

# ***Cleo* Harmony<sup>®</sup>**

## **Release Notes**

**Version 5.7**



June 2022

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### **Cleo**

4949 Harrison Avenue, Suite 200  
Rockford, IL 61108 USA  
Phone: +1.815.654.8110  
Fax: +1.815.654.8294  
Email: sales@cleo.com  
www.cleo.com

**Support:** 1.815.282.7894, 1.866.444.2536 (US only), 02038653439 (UK), or support@cleo.com

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## Cleo Harmony 5.7 Release Notes

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Cleo Harmony software provides you with a wide variety and combination of file transfer capabilities that allow you to initiate transfers, control your transfers and environment, monitor your file transfer activities, and take actions as appropriate based on your file transfer activities.

Cleo VersaLex is the platform that powers the Cleo family of Secure Data Integration (SDI) products—The Cleo LexiCom® product is a desktop-based client solution for communication with major trading networks. The Cleo VLTrader® product is a server-level solution designed to meet the needs of mid-enterprise organizations. The Cleo Harmony® product is tailored for large enterprise needs. Enterprise capabilities include system monitoring, enhanced business-level dashboards, VLTracker, SNMP traps, dynamic blacklisting, and whitelisting.

## Cleo Technical Support

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Standard Cleo Technical Support is available from 7am - 7pm CST, Monday through Friday. Support availability might differ depending on your support package.

Training and a support subscription are required to work with a Cleo technical support analyst for all products, except Cleo LexiCom.

When contacting the Cleo support team, have your contact information, the name of product you are calling about, and your serial number, if available. During the support process we may request additional information (for example, a support bundle) that will vary depending on the type of request or issue.

Requests are handled on a callback basis in the order they are received. The Cleo support answering service or web form will collect your information and your request will be placed in our callback queue.

To contact Cleo Technical Support:

- Use the request form at: <https://support.cleo.com/hc/en-us>.
- Call us:
  - 1-815-282-7894
  - US (toll free): 1-866-444-CLEO(2536)
  - UK: 02038653439

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## What's new in version 5.7

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This section outlines new features and enhancements included in this version of Cleo Harmony.

### Technology Refresh

In Version 5.7, we have refreshed underlying technologies in Cleo Harmony. These upgrades include support for TLS 1.3 and replacing Oracle 8 JRE with OpenJDK 8.

### AS4 Enhancements

AS4 support in Cleo Harmony has been enhanced in the following ways:

- Certificate exchange capability included.
- Cleo Harmony is certified as an AS4 eDelivery conformant solution.
- User Messages and Pull Request Signal (inbound and outbound) can now include `<wsse:UsernameToken>` elements for outbound messages and authenticate for inbound messages.
- A GET command has been added to support the use of Pull Request Signals and User Messages.
- The advanced property, `Use MIME Packaging For Signal Messages`, has been added to allow Receipt Signals, Error Signals, and Pull Request Signals to be encapsulated within a MIME package.
- Other AS4 enhancements include Asynchronous Receipt Signals, automatic retries of User Messages that are awaiting an asynchronous Receipt Signal, and the ability to send and receive a payload within the `<eb:Body>` element of a User Message.

### S3 Enhancements

S3 support in Cleo Harmony has been updated to include the following enhancements:

- Support for using AWS credentials that have been stored locally.
- The S3 connector now has a "Pseudo Folders" property, where Cleo Harmony creates actual folder objects when asked to make a directory and require actual folder objects to exist when asked to list a directory
- Added the ability to perform multipart multithreaded transfers to S3.

### JMS Enhancements

JMS support has been expanded in Cleo Harmony.

- The JMS URI now allows you to use the new `filenameProp` property to construct filenames based on parameters you specify.
- The `TextMessage` JMS message type is now supported by the JMS URI.

### Connector Enhancements

Connectors that support directory structures, such as `smb :`, can now be used as send/receive archive directories for local user hosts.

The maximum length of the common `System Scheme Name` connector property has been increased from 8 to 24 characters to match the maximum allowed for the actual connector scheme names.

In addition, SMB and AzureBlob support has been expanded.

### **SMB**

- With this release, using an SMB Connector as send and receive archives for local user hosts is compatible with disabling the system-level property, `Sent/Received Box Archive`.
- SMB3 now supported.

### **AzureBlob**

- File movement to a different container with the same Azure storage account and file movement within the same Azure container are performed natively to avoid the extra overhead associated with performing these operations outside the Azure network.
- The ability to authenticate using a key in the Azure Key Vault is available in this release.

### **SSH FTP**

Cleo Harmony now allows a trading partner SFTP client to leave files or directories open on session end and now automatically close an open file or directory if the SFTP client removes a file or directory while it is open. In addition, performance of SSH FTP transfers when using AES ciphers has been improved.

### **Security Enhancements**

Expired and retired trusted CA certificates will not be installed for new Cleo VersaLex installs. The expired certificates will remain intact for Cleo VersaLex upgrades. Some trusted CA certificates have been updated with new versions.

With this release, Cleo products have been enhanced to use Bouncy Castle libraries version 1.66.

## Upgrading to version 5.7

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### Recommendations for Upgrading

When upgrading to Cleo Harmony version 5.7, Cleo recommends the following:

- Back up your configuration using the **Export** functionality. In the Web UI, go to **Administration > System > Export**. In the native UI, go to **File > Export**. Performing an **Export** will save your data in a format that you can import using the Cleo Harmony **Import** functionality should the need arise.
- Make sure your system meets the system requirements for Cleo Harmony version 5.7, as it requires greater resources than earlier versions. All new installs must be 64-bit. Visit [Cleo Harmony 5.7 System Requirements](#) to view the System Requirements for your product.
- Because this release of Cleo Harmony uses OpenJDK, if you are using the Web UI on a Unix system, you might need to install the latest fontconfig. The command is dependent on the flavor of Unix you are using.

For example:

- Red Hat: `yum install fontconfig`
- Ubuntu: `apt-get install -y --no-install-recommends libfontconfig1`
- Run the Cleo Harmony 5.7 installer to perform an in-place upgrade. Your data and configuration remain intact from the previous version of the Cleo Harmony software.

## Update history

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The following section contains descriptions of issues fixed in Version 5.7 and subsequent patch releases:

### Fixed issues in version 5.7.0.9 - June 24, 2022

#### Enhancements - Framework

- Cleo Harmony and Cleo VLTrader only: When sending bundled Database Payload, added the ability for each file to use additional properties only when explicitly set in the VLOutgoingProperties table. All other settings use the defaults from the host, mailbox, or action. To enable this, set 'Clear.Set.Properties' to 'True' in the VLOutgoingProperties table for each file.

#### Enhancements - OFTP

- Added a new OFTP host advanced property "Allow Duplicate SFIDs". Setting this property to True allows files with duplicate SFIDs to be accepted and simply log a message if a duplicate is received.

#### Enhancements - SSH FTP

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where deleting file/folders from an SSH FTP server concurrently using SSH\_FXP\_REMOVE could result in the file/folder not being deleted and a ConcurrentModificationException logged to the console.



## Fixed issues in version 5.7.0.8 - May 2, 2022

### Enhancements - Framework

- Cleo Harmony and Cleo VLTrader only: Added support for new %resttransferid% macro. This macro can be used wherever the traditional %transferid% macro can be used, but resolves to the REST API transfer id (also known as the document DB transfer id).

### Enhancements - SSH FTP

- Added system options for limiting client-side SSH FTP cipher, key exchange, mac, and public key algorithms for all client connections. Go to Administration>System>Other in the admin web UI and filter on Protocols to configure regular expressions for each algorithm.

### Enhancements - Portal

- Cleo Harmony only: Migrating Two-Factor Authentication from GraphDB into Users host files. If Two-Factor Authentication is being used, then 5.7.0.8 must be installed before upgrading to the next release.

### Enhancements - Connector

- Improved performance renaming/moving files within the same connector.

### Bug Fixes - Framework

- TLS v1.2 is now supported when in FIPS mode. **Note:** VLProxy 3.9.0.4 is required if using VLProxy.

### Bug Fixes - AS4

- Cleo Harmony only: Fixed an issue where AS4 transfers would fail if schema validation was enabled. This was corrected by adding additional schemas to the Harmony AS4/schemas folder.

## Fixed issues in version 5.7.0.7 - March 25, 2022

### Enhancements - FTP

- Cleo Harmony and Cleo VLTrader only: Added a "Before Login" option on the FTP/S Explicit AUTH Required setting. The option is located in the Local Listener |FTP| tab. With this new option turned on when AUTH is required, a user must issue the AUTH command before the USER and PASS commands.

### Enhancements - GCPBucket

- Added support for being able to use CMEK keys in GCP buckets.

### Bug Fixes - Framework

- Fixed an issue where api/resourceFolders endpoint would fail after a change was made to a host through the command line. This would impact the WebUI displaying the hosts.
- Cleo Harmony and Cleo VLTrader only: For the database payload feature, removed unnecessary table identifiers in a SQL UPDATE statement that was causing a syntax error on Postgres.
- Fixed a bug where placing & or && after LREPLACE or LDELETE commands would cause the action to fail when run through the REST API.

### Bug Fixes - Portal

- Cleo Harmony and Cleo VLTrader only: Fixed an issue with SAML authentication where IDP-initiated login would sometimes fail when using a Chromium-based browser.

### Bug Fixes - Connector

- Fixed a bug where SFTP transfers would hang if the file was an AzureBlob and the client tried to set the file time.

### Security - Framework

- Cleo Harmony and Cleo VLTrader only: Removed the default OSGi HTTP listening port 8181. This port was not necessary and was not locally bound.

## Fixed issues in version 5.7.0.6 - February 8, 2022

### Bug Fixes - Framework

- Cleo Harmony and Cleo VLTrader only: Fixed a bug where, when using SAML with a custom authentication connector and the email address could not be found, the mailbox name would be displayed in Portal instead. Now, the nameID is shown if email address is not found. Also, added some debug that can be turned on by enabling debug on the custom auth connector.

### Bug Fixes - Connector

- Cleo Harmony and Cleo VLTrader only: Fixed a bug where VersaLex would not start up if FIPS was enabled due to an issue with the SMB connector. Also, fixed an issue with the SMB connector connecting to shares in FIPS mode.

## Fixed issues in version 5.7.0.5 - January 26, 2022

### Enhancements - Framework

- Cleo Harmony and Cleo VLTrader only: Added new Users advanced property, 'Archive Nested Subdirs'. When set on, file transfers to subdirectories within the configured upload and download folders will also be archived both to the user's and the system sent/received boxes.
- Added the ability to change the HTTP status code returned when 'Disable Basic Access Authentication for REST API Requests' is turned on.
- Nested `ExecuteOn...` commands are now supported up to three levels. An example would be an `ExecuteOnFail` from a failure result of an `ExecuteOnCheckConditionsMet` (this would be two levels).

### Security - Framework

- For the main VersaLex process, upgraded log4j v1 to the latest version of log4j v2. And for the VLTrader/Harmony secondary OSGi process, where upgrading log4j will require a full release, removed the vulnerable classes from the log4j v1 library. A full release of VersaLex is planned for later this year.

### Bug Fixes - SMTP

- Cleo Harmony and Cleo VLTrader only: Added SMTP server debug for inbound content type filtering. If the allowed inbound content types are being restricted and SMTP debug is turned on, the content type is logged for each file being checked.

### Bug Fixes - Connector

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where SFTP directory listings would fail if the home directory was set to a Storage connector and folders existed in the Storage connector.

### Bug Fixes - S3

- Fixed a problem where an S3 directory listing would be truncated at 1000 objects.
- Fixed an issue where temp files could remain after a transfer when using the S3 connector on certain operating systems.

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## Fixed issues in version 5.7.0.4 - December 10, 2021

### Enhancements - Framework

- The Generate Report option in the admin web UI Transfers page would previously include only the information viewable from the UI grid. Now all available transfer information, such as file path, is included in the generated report. Also, a report generated from classic mode specifically now includes the file path if it is enabled in the user's group.

### Enhancements - HTTP

- Added a new HTTP SaveErrorResponseContentOnPutPlusGet advanced property, which when set on causes the response content from a PUT+GET command request to be saved to the inbox even on error responses.

### Enhancements - ebMS

- Added an option to ebXML to modify the case of the Content-Id header.

### Enhancements - MQ

- Added support for the following MQ SSL cipher specs: ECDHE\_RSA\_AES\_128\_GCM\_SHA256 and TLS\_AES\_256\_GCM\_SHA384.

### Enhancements - SMTP

- Added the ability to configure individual SMTP Proxies to use Start TLS via the property 'Use Start TLS' in the proxy configuration screen. This property defaults to 'True' to match existing functionality.

### Enhancements - Connector

- Cleo Harmony and Cleo VLTrader only: Fixed an issue with the GCPBucket connector where not all traffic would be directed through the specified proxy. Also, introduced support for multiple proxies in the GCPBucket connector.

### Bug Fixes - HTTP

- Fixed an issue where SSL connections could fail with a NullPointerException when SSL Debug was enabled.

### Bug Fixes - SSH FTP

- Fixed a potential SFTP server problem where a file stat request would not return a response. This could occur after a file upload, if a file stat request from a client occurred at the same time that the file was deleted or moved by the server.

### Bug Fixes - Connector

- Fixed an issue where users would not be able to CD into a subdirectory of an Azure Blob connector when the Azure Blob container was set up as Data Lake Storage.

### Bug Fixes - SMB

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where the SMB connector would fail when connecting to AS400 IFS SMB shares with the following error: "TreeID is invalid".

### **Security - Framework**

- VersaLex now ensures that any paths in filenames on incoming requests are ignored for protocols that do not support paths, including AS2, ebMS, RNIF, and SMTP.

## Fixed issues in version 5.7.0.3 - November 15, 2021

### Enhancements - SSH FTP

- Cleo Harmony and Cleo VLTrader only: Improved performance of SSHFTP directory listings when VersaLex is the server on Linux.

### Enhancements - Connector

- Cleo Harmony and Cleo VLTrader only: Improved performance of the SMB connector by caching file attributes for all files in a specific folder for two seconds if more than five files are accessed from that folder within ten seconds.

### Enhancements - SFTP

- Added support for the following SFTP algorithms: Public Key: ecdsa-sha2-nistp256, ecdsa-sha2-nistp384, ecdsa-sha2-nistp521, Key Exchange: ecdh-sha2-nistp256, ecdh-sha2-nistp384, ecdh-sha2-nistp521, and MAC: hmac-sha2-512, hmac-sha2-256-96, hmac-sha2-512-96. The new Public Key algorithms are available on the client side only, while the new Key Exchange and MAC algorithms are available on both client and server side (although server side only applies to VLTrader and Harmony). The new Key Exchange algorithms are not available in FIPS mode.
- All negotiated algorithms are now logged at the beginning of each SFTP client and server session.

### Enhancements - S3

- Added new S3 connector property, AccessControlList (ACL), for cross-account use. This new property applies the selected ACL permissions on objects PUT to a bucket.

### Bug Fixes - Connector

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where using a connector as the inbox/outbox for a connector would result in a NullPointerException.

### Bug Fixes - S3

- Cleo Harmony only: Fixed an issue with the S3 connector that could prevent the UI from starting correctly.

### Bug Fixes - AS2

- Fixed an issue where, if the AS2 Receipt-Delivery-Option header contained a username:password in the URL, it would fail to send the MDN to the trading partner.

## Fixed issues in version 5.7.0.2 - July 21, 2021

### Major Enhancements - Framework

- Cleo Harmony only: If you are upgrading to VersaLex 5.7.0.2 and you use Cleo Dashboards, you need to upgrade Cleo Dashboards to v3.3.6 because of database changes in VersaLex. In addition, Cleo Dashboards v3.3.6 requires Clarify v5.1.16.

### Enhancements - Framework

- Cleo Harmony and Cleo VLTrader only: VersaLex now supports MySQL 8. However, as part of this, the 'Recursive' column in the 'VLSLAKPI' database table had to be renamed to 'Recurse' as 'Recursive' is now a reserved keyword in MySQL 8. The column rename was applied to ALL databases and versions, not just MySQL 8. VersaLex will attempt to rename the column at startup after upgrade; but if the database user configured in VersaLex does not have DDL privilege or if the column rename otherwise fails, the column will need to be renamed outside of VersaLex. There is also a database view 'View\_Checkpoints' where the 'Recursive' column was renamed, and VersaLex will actually first attempt to drop this view, then rename the table column, and then recreate the view. For reference, use [Export Database Definition...] in the Transfers configuration window and find references to 'Recursive' in the CREATE TABLE VLSLAKPI and CREATE VIEW View\_Checkpoints statements.
- Cleo Harmony and Cleo VLTrader only: If a file share has already timed out, then any subsequent scheduler failures on the file share during the configured 'Wait Time For Nonresponsive File Systems' are now logged as warnings rather than errors. This helps to cut down on email-on-fail alerts for the same file share issue.

### Enhancements - ebMS

- Added new ebMS "Allow Incoming Request With Missing Role Element" advanced property, which when enabled allows an incoming request without a role element value to be processed if it otherwise matches a configured ebMS mailbox.

### Enhancements - SMB

- Cleo Harmony and Cleo VLTrader only: Added an option 'Force Make Directories' to the SMB connector to enable the connector to create any parent folders that do not exist for the destination of a file.

### Enhancements - S3

- Cleo Harmony only: Added three new optional S3 connection properties: 1)'User Metadata' can be used to specify metadata key/value pairs which are added to new S3 objects, 2)'Put Object Key' is an expression used to name new S3 objects, 3)'Force Unique' forces all new S3 objects to be uniquely named. After upgrade, refer to the S3 connection |S3| and |Info| tabs for more information.

### Enhancements - GCPBucket

- Cleo Harmony only: Added 'Proxy Address' and 'Proxy Port' properties to GCPBucket connections for forward proxying support. GCPBucket already honors the Default HTTP/S Forward Proxy setting.

### Enhancements - S3

- Added support for cross-account access using AWS's AssumeRole feature in the S3 Connector.



### **Bug Fixes - Portal**

- Cleo Harmony and Cleo VLTrader only: Fixed an issue introduced in 5.6.2.8 where a zero-byte file uploaded through SFTP would not be written to disk.

### **Security - Portal**

- Cleo Harmony and Cleo VLTrader only: Increased web session cookie id length to be greater than 32 characters.
- Cleo Harmony only: When logging into Portal, the session cookie is now changed after login to help prevent session fixation attacks.

## Fixed issues in version 5.7.0.1 - May 18, 2021

### Enhancements - Framework

- Added the ability to import a P12 certificate through the REST API.

### Enhancements - AS4

- Cleo Harmony only: When sending signed messages with multiple attachments, the digest references are now ordered the same as the attachments..

### Bug Fixes - Framework

- Fixed an issue, introduced in 5.7.0.0, where importing a User certificate with a DSA key would fail.
- Fixed an issue where generating a User certificate with a DSA key would fail.
- Fixed an issue where connecting to the WebUI through a HTTP/s port with FIPS mode enabled would cause the web browser to report a cipher error and prevent the page from loading. Note: VLProxy 3.9.0.1 is required if using VLProxy.
- Fixed an issue where updating a host's certificate through REST API would set the host to 'Not Ready' when the certificate is a PGP key-generated certificate.

### Bug Fixes - FTP

- Fixed an FTPs Active mode issue introduced in 5.7.0.0 where, when the 'SSL Maximum Protocol Version' was set below the new maximum of 'TLS 1.3', it would fail to find an open data port in the specified range or it would fail in SSL negotiation.

### Bug Fixes - SSH FTP

- Fixed an issue where, if the trading partner's SSH server prematurely closed a client connection during the initial protocol version negotiation, the result could be excessive CPU usage up to the configured connection timeout.

### Bug Fixes - SMTP

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where the VLMail utility did not support TLS version 1.1 or higher when negotiating a secure connection.

### Bug Fixes - Connector

- Cleo Harmony only: Fixed a memory leak that occurred when transferring files with the S3 connector.

### Bug Fixes - SFTP

- Cleo Harmony and Cleo VLTrader only: Fixed an issue introduced in 5.6.2.8 where a zero-byte file uploaded through SFTP would not be written to disk.

## Fixed issues in version 5.7 - February 19, 2021

### Enhancements - Framework

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where Harmony/VLTrader would become unresponsive when the Document DB in-memory queue is full. Now, when the in-memory queue is full, events queued up for the Document DB are written to disk. When the Document DB becomes available again, events are read from disk and inserted into the database. The **Replicate Event Log Queue Size** is now the number of events that are in memory and on disk before the system logs an error and sends email notification to the administrator.
- Replaced Oracle 8 JRE with OpenJDK 8.
- Cleo Harmony and Cleo VLTrader only: Added finer control over certificate expiration notifications. Separated server certificate expiration notifications from the existing **Email Local And Partner Certificate Expiration** options into the **Email Server Certificate Expiration** options. Also added the ability to control the frequency of the certificate expiration notifications with the **Email (Server/Local And Partner) Certificate Expiration Notification Frequency Days** setting. For more information see the Cleo Harmony or Cleo VLTrader User Guide.
- Added support for Transport Layer Security (TLS) Protocol Version 1.3.
  - 📄 **Note:** When the `SSL Maximum Protocol Version` is left blank, the software will attempt to use TLS 1.3.
- Added two new system-level other properties: **Email And Execute On Resolution** and **Email Local And Partner Activation Notifications**. Both of the new properties default to `true`, which matches previous behavior. If **Email And Execute On Resolution** is `true` and **Email/Execute on Repetitive Failures** is turned off, when the failure is resolved, an email is sent and/or `execute on` is performed. **Email And Execute On Resolution** applies to all three levels of **Email/Execute On Repetitive Failures**. If **Email Local And Partner Activation Notifications** is `true`, when a scheduled certificate is activated, an email is sent to the system administrator.
- Cleo Harmony and Cleo VLTrader only: Cleo Harmony and Cleo VLTrader will no longer alert prematurely on event replication issues while it attempts to "self heal" the document DB. In other words, document DB errors and exceptions will not be emailed or executed on fail while VersaLex attempts to correct the problem. If the problems persist, the replicate event log queue full error will eventually result, which is still alerted on.
- Addressed an issue where `FileNotFoundExceptions` were being thrown because scheduled autosend files were temporarily unstable due to a slow underlying file system. Now, when running scheduled actions, these files are bypassed, avoiding unnecessary exceptions and Email-On-Fail emails.
- Cleo Harmony and Cleo VLTrader only: Added a new Password Expirations standalone javascript action template. This action can be used to send emails to the set of users whose password is about to expire or is expired, where the email includes a link to Portal for the user to change their password. This action can also optionally send a summary email to the system administrator(s) listing the users who were emailed and their password status.
- Cleo Harmony and Cleo VLTrader only: Updated the static VLTransport database table such that LCOPY commands are considered to be transfers. This allows LCOPY records in the VLTransfers table to be displayed in Cleo Dashboards.
- Base release notes will be appended to the patch notes that are included within each patch, as stored in the `conf/notes.txt` file.
- Converted host-level Advanced property, `SSL Cipher`, to a regular expression field. Now, users can enter regular expressions (enclosed in brackets) or wildcard expressions to restrict the list of ciphers presented to the SSL server. The ability to specify only a single cipher is still possible, however, the UI has been improved to make this selection easier. Refer to the user's guide for detailed information on the usage of this property.
- Improved wording for messages related to actions that are temporarily blocked from scheduler processing, especially as it relates to failed actions due to slow file systems.
- Added the ability to create and edit OFTP connections via the `/connections` REST endpoints.
- An overrun of the data segment in the SSL/TLS handshake and a resulting failed inbound connection during SSL/TLS handshake could occur when both of the following are true: 1) any of the HTTP/s, FTP/s, SMTP/s or OFTP/s

client authentication settings are enabled in the Local Listener and configured to Accept all Certificate Manager Trusted CA certificates; 2) the number of installed trusted CA certificates causes the byte length of the Distinguished Names of those trusted CA certificates to exceed 65535 bytes. To help diagnose this problem, a log message and email notification will now be sent when the byte count exceeds 65535 bytes. An example of that message would be: "There are 2300 trusted CA certificates with 65570 total bytes registered for HTTP/s client authentication. This exceeds the maximum threshold of 65535 bytes and may cause inbound connections to fail during the SSL/TLS handshake. You should remove unused trusted CA certificates to get that byte count below the maximum threshold." After you remove the unused CA certificates, you must restart the Local Listener for those changes to take effect. Once the byte count falls below the maximum threshold, another log message and email notification will be sent. An example of that message would be: "There are now 1200 trusted CA certificates registered for HTTP/s client authentication with 43456 total bytes and is below the maximum threshold. No further action is necessary at this time."

### Enhancements - SSH FTP

- Cleo Harmony and Cleo VLTrader only: Harmony/VLTrader now allows a trading partner SFTP client to leave files or directories open on session end. In the past, this would result in errors at the end of the session, but it now results only in warnings. Also, Harmony/VLTrader now automatically closes an open file or directory if the SFTP client removes a file or directory while it is open.
- Improved performance of SSHFTP transfers when using AES ciphers.

### Enhancements - OFTP

- Now block sending and receiving of already expired certificates through ACE.
- When an installed local or partner certificate is expired and there is a valid secondary certificate available that had previously been exchanged through ACE, the next secondary certificate for the specified usage(s) will be rolled over as the installed certificate before an OFTP message is either sent or received. In synced environments, certificates will be updated only on the node where the rollover has occurred to avoid syncing collisions. Each node will subsequently be updated during its own OFTP data exchange.
- When a new user certificate is sent through Automatic Certificate Exchange (ACE) in either a replacement or rollover scenario, attributes of the currently installed certificate are now included in the SFIDDESC field of the SFID message. These attributes can then be used by the receiver to implicitly trust the new certificate based on the trust of the currently installed certificate. Additionally, when an OFTP partner certificate is replaced through ACE, the certificate is archived and removed as long as it is no longer in-use by any other trading relationship.
- Today, the VersaLex SSL server automatically rejects expired client certificates. This capability has been expanded to the client side. To facilitate this capability, a new host Advanced property was added: "SSL Reject Expired Certificates". When set, if the client receives an expired certificate from the server, it will be rejected and the SSL handshake will be terminated.
- Added two new features to OFTP SSL client authentication, both facilitated through new switches under the client authentication configuration of the Local Listener OFTP tab: "Optional" and "Verify Key Usage". "Optional", when set, indicates that the SSL client certificate should be requested by the server, but should not be required. "Verify Key Usage", when set, indicates that the server should validate that the provided client certificate contains the "clientAuth" extended key usage setting. Note: VLProxy 3.9.0.0 is required if using VLProxy.
- Renamed OFTP Mailbox > V2 > Require Authentication to OFTP Mailbox > V2 > Secure Authentication. This better describes the purpose of this switch which now controls both initiator and responder action regarding secure authentication. This setting controls what is placed in the SSIDAUTH field (Y/N) when sending and responding. It also is used by the responder to enforce compliance with RFC 5024, which states the secure authentication must be set to the same value for both the initiator and responder.
- Added a new advanced property 'Validate String Characters For Inbound Message Fields'. When this property is enabled, VersaLex validates that the incoming values for SSID and SFID string fields only contain the following characters: 0-9 A-Z / - . & ( ). Note: VLProxy 3.9.0.0 is required if using VLProxy.

### Enhancements - Portal

- Cleo Harmony and Cleo VLTrader only: Improved performance of Cleo Portal when there is a large number of files in a folder.

### Enhancements - Connector

- Cleo Harmony and Cleo VLTrader only: Increased the maximum length of the common 'System Scheme Name' connector property from 8 to 24 characters to match the maximum allowed for the actual connector scheme names.
- Cleo Harmony only: Enhanced the AzureBlob connector so that when a file is moved to a different Azure container within the same Azure storage account, it is done natively so that we don't incur extra costs by leaving the Azure network.
- Cleo Harmony only: Added the ability in the Azure Key Blob Connector to authenticate using a key in the Azure Key Vault. See the Info tab on the connector for more details.
- Cleo Harmony only: Enhanced the AzureBlob connector so that when a file is moved within the same Azure container, it is done natively so that we don't incur extra costs by leaving the Azure network.
- Cleo Harmony and Cleo VLTrader only: Added SMB 3 support to the SMB connector.

### Enhancements - ICAP

- Cleo Harmony and Cleo VLTrader only: Added support in the ICAP connector for the REQMOD method. Previously only the RESPMOD method (which is the default) was supported.azure

### Enhancements - AS4

- Cleo Harmony only: Added certificate exchange capability to AS4. Similar to other protocols, this capability is initiated through the Exchange Certificates button that is located on many panels.
- Cleo Harmony only: Added capability for PING operations in accordance with the eDelivery "Test Service" feature.
- Cleo Harmony only: Added a new advanced property 'Use MIME Packaging For Signal Messages'. When enabled, all Signal Messages (that is, Receipt Signals, Error Signals, and Pull Request Signals) are encapsulated within a MIME package.
- Cleo Harmony only: Added the ability to include <wsse:UsernameToken> elements within outbound User Messages and Pull Request Signals. Also added the ability to authenticate inbound User Messages and Pull Request Signals that contain <wsse:UsernameToken> elements. These abilities are both governed by the PMode.Security.PModeAuthorize setting.
- Cleo Harmony only: Added support for sending/receiving a payload within the <eb:Body> element of a User Message.
- Cleo Harmony only: Added support for a GET command. A GET command will issue a Pull Request Signal to the trading partner. If the trading partner has a payload in its queue, it will respond with a User Message. Also added inbound support for Pull Request Signals. If a Pull Request Signal is received, and a payload is available in the outbox, the payload is returned to the trading partner, packaged within a User Message.
- Cleo Harmony only: Added automatic retries of User Messages that are awaiting an asynchronous Receipt Signal. This capability is managed through the PMode.ReceptionAwareness settings.
- Cleo Harmony only: Added support for asynchronous Receipt Signals. This ability can be initiated by setting PMode.Security.SendReceipt.ReplyPattern to 'Callback'. Also added support for asynchronous Error Signals. This ability can be initiated by deselecting PMode.ErrorHandling.Report.AsResponse.
- Cleo Harmony only: Added provisions to support eDelivery, version 1.13. Cleo Harmony is now officially certified as an AS4 eDelivery conformant solution. See <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+AS4+conformant+solutions#eDeliveryAS4conformantsolutions-CLEO>.

### Enhancements - S3

- Cleo Harmony only: The S3 connector now supports using AWS credentials that have been stored locally.
- Cleo Harmony only: Because S3 is a flat file system which does however support the concept of folders for grouping objects, the S3 connector now has a 'Pseudo Folders' property. Only when this property is set on (the default) will Harmony create actual folder objects when asked to make a directory and require actual folder objects to exist when asked to list a directory.
- Cleo Harmony only: Added the ability to perform multipart multithreaded transfers to S3.
- Cleo Harmony only: Added new S3 connector property, 'Enable Path Style Access', which enables path-style S3 URLs instead of virtual hosted-style S3 URLs. Path-style URLs are being deprecated by AWS, so this setting should be configured only for non-standard S3 connections.

### Enhancements - JMS

- Cleo Harmony and Cleo VLTrader only: Added support to the JMS URI to allow the filename to be determined by multiple properties. This extends the 'filenameProp' URI property to allow a syntax of filenameProp=property1+property2+property3, which then produces a filename like value1+value2+value3. If desired, a filenameSeparator URI property can also be set, which overrides the use of + in the constructed filename. Note that the list of property names in filenameProperty always uses + since these property names must be Java identifiers and do not contain a +.
- Cleo Harmony and Cleo VLTrader only: Added support for the TextMessage JMS message type in the jms: URI. TextMessage can be specified by using a msgType=text parameter on the URI. Previously, only BytesMessage was supported.

### Enhancements - General

- Cleo Harmony and Cleo VLTrader only: Added new local listener "Email And Execute On Unknown Trading Partner Failures" advanced property, which works in conjunction with the existing "Email On Fail" and "Execute On Fail" properties. If this new property is set to false (defaults to true), only inbound transfer failures associated with a known mailbox result in the configured email and/or execute on fail being invoked. This eliminates unnecessary emails/executions related to cyberattacks, and applies to all the local listener protocols and services.

### Bug Fixes - Framework

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where transfers with receipts would show duplicate events within the Transfers view.
- Removed unsupported PSK ciphers from SSL cipher suites.
- Fixed an issue where user certificate private keys exported with Base64 encoded PKCS #8 (.PEM) format had incorrect header and footer values.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where overlapping temporary actions off of the same base action would cause logged thread ids for the running actions to become corrupted. This would result in event and transfer logging being inaccurate. This problem could happen with triggers in particular.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where accessing the REST endpoint /api/connections/<connectionId>/transfers would sometimes return transfers not associated with the <connectionId> when used with certain protocols that have asynchronous receipts.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue in the various Users host configuration pages where the ellipsis button [...] in the Archive Directories section would not display the correct folder.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where result text containing binary characters could overrun the size of the resultText field in the VLTransfers database table.
- Added support for the %transferid% macro in the destination filename field of the PUT and GET commands for FTP and SFTP. Also added support for %transferid% within the destination filename field of LCOPY commands.

- Added more detailed messaging around upgrading through our product. We are now specifying that you need to run the native UI as an admin user in Windows to upgrade through the product.
- Fixed an issue where certain upgrades to Cleo Harmony/VLTrader/LexiCom without updating Cleo VLProxy would cause VLProxy communications to become non-functional.
- Fixed an issue where passwords that start with "#" or "\*" were not always handled correctly. Please note that passwords that begin with "#" or "\*" should not be escaped by adding an extra "#" or "\*". Rather, the passwords should be entered literally.
- Fixed an issue where certain functions (such as moving a host) would fail when accessing the WebUI through Cleo VLProxy.
- Fixed an issue where updating to an incorrect Local Signing or Encryption certificate in a running Local Listener would prevent SSHFTP and FTP users from logging in.
- Improved possible performance issues when querying Microsoft SQL Server databases through a Microsoft JDBC driver.
- Right clicking a host in the classic mode Web UI and selecting "Transfer Report" now automatically selects the host in the host list. Also, generating a transfer report from the mailbox level in the same manner will now show the mailbox-level selection view immediately.
- Fixed an issue where temporary actions were being written to top.xml unnecessarily causing delays in processing.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where the /connections endpoints would occasionally append '.0' to integer values.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where Sentbox Archive and ReceivedBox Archive in a Users host would write files to the install directory if they were set to the "%none%" macro.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where, if a user host has an SMB connector as the Home Directory and an Icap connector is scanning its incoming files, an exception would occur when a file was uploaded to the user.
- Fixed an issue where using the "All" button to select Trading Partner/CA Certificates in the Export window would improperly populate the list with duplicate entries, which would then produce an unusable export filter.
- Fixed a problem where the concatenated file size (for example, "10+20") was being reported for the %filesize% macro when placed in an 'Execute On Check Conditions Met' string for a multi-file result. Now the concatenated string is split apart for each file (for example, "10" and "20").
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where VLProxy would not be sent updated configuration information if all the related hosts were disabled or not ready.
- Cleo Harmony and Cleo VLTrader only: Fixed a REST API issue where a connection's or user's partner or local packaging encryption certificate would be missing if the certificate was generated from an OpenPGP key.

#### **Bug Fixes - FTP**

- Fixed an issue where the "RESULT" log was missing when a FTP GET action failed on a CD command.

#### **Bug Fixes - AS2/AS3**

- Fixed an issue in the AS2 receiver where, if an asynchronous MDN was requested and the AS2 relationship was unknown, the MDN would not be sent and there was no Result logged.
- AS3 only: Fixed a problem where a NullPointerException would be logged if the AS3 partner included an "AS3-Version: 1.0" MIME header in their message payload.

#### **Bug Fixes - SSH FTP**

- Fixed an issue where, if an optional comment is returned from the SSH FTP server during version negotiation, SSH\_MSG\_KEX\_INIT would fail with an Invalid Packet Size exception.

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where, if a URI path was configured for the user home folder, that folder structure could be incorrectly created under the installation folder.
- Cleo Harmony and Cleo VLTrader only: Fixed issue where the SSH FTP server could prematurely close open directories in a user session under load.
- Fixed an issue where incorrect permissions were sent when retrieving a file from an SSHFTP server.

### **Bug Fixes - OFTP**

- Fixed an issue where OFTP connections that use the option 'Send files when partner initiates connection' would cause a memory leak.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where the OFTP inbound transfer report showed the wrong host in the new Web UI.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue with the OFTP property 'Validate String Characters For Inbound Message Fields' when performing certificate exchanges. A validation error is no longer thrown on CERTIFICATE\_DELIVER, CERTIFICATE\_REPLACE, and CERTIFICATE\_REQUEST functions.
- Fixed an issue where a FileNotFoundException could occur on a temporary file while processing an incoming OFTP message.
- Fixed an issue where a temporary file wasn't being closed causing a two-minute delay while processing an OFTP message.
- Fixed a problem where individual entries in the ACE list for specified usages were not able to be properly deleted using the right-click 'Remove' option.

### **Bug Fixes - RNIF**

- Fixed an issue where Inactive RNIF Message IDs were unnecessarily written to disk causing performance issues.

### **Bug Fixes - Portal**

- Cleo Harmony and Cleo VLTrader only: Fixed an issue in Cleo Portal where, in Firefox only, after downloading a file by clicking on its name, the loading spinner on the page would become stuck and require a page refresh to continue using the application.

### **Bug Fixes - Connector**

- Cleo Harmony: Storage connectors can now be cloned or deleted only if Unify in Portal is licensed and enabled.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where processing a TA1 Acknowledgment document through the Router connector would result in a NullPointerException.
- Fixed an issue where non-ASCII segment-terminating characters would cause the Router connector to throw an exception.
- Connectors that support directory structures, such as smb:, can now be used as send/receive archive directories for local user hosts.
- Cleo Harmony and Cleo VLTrader only: Fixed a problem where an SMB connector directory listing could fail if there was an invalid character found in one of the filenames.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue where actions using the Clarify connector would fail if they were scheduled for polling and the action was run on a synchronized system.
- SMB connectors used as send/receive archive directories for local user hosts no longer throw an error if the system-level other property "Sent/Received Box Archive" is disabled.



**Bug Fixes - HSP**

- Cleo Harmony and Cleo VLTrader only: Fixed an issue where HSP transfers would fail if additional cookies were present.
- Cleo Harmony and Cleo VLTrader only: Fixed an issue with the HSP protocol where the server would not fail a transfer that the client had failed resulting in errors when the client attempted to resend the file.

**Bug Fixes - General**

- Cleo Harmony and Cleo VLTrader only: Removed the logged result for low-level inbound connection failures where a trading partner has not been identified and now just log the exception. This keeps "Email/Execute On Fail" from being invoked unnecessarily and reduces alert noisiness.

**Security - Framework**

- Expired and retired trusted CA certificates will not be installed for new Cleo VersaLex installs. The expired certificates will remain intact for Cleo VersaLex upgrades. Some trusted CA certificates have been updated with new versions.
- Cleo Harmony and Cleo VLTrader only: Fixed a security issue where a partial web admin UI could be accessed over HTTP when a secure port is required to access the Web Admin UI. The user will now be redirected to the secure port. Note: VLProxy 3.8.2.2 is required if using VLProxy.
- Upgraded the Bouncy Castle libraries to version 1.66. This includes necessary updates to Cleo software.