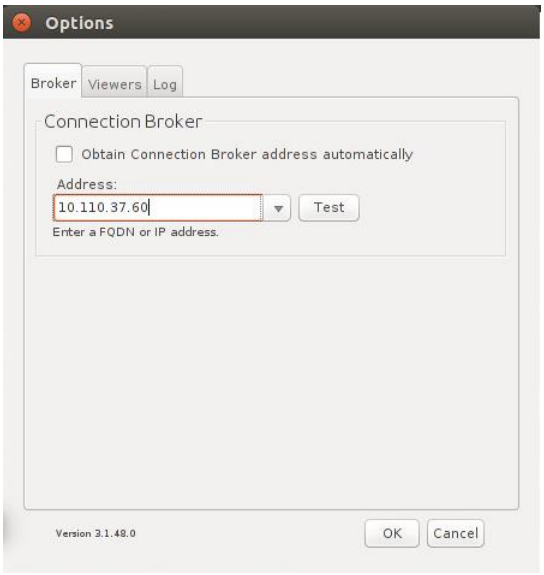
 Ensure that the command `java -jar /opt/leostreamconnect/LeostreamConnect.jar` functions properly before placing it in the `initrc.d` directory as this will affect all users that using KDE. Also, ensure that you have an alternate method for logging in to the Linux desktop, such as SSH.

Configuring Options

You can use the Leostream Connect **Options** dialog to specify the Connection Broker address and remote viewer locations. Alternately, you can configure Leostream Connect options using the `lc.conf` file (see **Writing lc.conf Files**).

Click the **Options** button to open the **Options** dialog, shown in the following figure.

 You can access the **Options** dialog by pressing `Ctrl+Shift+O`, even if the **Options** button does not appear on the **Login** dialog.



Entering the Connection Broker Address

By default, Leostream Connect uses the Connection Broker address stored in the `lc.conf` file (see **Writing lc.conf Files**). To change the Connection Broker used in this session of Leostream Connect, enter the Connection Broker hostname or IP address in the **Address** combo-box on the **Broker** tab, or select an existing address from the drop-down menu. To instruct Leostream Connect to discover the Connection Broker address using the appropriate DNS SRV record, select the **Obtain Connection Broker address automatically** option.

Clicking **OK** attempts to save the new address in the `lc.conf` file.

If you do not have write privileges to the `lc.conf` file, the new Connection Broker address is used only during the current Leostream Connect session. Closing and restarting Leostream Connect reverts to the Connection Broker address contained in the `lc.conf` file.

If you do have write privileges to the `lc.conf` file, the new Connection Broker address is stored in the file and used for all subsequent Leostream Connect sessions.

Specifying the Location of Display Protocol Clients

You can use any of the following display protocols with the Java version of Leostream Connect.

- RDP: To connect to a Windows desktop. Leostream Connect looks for the rdesktop executable when installed on a Linux desktop, and looks for the Microsoft RDP executable when installed on a Windows desktop.
- Amazon DCV and VNC: To connect to a Linux or Windows desktop
- Mechdyne TGX: To connect to a Linux or Windows desktop

- NoMachine and FreeNX: To connect to a Linux or Windows desktop
- HP RGS: To connect to a Linux or Windows desktop
- OpenText Exceed onDemand: To connect to a Linux desktop
- Teradici PCoIP: To connect from an Apple Mac OSX client device to a virtual machine running the Teradici Cloud Access Software or a workstation with an installed Teradici Remote Workstation Card (requires the PCoIP Soft Client for Mac)

To specify the path to the display protocol client, click the **Options** button on the **Login user** dialog to open the Leostream Connect **Options** dialog. On the **Viewers** tab, in the edit field associated with each display protocol, enter the full path to the file name for the protocol's executable file. You can browse for the remote viewer binary file in the following two ways.

- Click the **Browse** button next to the remote viewer to locate.
- Place the cursor in the edit field for the remote viewer and press `Ctrl-O`.

 When installing Leostream Connect on a Mac OSX device, you must specify the full path to the executable, not the path to the `.app` directory. For example, to launch the HP ZCentral Remote Boost Receiver for Mac, enter the following into the **RGS** edit field on the **Viewers** tab.

```
/Applications/HP RGS Receiver.app/Contents/MacOS/HP RGS Receiver
```

The command line parameters and configuration file for these remote viewers are determined by the protocol plans in the Connection Broker. See the Leostream Working with Display Protocols guide for information on specifying configuration files and command line parameters for the different display protocols.

Setting Log Levels

The **Log** tab allows you to specify the type of events to include in the Leostream Connect logs, and view the resultant logs. If you are gathering logs to send to Leostream support, ensure that Diagnostic event types are being logged.

To view the current logs, click the **View** button. The text to the left of the **View** button indicates the full path to the log file.

To set the logging levels:

1. Click the **Events** button.
2. In the **Log Events** dialog check the box before each type of event to log.
3. Click **OK** on the **Log Events** dialog.

Viewing Logs

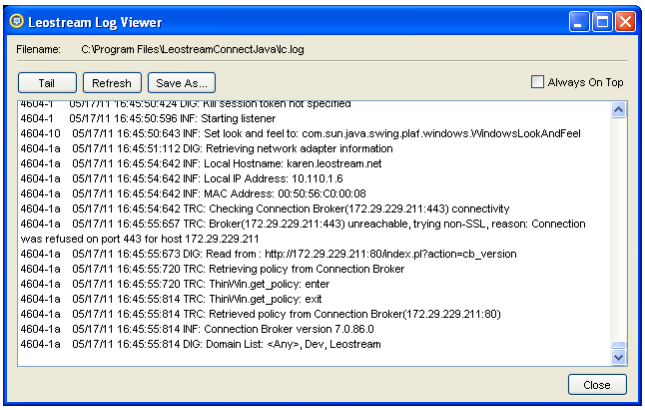
Leostream Connect writes all log information in the `lc.log` file. If you do not specify a directory for the log file, Leostream Connect places the log file in one of the following two locations, depending on the permissions allotted to the user that is running Leostream Connect.

- The Leostream Connection installation directory, if the user has permission to write to that directory and any `lc.log` file already in that directory.
- The user's directory, if the user cannot write to the installation directory.

To place the log file in a specific directory, run Leostream Connect with the `LeostreamLogDir` option (see **Running Leostream Connect for Linux® from the Command Line**). The user running Leostream Connect must have write permission for the specified directory. Otherwise, Leostream Connect places the log file into the user's directory.

Using the Graphical Log Viewer

You can access the **Log Viewer** by clicking the **View** button on the **Log** tab of the **Options** dialog. Alternatively, you can open the **Log Viewer** at any time by pressing `Ctrl+Shift+L`. The following figure shows the default **Log Viewer**.

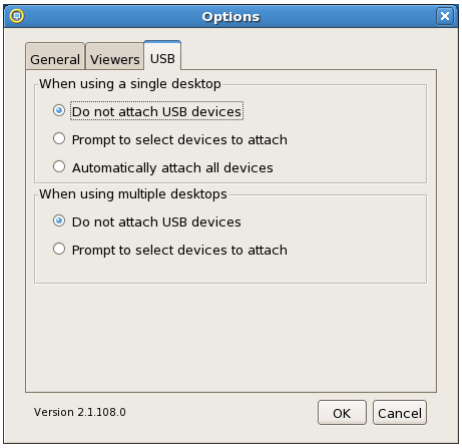


The logs display in the text field with the most recent log messages at the bottom. To use the **Log Viewer**:

- Click **Tail** or **Pause** to turn off or on, respectively, the real-time display of new log information in the **Log Viewer**. If you turn off the real-time display of the logs, Leostream Connect continues to store log information in the `lc.log` file.
- If you have stopped the real-time display of log information, click **Refresh** to update the Log Viewer with the current contents of the `lc.log` file.
- Click **Save As...** to store the log information to a file.

Specifying USB Device Redirection Options

If Leostream Connect is communicating with a Connection Broker that has the **USB passthrough control** feature selected on the **> System > Settings** page, the **Options** dialog contains the **USB** tab, shown in the following figure.



By default, Leostream Connect does not prompt the user to attach any USB devices to the remote desktop. You can specify different behavior based on how many desktops the user is offered, as follows.

For users with a single offered desktop:

- Select **Do not attached USB devices** (the default) to restrict Leostream Connect from redirecting a USB device connected to the client over to the remote desktop.
- Select **Prompt to select devices to attach** to indicate that Leostream Connect should prompt the user to redirect a USB device connected to the client over to the remote desktop. The user is prompted to redirect the USB device when they connect to their remote desktop and when a new USB device is attached to the client.
- Select **Automatically attach all devices** to indicate that Leostream Connect should automatically redirect all USB devices as soon as the user connects to their remote desktop. Leostream Connect redirects all USB devices as soon as the user connects to their remote desktop, and whenever a new device is attached to the client.

For users with a multiple offered desktop:

- Select **Do not attached USB devices** (the default) to restrict Leostream Connect from redirecting a USB device connected to the client over to the remote desktop.
- Select **Prompt to select devices to attach** to indicate that Leostream Connect should prompt the user if they want to redirect a USB device connected to the client over to the remote desktop. The user is prompted to redirect the USB device when they connect to their remote desktop and when a new USB device is attached to the client.

When **Prompt to select devices to attach** is selected and the user connects to a remote desktop, Leostream Connect opens the following dialog.

To attach a USB device to the remote desktop:

1. Select the checkbox in front of the USB devices to redirect to the remote desktop. If you do not want to redirect any USB devices, leave all checkboxes unchecked.

2. Click **Connect** to connect to the remote desktop, regardless of if you are redirecting USB devices, or not.

   Click **Cancel** *only* if you do not want to connect to the remote desktop.

Writing lc.conf Files

Leostream Connect stores a set of configuration parameters in a file called `lc.conf`. You can modify the `lc.conf` file to customize Leostream Connect, such as changing the colors used on the **Login** dialog.

By default, Leostream Connect looks for the `lc.conf` file in the Leostream Connect installation directory. If an `lc.conf` file does not exist in the installation directory, Leostream Connect looks for the file in the following directories. In order:

1. A `.leostream` directory within the Leostream Connect installation directory
2. A `.leostream` directory inside the user's home directory

Alternatively, you can store the `lc.conf` file in a user-defined directory and use the `LeostreamConfFile` option to specify the absolute or relative path to the file when you run Leostream Connect. See **Running Leostream Connect for Linux® from the Command Line** for more information.

In general, if you are running Leostream Connect in a kiosk-like mode where multiple users can access the `lc.conf` file, setup the `lc.conf` file with your default values and then mark this file as read-only for all users.
The `lc.conf` file takes the following form

```
option1 = value1
option2 = value2
```

The following options are available.

Connection Options

- **connection_broker_address**: IP address or hostname of the Connection Broker.

- **domain**: The default authentication server shown to the user in the **Domain** field.

- **logout_ondisconnect**: Set to `true` (`1`) to return to the legacy Leostream Connect logout behavior. In legacy versions of the client, users that connected to multiple resources were automatically logged out of Leostream Connect when they closed their last desktop connection. Setting `logout_ondisconnect` to `false` (`0`), the default, leaves the user logged into Leostream Connect after they close their last desktop connection.

- **recent_brokers**: A comma separated list of Connection Broker addresses that this Leostream Connect client has contacted. These addresses appear in the **Address** combo-box on the **Options** dialog (see **Entering the Connection Broker Address**). Delete this entry or individual addresses from the `lc.conf` file to clear out the contents of the **Address** combo-box.

- **sso_desktop**: Use this parameter to specify the window manager that should be used to perform single sign-on, currently either `gdm` or `lightdm`.

- **enable_input_methods:** Set it to `true` (1) when experiencing issues with the **Password** field being disabled on a Linux system.

- **caps_lock_warning**: Set to `true` (`1`) to warn users when their `Caps Lock` key is on and they are entering their password. Defaults to `false`.

External Programs

- **exceed_path:** Path to the Exceed onDemand client
- **nx_path**: Path to NX client
- **rdp_path**: Path to the Terminal Services Client (rdesktop) binary
- **rgs_path**: Path to the HP ZCentral Remote Boost Receiver binary
- **pcoip_path**: Path to the Teradici PCoIP software client
- **tgx_path**: Path to the Mechdyne TGX receiver binary
- **vnc_path**: Path to the `vncviewer` binary
- **prompt_for_path**: If set to `true` (`1`), displays a prompt to browse for the remote viewer binary file if a file is not specified in the **Options** dialog.

Common UI Controls

All colors are specified as RGB triplets, using the format `(R,G,B)`, where R, G and B are decimal values between 0-255. You can use either ones and zeros or the strings `true` and `false` for the values of parameters that accept Boolean values.

- **border_color**: Specify the color of the border around the **Login** dialog. Expects a value in the form (R,G,B), where R, G and B are decimal values between 0-255. For example, to make the border all red, use `border_color=(255,0,0)`
- **border_width:** Width in pixels of the border along the left, bottom and right of the panels. Use the `border_color` option to specify a color for the border.
- **button_face_color**: Color of the face of all buttons. The default color is based on the configured Look-and-Feel.
- **button_select_color**: Color of the background on selected buttons. The default color is based on the configured Look-and-Feel.
- **button_text_color**: Color of the text on all buttons. The default color is based on the configured Look-and-Feel.
- **control_background:** Color of the background of text fields on the **Login** and **Connect** dialogs. Default is (255,255,255).
- **decorate_window:** Show or hide default window decorations such as title bar and border. By default, the value is set to 1 to show the decorations. Set to 0 to hide the decorations. Note that some windows managers do not support hiding window decorations.
- **dialog_background:** Color of the background of the entire panel. Default is (212,208,200).
- **disable_options_tab**: *Deprecated*. See `hide_options_button`.
- **exit_ondisconnect**: Set to 1 to indicate that Leostream Connect should exit after the user closes, either by disconnecting or logging out, their last resource connection. Default is 0.
- **geometry**: Specify the initial location of the login dialog. Default is 0,0, which is the top-left corner of the screen.
- **header_background:** Background color for top panel containing the logo. If not specified, the header background color is set by the `panel_background` parameter.
- **hide_exit_button:** If set to 1, will prevent the **Cancel** button on the credentials form from appearing.

- **hide_options_button**: Set to 1 to hide the **Options** button on the **Connect** dialog. Default is 0, which displays the button. See **Configuring Options on Linux® Operating Systems** for information on available options.

- **keyboard_country**: Enter the two-letter uppercase country code for the keyboard attached to the client, for example `US` or `GB`. Must be used in conjunction with `keyboard_language`.

- **keyboard_language**: Enter a two-letter lowercase language code for the keyboard attached to the client, for example `en`, `jp`, or `fr`. `keyboard_language` must be used in conjunction with `keyboard_country`. Leostream Connect attempts to force the keyboard locale used for inputting data into text fields.

- **laf:** Specifies the look-and-feel for the Leostream Connect dialogs. When not specified, Leostream Connect defaults to the system look-and-feel. Possible values include, the following, when supported by the client device.

    - `windows` – Default Windows look-and-feel
    - `windows classic` – Windows classic look-and-feel
    - `motif` – Motif
    - `gtk` – gtk
    - `metal` – Java cross platform look-and-feel
    - `system` (default) – Default system look-and-feel

- **login_url**: Specify a full URL to include as a link on the bottom right side of the **Login** dialog.

- **login_url_label**: Specify a label for the link to display on the bottom right side of the **Login** dialog. Must be used in conjunction with `login_url`. If 9 is specified by no `login_url_label` is given, a potentially truncated version of the URL is displayed on the **Login** dialog.

- **login_url_tooltip**: Specify a tooltip to display when the user hovers the cursor over the URL displayed on the **Login** dialog. If left blank, or not included in the `lc.conf` file, no tooltip is displayed.

- **logo_path**: Specify the path to a GIF-file to replace the Leostream banner on the login dialog. The file must be sized to 294 x 40.

- **logout_ondisconnect**: Specify if users that connect to multiple resources are automatically logged out of Leostream Connect after they close their last desktop connection. If the `lc.conf` file does not contain this parameter, the default behavior is determined by the **Log out user after last connection is closed** option on the Connection Broker **> System > Settings** page.

- **resource_dlg_size:** The width and height, in pixels, of the resource selection dialog, entered as `(width, height)`.

- **selected_background**: RGB value indicating the color of the background of selected options in the **Resource Selection** dialog.

- **selected_text_color**: RGB value indicating the color of the text of selected options in the **Resource Selection** dialog.

- **sidebar_edge**: Indicates the edges of the screen where the user can access the Leostream Connect sidebar menu. Possible values include `left`, `right`, `top`, `bottom`, and `all`.

- **sidebar_enabled:** If set to 1 (`true`), enables the Leostream Connect sidebar for connecting and disconnecting from remote sessions. The default value of 0 (`false`) hides the sidebar.

- **sidebar_show_delay**: An integer value indicating the amount of time, in seconds, the user must keep their mouse at the left-most side of the screen before the sidebar opens. If not specified, this value defaults to 2.

- **sidebar_hide_timeout**: An integer value indicating the length of time, in seconds, that the sidebar remains open after the mouse leaves the sidebar. If not specified, this value defaults to 1.

- **window_title:** Set the window title. The default window title is Leostream Connect.

Other UI Controls

- **check_port_timeout**: *(Deprecated)* Specify the length of time, in milliseconds, before interrupting a port check. Default is 2000 (2 seconds). Leostream Connect 1.5 and later hard-code this value to 8000 (8 seconds).

- **serial_number:** An optional setting that will be automatically generated if not manually configured.

- **trace_level**: Specify the level of information to keep in the Leostream Connect logs. Valid trace levels include: `ERROR`, `WARN`, `INFO`, `TRACE`, `EXCEPT`, `DIAG`, `DUMP`, and `STDOUT`. With the exception of `STDOUT`, all trace levels correspond to the associated checkbox on the **Log Events** dialog. The `STDOUT` trace level instructs Leostream Connect to print the logs to standard out, as they occur.

Running Leostream Connect from the Command Line

To invoke Leostream Connect from the installation directory, enter the following command.

```
java -jar LeostreamConnect.jar
```

The following sections describe the supported command line parameters and options.

Command Line Parameters

The following command line parameters are supported by Leostream Connect version 1.5 and later.

- `-user <username>`: Specifies the username to automatically use when the client starts up.

(Replaces the obsolete `form.username` command line option.)

- `-password <password>`: Specifies the password to automatically use when the client is authenticating with the Connection Broker. (Replaces the obsolete `form.password` command line option.)

- `-readpassword`: Causes the client to wait for up to 2 seconds for the password to be written to the standard input of Leostream Connect to facilitate more secure credential passing.

- `-domain <domain>`: Specifies the domain to automatically use when the client is authenticating with the Connection Broker using the credentials provided by `-user` and `-password`. (Replaces the obsolete `form.domain` command line option.)

To use the command line parameters, append the options after `LeostreamConnect.jar`, for example:

```
java –jar LeostreamConnect.jar -user Example -readpassword -domain leostream
```

Command Line Options

You can customize Leostream Connect by invoking the command with any of the following options:

- **LeostreamConfFile**: Full path to the Leostream Connect configuration file. This directory name overrides any other possible location for the `lc.conf` file.

- **LeostreamLogDir:** Full path to the directory for storing the Leostream Connect logs. Overrides other settings.

- **LeostreamLogFileSuffix**: An additional identifier for log file names. The default log file name is `lc.log`. If this option is used, the log filename is changed to `lc-$ID.log`.

- **LeostreamLogStdOut:** Write log to standard out in addition to a file.

- **geometry**: Sets the position of the window (e.g. -Dgeometry=100,100).

To invoke Leostream Connect for Linux with any of the options, prepend the option with `-D` and add it to the command just before the `-jar`, for example, the following command sets the directory for the `lc.conf` file.

```
java –DLeostreamConfFile=/etc/leostream/lc.conf –jar LeostreamConnect.jar
```

Running Leostream Connect from a Shell Script

You can create shell scripts that launch Leostream Connect/Java so users do not have to use the command line interface. For example:

```
#!/bin/sh
JAVA_HOME=/path/to/java
LSC_HOME=/path/to/leostream
cd $LSC_HOME
$JAVA_HOME/bin/java -jar LeostreamConnect.jar
```

Where */path/to/java* and */path/to/leostream* are the full path name to your Java Run-Time Environment and Leostream Connect, respectively.