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

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Leostream Platform 9.1 – Revision 3

The following release notes describes the enhancements available for all components in the Leostream Platform.

Important Notes

- Connection Broker 9.1 enables the RESTful API, by default, and therefore requires additional RAM. If you are upgrading from Connection Broker 9.0 or installing a new Connection Broker, ensure that your Connection Broker RAM is at least 8GB prior to upgrading or installing Connection Broker 9.1, respectively.
- Version 7.4.13 and higher of the Leostream Agent for Windows Operating system and 5.2.10 and higher of the Leostream Agent for macOS and Linux now distinguish between older versions of RGS and newer versions of HP ZCentral Remote Boost. If you define Pools based on the **Installed Protocols** attribute having a text value of **RGS**, edit the pool to include machines with **Boost** installed, as well, to ensure desktops running all versions of the protocol appear in the pool.

Connection Broker 9.1.18

Features

- **Component updates:**
 - **Leostream Agent 7.4.15 for Windows Operating Systems:** Returns version information for Windows Server 2022 and Windows 11 operating systems
 - **Leostream Agent 5.2.16 for Linux and macOS**
 - Support forcefully logging off users from sessions connected using HP ZCentral Remote Boost version 20.0x
 - Honor the Role option to create local users on login (applies to Linux operating systems, only)
 - When installed on macOS, report the PCoIP CAS Agent version and send disconnect notifications for PCoIP CAS sessions
- The **Connection Broker Security Options** on the > **System** > **Settings** page contains additional options to set Cross-Origin HTTP security headers (if you plan to take advantage of these headers and are using Duo for MFA, please see the guide for [Using DUO MFA with Leostream](#))
- You can now add the ID column to any **Resources** list page, to simplify relating objects in the lists to their associated references in the Connection Broker Technical Support package
- The VMware vSphere SDK used for VMware centers has been upgraded to version 7.0.0 U2, to support Guest OS Customization files when provisioning Linux virtual machines
- You can now select a Recipe to use for provisioning in Verge.io

- You can now build a Role that restricts logging into the Connection Broker Web interface for users dedicated to executing the RESTful API
- Added support for sending invitations to collaborate to sessions launched using the HTML5 NoMachine client
- Connection Broker forms now require you to re-enter passwords whenever the hostname or IP address of an object, such as a center or authentication server, is changed
- The Connection Broker now recognizes desktops running Windows Server 2022 and Windows 11 operating systems (requires Leostream Agent 7.4.15)

Resolved Issues

- No longer create duplicate local user accounts after the Connection Broker receives a rogue user login notification from the Leostream Agent and the current license count is exceeded
- The range of pool history data displayed on the Dashboard is no longer defined by a static start and stop date, to resolve the issue where no data is displayed when those dates are beyond the data retention date
- The Connection Broker now inventories Azure images that do not have an associated Managed Disk so these images can be used for provisioning in pools
- Security enhancements for the global search function.

Leostream Gateway 2.0.0.20

Upgrades the Apache Guacamole HTML5 viewer to version 1.4, which improves audio support for HTML5 RDP connections.

Leostream Platform 9.1 – Revision 2

Connection Broker 9.1.12

Features

- **Component updates:**
 - **Leostream Agent 7.4.14 for Windows Operating Systems:** Includes new functionality to receive instructions from the Connection Broker to close DCV sessions
 - **Leostream Agent 5.2.12 for Linux and macOS**
 - For Linux operating systems, includes new functionality to receive instructions from the Connection Broker to close DCV sessions

- For macOS, resolves issues related to idle-time monitoring for Scyld Cloud Workstation sessions
- **AWS support:**
 - You can now select multiple Availability Zones for provisioning in pools, to support failing over to a different zone when the primary zone no longer has capacity to provision your selected instance size
 - Added support for Asia Pacific – Jakarta region
- **DCV support:** The Connection Broker now instructs the Leostream Agent to close DCV sessions when the desktop is released from the user in Leostream - requires Leostream Agent 7.1.14 for Windows operating systems and Leostream Agent 5.2.12 for Linux operating systems
- **Azure support:** You can now provision instances using images in an Azure Compute Gallery
- **Managing user identities**
 - The **Associate all user notifications with assigned user** option in pools is now **Associate initial user login with assigned user**, and the Connection Broker acts upon only the events related to the first user identity that logs into the remote operating system after the desktop is assigned, ignoring events for all other users
 - Policies for hard-assigned desktops now include the **Associate initial user login with assigned user** option to allow the Connection Broker to manage sessions for hard-assign users who log into the remote operating system with a different user identity
- **leostream-broker CLI**
 - The new `--info` option returns the Leostream environment information displayed on the > **System** > **Maintenance** page
 - The new `--health` option checks if system requirements related to CPU, RAM, and disk are met by the machine running the Connection Broker, as well as checks functional requirements related to if the `leo` user has sufficient `sudo` privileges and is able to run `nmap`
- **PIV card authentication:** Supports OCSP for CA certification chains that include multiple CA certificates

Resolved Issues

- The Connection Broker now confirms an Azure VM is stopped before attempting to deallocate it
- Launching PCoIP connections from the Leostream web client no longer instantly expires the user's Leostream session

- The DCV External Authenticator can now be used in Protocol Plans for users who log into Leostream using a SAML-based Identity Provider
- The Connection Broker now sends Wake-on-LAN packets to power on machines, as requested, regardless of the machines current power state in the Connection Broker
- Resolves issues authenticating with PIV cards that contain multiple SAN entries or non-standard UPN formats
- Regenerate Mechdyne TGX credentials before launching TGX connections, to handle cases where the encryption tool returns an error code on the first attempt
- Recursively delete AD entries for Computer records that include a nested “Windows Virtual Machine” object, when deleting virtual machines based on Release Plans
- Double-byte characters now display correctly on the **Pool Statistics** page

Leostream Platform 9.1 – Revision 1

The following release notes describes the enhancements available for all components in the Leostream Platform.

Connection Broker 9.1.6

Features

- **Connection Broker CLI:** The new `leostream-broker` CLI can be used to query for the Connection Broker installation code, show current license information, and apply a new Leostream license (see “Querying and Setting License Information” in the **Connection Broker Application Guide**)
- **Azure** (see the **Quick Start Using Leostream with Microsoft Azure**)
 - Pools now allow you to provision from images that are in a different resource group from where you are provisioning instances into
 - You can now provision Azure VMs with Ephemeral OS disks
- **AWS:** Pools now support provisioning G5 instances
- **OpenStack:** Power control plans include a new option to put OpenStack VMs in a Shelved state
- **Scyld Cloud Workstation** (see the **Leostream Guide for Using Third-Party Display Protocols**)

- Users can now launch the Scyld Cloud Workstation software client to connect to machines offered when logging in using the Leostream Web client
- Scyld Cloud Workstation connections launched from a Leostream Connect login can now be directed through a Leostream Gateway
- **Mechdyne TGX:** Upgraded the TGX encryption tool to version 2.2
- **Joining Desktops to Domains**
 - The Connection Broker now removes Active Directory records for desktops that it added to the domain when that desktop is deleted via a Leostream Release Plan (requires Leostream Agent 7.4.11)
 - You can now add desktops to Active Directory groups as part of the Domain-join process in a Leostream pool (see “Joining Pooled Desktops to a Domain” in the [Connection Broker Administrator's Guide](#))
- **Dashboard:** You can now customize the layout of the available widgets on the Leostream Dashboard (see “Using the Pool Statistics Dashboard” in the [Connection Broker Administrator's Guide](#))

Resolved Issues

- The Leostream Dashboard now stores configuration changes, such as selected pools, when you navigate away from the page
- The **Send username to MFA provider as** option for RADIUS MFA Providers is now honored when users log in using a PCoIP Zero client
- The User Assignments report now accurately displays the role associated with users who are hard-assigned to desktops
- Users logging in using a PCoIP Software client with RADIUS MFA enabled can now reset their expired passwords
- Resolved potential problems using the DCV external authenticator with Connection Broker clusters
- AWS center scans no longer reset IP addresses when the Leostream Agent is unable to retrieve the instance’s meta data
- Azure centers are now taken offline when the Azure API call fails, to avoid removing all Azure resources from Connection Broker lists
- The Connection Broker now correctly redirects administrators to the Leostream License page after they log in via a SAML-based IdP to a Leostream environment with an expired license

Leostream Agent 7.4.13 for Windows Operating Systems

- Supports the new Connection Broker feature to remove Active Directory records for virtual machines that were joined to a domain and then subsequently deleted via Leostream
- Adds an option to write Leostream Agent logs in UTC time instead of system time
- Distinguishes between older RGS and new Remote Boost connections when reporting the list of installed protocols
- Updates the Leostream USB drivers

Leostream Connect 4.4.4 for Windows Operating Systems

- Adds an option to write Leostream Connect logs in UTC time instead of system time
- Upgrades the Leostream USB drivers to support Linux kernels up to 5.5

Leostream Agent 5.2.10 for macOS and Linux

- Upgrades the Leostream USB drivers to support newer Linux kernel versions
- Resolves issues disconnection Scyld Cloud Workstation connection to macOS
- Distinguishes between older RGS and new Remote Boost connections when reporting the list of installed protocols
- For users connecting via PCoIP, Remote Boost, or NoMachine, retains a user's existing SSH sessions when the Connection Broker requests the user's desktop connection be closed
- Adds an option to write Leostream Agent logs in UTC time instead of system time

Leostream Connect 3.8.4 for macOS and Linux

- Upgrades the Leostream USB drivers to support newer Linux kernel versions
- Adds an option to write Leostream Agent logs in UTC time instead of system time

Leostream Platform 9.1 – Initial Release

The following release notes describes the enhancements available for all components in the Leostream Platform.

Connection Broker 9.1.1

Connection Broker 9.1.1 is an update release to Connection Broker 9.0. This update can be installed on the latest point release of CentOS 7 and Red Hat Enterprise Linux 7. This release includes the following component updates and features.

Important Notes

- The ability to upload third-party content has been removed from the **> System > Maintenance** page, to address concerns raised by CVE-2021-41550 and CVE-2021-41551. Users can no longer use the Connection Broker Administrator Web interface to upload ZIP-files, PL-files, or any other files with the exception of custom logos and favicons, into the Connection Broker `/home/leo/app/tpc` directory, to prevent bad actors from uploading malicious scripts into a Leostream environment. Leostream recommends updating to Connection Broker 9.1 for any customers who have exposed their Connection Broker Administrator Web Interface to the internet.
- The **Edit Desktop** page no longer allows you to change the desktops MAC address, to avoid problems arising from incorrectly specified MAC addresses
- The Connection Broker now includes signed versions of the Leostream Agent and Leostream Connect installers listed on the **> Dashboard > Downloads** page. If you are running the following out-of-support versions of the Leostream Agent or Leostream Connect client, you cannot use these signed installers to push upgrades from your Connection Broker. Please contact support@leostream.com if you required unsigned versions of the installers to upgrade components older than the following versions.
 - Leostream Agent 7.1.2 for Microsoft Windows Operating Systems
 - Leostream Connect 4.1.2 for Microsoft Windows Operating Systems
- This release of the Connection Broker removes support for logging into Leostream using HP Session Allocation Manager (SAM) clients.

Features

- **Leostream RESTful API** – This initial release of the Leostream RESTful API supports creating, editing, and deleting pools and policies, as well as creating users and listing centers. Please contact support@leostream.com for more information and documentation.
- **Connection Broker CLI** – With a focus on scripting Leostream installations, the Connection

Broker CLI includes a new option for switching databases or updating database credentials, including switching to a new external database. See Chapter 3 in the [Leostream Connection Broker Application Guide](#) for more information.

- **Improved Policy Form** – The **Create/Edit Policy** form has been redesigned with a new tabbed design to improve the usability for deployments that include a large number of pools in their policies. See Chapter 12 in the [Leostream Connection Broker Application Guide](#) for information on how to use the new form.
- **Leostream Dashboard** – This initial release of the Leostream Dashboard focuses on displaying information about the number of connected and logged in users, and graphs statistics related to the status of desktops in pools, such as the number of desktops that are assigned, running, etc. See “Using the Pool Statistics Dashboard” in Chapter 16 of the [Connection Broker Administrator’s Guide](#) for more information.



You must enable the option to track historical pool assignments in your pools to display pool statistics on the dashboard.

- **Storing User Assignments** – The information used to generate the User Assignment Report can now be stored to the Connection Broker database. See “Storing User Assignment History” in the [Connection Broker Administrator’s Guide](#) for more information.
- **Nutanix AHV Integration** – Nutanix AHV can now be added as a center in Leostream, adding native integration for Nutanix AHV environments that require desktop provisioning, power control, assignments, and connections in Leostream environments. See the [Leostream Quick Start Guide for Nutanix AHV](#) for more information.
- **OpenStack Enhancement** – OpenStack provisioning in Leostream pools includes a new option to create a volume from the master image used for provisioning. See the [Leostream Quick Start Guide for OpenStack Clouds](#) for more information.
- **Scyld Cloud Workstation Support** – Scyld Cloud Workstation has been expanded to include session monitoring for Windows and Linux, as well as client-based connections using Leostream Connect.
- **DCV Enhancement** – When used with the latest Leostream Agents, DCV session handling has been changed to support usernames with special characters. Please see the [Leostream Guide for Using Display Protocols](#) for information on updating protocol plans to support this new functionality.
- **Leostream Gateway** – The Connection Broker contains two new options to control the length of time port-forwarding rules are retained based on certain user events.
 - The **> System > Settings** page contains a new **Delay closing gateway forwarding ports on disconnect** option to delay closing forwarding ports when the Connection Broker receives a disconnect notice from the Leostream Agent. Use this feature to retain the forwarded port after a disconnect when using display protocols, such as

Mechdyne TGX, that automatically attempt to reconnect to desktops after a temporary network outage. See “Closing Leostream Gateway Ports for Disconnected Desktop Sessions” in the [Connection Broker Administrator’s Guide](#) for more information.

- Policies include a new setting for hard-assigned desktops that allow you to specify when a forwarded port should be closed if the user requests a connection to their desktop but never logs into the remote operating system. See “Configuring Policies for Hard-Assigned Desktops” in the [Connection Broker Administrator’s Guide](#) for more information.
- **Database Options** – You can use the new **Edit the current database** option in the Connection Broker console Administration menu to update the current database connection settings in the event the Connection Broker is unable to connect to the database and the Web interface is inaccessible. Use this option, for example, if the password for the database user was changed and needs to be updated in your Leostream Connection Broker. See the “Database Option” section in the [Connection Broker Application Guide](#) for more information.
- **Locations** – You can now create locations by matching IP addresses in a client’s HTTP X-Forwarded-For header, including matches based on a CIDR notation. See “Using Subnet Masks (CIDR) to Create Locations” in the [Connection Broker Administrator’s Guide](#) for more information.
- **Desktops** – You can no longer override the Leostream Agent port on the **Edit Desktops** page. The Connection Broker always uses the port provided when the Leostream Agent registers with the Connection Broker
- **Uploading Logos and Favicons** – The new **Logos and Favicons** section on the **> System > Maintenance** page can be used to upload custom logos and favicons to display on the Connection Broker Web interface. See “Displaying a Custom Logo and Favicon” in the [Connection Broker Administrator’s Guide](#) for more information.

Resolved Issues

- You can now specify custom names for custom flavors created in OpenStack.
- Resolves work queue prioritization issues that were causing provisioning tasks to run serially instead of in batches.
- Multi-user sessions can again be hard-assigned to users.
- Improve logging related to closing Leostream Gateway forwarding ports, to avoid logging spurious errors that Leostream Gateway ports were failing to close.
- Resolves issue where an unrecognized `operatingSystem` value coming from the Scale API call could cause the work queue to abort.

- The Connection Broker now uses the X_REAL_IP HTTP header to determine a client's IP address, if the header exists. This allows the Connection Broker to identify the client's actual IP address in environments that use load balancers, such as NGINX.
- Ensure that the {CREDENTIALS_MECHDYNE} dynamic tag is replaced with an empty string instead of with an error message any time the TGX credentials encryption tool returns an error. In the event an error occurs, the user is prompted to enter their credentials in the TGX Receiver.

Leostream Gateway 2.0.0.19

- Two new CLI options can be used to start and stop the gateway without rebooting the underlying operating system.
- The CLI option to generate an SSL CSR for signing now uses the entered Site Name both for the CN and SAN (subjectAltName) to support modern Web browsers.
- Resolves issues where the `check_gateways` job could result in error messages in the `/var/log/secure` logs.

Leostream Agent 7.4.8 for Windows Operating Systems

- The Leostream Agent now starts DCV sessions using the session ID generated by the Connection Broker.
- Return the configured port for DCV sessions, to support changing the default DCV port.
- Monitors desktop sessions for Scyld Cloud Workstation connections.
- When suspending logout for idle users based on CPU levels, the Leostream Agent now returns the maximum CPU usage across all CPUs on the remote desktop, instead of returning the average across all CPUs.
- Resolves an issue where Registry Plans would set keys in the 32-bit registry instead of the 64-bit registry if HKLM was selected for the root.

Leostream Connect 4.4.2 for Windows Operating Systems

- Supports launching the Scyld Cloud Workstation software client.
- Supports the policy option to limit sending collaboration invitations to groups of users.
- Includes a new installation option when installing in Shell mode, to indicate if the default Connection Broker address is stored in the current user or local machine registry.
- The new **Viewers** tab on the **Options** dialog shows the full path to all locally installed

display protocol clients, and allows you to override these default locations.

Leostream Agent 5.2.6 for macOS and Linux

- When installed on Linux operating systems, the Leostream Agent now starts DCV sessions using the session ID provided by the Connection Broker.
- The Leostream Agent now returns the configured port for DCV sessions, allowing you to change the default port used for DCV
- When installed on Linux, adds support for monitoring and managing desktop sessions for Scyld Cloud Workstation connections.
- Adds support for monitoring and managing PCoIP connections when using the PCoIP CAS Agent on macOS.
- Adds support for the Release Plan option to display messages to user before they are forcefully logged out due to idleness.
- Resolves issues where the Leostream Agent was unable to log users out of Remote Boost (RGS) sessions, either manually or via Release Plans.

Leostream Connect 3.8.2 for macOS and Linux

- Supports launching the Scyld Cloud Workstation software client.
- Resolves issues where the client would freeze after closing auto-launched Remote Boost connections on macOS.

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 through your 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
- **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 (see “Which Protocol Plan Applies?” in the [Connection Broker Administrator’s Guide](#))

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 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 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

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.