

## REMOTE ACCESS FOR ALL

User connections to anything – anytime, anywhere, from any device.



## Leostream Release Notes

Manage user connections to anything – anytime, anywhere, from any device

## Contacting Leostream

Leostream Corporation  
271 Waverley Oaks Rd.  
Suite 204  
Waltham, MA 02452  
USA

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

To submit an enhancement request, email [features@leostream.com](mailto:features@leostream.com).  
To request product information or inquire about our future direction, email [sales@leostream.com](mailto:sales@leostream.com).

## Copyright

© Copyright 2002-2021 by Leostream Corporation

This software program and documentation are copyrighted by Leostream. The software described in this document is provided under a license agreement and may be used or copied only under the terms of this agreement. No part of this manual may be copied or reproduced in any form without prior written consent from Leostream.

## Trademarks

The following are trademarks of Leostream Corporation.

Leostream™

The Leostream graphical logo™

The absence of a product name or logo from this list does not constitute a waiver of the trademark or other intellectual property rights concerning that product, name, or logo by Leostream.

HP is a trademark of Hewlett-Packard Development Company, L.P. in the U.S. and other countries. HPE is a trademark of Hewlett-Packard Enterprise Development, L.P. in the U.S. and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries. The OpenStack Word Mark and OpenStack Logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission. Leostream is not affiliated with, endorsed or sponsored by the OpenStack Foundation, or the OpenStack community. Microsoft, Active Directory, SQL Server, ActiveX, Hyper-V, Windows, and the Windows logo are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. Apache Guacamole, Guacamole, Apache, the Apache feather logo, and the Apache Guacamole project logo are trademarks of The Apache Software Foundation. Other brand and product names are trademarks or registered trademarks of their respective holders. Leostream claims no right to use of these marks.

## Patents

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

# Contents

<b>CONTENTS .....</b>	<b>3</b>
<b>CONNECTION BROKER 9.0.40.22.....</b>	<b>5</b>
Features .....	5
Resolved Issues.....	5
<b>CONNECTION BROKER 9.0.40.17.....</b>	<b>6</b>
Features .....	6
Bug Fixes .....	7
<b>CONNECTION BROKER 9.0.40.10.....</b>	<b>7</b>
Features .....	7
Resolved Issues.....	8
<b>CONNECTION BROKER 9.0.40.3.....</b>	<b>9</b>
<b>CONNECTION BROKER 9.0.40.1.....</b>	<b>10</b>
Important notes .....	10
Features .....	10
Resolved Issues.....	13
<b>CONNECTION BROKER 9.0.38.12.....</b>	<b>14</b>
Important note .....	14
Resolved Issues.....	14
<b>LEOSTREAM GATEWAY 2.0.0.11.....</b>	<b>15</b>
Minor Features and Resolved Issues .....	15
<b>CONNECTION BROKER 9.0.38.11.....</b>	<b>15</b>
Features and Resolved Issues .....	15
<b>LEOSTREAM GATEWAY 2.0.0.9 .....</b>	<b>16</b>
<b>CONNECTION BROKER 9.0.38.9.....</b>	<b>16</b>
Important note .....	16
Features and Resolved Issues .....	16
<b>LEOSTREAM GATEWAY 2.0.0.8 .....</b>	<b>18</b>
Minor Features and Resolved Issues .....	18
<b>CONNECTION BROKER 9.0.38.3.....</b>	<b>19</b>
Important note .....	19
Features .....	19
Resolved Issues.....	20
<b>LEOSTREAM GATEWAY 2.0.0.5 .....</b>	<b>21</b>
<b>LEOSTREAM GATEWAY 2.0.0.4 .....</b>	<b>21</b>
Resolved Issues and Enhancements .....	21
<b>CONNECTION BROKER 9.0.36.5.....</b>	<b>22</b>
<b>CONNECTION BROKER 9.0.36.0.....</b>	<b>24</b>
Important Notes.....	24
Connection Broker Features .....	24
Leostream Gateway 2.0.0.1 .....	27
Resolved Issues.....	27
<b>LEOSTREAM GATEWAY 1.0.0.32 UPDATE.....</b>	<b>28</b>
<b>CONNECTION BROKER 9.0.34.25 UPDATE.....</b>	<b>28</b>
<b>CONNECTION BROKER 9.0.34.22 UPDATE.....</b>	<b>29</b>

<b>CONNECTION BROKER 9.0.34.21 UPDATE</b> .....	<b>30</b>
Issue Resolutions and Minor Features.....	30
<b>CONNECTION BROKER 9.0.34.10 UPDATE</b> .....	<b>31</b>
Issue Resolutions and Minor Features.....	31
<b>CONNECTION BROKER 9.0.34.7 UPDATE</b> .....	<b>32</b>
Issue Resolutions and Minor Features.....	32
Leostream Gateway 1.0.0.27.....	32
<b>CONNECTION BROKER 9.0.34.5 UPDATE</b> .....	<b>32</b>
<b>CONNECTION BROKER 9.0.34.4 UPDATE</b> .....	<b>33</b>
<b>CONNECTION BROKER 9.0.34.2 UPDATE</b> .....	<b>34</b>
<b>CONNECTION BROKER 9.0.34 UPDATE</b> .....	<b>35</b>
Leostream Component Updates .....	35
Features .....	35
Leostream Gateway 1.0.0.24 Update.....	37
Resolved Issues.....	37
<b>LEOSTREAM GATEWAY 1.0.0.19 UPDATE</b> .....	<b>37</b>
<b>CONNECTION BROKER 9.0.10 UPDATE</b> .....	<b>38</b>
Features .....	38
Resolved Issues.....	38
<b>LEOSTREAM COMPONENT UPDATES</b> .....	<b>39</b>
<b>CONNECTION BROKER 9.0 – INITIAL RELEASE NOTES</b> .....	<b>41</b>
Important Notes.....	41
Unsupported Connection Broker 8.2 Functionality.....	41
Leostream Component Updates .....	42
Connection Broker 9.0 Features .....	42
Leostream Gateway 1.0.0.17.....	44
<b>APPENDIX A: VERSION COMPATIBILITY</b> .....	<b>45</b>
Leostream Agent Compatibility Matrix.....	45
Leostream Connect Compatibility Matrix .....	46

# Connection Broker 9.0.40.22

Connection Broker 9.0.40.22 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7. This release includes the following component updates and issue resolutions.



Future versions of the Connection Broker enable the RESTful API, by default, and therefore require additional RAM. Consider increasing your Connection Broker RAM to at least 8GB prior to the next Leostream update.

## Features

- The **Edit Desktop** page contains new options to instruct the Connection Broker to mark the desktop as Unavailable after the user logs out or the desktop is released, to support use cases where the machine requires maintenance and should be taken out-of-service when the current user is finished
- The Bulk Edit action for desktops now allows you to set the **Log user into remote desktop as** option for multiple desktops
- The **Desktop selection preference** drop-down menu in Policies provides a new option to favor the least recently offered desktops, to support use cases where a large number of users simultaneously log into the Connection Broker to connect to a desktop in the same pool, such as for a schedule class or project

## Resolved Issues

- Policies that offer stopped desktops from an Azure center now also offer desktops in the Deallocated state
- Resolves an issue introduced in version 9.0.40.17 related to launching the PCoIP client from a Web client login that was authenticated from a SAML Identity provider
- Using the desktop Bulk Edit form to convert a desktop to a Multi-User Center now marks the original desktop as unavailable instead of removing it from the > Resources > Desktops page
- Resolves an issue where search filters for columns on Resource lists could be unintentionally reset
- Improved handling of special characters in Active Directory groups used for policy assignment

# Connection Broker 9.0.40.17

Connection Broker 9.0.40.17 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7. This release includes the following component updates and issue resolutions.

## Features

- **Leostream Gateway 2.0.0.18** – Adds the header information required for the Connection Broker feature to block access to the Connection Broker Administrator and End-User Web browser Login dialog when Connection Broker forwarding is on in the Leostream Gateway
- **Blocking Logins** – The new **Block web browser login dialog when accessing Connection Broker via a Leostream Gateway** option on the > **System** > **Settings** page allows you to disable access to the Connection Broker login dialog through a Leostream Gateway, to force all login traffic to go through a SAML-based Identify Provider (requires Leostream Gateway 2.0.0.18)
- **Release Plans** – You can now display a warning message to users before they are automatically logged out of their remote desktop due to idle-time settings in Release Plans (Windows, only)
- **Protocol Plans** – When creating Protocol Plans for HTML5 VNC through the Leostream Gateway, you can now indicate if the VNC session is authenticated using the VNC server password, the Leostream user's username and password, or a hard-coded username and password
- **PCoIP Clients** – Users can now reset their expired Active Directory passwords when logging into Leostream using a PCoIP client or using the Leostream Web client to launch a PCoIP connection
- **Dynamic Tags** – A new {LOCATION} dynamic tag returns the client location used to assign the user's policy, for use in calling URLs in policies
- **RADIUS MFA** – The new **Send username to MFA provider as** option for RADIUS MFA providers allows you to change the format of the username sent to the MFA provider, in cases where the format of the username used for Active Directory logins does not match the username expected by the MFA provider
- **Logging** – The Connection Broker now distinguishes login events associated with users running the Leostream API, to support > **System** > **Log** filters that exclude API users
- **Desktop**
  - You can now indicate if users are logged into individual desktops as a local or domain user, to override the **Log user into remote desktop as** option in the user's

policy or role

- You can now specify a Protocol Plan for individual desktops, to override the Protocol Plan selected for the user, location, or policy.

## Bug Fixes

- Resolve an issue using the Connection Broker as an external authenticator for NICE DCV sessions when using fully qualified domain names
- Improve power state detection for new virtual machines provisioned in VMware environments
- No longer attempt to suspend virtual machines hosted in Scale Computing HC3
- Log an error instead of attempting to connect the user to their desktop when the Leostream Gateway fails to set up an appropriate forwarding rule
- No longer consider disabled Authentication Servers when determining if the Connection Broker is healthy using the `is_alive` function

## Connection Broker 9.0.40.10

Connection Broker 9.0.40.10 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7. This release includes the following component updates and issue resolutions.

## Features

- **Leostream Agent 5.1.24** for Linux and macOS – Supports launching multiple virtual DCV sessions on Linux DCV servers
- **Leostream Agent 7.3.13** for Microsoft Windows operating systems – Improves session handling for the HP ZCentral Remote Boost display protocol
- **Leostream Connect 4.3.9** for Microsoft Windows operating systems – Allows specifying the path to additional display protocol software clients in the **Options** dialog
- **DCV** – Protocol plans include a new option to launch virtual sessions for Linux
- **PCoIP** – Protocol plans include a new option for specifying the dynamic tag that determines the desktop attribute (hostname or IP address) sent to the Teradici PCoIP Connection Manager for establishing PCoIP connections.
- **Azure**: Pools can now provision Azure NV4A instance types

- **AWS:** Centers include two new options to indicate if the Connection Broker should wait for the two AWS initialization checks to complete before considering the instance as running and ready for connections
- **Idle-time warnings:** Release plans contain a new option to popup a warning message on the user's desktop if they are going to be forcefully logged out due to the plan's idle time setting (Windows, only)
- The **OS Version** filter on the > **Resources** > **Desktops** now allows you to filter based on specific versions

## Resolved Issues

- Resolves issues where center scans for VCenter Server 7 were aborting
- Removes jquery-1.6.4.min.js from the Connection Broker installation
- Leostream Gateway records can now be saved even if the gateway is currently offline
- When using the LDAP `mail` or `uid` attribute for matching user login names, the domain information is no longer stripped from the username before querying the LDAP server for a matching user record
- Resolves a logging error where Connection Broker logs would show a location-defined protocol plan overriding a user-defined protocol plan
- Resolves issues related to managing PCoIP Remote Workstation cards with an AWI protected by a password that includes certain symbols
- Resolves an Azure provisioning fails due to `storageAccountTypes`
- Searching for non-existent Tags no longer causes errors in the Administrator Web interface
- Resolves issues with exporting the result of tag searches



## Connection Broker 9.0.40.3

Connection Broker 9.0.40.3 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7. This release includes the following component updates and issue resolutions.

- **Leostream Gateway 2.0.0.16** – Upgrades the Apache Guacamole HTML5 viewer to version 1.3 with additional support for VNC scheme 30 when connecting to macOS desktops, and resolves an issue with log rotation in the `/var/log/tomcat` directory



Ensure you run a `yum update` on the underlying operating system prior to installing or upgrading to Leostream Gateway 2.0.0.16

- **Leostream Connect 4.3.8 for Windows operating systems** – Resolves an issue where the client could take a long time to launch when searching for VNC viewers
- Resolve an issue logging in from a PCoIP Zero client with an invalid or blank hostname
- Updates the internal PostgreSQL database to version 9.5.25
- Now saves the `REMOTE_ADDR` value in the HTTP Headers returned by client devices, to support defining locations based on these addresses
- Logs additional information about which Leostream Gateway was used to establish a user's desktop connection
- A user's column customizations on the **> Resources** pages now apply when the user directly logs into the Administrator Web interface and when it is accessed from the **Open Administrator View** link from an end user login
- Contains usability enhancements when refreshing pool counts

# Connection Broker 9.0.40.1

Connection Broker 9.0.40.1 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

## Important notes

- Connection Broker 9.0.40 includes a new feature to filter the > **System** > **Log** page by selecting individual events. This feature is not backwards compatible. If you enable this feature, older Connection Brokers will not display any information in the list. If you need to attach an older Connection Broker to a database that has been upgraded to 9.0.40, you can resolve this issue by clearing the filters for particular list or selecting the **Remove table customizations** option on the > **Dashboard** > **My Options** page.
- The internal PostgreSQL database in Connection Broker 9.0.40 has been upgraded to version 9.5.24. Future Connection Broker releases will update the internal PostgreSQL database to version 13. You may attach your Leostream Connection Broker to an external PostgreSQL version 13 database. To do so, you must allow password authentication for remote connections on your PostgreSQL server.

## Features

- **Leostream Platform Component Updates:**
  - **Leostream Connect 4.3.5 for Microsoft Windows operating systems** – Supports push notifications when MFA is enabled for a RADIUS MFA provider
  - **Leostream Agent 7.3.8 for Microsoft Windows operating systems** – The Leostream Agent service is now configured to retry to start after a failure
  - **Leostream Connect 3.7.5 for Linux and macOS** – Supports push notifications when MFA is enabled for a RADIUS MFA provider
  - **Leostream Agent 5.1.22 for Linux and macOS** – Supports idle-time notifications when installed on macOS
- **Leostream Gateway:** Gateway Clusters now allow you to indicate if the Connection Broker should set up forwarding rules on all gateways in the cluster or only on the gateway that forwarded the login traffic
- **SAML Support:**
  - You can now specify a unique Entity ID for your Connection Broker when adding a SAML-based authentication server to your Leostream environment
  - You can enable an end-user login URL to allow local and domain users to bypass

your SAML authentication server and log in with their username and password

- New edit fields and { SAML } dynamic tags in a SAML authentication server allow you to populate attributes in the user's record based on attributes returned in the SAML assertion
- The **Sign out** link on the Leostream Web client now redirects user to a **Signed out** page or to the page entered in the **URL redirect on user logout** field on the > **System > Settings** page
- **RADIUS MFA:**
  - RADIUS MFA Providers include a new checkbox to indicate if users can request a push notification MFA
  - The **Sign In Terminology** customizations now allow you to customize the text on the MFA dialog on all client types
- **NIS:** NIS authentication servers now support the **Allow users to log in with an expired password** option
- **Teradici PCoIP:**
  - Protocol plans contain a new option to launch the PCoIP Software client from a Leostream Web client login
  - The default **Alternate port for remote viewer port** used in protocol plans is now 60443
  - The **PCoIP Devices** center includes a new option to **Relay syslog events to another syslog server** allowing you to send syslog events to Leostream to enable Release Plan actions and then on to your syslog server for reporting, etc.
  - The **PCoIP Devices** center no longer includes options to automatically bind two PCoIP Zero clients with sequential MAC addresses
  - The > **Resources > Desktops** page includes a new column that allows you to display the second PCoIP Zero client connected to the desktop, for desktops with two Teradici Remote Workstation Cards
  - The Connection Broker now tries to resolve the PCoIP Zero client hostname to determine if the client's IP address has changed
- **DCV:** The Connection Broker now supports single sign-on to a NICE DCV server using authentication tokens

- **NoMachine:**
  - Protocol plans now have an option to launch the HTML5 NoMachine client included in NoMachine Enterprise Desktop
  - The policy options to enable view-only mode for NoMachine collaborations has been removed as that functionality should now be controlled by the NoMachine server
- **Scyld Cloud Workstation:** Protocol Plans include a new option to launch the for Scyld Cloud Workstation HTML5 client
- **VMware provisioning:** Virtual machines provisioned into vSphere can now be assigned to a specific VM Host Group
- **Verge.io:** Provisioning is now supported for Verge.io centers
- **Database:** You can now use SSL to connect to external PostgreSQL databases
- **Policies:** You can now schedule access to pools in a policy for different groups of users
- **Clients:**
  - Client hostnames can now be displayed in the new **Hostname** column on the > **Resources > Clients** page (hostnames currently available only for PCoIP Zero clients)
  - HTTP Headers are now stored for Leostream Connect and PCoIP clients and a new HTTP Header column is available on the > **Resources > Clients** page
- **Administrator Web Interface:**
  - Center **Refresh** intervals are now called **Scans** to more accurately portray the purpose of the action
  - Dialogs that previously popped up new Web browser windows now open in modal dialogs
  - Column filters in the tables on the > **Resources** pages now provide checkboxes in the filters to allow you to select multiple values to display in that column
  - Lists of available items for customizing Connection Broker tables are now listed alphabetically
  - The **Edit Desktop** form no longer allows you to edit the desktop MAC address


- The **Edit Gateway** form now displays the information available from the `leostream-gateway --info` CLI.
- CSS and HTML customizations to the **Sign in** page will persist through subsequent Connection Broker upgrades
- **Connection Broker Application:**
  - jQuery has been updated to version 3.5.1
  - The Connection Broker now disables automatic updates with `yum update`

## Resolved Issues

- The Connection Broker no longer removes virtual machine tags in Azure when the desktop record has no associated tags in Leostream
- The Connection Broker now uses the Forwarded-For HTTP Header instead of the immediate remote address when determining the desktop IP address, to resolve issues where desktops could be listed with the IP address of the load balancer used by the Leostream Agent for sending registrations
- The Connection Broker now uses the PCoIP Zero Client hostname to contact the client, resolving issues communicating with clients with DHCP IP addresses
- Resolved issues with the negotiation of cipher suites between the Leostream Agent and Connection Broker during agent registration
- Policies that offer stopped machines no longer incorrectly offer machines in the **Joining Domain** state

## Connection Broker 9.0.38.12

Connection Broker 9.0.38.12 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

 The Connection Broker does not install on CentOS or Red Hat Enterprise Linux version 8. Please contact [support@leostream.com](mailto:support@leostream.com) if you require support for one of these platforms.

### Important note

Leostream recommends installing the Connection Broker on a machine with at least 8GB of RAM.

### Resolved Issues

- New log entry if DUO authentication fails because the response from DUO has expired, which can occur if the Connection Broker time is incorrect
- Resolves an issue launching HTML5 RDP connections to Windows 7 remote desktops - requires Leostream Gateway 2.0.0.11
- Improved duplicate hostname detection for desktop records in a Remote Desktop Services/Multi-User Center

# Leostream Gateway 2.0.0.11

## Minor Features and Resolved Issues

- Resolves an issue launching HTML5 RDP connections to Windows 7 remote desktops
- The `leostream-gateway --info` command checks `sudo` file contents and permissions for necessary levels
- Logging enhancements

# Connection Broker 9.0.38.11

Connection Broker 9.0.38.11 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

## Features and Resolved Issues

- Users can now be restricted to send invitations for collaboration only to specified groups of users
- All collaboration dialogs now adhere to the **Display to user as** setting for the associated pool in the policy
- The `/saml` URL now returns a 404 message if SAML authentication is not enabled in the Connection Broker license key  
  
**NOTE:** Enabling SAML authentication now requires a subsequent Connection Broker reboot.
- The Connection Broker HTTP headers no longer over write iframe settings specified in the `Content-Security-Policy` HTTP header on the > **System > Settings** page
- The User Assignment Report on the > **Dashboards > Reports** page now correctly calculates the assignment time for hard-assigned desktops
- Work queue jobs running against pool objects now check if the pool was deleted prior to running, to ensure that new empty pool records are not created for the missing pool
- The setting for the **Send HTTP GET request** option in a policy now persists when the policy is saved
- New `{IP_AGENT}` dynamic tag allows you to use the IP address returned by the Leostream Agent in protocol plans

## Leostream Gateway 2.0.0.9

Leostream Gateway 2.0.0.8 includes a new Content-Security-Policy setting that is incompatible with Leostream's Duo integration when Connection Broker forwarding is on in the Leostream Gateway.

Leostream Gateway 2.0.0.9 now inherits its Content-Security-Policy from the Connection Broker, when Connection Broker forwarding is enabled.

## Connection Broker 9.0.38.9

Connection Broker 9.0.38.9 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

### Important note

- Connection Broker 9.0.38.6 has been recalled due to issues with authenticating using a SAML-based identity provider. If you are running 9.0.38.6, Leostream recommends upgrading to version 9.0.38.9.

### Features and Resolved Issues

- **Leostream Agent 7.3.5 for Microsoft Windows Operating Systems** – Accurately report disconnect events and version numbers for the NoMachine display protocol
- **Leostream Agent 5.1.13 for Linux and macOS**
  - Accurately report disconnect events for NoMachine connections to macOS
  - Support forced logout of macOS when using the NoMachine display protocol
  - Retrieve hostname and serial numbers when installed on macOS
  - Support disconnect based on idle-time when connecting to Linux desktops using Teradici Cloud Access Software (PCoIP)
- **Leostream Connect 4.2.10 for Microsoft Windows Operating Systems** - Resolves an issue where the client could crash when searching for available installed display protocol clients
- **Connection Broker Settings**
  - The **Connection Broker Security Options** section on the **> System > Settings** page has a new option to specify the `Content-Security-Policy` HTTP header, which can be modified to allow the Leostream **Sign In** page to be embedded in an iframe
  - The **Maximum number of simultaneous server requests** value on the **> System > Settings** page is now 15 for new Connection Broker installations, to prevent the Connection Broker memory from going to swap



- **NICE DCV**
  - Client-based NICE DCV connections launched using Leostream Connect or the Leostream Web client can now be sent through a Leostream Gateway
  - DCV sessions are now started before requesting the DCV connection using the HTML5 DCV client
- **Mechdyne TGX:** The Connection Broker now instructs the Leostream Gateway to open up the appropriate number of ports depending on if the TGX Sender is version 1.10 or 2.0
- **Web client**
  - The **Show** drop-down menu on the Web client now allows you to return to a list of all resources after filtering the view by desktop pools
  - The **Show** drop-down menu on the Web client no longer includes pools that the user is not offered when the **Offer desktops from this pool** policy option filters the pools based on the user's group membership
  - The Connection Broker now uses the `X-Forwarded-For` HTTP header to determine a web client's original IP address when evaluating the client's location
- **Release Plans:** The **Release to pool** option in the **When Desktop is first Assigned** section of Release Plans contains additional time intervals between one and four hours
- **PCoIP**
  - PIV card logins with PCoIP Zero Clients now work when using version 20.07 or higher of the Teradici PCoIP Connection Manager
  - Log messages related to being unable to contact the Administrator Web Interface (AWI) for a PCoIP device are now logged as Diagnostic level logging, to avoid logging these messages under nominal logging conditions
- **VMware Provisioning:** The Connection Broker now uses the Computer UUID or Host UUID to identify duplicates when provisioning in VMware
- **Active Directory Centers:** Scans of Active Directory centers now correctly report when desktops are removed from Active Directory groups
- **Azure SQL:** Resolves the issue where Leostream Agent registrations could potentially fail when the Connection Broker was attached to an Azure SQL database
- **Hard-assignments:** Clients can now be hard-assigned to a desktop that is already hard-assigned to a user

- **Licensing:** The **Apply to broker** button has returned to the Leostream License Server to support a one-click method to apply new Leostream licenses to Connection Brokers with internet access

## Leostream Gateway 2.0.0.8

### Minor Features and Resolved Issues

- Added log file rotation for the HTML5 viewer sessions stored in `/var/log/tomcat`
- Enabled font smoothing in the HTML5 RDP viewer when the **Desktop composition and wallpaper** option is selected
- Improved logging when failing to setup forwarding rules for PCoIP connections
- Ensure that `firewalld` and `redis` are running before starting the Apache service, to avoid issues that arise if third party systems such as Puppet prevent the required services from starting
- Improved logging in the Leostream Technical Support logs

# Connection Broker 9.0.38.3

Connection Broker 9.0.38.3 is an update release to Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

## Important note

Connection Broker 9.0.38 no longer supports the Connection Management Interface for PCoIP Remote Workstation Cards. You must use the PCoIP Broker Protocol to manage Remote Workstation Cards. To retain all Leostream features and functionality, you must also enable the Administrator Web Interface on all PCoIP Zero Clients and Remote Workstation Cards. Please contact [support@leostream.com](mailto:support@leostream.com) for more information prior to upgrading your Leostream environment.

## Features

- **Component Upgrades:**
  - Leostream Agent for Windows – 7.3.3 adds support for launching and monitoring NICE DCV sessions
  - Leostream Agent for Linux – 5.1.4 adds support for launching and monitoring NICE DCV sessions along with improvements for monitoring NoMachine sessions on macOS
  - Leostream Connect for Windows 4.2.9 adds support for connecting to NICE DCV sessions
  - Leostream Connect for macOS and Linux 3.7.3 adds support for connecting to NICE DCV sessions and resolves issues launching HP Remote Boost connections through the Leostream Gateway
- **NoMachine support:** Leostream Protocol Plans can now be configured to send NoMachine connections through the Leostream Gateway
- **DCV support:** Leostream Protocol Plans now support the latest version of NICE DCV that is included with AWS EC2 instances
- **PCoIP support:**
  - Leostream logins are now supported when the identify on the PIV cards is linked to an Active Directory user via the `altSecurityIdentities` attribute
  - The **Installed Protocols** column on the **> Desktops** page now distinguishes between desktops that use the PCoIP Remote Workstation Card and the PCoIP Cloud Access Software

- **Alerts:** The > **System** > **Alerts** page includes a new option to send an alert email when a Leostream Gateway goes offline
- **Locations:** Client locations can now be created using the Device and Client Software parameters
- The **Bulk Edit** feature for desktops now allows new **Notes** to be simultaneously added to multiple desktops.

## Resolved Issues

- Follow-me mode now works for PCoIP connections to Remote Workstation Cards established through the Leostream Gateway
- The power state for Azure instances is more accurately reported when users power on machines using the Leostream Web client, resulting in fewer failed desktop connections
- Saving and testing RADIUS MFA now only validates the specified hostname and port, to avoid cases where the Connection Broker could not connect to the RADIUS server to validate the shared secret
- Desktop connections forwarded through a load balanced set of Leostream Gateways now use the correct client source IP
- The Connection Broker now resends the command to join a desktop to a domain in the event the Leostream Agent is unreachable when the desktop first starts
- The `/admin` URL now correctly logs the user into the Connection Broker Administrator Web interface, if their role allows access
- Desktops marked as Unavailable or Duplicates no longer consume Leostream Desktop licenses.
- Resolves issues related to assigning policies when users are members of nested Active Directory groups
- UTF-8 characters can now be used for the message displayed using the **Additional text for right side of sign-in form** option on the > **System** > **Settings** page
- Users logging into Leostream with a username formatted as a `userPrincipalName` can now connect to their desktops using the Leostream HTML5 viewer.
- Center scans no longer fail if a desktop is deleted in the middle of the scan
- When defining pools based on LDAP attributes, the selected LDAP attributes are no longer duplicated when you edit the pool

- Properly block logins from a SAML Identify Provider with the **Assignments** table sets the **Default Policy** to **<None – prevent user login>**
- No longer log spurious warning messages about unknown PCoIP Host Cards for desktops with two PCoIP Remote Workstation Cards
- Session information is now transferred between Connection Brokers in a cluster over port 443 instead of port 80, resolving session expiration errors when port 80 is blocked
- Distinguish PCoIP software clients from zero clients to stop attempts to contact the Administrator Web Interface for PCoIP software clients
- No longer update desktop records when its list of IP addresses is reordered but otherwise identical to the list already in the Connection Broker, to avoid superfluous log messages
- Resolved poorly formatted error messages that could result if the policy was set to open the HTML5 connection in a new tab and the user's policy blocked the connection

## Leostream Gateway 2.0.0.5

Version 2.0.0.5 addresses issues introduced in the updated Guacamole HTML5 viewer related to launching HTML5-based VNC sessions to macOS desktops.

## Leostream Gateway 2.0.0.4

Version 2.0.0.4 of the Leostream Gateway addresses recent security concerns related to the HTML5 viewer. All Leostream customers are encouraged to upgrade to this version of the Leostream Gateway.

## Resolved Issues and Enhancements

- The Apache Guacamole HTML5 viewer has been upgraded to version 1.2, to address the recently announced reverse RDP vulnerabilities
- New CLI options are available to enable and disable the Guacamole service, for environments that do not require the HTML5 Viewer
- Logging out of an HTML5 viewer session now redirects the user back to the Connection Broker login page or closes the browser tab, based on the user's policy setting

# Connection Broker 9.0.36.5

Connection Broker 9.0.36.5 is a patch release to Connection Broker 9.0.36.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

## Important notes:

- Connection Broker 9.0.36 is the last version of the Leostream Connection Broker that will support the Teradici Connection Management Interface (CMI) used by older firmware versions.

Please plan to upgrade your PCoIP Zero client and Remote Workstation Card firmware to version 20.x.x before upgrading to future Leostream releases.

- Connection Broker 9.0.36 is not available for Ubuntu or SUSE operating systems. For more information on the Leostream roadmap to support those operating systems, please contact [info@leostream.com](mailto:info@leostream.com).


## Issue Resolutions and Minor Features


- **Leostream Agent for Windows - version 7.2.12** – Updates OpenSSL to version 1.1.1g and improves detection of changes to the Connection Broker address in the DNS SRV record
- **Leostream Agent for Linux and macOS – version 5.0.15** - Resolves issues detecting MAC addresses for machines using Infiniband cards and allows simultaneous communication with Connection Brokers discovered using the DNS SRV record and all Connection Brokers manually entered into the `leostreamagent.conf` file
- **PCoIP support**
  - Resolves issues related to using Leostream with the 20.x.x versions of Teradici firmware, and higher
  - The Leostream Connect client can now launch the Teradici PCoIP Software client to connect to Remote Workstation Cards through the Leostream Gateway
- **Verge.io support** – Added the Refresh interval and other standard options to Verge centers
- **Google Cloud Platform** – Provisioning and deleting instances in Google Cloud Platform is now fully supported
- **Leostream Gateway support**
  - Addresses specified on the > **Setup** > **Gateways** page now support an `IP:port` syntax

- Additional logging is now available when HTML5 connections are established through the Leostream Gateway
- You can now specify the VNC port to use for HTML5 VNC sessions through the Leostream Gateway
- **Leostream Web client**
  - Desktop icons now reflect the desktop's power state
  - Resolves an issue where the Web client would crash if a pool did not have an available resource to offer to the user and the user's policy was set to inform the user about empty pools
- Resolved issues when using UTF-8 (double-byte) characters for > **System > Settings**
- No longer release long-standing assignments if reconnecting to a disconnected session fails

# Connection Broker 9.0.36.0


Connection Broker 9.0.36.0 is an update release for Connection Broker 9.0. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7.

 The Connection Broker does not install on CentOS or Red Hat Enterprise Linux version 8. Please contact [support@leostream.com](mailto:support@leostream.com) if you require support for one of these platforms.

 Leostream updated the Connection Broker RAM recommendations from 2GB to 4GB. Connection Brokers running on a machine with 2GB or RAM may be updated to version 9.0.36, however Leostream recommends scheduling an upgrade to the available RAM in advanced of features scheduled for upcoming Leostream releases.

This release includes the following enhancements and issue resolutions when compared to Connection Broker version 9.0.34.25.

## Important Notes

 Support for Excel Web queries and for the PCoIP Connection Management Interface have been removed in Connection Broker 9.0.36. If you require support for either of these features, please contact [support@leostream.com](mailto:support@leostream.com).

This release contains a beta version of the initial RESTful API for Connection Broker configuration. Please contact [support@leostream.com](mailto:support@leostream.com) if you are interested in testing this functionality.

## Connection Broker Features

- **Leostream Platform Components**
  - **Leostream Gateway 2.0.0.1** – see [Leostream Gateway 2.0.0.1](#) Features
  - **Leostream Connect 4.2.7 for Windows operating systems** – Supports new two-step MFA login for RADIUS servers and resolves the following issues:
    - The `-clearuser` flag now completely clears out the Username field
    - The **Options** menu now appears when installing in German
  - **Leostream Connect 3.6.2 for Linux and macOS:**
    - Supports new two-step MFA login for RADIUS servers
    - Adds support for installing and running in read-only directories



- **Leostream Agent 7.2.7 for Windows operating systems:**
  - Improved support for provisioning from sysprepped images
  - No longer require a restart to register with new Connection Brokers after the DNS SRV record is updated to point to a new broker
- **Leostream Agent 5.0.12 for Linux and macOS** – Resolved issues related to using Connection Broker DNS SRV records, such as requiring a restart to register with new Connection Brokers after the DNS SRV record is updated
- **Leostream Gateway Features**
  - Protocol plans for Leostream Connect now support sending rdesktop client connections through the Leostream Gateway
  - Protocol plans for the HTML5 viewer added additional keyboard layouts
  - Protocol plans for Teradici Zero clients now allow PCoIP connections to PCoIP Remote Workstation Cards to be port forwarded through the Leostream Gateway
- **PCoIP**
  - PCoIP Zero Client logins now support authentication using PIV/CAC smart cards (requires the latest Teradici firmware version on the Zero Client)
  - The Leostream 8.2 feature to manage another user’s desktop is now supported for the latest version of the PCoIP Zero client firmware
  - Disconnect PCoIP connections using the Remote Workstation Cards, in the event the PCoIP Zero client isn’t reachable by the Connection Broker
  - Send Wake-on-LAN packets to PCoIP Remote Workstation Cards, to power on physical workstations
- **Mechdyne TGX:**
  - The TGX encryption tool for user credentials now supports TGX 2.0
  - The {CREDENTIALS\_MECHDYNE} dynamic tag now supports additional qualifiers to indicate if Leostream should force lower case or domain logins
- **HP RGS / Remote Boost:** Protocol plans for Leostream Connect now support specifying a generic password to use for the RGS connection, in addition to a user name
- **Multi-factor authentication** (see the Leostream guide for [Using RADIUS Servers for MFA with Leostream](#))

- RADIUS servers are now configured on the > **Setup > MFA Providers** page
- MFA requirements using RADIUS can now be assigned to groups of users on the > **Configuration > Assignments** page, instead of applying globally to all users
- **Scale Computing HC3** (See the [Quick Start Guide for Scale Computing HC3](#))
  - Leostream now fails over between all nodes in the Scale Computing HC3 cluster associated with a Center
  - Scale Computing centers now allow you to specify a custom HC3 tag for your master virtual machines
  - Scale Computing tags assigned to the master virtual machine in HC3 are now applied to any new virtual machine provisioned from that instance
- **Verge:** Added support for creating centers for Verge virtualization software (see “Verge Centers” in Chapter 6 of the [Connection Broker Administrator’s Guide](#))
- **Cloud Support:** Additional regions have been added to AWS and Azure centers
- **Provisioning:** Pool logic includes general enhancements for provisioning large numbers of virtual machines
- **Email Alerts and SMTP**
  - SMTP servers are now configured on the > **Setup > SMTP** page, instead of on the > **System > Alerts** page
  - Administrators can now allow end users to send email invitations to users who receive collaboration requests
- **Roles:** Roles include a new option to set a session expiration for logins to the Connection Broker Administrator Web interface
- **SSO:** The policy **Enable single sign-on to desktop console** option now applies to Windows NoMachine and VNC sessions
- **Sign in Page Customizations:** You can now use the custom.css file to add persistent customizations to your Leostream Sign In Web page
- **Release Plans:** Add 14 days as an option for releasing the desktop after initial assignment
- **Test Login:** Now includes an option to test the user’s RADIUS-based MFA
- **Licensing:** Licensed Leostream features can now be displayed using the “click here for complete license information” link on the > **System > Maintenance** page

## Leostream Gateway 2.0.0.1

- Supports port forwarding connections from PCoIP Zero clients to PCoIP Remote Workstation Cards
- Resolved issues related to using the touch screen on iOS 13 and later
- Explicitly drop UDP ports that were erroneously left open in previous gateway versions
- Loosen checks on enabling Connection Broker forwarding, to avoid errors about an invalid Connection Broker address or SSL not being enabled in cases where the Connection Broker is not currently able to communicate with its authentication servers or database

## Resolved Issues

- Resolve duplicate desktop records using all known MAC addresses instead of just the primary MAC address, to resolve issues identifying Leostream Agent registrations from nodes on an HPE Moonshot cartridge
- Usability improvements to remove additional scroll bars from long Resources tables
- No longer send the desktop hostname as the domain when logging local users into a Linux RGS session
- No longer allow virtual machines that are marked for replication to be used as templates for provisioning in Scale Computing HC3
- The Leostream Agent Status column on the > **Resources** > **Desktops** page is no longer blank when the Power Status column is hidden on the page
- Close forwarded ports on the Leostream Gateway when users log out of hard-assigned desktops
- Add the **Query for LDAP group information** option to the **Edit Authentication Server** page, to provide an option to turn off slow group queries for extremely large Active Directory trees
- Uploading a new favicon.ico file no longer removes the existing custom logo file

## Leostream Gateway 1.0.0.32 Update

Resolves issues with missing dependencies for the HTML5 RDP viewer when installing on certain releases of CentOS or Red Hat Enterprise Linux 7. This update also resolves issues where forwarded UDP ports were not being closed when desktop assignments were released.



The Connection Broker and Connection Broker do not install on CentOS or Red Hat Enterprise Linux version 8, or on Ubuntu 18.04. Please contact [support@leostream.com](mailto:support@leostream.com) if you require support for one of these platforms.

## Connection Broker 9.0.34.25 Update

Connection Broker 9.0.34.25 is a patch release to Connection Broker 9.0.34.22. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7, as well as for Ubuntu 16.04.



The Connection Broker does not install on CentOS or Red Hat Enterprise Linux version 8, or on Ubuntu 18.04. Please contact [support@leostream.com](mailto:support@leostream.com) if you require support for one of these platforms.

This release includes the following changes.

- **Leostream Gateway 1.0.0.29** – Upgrades the underlying Apache Guacamole clientless remote access gateway to version 1.1.0, which resolves previous issues when using FreeRDP version 2



The Leostream Gateway installs on CentOS or Red Hat Enterprise Linux version 7, only.

- **PCoIP**
  - Support local and domain user logins when using the policy option to enter alternate credentials for the remote desktop
  - Zero clients now display **Reconnect** if an offered desktop is already assigned to the user
  - The new **Use web browser cookies to prevent session hijacking** option in the Connection Broker Security section of the > **System** > **Settings** page, disables cookies, which can resolve issues with lost sessions when load balancing a Connection Broker cluster through the Teradici PCoIP Connection Manager
- Resolved a regression that caused Release Plan option **Release if user does not log in** to release the machine even after the Leostream Agent notified the Connection Broker that a user had logged in

## Connection Broker 9.0.34.22 Update

Connection Broker 9.0.34.22 is a patch release to Connection Broker 9.0.34.21. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7, as well as for Ubuntu 16.04.

This release includes the following changes.

- The Leostream Agent for Windows operating systems has been updated to version 7.1.15, which includes minor updates related to how the agent registers with the Connection Broker
- Hard-assigned desktops are no longer deleted when the user's policy-assigned desktops have a release plan set to delete the virtual machine
- Release plan options to release the desktop after a specified elapsed time are now honoured even when the user disconnects and reconnects from different client devices
- A desktop's **Connected** state is now properly reverted to **No** if the HP RGS Receiver fails to connect to the selected RGS Sender
- You can no longer select the Human Interface Devices category when selecting devices to support for USB passthrough
- Desktops no longer get cause in an Unavailable state after being joined to a domain
- Pools allow you to provision additional AWS instance sizes, including `inf1.`, `m6g.`, `c5d.12xlarge`, `c5d.24xlarge`

# Connection Broker 9.0.34.21 Update

Connection Broker 9.0.34.16 is a patch release to Connection Broker 9.0.34.10. This update is available for the latest point release of CentOS 7 and Red Hat Enterprise Linux 7, as well as for Ubuntu 16.04.

This release includes the following changes.

## Issue Resolutions and Minor Features

- **Appliance:**
  - Apache has been updated to 2.4.41
  - Addressed issues upgrading a database from an 8.2 installation to 9.0
  - Added ability to use plaintext passwords in `db_info` to connect to a remote database when scripting Connection Broker installations
- **Component Upgrades:**
  - Leostream Agent for Windows – 7.1.14 – Improved detection of disconnect events from PCoIP software clients
  - Leostream Agent for Linux – 5.0.9
    - Monitor disconnect and connect events for PCoIP Cloud Access Software
    - Installing the Leostream Agent using an XML-file of configuration parameters now correctly sets all options

NOTE: You must generate a new XML-file to use for future installations

  - Leostream Connect for macOS and Linux – 3.5.13 – Resolved issues related to launching the **Configure** dialog when allowing users to set display protocol parameter settings
- **Web client:** The web client now provides a **Start** or **Stop** option, along with **Restart**, if the user's role and policy allows them to power control their offered desktops
- **AWS:**
  - Added support for ap-east-1 and me-south-1 regions
  - Added support for new instance types, such as g4dn
- **Azure:**
  - All shutdown and power off options now return Azure VMs to a deallocated state

- Azure centers can now inventory subscriptions with more than 50 images or virtual machines
- **Scale Computing:**
  - Improved error handling during provisioning
  - Leostream Agent registrations from virtual machines tagged as templates are now ignored
- **Policies**
  - You can now block the user's login if the URL to call at the start of a user's session returns an error.
  - You can now specify a custom URL to call at the time a desktop is assigned from a pool
  - You can now specify a custom timeout for URLs called in policies
- **Provisioning:** Virtual machines are no longer removed from the Connection Broker inventory if they fail to delete from their hosting platform after being released from a user
- **Printers:** Do not delete inventoried printers if Connection Broker cannot contact the Active Directory server associated with the Printer center.
- **Power Control:** The Connection Broker now properly cancels scheduled `reboot_after_idle` jobs when the user logs back into their desktop

## Connection Broker 9.0.34.10 Update

Connection Broker 9.0.34.10 is a patch release to Connection Broker 9.0.34. This release includes the changes indicated in the following sections.

### Issue Resolutions and Minor Features

- Upgrades the Apache Web Server to version 2.4.39.
- Adds support for scrambling passwords for VNC servers that support passwords longer than eight characters.
- Resolves issues related to properly matching login events from PCoIP zero clients to existing records on the > **Resources** > **Clients** page.

## Connection Broker 9.0.34.7 Update

Connection Broker 9.0.34.7 is a patch release to Connection Broker 9.0.34. This release includes the changes indicated in the following sections.

### Issue Resolutions and Minor Features

- **Locations:** Client Locations can now be created using CIDR notation.
- **MFA:** The Connection Broker now honors any selection in the **Default MFA Provider** drop-down menu in the **Assignments** tables.
- **Leostream Gateway:** Protocol plans for the HTML5 Viewer now contain a **Disable the viewer menu** option to indicate if the Guacamole sidebar menu should be disabled for this user's connection.
- **Administrator View:** Resolved various issues related to navigating to and between the Administrator Web interface of different Connection Brokers in a cluster.
- **Licensing:** Leostream licenses are now released one month after the last user sign in or desktop connection, instead of after six months.

### Leostream Gateway 1.0.0.27

- Upgraded the underlying HTML5 remote access client to Apache Guacamole 1.0.0.
- Supports Connection Broker protocol plan option to disable the Guacamole sidebar menu when establishing the HTML5 connection.
- Incoming HTTP requests are now automatically forwarded to HTTPS.
- Resolved timing issues that could cause Apache to fail to boot when running the Leostream Gateway on slower machines.

## Connection Broker 9.0.34.5 Update

Connection Broker 9.0.34.5 is a patch release to Connection Broker 9.0.34. This release includes the following issue resolutions

- **PCoIP Remote Workstation Cards:**
  - New Remote Workstation Cards that are uploaded without a name will have their hostname displayed in the **PCoIP Host Device** drop-down menu in the **Edit Desktop** page. Previously, these cards displayed with no name.



- Improved error messaging when CSV file used to upload PCoIP Host Devices contains invalid fields.
- **PCoIP Zero Clients:** Improved detection of existing client records when a zero client login registers with the Connection Broker.
- **VNC:** Do not attempt to start a new VNC session if the user's protocol plan does not use the `{VNC_PORT}` dynamic tag. Instead, assume a VNC session already exists for the hard-coded session number.
- **Updates:** Resolved issues related to restarting Apache after a Connection Broker update on a slow machine.

## Connection Broker 9.0.34.4 Update

Connection Broker 9.0.34.4 is a patch release to Connection Broker 9.0.34. This release includes the following features and issue resolutions.

- **Leostream Gateway 1.0.0.26** - The Leostream Gateway RPM file now blocks attempts to install the Leostream Gateway on a machine with an installed Leostream Connection Broker.
- **Leostream Connect for Linux and macOS 3.5.9** – Resolves issue where passwords for rdesktop connections could be logged in plain text in the `lc.log` file.
- **AWS Centers** – Added support for ap-northeast-3 (Osaka-Local), eu-west-3 (Paris), eu-north-1 (Stockholm) regions, as well as new m5ad and r5ad instances types.
- **Azure Centers** – You can now specify if the network card for newly provisioned virtual machines is placed in the resource group of the original virtual network or in the resource group specified for the new virtual machines.
- **Active Directory Centers** – Resolved issues related to inventorying computer records from a particular sub-tree.
- **PCoIP**
  - The secondary authentication dialog now applies to PCoIP connections to workstations with an installed PCoIP Remote Workstation Card.
  - Resolved issues communicating with zero clients running firmware version 4.x and using the Connection Management Interface.

# Connection Broker 9.0.34.2 Update

Connection broker 9.0.34.2 is a patch release to Connection Broker 9.0.34. This release includes the following features and issue resolutions.

- **Leostream Gateway 1.0.0.25**
  - The leostream-gateway CLI includes a new option to enable Azure API forwarding
  - When adding a Leostream Gateway to the Connection Broker, you can now specify the method to use to forwards traffic through the gateway
- **Leostream Connect 4.1.8** – The client now allows you to configure the Leostream Connect short cut keys.
- **Azure:** Azure API forwarding is now enabled via a checkbox in the Azure center. When enabled, Leostream selects any Leostream Gateway that enables Azure API forwarding, and fails over to a different Leostream Gateway in the event the original gateway is unavailable.
- **Red Hat:** Newly provisioned virtual machines in a Red Hat Virtualization center are now powered on, by default.
- **PCoIP:**
  - The secondary authentication dialog for PCoIP clients now supports launching connections when more than 10 desktops are offered.
  - The PCoIP Devices center is now automatically added when you install a Leostream license key with PCoIP enabled.
- **RADIUS:** Resolves an issue with Radius authentication caused by an update to the underlying Radius library.

# Connection Broker 9.0.34 Update

Connection Broker 9.0.34 is an update Connection Broker 9.0.10. This update includes the following features and issue resolutions.



The Leostream Software License Agreement has been updated. Please see <https://www.leostream.com/perpetual-software-license-agreement/> for details.

## Leostream Component Updates

- Leostream Connect Windows 4.1.5 – The **Refresh offer list before displaying to user** option is now honored every time the **Connect** dialog is opened
- Leostream Agent Windows 7.1.10 – TGX sessions are now properly tracked for remote Windows connections
- Leostream Connect Linux/macOS 3.5.8 – Contains usability enhancements when using on macOS
- Leostream Agent Linux 5.0.4 - Introduces new public key exchange to secure communication with Connection Broker 9.0.

Leostream Agent 5.0 for Linux and macOS is not compatible with Connection Broker 8.2.72 or earlier.

## Features

- **Authentication**
  - Multi-factor authentication is now supported for any SAML-based third-party identity providers, such as Ping Identity and Microsoft Active Directory Federated Services (see Using **SAML-Based Identity Providers with Leostream**)
  - **Multi-factor authentication (MFA) with Duo Security** notifications can now be enabled for groups of Leostream users (See **Duo MFA for Leostream Logins**)
  - The default local Connection Broker **admin** account can now be disabled (see **Advanced Settings** in the guide for **Using the Leostream Connection Broker Console**)
- **Centers**
  - **Red Hat Virtualization** can now be added as a center in Leostream, with support for inventorying, power control, provisioning, and connecting users to resources

hosted in a Red Hat environment (see **Red Hat Virtualization Centers** in Chapter 6 of the [Connection Broker Administrator's Guide](#))

- The **Scale Computing HC3 virtualization platform** can now be added as a center in Leostream, with full support for VDI environments on this hyperconverged platform, including inventorying, power control, provisioning, and connecting users (see the [Quick Start Guide for Scale Computing HC3](#))
  - **Google Cloud Platform** can now be added as a center in Leostream, with support for inventorying, power control, and connecting users to resources hosted in GPC (see **Google Cloud Platform Centers** in Chapter 6 of the [Connection Broker Administrator's Guide](#) - Note: provisioning will be available in an upcoming release)
  - You can now specify a Region when creating an OpenStack center, to support OpenStack deployments with custom regions (see **OpenStack Centers** in Chapter 6 of the [Connection Broker Administrator's Guide](#))
  - The usability of creating multi-user centers has been improved (see **Remote Desktop Services / Multi-User Centers** in Chapter 6 of the [Connection Broker Administrator's Guide](#))
- **Databases**
    - You can now attach the Connection Broker to an Azure SQL database (see **Connecting to an Azure SQL Database** in Chapter 17 of the [Connection Broker Administrator's Guide](#))
    - The Connection Broker now allows you to specify any secondary database as a failover database, instead of requiring you to configure SQL Server mirroring (see "Database Failover" in the [Leostream Connection Broker Application Guide](#))
  - **Provisioning:** Provisioning limits in pools can now be enforced at certain times and days of the week (see **Provisioning Based on Time-of-Day** in the [Connection Broker Administrator's Guide](#))
  - **Azure:** The Connection Broker now forwards Azure API traffic through the Leostream Gateway when Connection Broker logins are forwarded to the Leostream Gateway (requires Leostream Gateway 1.0.0.24)
  - **PCoIP Remote Workstation Cards**
    - Release plan options based on disconnect events can now be executed for workstations with an installed PCoIP Remote Workstation Cards running firmware version 5.x
    - Client binding is now supported for PCoIP Zero clients running firmware version 5.x and later, providing octal monitor support for Amulet Hotkey zero clients

- You can now force end users to accept a disclaimer as part of the authentication process on a PCoIP client
- Leostream policies can force the user to enter a second set of credentials to use for single sign-on to a PCoIP remote resource
- **Clients:** The > **Clients** page provides a new column to display the installed display protocol clients and their version (see “Available Client Characteristics” in Chapter 13 of the [Connection Broker Administrator’s Guide](#))
- **Backups:** SFTP is now available as a transfer protocol when backing up the Connection Broker internal database (see “Scheduling Connection Broker Backups” in Chapter 17 of the [Connection Broker Administrator’s Guide](#))
- **Security:**
  - The new **Enable Strict-Transport-Security header (HSTS)** option on the > **System > Settings** page allows you to instruct the Connection Broker to enforce strict transport security and sets the expiration time for when the Connection Broker can be accessed using only HTTPS (see “Configuring TLS Version” in Chapter 3 of the [Connection Broker Administrator’s Guide](#))

## Leostream Gateway 1.0.0.24 Update

Leostream Gateway 1.0.0.24 is a patch update to version 1.0.0.19. It is compatible with Connection Broker 9.0.34. This version of the Leostream Gateway supports Azure API forwarding.

## Resolved Issues

- Wake-on-LAN packets are now sent from every broker in your Leostream cluster, to improve powering on machines across subnets
- Apache has been updated to 2.4.38 and the Apache configuration has been modified to use more restrictive conditions

## Leostream Gateway 1.0.0.19 Update

Leostream Gateway 1.0.0.19 is a patch update to version 1.0.0.17. It is compatible with Connection Broker 9.0.10.

This version of the Leostream Gateway resolves issues related to launching HTML5 RDP connections to Windows 10 or Windows Server 2016 operating systems that have Network Level Authentication enabled for RDP.

# Connection Broker 9.0.10 Update

Connection Broker 9.0.10 is a minor update to the initial release of Leostream 9. This update includes the following features and issue resolutions.

## Features

- The new **Control** action for multi-user centers allows you to power cycle the server associated with the center. The individual sessions for a multi-user center no longer offer individual **Control** actions.
- The Role option to log users into the remote desktop as either a local or domain users can now be specified per pool in a policy.
- The default NX configuration file in protocol plans now supports the NoMachine Enterprise Client version 6.2, and the default VMware View client command line parameters now support version 2.3.3 or higher.
- Pools of AWS T3 instances can now be provisioned.
- You can now create protocol plans that do not provide any protocol option for specific client types. This allows you to prohibit users from launch desktop connections from certain clients, such as from the Leostream Web client.
- The Connection Broker can now automatically send email alerts for certain events, such as when centers go offline (see “Sending Email Alerts” in Chapter 16 of the [Connection Broker Administrator’s Guide](#)).

## Resolved Issues

- Connection closed events are now interpreted as a disconnect, and the associated Release Plan actions are taken, in cases where the user never logged into their assigned desktop.
- Multi-user sessions assigned to users are now evaluated when a Leostream Agent restart occurs. If an active session is not found for an assigned user, the Connection Broker now releases that session.
- Deallocated Azure instances are now considered as available to power on, to meet the pool’s power management threshold.
- The Connection Broker allows more time for Leostream Agents to respond, to lower the chances of agents being marked as Unreachable in high-latency environments.
- The favicon now correctly appears in the browser tabs after logging into the web client.

- The logs now contain the full JSON response returned by the Azure APIs when an error is returned to the Connection Broker.
- The Connection Broker no longer removes the images inventoried from an Azure center if Azure returns an error or empty list. This ensures that, on a subsequent successful call to Azure, existing pools continue to provision with the previously selected image.
- The **Deploy from image** drop-down menu in pools now defaults to **<Select>** instead of the first image in the list.
- The logs now contain the errors output from the LDAP queries when a user bind fails.
- Resolves rendering issue of drop-down menus on Internet Explorer 11.

## Leostream Component Updates

Leostream component upgrades are available to resolve the following issues.

- **Leostream Connect 4.0.6** for Microsoft Windows Operating Systems
  - The installation package can now install Leostream Connect and the Leostream USB drivers on the latest updates of Windows 10 desktops that enable Secure Boot.
  - The Leostream Connect system tray menu contains a new **Login using Windows credentials** option when the client is installed with the client-side single sign-on, allowing users to log back into Leostream after they exit their initial session.
  - Resolves an issue opening the **Configuration** dialog for protocol parameters.
  - Supports launching the latest VMware Horizon client.
- **Leostream Agent 7.0.5** for Microsoft Windows Operating Systems – The installation package can now install the Leostream Agent and Leostream USB drivers on the latest updates of Windows 10 desktops that enable Secure Boot.
- **Leostream Agent 4.3.23** for Linux and macOS
  - Resolves an issue disconnecting RGS 7.4 sessions based on idle time settings.
  - The new `sso_desktop` parameter allows you to specify the window manager used for single sign on.
  - The Leostream Agent now reports the port associated with the user's VNC session when you click **Status** on the Connection Broker > **Resources** > **Desktops** page.
  - If a user has an open SSH session to a desktop, and establishes an RGS or VNC connection to that desktop using Leostream, forcefully logging the user out of their

RGS or VNC session no longer closes their SSH session.



# Connection Broker 9.0 – Initial Release Notes


Connection Broker 9.0 is the next major release of the Leostream Connection Broker. It includes a new user interface and licensing scheme, as well as new Leostream Connect and Leostream Agent components and a new Leostream Gateway.

Connection Broker 9.0 includes all the issue resolutions and features available in the latest 8.2 version. For a full list of recent changes in 8.2, see the Connection broker 8.2 Release Notes.

## Important Notes

You cannot upgrade your existing Connection Broker 8.2 virtual appliance to version 9.0. You must build a new Leostream Connection Broker and obtain a new license key from [sales@leostream.com](mailto:sales@leostream.com).

After building your 9.0 Connection Broker and applying your new license, you can copy over your existing 8.2 configuration, to simplify the upgrade process. You must be running Connection Broker 8.2.37 or higher to copy your existing Connection Broker database to 9.0.

 Leostream Agent 7.0 for Windows operating systems is *not* compatible with Connection Broker 8.2.72 or earlier.

Connection Broker 9.0 supports Mechdyne TGX version 1.10. To use older versions of TGX, please remain on Connection Broker 8.2.

## Unsupported Connection Broker 8.2 Functionality

The following Connection Broker 8.2 features are no longer supported in Connection Broker 9.0. Leostream will continue to support version 8.2 for our existing customers. See the Leostream [Product Lifecycle page](#) for information on support dates for previous Connection Broker versions.

- Supported hosted platforms – The following platforms are no longer supported or are in the process of being deprecated.
  - Citrix XenApp and XenDesktop
  - Citrix XenServer
  - Open source Xen
  - Red Hat Enterprise Virtualization 3.x, including the SPICE display protocol
  - Microsoft Hyper-V 2012
- Connection Broker Skins no longer set form colors in the Administrator Web interface. Contact [support@leostream.com](mailto:support@leostream.com) for information on using customized CSS-files to modify the look-and-feel of the Connection Broke Web interface.
- The Policy Report and User Connection History report are no longer available. Use the

improved User Assignment Report for detailed information about desktop usage per user.

- The Policy option to store assignment and connection information is no longer available for use with Leostream Connect for Linux and macOS.
- Display plans are no longer available. Instead, use the multi-monitor support natively provided by your chosen display protocol.
- Failover plans and failover desktops are no longer available. Use Backup Pools for all desktop failover needs.
- The Java NX client is no longer available in Protocol Plans for NX connections launched from a Web client login.
- Mechdyne TGX version 1.9 or older.

## Leostream Component Updates

- Leostream Connect for Microsoft® Windows® Operating Systems – Version 4.0.2
  - Provides support for USB redirection through the Leostream Gateway
  - Resolves issue where user pressing Ctrl-Shift-X wasn't breaking out of Shell mode
- Leostream Agent for Microsoft® Windows® Operating Systems –Version 7.0.4
  - Introduces new public key exchange to secure communication with Connection Broker 9.0.
  - Resolve issues identifying users in sub-domains.



Leostream Agent 7.0 is not compatible with Connection Broker 8.2.72 or older.



The Java versions of Leostream Connect and the Leostream Agent were not upgraded between the Connection Broker 8.2 release and Connection Broker 9.0.

## Connection Broker 9.0 Features


- The Connection Broker is packaged for installation on a CentOS, Red Hat Enterprise Linux, Ubuntu, and SUSE Linux Enterprise Server operating system. Manage updates for the underlying operating system independently of your Connection Broker.
- Connection Broker 9.0 introduces a new design for the Administrator and End User Web interfaces. The Administrator menu has been reorganized to improve usability.
- Version 9.0 also introduces a new Leostream licensing scheme. You are issued a Leostream Serial number, which you can use to generate your Leostream license. Your Leostream

license controls the functionality available in the Administrator Web interface.

At any time, you can contact [sales@leostream.com](mailto:sales@leostream.com) to discuss adding functionality to your Leostream license. Additional licensing fees may or may not apply.

- The Connection Broker and Leostream Agent for Windows now use a public/private key exchange to verify communications.
- Connection Broker 9.0 can be immediately attached to an external Microsoft SQL Server or PostgreSQL database after installation, avoiding the need to re-enter your Leostream license in the cluster.
- Protocol plans now provide Leostream Gateway support for RGS and TGX connections launched from Leostream Connect, as well as RDP connections launched from a Dell Wyse ThinOS client.
- Users can now send invitations to collaborate on their existing Mechdyne TGX connections.
- A new > **Resources** > **Images** page lists all images available for provisioning in Leostream pools
- You can now specify a domain when creating an OpenStack centers.
- The provisioning logic in Connection Broker 9.0 now allows many desktops to be simultaneously provisioned, instead of running serially.
- For cloud environments, you can specify additional provisioning parameters, including:
  - OpenStack – Set the security groups and availability zone
  - Azure – Use new image formats and specify security groups
  - AWS – Provision T2 unlimited instances and set an IAM role on the instance
- Role enhancements – separate role for downloading logs and add role for permission to remove users
- NIS authentication now supports SHA 512 for NIS passwords and allows policies to be assigned based on the user's `netgroup` membership.
- The Connection Broker now logs out rogue when an already-assigned user requests a connection to the desktop, not just upon the initial assignment.
- The Connection Broker no longer store Leostream Agent registrations if there is no Uncategorized Desktops center. To register desktops using the Leostream Agent, first create the uncategorized Desktops center and then install or restart your Leostream Agents, ensuring that they are pointing at your Connection Broker.

## Leostream Gateway 1.0.0.17

 The Leostream Gateway described in this document is for use with Connection Broker 9.0. You cannot upgrade the Leostream Gateway for Connection Broker 8.2 to the 9.0-compatible version.

- The HTML5 viewer now supports SSH and VNC HTML5 connections, as well as RDP.
- The Leostream Gateway can forward user login traffic to your Connection Broker, allowing you to isolate your Connection Broker in the same network as your desktops.
- The Leostream Gateway includes a new Command Line Interface for configuring certain gateway functionality, such as limiting the ports used by the Leostream Gateway and installing SSL certificates.
- The Leostream Gateway now enables UDP for RDP connections.
- You can use Connection Broker protocol plans to set additional parameters for HTML5 RDP connections.

## Appendix A: Version Compatibility

### Leostream Agent Compatibility Matrix

The following table indicates the Leostream Agent versions that are compatible with the different Connection Broker versions. Connection Brokers cannot communication with incompatible Leostream Agents, resulting in a loss in Leostream functionality.

Connection Broker	Version	8.1	8.2.71 and earlier	8.2.73	9.0.34.10	9.0.34.21 and later
Leostream Agent for Windows	5.x	Y	Y	N	N	N
	6.x	Y	Y	Y	Y	N
	7.0	N	N	Y	Y	Y
	7.1	N	N	Y	Y	Y
	7.2+	N	N	Y	Y	Y
Leostream Agent for Linux	3.x	Y	Y	N	N	N
	4.x	Y	Y	Y	Y	N
	5.x	N	N	Y	Y	Y

- Leostream Agent versions older than 5.0 for Windows and 3.0 for Linux are not compatible with any supported Connection Broker.

## Leostream Connect Compatibility Matrix

The following table indicates the Leostream Connect versions that are compatible with the currently supported Connection Broker versions.

Connection Broker	Version	8.1	8.2	9.0
Leostream Connect for Windows	3.8	Y	Y	Y
	4.0	N	Y	Y
	4.1	N	Y	Y
	4.2+	N	Y	Y
Leostream Connect for Linux	3.3	Y	Y	N
	3.4	Y	Y	Y
	3.5	N	Y	Y
	3.6+	N	Y	Y

- Connection Brokers older than 8.1.44 are compatible only with Leostream Connect 3.6.18 or earlier on Windows operating systems.
- Not all features supported by the latest Leostream Connect version are available when using an older Connection Broker version.