Apama 10.7.2 Readme

June 2021

This file contains important information you must read before using Apama 10.7.2. You can find system requirements, user documentation, and installation and upgrade instructions on the Documentation website or the TECHcommunity website. At those locations, you can also find suite-related security and globalization information.

Included in this file is information about functionality that has been added, removed, deprecated, or changed for this product. Deprecated functionality continues to work and is supported by Software AG, but may be removed in a future release. Software AG recommends against using deprecated functionality in new projects.

1.0　Critical Information

This section lists any critical issues for the current release that were known when this readme was published. For critical information found later, go to the Knowledge Center on the [Empower website](#).

Important: The Software AG Update Manager allows you to individually select which fix packages you wish to install. However, to ensure that all dependencies between the Apama fix packages are met, it is essential that you always select, and thus install, all Apama fix packages - do not try to install fixes for a subset of the Apama components you have installed.

For installation information, see *Installing Apama* in the downloaded package (accessible via the index.html file which is in the doc/apama-onlinehelp directory of your Apama installation directory) or on the [Documentation website](#).

2.0　Known Issues

This section lists any issues for the current release that were known when this readme was published. For known issues found later, go to the Knowledge Center on the [Empower website](#).

Dashboards

- PAM-31032
  Inconsistent behavior with deployed dashboard and viewer when a function is attached to the `enabledFlag` property of a check box.
  When a function is attached to the `enabledFlag` property of a check box, the Dashboard Viewer executes the `actionCommand` first and then evaluates the function. In the thin client, however, the function is evaluated first, and when the function returns 0, the `actionCommand` attached to the check box is never executed.
  The workaround for this issue is to add two check boxes, one stacked above the other, in z-order. The lower has `objName = checkbox_enabled, enabledFlag = true, label = "Checkbox", actionCommand = "system browseUrl ..."`, and sets `$foold = 1`. The upper has `objName = checkbox_disabled, enabledFlag = false, label = "", actionCommand = "system browseUrl ..."`, and `visFlag` is attached to `$foold`. So when the display is opened and `$foold = ""`, then `checkbox_disabled` is invisible, and the user can click on `checkbox_enabled` to execute the command and set `$foold = 1`. That makes `checkbox_disabled` visible, which obscures `checkbox_enabled` so the user cannot click on it afterwards.

Designer

- PAM-31465
  Launching Software AG Designer can significantly slow down and freeze on Windows 10 if Windows Defender is enabled. The workaround for this issue is to add the SoftwareAG\Designer directory to the exclusion list for Windows Defender. Steps for adding to the exclusion list can be found in https://bugs.eclipse.org/bugs/show_bug.cgi?id=548443#c28.

3.0   Usage Notes

This section provides any additional information you need to work with the current release of this product.

ADBC

- PAM-28453
  Core dump in ADBC `AP_NormalisedEvent_dtor`/`_int_free - double free`.
  We recommend that you install the latest RHEL patches and we strongly recommend the patch glibc-2.17-106.el7_2.6 (7.2) as it is known to fix an issue which can result in a crash when freeing memory.

- PAM-21466
  Bundled Oracle JDBC driver can incorrectly report Oracle Advanced Security errors (since 5.2.0.0).
  Even when Oracle Advanced Security is not turned on for the server, the following error can occur during connect:
  ```
  [Oracle JDBC Driver]The connect attempt failed because the server
  requires Oracle Advanced Security. To enable the driver to use OAS,
  please use the "dataIntegrityLevel" and/or "encryptionLevel" connect
  options.
  ```
  To work around the issue, set the connection URL option `randomNumberGenerationOptions` to one of the following values:
  "1" - The driver uses secure random numbers for handshake. The driver generates secure random numbers before the start of handshake, thus preventing this issue to occur due to the amount of time the connection needs to be made.
  "2" - The driver uses random numbers instead of secure random numbers for handshake. This is less secure but provides a faster connection to occur.
  DataDirect recommends setting this to the value of "1" and then re-testing. If the issue still occurs, then try the value of "2".

- PAM-23063
  Occasional connection errors with some JDBC drivers. It is not recommended to use multiple correlators against a single IAF, as the message IDs might not be unique and therefore could result in failures.

- PAM-10573
  Some supported databases store empty strings as NULL (since 5.3.0.0).
  Some databases such as Oracle are known to store empty strings as NULL values, which can lead to confusion when executing queries where a field is compared to the empty string. For example, the following would not match rows where the field was null for such databases:
  ```
  select * from table where field = ""
  ```
  To ensure the desired results are returned when running queries against databases that store empty strings as null, we recommend queries to be written to check for NULL instead of empty string literals.

- PAM-3876

  Support for NaN in Apama ADBC adapter (since 5.0).

  Support for storing and retrieving a NaN value is not supported with all databases. The following databases have been tested:

  - MS SQL Server and MySQL - No support. Database does not support NaN values.

  - DB2 - Not supported for JDBC.

  - Oracle - Full support for JDBC.

Adapters

- PAM-30527

  The Apama Cumulocity IoT transport implementation has changed some of the internal channel names (since 10.5.0).

  This will be transparent to most users, but if you are trying to debug or test code by subscribing a receiver to those channels, you may need to subscribe to the `CumulocityIoTGeneric` channel instead of, or in addition to, the `CumulocityIoT` channel. In addition, if you are connecting to a tenant which does not have automatic hostname mapping (such as with a Cumulocity IoT Edge instance) you may need to explicitly set the `CUMULOCITY_TENANT` option in your configuration properties.

- PAM-15644

  Unicode variable names in mapping rules cannot be resolved (since 5.0).

  Mapping in the correlator-integrated messaging adapter for JMS does not support internationalization for variable names. That is, only English characters are allowed in complex mapping template variable names.

Software AG Designer

- PAM-21618

  Pre-existing JDBC/ODBC projects do not start after Ant export (since 5.3.0.0).

  Existing JDBC adapter projects (5.2 and older) will require manual updating when used with Apama 5.3 and older to address a problem with Ant Export project referencing incorrect location for the adapters folder. To perform this update, you need to follow the steps below:

  - In the Project Explorer, right-click the project and select **Properties**.

  - Navigate to **Apama > MonitorScript Build Path** and select the **Bundles** tab.

  - Select the **JDBC Adapter:\ADBC-JDBC.bnd [Adapter catalog]** node.

  - Click the **Update** button.

  - A **Bundle instance** warning box will be shown to ask you for whether to back up existing files.

  - Choose **Yes**.

  - Your instance file should be updated to address this Ant Export issue.

- PAM-21378

  Creating duplicate launch configuration does not honor previous launch values (since 5.2.0.0).
  Duplicating the Apama launch configuration whose mode is set as "shared" will not duplicate the
  deploy configuration. When the "Duplicate" action of the launch configuration dialog is invoked on
  selecting an Apama launch configuration which is in "shared mode", an error dialog appears,
  saying that deploy configuration does not exist and it then reverts to the default settings. To
  complete the duplication of the launch, go to the folder where the launch configuration exists and
  copy the contents of its deploy file at the same location and name as launch. Paste the contents to
  the new deploy file (which shares the name of the new launch configuration) and save the file. This
  extra manual step will complete the "Duplicate" action.

Correlator

- PAM-21747

  Apama queries do not appropriately map line numbers when reporting exceptions (since 5.3.0.0).
  While compile-time errors are reported with the correct line number for Apama queries, runtime
  exceptions are not. If a runtime exception is thrown, then the stack trace of the exception (whether
  uncaught and reported by the correlator, or inspected by a catch statement in EPL) will show some
  details of the queries runtime system, and the line numbers will not correspond to lines in the
  query source file.

Dashboards

- PAM-21512

  Dashboard client is showing exception in log when dashboard server is stopped (since 5.2.0.0).
  The following error message will be logged to the dashboard client log file(s) when shutting down
  the connected dashboard server process(es):
  ```
  ERROR [GmsClientReceiverThread-<host>:<port>] - error receiving message:
  java.net.SocketException: Connection reseterror receiving message:
  java.net.SocketException: Connection reset (<host>:<port>)
  ```
  This message merely indicates the disconnection between the dashboard components and the
  server. Despite being logged as ERROR, these messages are informational only.

- PAM-12975

  Panels deployments can save header when disconnected from webserver (since 4.3).
  If panels.ini is used for display server dashboard, then an invalid HTTP session (for example, re-
  start Tomcat) will result in a sessionExpired page inside the main frame of the dashboard. Clicking
  on the login link on that page to re-login will *not* clear the previously displaying tabs/trees. Refresh
  the web browser or re-visit the dashboard URL to fix the problem.

- PAM-12699

  Filters containing quotes are broken when running with enhanced query mode (since 4.3).
  Attachments where the filter value is a string containing a quote do not work in enhanced query mode. In enhanced query mode, attachment filters are turned into SQL WHERE clauses. When using enhanced query mode and having the need to filter by values containing quotes, you need to escape each quote with a quote. Double quotes do not need to be escaped.

- PAM-11994

  Re-deploy of dashboard does not delete cached files (since 4.2.2).
  If dashboard files were removed between two display server deployments (that is, deploy foo.rtv, then delete foo.rtv from project and re-deploy), the deleted dashboard files will still be available for the re-deployed client. To work around this, delete the reference directory, *APAMA_WORK*/dashboards/*deployed_dashboard*, manually before re-deploying.

- PAM-11830

  Improperly defined JDBC connection causes CPU spike in SQL server when using Dashboard Builder (since 4.2.2).
  Dashboards using the SQL datasource with invalid JDBC connection parameters can sometimes cause high CPU usage due to numerous failed JDBC connection attempts to the SQL server. This issue can occur if an invalid JDBC password is specified and the Dashboard Builder SQL option **Get Tables and Columns** is enabled.

- PAM-11716

  Custom window title from Dashboard Builder options is not supported (since 4.2.2).
  Setting window titles in the Dashboard Builder using **Custom Window Title** in **Tools > Options > General** tab is not supported. Window titles can be set on the command line used to invoke the dashboard viewer.

- PAM-11551

  Apama commands in display server with large amounts of string data may fail (since 4.2).
  Executing Apama commands in display server deployments with large amounts of string data may fail if the resulting HTTP GET request exceeds the maximum allowed string length.

- PAM-10722

  Dashboard deployment wizard does not re-sign already signed jars (since 4.2).
  The dashboard deployment utility in Software AG Designer will not re-sign jar files that are already signed. If you add jar files to your dashboard deployment that are already signed, you may see errors when accessing the deployed dashboards. When using the dashboard deployment utility, you can sign all jars, or none of them (in this case, they would all need to be signed already), or (if you have a mix of signed and unsigned jars) sign with the same certificate that was used for the jars that have already been signed. If you'd like the deployment utility to sign jars that have been previously signed, you will have to first remove their signatures.

- PAM-5474
  Display server dashboards clearing edited text field on update (since 3.0.2).
  Input controls when displayed via the dashboard server may clear any edits when the display is updated. This makes it very difficult to use input forms with the display server. The problem occurs with input controls that are attached to either an Apama scenario, DataView, or dashboard function. When creating input forms in dashboards that will be deployed via the display server, you can follow one of the following techniques:
  - Do not attach the value property of input controls to Apama scenarios, DataViews, or functions. This is fine if the current value of the attachment does not need to be displayed in the control.
  - Attach the value property of input controls to variables set as the result of a drilldown. This will allow the initial value to be set to the value of the variable. The deficiency here is that if the value changes externally, it is not reflected in the control unless a new drilldown is performed.

- PAM-4405
  Delete All with many instances blocks UI (since 3.0).
  Using the Dashboard Builder's **Delete All** command to delete large numbers of scenario instances can make the dashboard user interface appear blocked. This is because control is not returned to the user interface until the **Delete All** operation has completed.

Other

- PAM-28499
  Cannot correctly override configuration properties with UTF-8 strings in a Command Central template (since 10.2.0.0).
  When using Command Central templates to configure an instance of an Apama correlator, the UTF-8 character encoding of property keys and values in the `APAMA-PROPS-OVERRIDES` configuration item will not always be honored. We do not recommend using characters in property keys and values outside of the ASCII range.

- PAM-24164
  ApamaDoc link in online help does not work in Internet Explorer (since 9.10).
  With Internet Explorer 11, it is not possible to invoke the ApamaDoc from the *API Reference for EPL (ApamaDoc)* page of the online help. This problem does not occur in other browsers such as Firefox. As a workaround for Internet Explorer 11, right-click the link, copy the link using the **Copy shortcut** command, and then paste the link into the Internet Explorer's address bar.

4.0 Fixes Included in Each Release

This section lists the latest fix level that has been included in each release for each product component. A release is listed in this section only if changes occurred in that release. Go to the Knowledge Center on the Empower website for detailed information about fixes.

Release 10.5

- PAM_10.5.0_Fix12

Release 10.3

- PAM_10.3.0_Fix12

Release 10.1

- PAM_10.1.0_Fix17

5.0 Other Resolved Issues

This section lists the issues that were resolved in each release but were not part of the fixes listed in the previous section. A release is listed in this section only if changes occurred in that release.

Release 10.7.2

Cumulocity IoT Transport

- PAM-32554
  Breaking change in `GenericResponse` behavior should be configurable to old behavior.
  10.7.0 introduced a breaking change in the contents of the
  `com.apama.cumulocity.GenericResponse.body` member. This fix introduces a mechanism
  to revert to the old behavior. This can be done by setting a property in the correlator on startup:
  `analyticsBuilder.genericResponse.body=payload`. This may be needed for compatibility
  with applications running in a Streaming Analytics application in Cumulocity IoT.

APIs

- PAM-32033
  C++ `StatusReporter::StatusItem` needs to be fully thread-safe.
  C++ `StatusReporter::StatusItem` is fully thread-safe now.

Correlator

- PAM-32485
  `deleteAll` does not actually remove coverage information.
  A change in 10.7.1 retained coverage information for transient/deleted files, except on `deleteAll`.
  A bug caused it to also be retained on `deleteAll`, but this has now been fixed.

- PAM-32417
  LLVM includes n^2 copies of the clang version in `.comment` sections.
  Applications running the compiled runtime on Linux can experience high memory usage and long
  compilation times. When using a compilation cache, then they can also experience very large cache
  directories. This happens with complex EPL applications with very deep dependency graphs
  between EPL types. Redundant object file information has been removed, improving the size of
  cache directories, injection times and memory usage for the compiled runtime.

- PAM-31031
  Rework correlator receiver/sender connect/disconnection log messages (including slow receiver).
  The messages logged by the correlator when receivers are connected, disconnected or become slow
  now have more information about the receiver.

Connectivity and Adapters

- PAM-32455
  Shutting down a chain containing a queue should not lose events that are on the queue.
  If the Batch Accumulator codec has any messages queued to send towards the host, it waits to flush them before shutting down. This is not true if the host itself is shutting down (rather than just the chain).

- PAM-32451
  `Chain::isStartThread threadlocal` should be a static to avoid hitting `PTHREAD_KEYS_MAX` limit.
  Prior to this fix, each connectivity chain requested its own thread-local key for chain management purposes. When a large number of chains is created (for example, more than 1000), the maximum number of thread-local keys in the system may be reached, with consequential effects on other functionality in the system wishing to use thread-local memory. On Linux, a call to `pthread_key_create()` would return `EAGAIN`. On Windows, a call to `TLSAlloc()` would return `TLS_OUT_OF_INDEXES`. The fix ensures that only one thread-local key is requested for the management of all connectivity chains.

- PAM-32345
  Crash in HTTP concurrent chains on ARM.
  On ARMv7 platforms using the HTTP server connectivity plug-in configured for concurrent chains, the correlator dumped core when those chains were started. This is now resolved.

- PAM-32484
  DistMemStore/JMS Spring tries to connect to remote URL to find schema.
  The Spring resolver used to attempt to look up XML schema URLs via the network. This has now been disabled.

Release 10.7.1.3

Cumulocity IoT Transport

- PAM-32563
  Undo breaking change to `GenericResponse.body` behavior.
  In 10.7.0 we introduced a breaking change to `GenericResponse.body` to remove an erroneous single-element dictionary in which the actual body had been wrapped. This caused an unacceptable level of inconvenience to our cloud customers since this change had not been warned in advance. Accordingly, we have reverted the change in the 10.7.1.3 fix. If you rely on this new behavior, you can restore it in one of two fashions:

  - Call the new `GenericResponse.getBody()` method we added in this fix which will always return the new, unadorned, body.

  - Set the property `analyticsBuilder.genericResponse.body=payload.body` which will change `GenericResponse.body` to the new behavior.

Correlator

- PAM-32562
  Correlator shutdown crash during management flush all queues.
  In a previous fix, code was introduced which caused a rare shutdown crash on Windows platforms when shutting down a correlator connectivity plug-in. The change which caused the occasional crash has now been reverted to avoid the occasional crash.

Release 10.7.1.2

Cumulocity IoT Transport

- PAM-32554
  Breaking change in `GenericResponse` behavior should be configurable to old behavior.
  10.7.0 introduced a breaking change in the contents of the `com.apama.cumulocity.GenericResponse.body` member. This fix introduces a mechanism to revert to the old behavior. This can be done by setting a property in the correlator on startup: `analyticsBuilder.genericResponse.body=payload`. This may be needed for compatibility with applications running in a Streaming Analytics application in Cumulocity IoT.

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  Applications running the compiled runtime on Linux can experience high memory usage and long compilation times. When using a compilation cache, then they can also experience very large cache directories. This happens with complex EPL applications with very deep dependency graphs between EPL types. Redundant object file information has been removed, improving the size of cache directories, injection times and memory usage for the compiled runtime.

Release 10.7.1.1

Connectivity and Adapters

- PAM-32344
  HTTP server with `concurrentChains: true` unnecessarily waits for chains to be destroyed before processing next request.
  A change was made to correct a locking situation where if `concurrentChains` is on in a HTTP server chain and if the queue became full, it could have blocked further HTTP server requests being processed.

Release 10.7.1

Correlator

- PAM-32297
  Correlator crashes when `libnss_ldap` is configured on system for SSL.
  There is a known issue with running Apama on systems configured to use `libnss_ldap` in-process. This applies to any system authentication method using SSLwhich does not use an external daemon. This is due to the custom OpenSSL shipped with Apama. The work around is either to disable SSL for your LDAP requests or, preferably, configure the system with an external authentication provider such as SSSD or `nslcd`, rather than `libnss_ldap` directly.

- PAM-31918
  Sending in large (8Mb) managed object uses disproportionately large amounts of memory (> 1Gb).
  The ordering of entries in containers within EPL and within connectivity plug-ins is undefined in some cases. A change in this release to reduce memory usage had the side effect of changing some of this ordering. This is particularly likely to be reflected in the order of entries in maps when printed by some connectivity plug-ins like the diagnostic codec or the JSON format produced by the JSON plug-in. It could also affect the order that map entries are iterated over in your own plug-ins.

- PAM-32155

  EPL `on completed InnerEvent()` crashes the correlator.

  A correlator crash has been fixed. The crash occurred when a monitor was deleted which contained both an event type defined within its scope (an "internal event") and an `on completed` listener for such events.

- PAM-32070

  Correlator should allow starting during grace period after license expiry.

  The correlator now starts with an expired license in its grace period, that is, 7 days post expiration date.

- PAM-32036

  Incorrect type for runtime object of `any.getGenericAction()`.

  Calling `getGenericAction` on an `any` value that is an action, a value of type `action<sequence<any> > returns any` is returned. However, after assigning the return to an `any`, a call to `getTypeName()` would return the original action's type which would match the original signature, not `action<sequence<any> > returns any`, for example, would be a type mismatch. The correct type is now returned by `getTypeName()`.

- PAM-32000

  `GenericComponentManagementAdapter::getHostname` deallocates its return value.

  An issue leading to corrupted data in the Prometheus hostname metric has been fixed.

- PAM-31960

  Combination of big events and channel prefixes can cause a crash in `engine_send`, correlator (EventStreamReader).

  Parsing an event (.evt) file with single lines in excess of 256kB combined with lines using a channel name before the event could result in a crash. This issue is resolved.

- PAM-31887

  Correlator crash handler should log EPL monitor name etc. if possible.

  In case of a correlator crash, after the correlator stacktrace, the EPL stacktrace is now printed as well.

- PAM-31932

  New soft-reserved keywords have been added to the Event Processing Language (EPL). The `await` keyword is now a soft-reserved keyword. This may become a language feature in the future, so it is recommended to avoid using it to avoid confusion.

Management Tools

- PAM-31996

  `httpserver_passman` silently fails if `httppasswd` is not writeable.

  `httpserver_passman` used to silently ignore if the `httppasswd` is not writable. Now it throws an error, stating a permission issue.

Cumulocity IoT Transport

- PAM-32088
  `senderAddress` and `senderName` are required fields for sending SMS messages to Cumulocity IoT.
  When the HTTP client generic JSON bundle is added to the project configuration, defaults for the sender name and sender address are now retrieved from the tenant options in Cumulocity IoT if they are not specified in the `SendSMS` event. If the tenant options cannot be retrieved from Cumulocity IoT, you can now configure the defaults by adding `CUMULOCITY_SMS_SENDER_NAME` and `CUMULOCITY_SMS_SENDER_ADDRESS` to the .properties configuration file of the Cumulocity IoT transport.

- PAM-31998
  Cumulocity IoT `ObjectCommitted`/`ObjectCommitFailed` responses are sent on the default channel.
  It is now possible to receive responses for the creation or update of predefined types (`Measurement`, `ManagedObject`, `Alarm`, `Event`, `MeasurementFragment`, and `Operation`) on their respective `SUBSCRIBE_CHANNEL`.

- PAM-31593
  Generic requests should correctly support `DELETE` request where the body is empty.
  On a Cumulocity IoT `GenericRequest`, a `GenericResponseComplete` acknowledgement is now sent even when the `content-type` is not set.

EPL Plug-ins

- PAM-32139
  HTTP client: Query value incorrectly converted to ISO-8859-1.
  The HTTP client and HTTP server connectivity transport plug-ins are no longer converting UTF-8 characters to ISO8859-1 for query string and path.

Dashboards

- PAM-31260
  `APAMA_DASHBOARD_CLASSPATH` is not honored from environment when launching from Software AG Designer.
  The `APAMA_DASHBOARD_CLASSPATH` environment variable can now be used when launching dashboards from Software AG Designer, thereby matching the behavior when opening dashboards from the command line.

Software AG Designer

- PAM-31672
  NPE while adding JNDI environment property using JMS Configuration Wizard.
  An error could occur when attempting to add a connection property to a Universal Messaging
  Correlator JMS Adapter as part of the configuration wizard. This issue has been resolved.

- PAM-31092
  Data player not removing ADBCStatusManager.mon when launching project with xclock and
  timestamps from data.
  The data player reliably removes ADBCStatusManager.mon now if it is externally clocked.

Connectivity and Adapters

- PAM-32221
  Mapper codec fails to find item in map.
  Incorrect comparison of `map_t::iterators` in C++ connectivity plug-ins is now detected. If it
  occurs, an exception "Invalid comparison of iterators into different maps" will be thrown. The
  correct course of action is to identify the source of the bug and fix it. For operational purposes, the
  exception may be suppressed by the existence of the environment variable
  `AP_SKIP_DATA_T_ITERATOR_CHECKS`.

- PAM-31928
  JMS BEST_EFFORT queue receiving with IBM MQ is painfully slow.
  For customers using JMS to receive non-persistent messages from an IBM MQ queue, a change was
  made (the default receiver `maxBatchSize` is now 1, that is, `AUTO_ACK` not `CLIENT_ACK`) which
  can enable significant performance improvements if you also add the `?READAHEADALLOWED=YES`
  MQ property to the queue URL (see the IBM documentation for further information about the read-
  ahead allowed option). This change does not affect other JMS vendors, does not affect topics, and
  does not affect persistent (reliable) messages.

Release 10.7.0

Cumulocity IoT Transport

- PAM-31248
  CumulocityCodec should reject requests if datetime is not mentioned in epoch.
  When making queries to Cumulocity IoT, timestamp fields (`fromDate`, `toDate`, `fromCreationDate`, `toCreationDate`) are required to be seconds since the epoch (as a float or a string). Previously, non-parsing strings would return all historical artifacts. Now they are rejected with an error.

APIs

- PAM-31437
  Java `engine_client` library can get into state where inject will always fail, but this cannot be detected easily.
  Sender-only disconnects in the Java engine client interface were in some cases not being correctly reconnected in the `ping()` method. This has now been fixed.

Connectivity and Adapters

- PAM-31432
  Universal Messaging client should drop messages which exceed `nSession::getMaxBufferSize()`.
  An exception is thrown if a Universal Messaging client sends an input buffer whose size exceeds the server's buffer size (default value 20 MB), where before it would have failed and retried forever.

- PAM-31661
  JSON codec crashed when messages in `towardsHost` and `towardsTransport` arrived at the same time.
  In a connectivity chain, there is a possibility that 2 threads try to use the JSON codec at the same time. This used to result in a correlator crash. This is now fixed.

- PAM-29847
  Upgrade Saxon parser used for JMS XPath.
  The Saxon parser library has been updated from 8.9 to 9.9.1.

Correlator

- PAM-31452
Vulnerable third-party sqlite3.dll component used.
The version of SQLite used with Apama has been updated to address the following security advisories: CVE-2019-19646, CVE-2020-11656 and CVE-2020-11655. None of these were directly exploitable within the Apama platform.

- PAM-31427
Correlator core dump if debug logging (but not EPL coverage) is enabled when injecting Analytics Builder EPL code.
A crash during injection has been fixed. The crash occurred with both application event logging and optimizations enabled when passing constants to static actions from another static action.

- PAM-31430
`any.hasEntry(k)` returned true for strings, primitives, for all `k`.
Calling `hasEntry` on an `any` containing a string now returns false for all entries other than "value". This now matches both the documentation and the behavior of `getEntry`, which will throw on any entry other than "value".

- PAM-31687
Object pool should use optimal allocator for all sizes if the allocator is jemalloc.
Some memory improvements when using the jemalloc allocator have been made.

- PAM-31416
Undocumented correlator parameter `--qsize` changed the logged "Output queue size" but had no other effect.
The `--qsize` option to the correlator has been removed. This was previously undocumented and had no effect.

- PAM-31803
Update jemalloc to v5.2.1 and also ship the unprefixed version of jemalloc libraries that users can load dynamically using `LD_PRELOAD`.
The version of jemalloc shipped with the installation has now been upgraded to 5.2.1.

- PAM-31513
Management plug-in's async jobs not flushed in `flushAllQueues`.
Using `flushAllQueues` from the Management plug-in, which is the underlying implementation for the Management interface, did not wait for the `asyncRequests` to complete.
The Management plug-in supports executing `asyncRequests`, and the `flushAllQueues` request did not wait for these. This issue is now resolved. `flushAllQueues` will wait for `asyncRequests` to complete, with the exception of requests executing from the Management interface (as that would deadlock).

Release 10.5.3.3

Cumulocity IoT Transport

- PAM-31374
  Cumulocity codec discards multiple messages if one has an error.
  Instead of dropping the entire batch, only the messages causing exceptions will now be dropped.

Correlator

- PAM-31729
  Prometheus endpoint generates invalid values.
  The Prometheus endpoint sometimes reported bad values and duplicates. This issue has now been fixed.

Release 10.5.3.2

Software AG Designer

- PAM-31448
  Vulnerable third-party SnakeYAML component used.
  SnakeYAML has been upgraded to address CVE-2017-18640.

- PAM-31559
  Project initialization list fails to be generated from Designer.
  Exporting an Apama project initialization list to a text file from Designer is now fixed.

APIs

- PAM-31456
  Vulnerable third-party log4net component used - only affects customers using our .NET client API.
  Apache log4net has been upgraded to address CVE-2018-1285.

Cumulocity IoT Transport

- PAM-31647
  Generic request `content-type` preserved in request not reconstituted.
  Using a Cumulocity IoT `GenericRequest` event to send JSON data to Cumulocity IoT is no longer sensitive to the case used when specifying the `content-type` in the header.

- PAM-31579
  Requests created via `CumulocityRequestInterface.createRequest()` do not include application key (if available).
  The `X-Cumulocity-Application-Key` header is now included in requests from Apama to Cumulocity IoT using the `CumulocityRequestInterface`, which means that the `deviceRequestCount` will not include Apama requests.

Correlator

- PAM-31679
  Crash in Python plug-ins parsing from `any`.
  A Python plug-in method that takes a parameter of the `any` type can crash the correlator when invoked with a parameter containing a value that is a dictionary type or an event type. This has now been fixed, along with a second crash at shutdown in certain situations when using a Python plug-in.

Connectivity and Adapters

- PAM-31566
  Generic JSON chain does not honor user-supplied content type.
  A regression was introduced in 10.5.3.0 where explicitly overridden `content-type` headers using the generic HTTP client could have a `charset` appended to them. This has now been fixed.

- PAM-31444
  Vulnerable third-party CXF component used.
  Apache Camel has been updated to 3.3.0 and Apache CXF has been updated to 3.3.6 to resolve vulnerabilities associated with the previous versions. Since this is a major update of these components, users with extensive use of the web services adapter may experience some differences in functionality.

Release 10.5.3.1

Cumulocity IoT Transport

- PAM-31483
  Does `deviceRequestCount` include the request from Apama (by setting `X-Cumulocity-Application-Key` header)?
  The `X-Cumulocity-Application-Key` header is now included in requests from Apama to Cumulocity IoT, which means that the `deviceRequestCount` will include Apama requests.

- PAM-31514
  Cumulocity IoT transport does not log all unexpected HTTP errors.
  The Cumulocity IoT transport was only logging some errors from the Cumulocity IoT platform. It missed out certain kinds of error that would be useful in diagnosing misconfiguration, such as authorization errors and missing microservices. This has now been fixed.

Connectivity and Adapters

- PAM-31379
  Vulnerable third-party camel-core component used.
  Apache Camel has been upgraded in order to fix CVE-2018-8027.

Release 10.5.3

Software AG Designer

- PAM-30787
  Incorrect `engine_deploy` dependencies generated when project is directly under a drive root path.
  On Windows platforms, generating an injection order list for any Apama project from a root directory by specifying the relative path of the project was not honoring exclude or include patterns specified in the project. This issue is now fixed.

APIs

- PAM-31331
  C++ chain managers do not compile without using namespace.
  C++ chain managers no longer require a "using namespace" in order to compile.

Cumulocity IoT Transport

- PAM-31304
  Cumulocity codec hitting map iterator modification assert.
  In some cases, the `CumulocityCodec` component that is used for sending requests to Cumulocity IoT from Apama could fail to send either part or all of a request or response. This has been corrected.

Correlator

- PAM-31407
  switch (any as value) crashes the correlator on injection.
  When writing incorrect EPL of the following form, Software AG Designer silently allowed this error, and the correlator crashed when attempting to inject this incorrect EPL.

  ```
  switch(<name of type> as value) {
    …
  }
  ```

  This has now been fixed in both cases.

- PAM-31037
  Java connectivity plug-in framework should call `Thread.setContextClassLoader`.
  Connectivity plug-ins and EPL plug-ins written in Java will now have the context class loader set to be the correct class loader for the plug-in when invoked.

- PAM-30745
  Correlator can dump core in `InitInjectThread::logStatus` during shutdown.
  A rare crash during shutdown of correlators using YAML injection lists has been fixed.

Connectivity and Adapters

- PAM-31352
  HTTP client is unable to send requests in some non-English locales.
  HTTP client connections could fail when running on Windows configured in a locale with a timezone name containing non-ASCII characters. This issue has been fixed.

Documentation

- PAM-31256
  ApamaDoc in generated documentation contains errors.
  Documentation has been corrected for some trigonometric functions in the built-in `float` and `decimal` types.

Release 10.5.2.1

Connectivity and Adapters

- PAM-31304
  Cumulocity codec hits map iterator modification assert.
  In some cases, the CumulocityCodec component that is used for sending requests to Cumulocity IoT from Apama failed to send either part or all of a request or response. This has been corrected.

Release 10.5.2

EPL Plug-ins

- PAM-31179
  Occasional core dumps are seen in the upgraded Storage plug-in to the new API.
  A rare race-to-crash when opening MemoryStore tables on multiple threads simultaneously in a persistent correlator has been fixed.

- PAM-31115
  Codecs with background threads sending events can crash other codecs.
  It was previously possible for a connectivity plug-in which started a background thread to send events to another plug-in whose `start()` method had not yet completed, which violates the API contract of connectivity plug-ins. Now such sends will block until the chain has completed `start()` on all plug-ins. Sending from the `start()` method itself is not permitted for the same reason, but blocking would deadlock, so it prints a warning message instead.

Connectivity and Adapters

- PAM-31108
  Infinite loop in HTTP client and HTTP server connectivity plug-ins.
  If the HTTP server connectivity plug-in was sent a request with a gzip or deflate content-encoding header set but the body not actually compressed, then the HTTP server would never send a response to the client. This would exhibit a "chain is slow" warning in the correlator log. The HTTP server connectivity plug-in now safely handles this scenario and responds with status code 400 (Bad Request).

Cumulocity IoT Transport

- PAM-31238
  Position attributes of Cumulocity Managed Objects cannot parse stringified lat/long.
  The Cumulocity IoT transport now accepts strings that can be converted to numbers in a position, whereas previously these would have been excluded from the position dictionary on `ManagedObject`.

- PAM-31235
  CumulocityCodec causes a correlator crash when retrieving lots of pages.
  Fetching too many pages from Cumulocity IoT used to crash the correlator due to stack overflow. It is now fixed.

Correlator

- PAM-31170
  Correlator not able to handle long paths on Windows.
  The correlator has been enhanced to support loading EPL monitor files via the YAML configuration file with paths that are longer than `MAX_PATH` on Windows.

- PAM-31143
  Correlator deadlocks if some EPL is runnable while other EPL causes a timeout of a stop-the-world-request.
  In some circumstances, a correlator request which needs to suspend contexts (such as `toStringAll`) but which timed out due to a long-running monitor execution could leave other contexts suspended after it times out, leading to other operations deadlocking. This issue has now been fixed.

- PAM-31126
  Concurrent, first request to Prometheus endpoint caused a correlator crash.
  Concurrent accesses to the `/metrics` endpoint on the correlator could result in a crash, and also when new `/metrics` statistics were first reported, they held the value zero (first access only). The risk of crashing is now removed, and the current value, of any new statistics, will be retrieved when accessed for the first time.

- PAM-31106
First Prometheus metrics request returns ...memory_bytes 0.000.
Access to new `/metrics` statistics would report the value zero (first access only). The current value, of any new statistics, will now be retrieved when accessed for the first time.

Other

- PAM-30846
pip3 tries to execute Python from apama-lib-src (and does not work in Designer).
The `pip` command in the Python interpreter shipped with Apama was previously not functioning on Windows when executed directly, rather than as a Python module. This also caused `pip` not to be able to run through `pydev` in the Software AG Designer environment. The default `pip` executable has been replaced with a shell wrapper to fix this issue, which is available on the `PATH` in your Apama command prompt.

Release 10.5.1

Connectivity and Adapters

- PAM-29458
Multi-threaded performance scaling of JMS XPath mapping is very poor.
The previous bottleneck affecting JMS scalability on multicore platforms has now been addressed. JMS now makes better use of cores and delivers greater performance.

Cumulocity IoT Transport

- PAM-30999
Runtime error when activating model in Analytics Builder which should be more robust in handling "atypical" objects.
A runtime error was seen in Analytics Builder when a model failed to activate in one of the subtenants. This issue is now resolved.

- PAM-31014
Cumulocity chain should log a WARN message if measurement timestamp is not set or invalid.
It is possible to forget setting a timestamp when sending measurements, alarms or events. If the timestamp is unset or is during the year 1970, a warning message is logged once per managed object.

- PAM-31036
Cumulocity IoT transport cannot use credentials from environment for long polling.
Previously, the old Cumulocity IoT transport required a user name and password to be specified in a configuration file. Now, it can pick up configurations from the environment. This is especially useful in the microservice mode where the user does not need to populate the configuration file and an empty configuration file can be injected. In the case of an app-key, a lookup for the application using its name is performed. If the lookup fails, then the app-key must be provided in the configuration file.

ADBC

- PAM-29763
  IAF allows commands to be executed before fully up in ADBC.
  To conform with best practice, the ADBCHelper has been updated to ensure the adapter is up
  before it can proceed with any next operations, in both startup and reconnection scenarios.

Correlator

- PAM-27043
  Correlator and IAF should print logfile to stdout on startup.
  If the correlator or the IAF is configured to log to a file, then the log file being used will be output to
  stderr. In the case of the correlator, this is the full path and filename whereas the IAF will only log
  the filename.

Other

- PAM-30176
  VisualizingDataInADashboard EPL generates huge number of DataView updates.
  The Persisting Data and Visualizing Data samples would use up an ever increasing amount of
  memory and if left running for a long period of time, the process would shut down. This issue is
  now resolved.

Release 10.5.0

Software AG Designer

- PAM-30809
  `apama_project` tool fails if a project contains a deleted bundle (fixed in 10.5.0.1).
  The older 9.8 and 9.0 versions of the Cumulocity IoT transport and associated bundles have been
  removed in the 10.5 release. As a result, older projects migrated to the 10.5 version which were
  using these older versions of the transport, would not work with the `apama_project` tool until
  the projects had been modified to use the newer 10.5 bundles/transport. This issue is fixed by
  allowing the `apama_project` tool to be used to perform the steps necessary to remove the old
  bundles and add the new ones.

- WF-5508
  Designer does not start after install if UAC is turned on.
  Designer can now be started as a non-administrator user after installation is run as an administrator
  even when UAC is turned on. Installation of additional packages will still require administrator
  privileges.

Connectivity and Adapters

▪ PAM-30636
Cumulocity IoT transport fails to forward child references received as part of real-time notifications.
Linked `childDevices/childAssets` were not being populated for a `ManagedObject` received via the real-time notifications mechanism. This is fixed now.

▪ PAM-30313
Message List codec `metadataMode=first` can result in empty metadata.
The Message List codec with `mode=first` used to result in empty metadata when more than `maxBatchSize` messages pass through it. Now it will always have the metadata of the first message. Fixed an issue with `mode=splitBatch` which resulted in lower batching than specified in `maxBatchSize.` Fixed an issue with `mode=splitBatch` which resulted in bad batching of messages.

▪ PAM-30058
An empty `buffer_t` translates to a `null` in Java, should be `byte[0]`.
An empty buffer used to get converted to null when transferred from a C++ connectivity plug-in to a Java connectivity plug-in. Now it gets converted to a byte buffer of size 0.

Correlator

• PAM-30828
Performance issue in `any` type - calling `loadAllConstants` too much (fixed in 10.5.0.1).
Performance has been improved in EPL reflection using `any` objects, particularly the `hasAction` and `getAction` calls.

• PAM-30880
Engine connect YAML flips meaning `of mode=legacy/parallel` (fixed in 10.5.0.1).
An issue has been fixed where specifying the correlator connect `mode` in the YAML file interpreted `legacy` as `parallel` and vice versa.

• PAM-30594
Overwriting a valid license file with another valid license file can sometimes kill the correlator (rare race).
When updating the Apama license file for the correlator it was possible to exit due to an invalid license file, even when the file was valid. This issue has been fixed.

• PAM-30565
Prometheus metrics printed with locale-specific number formatting with Java enabled.
In some locales, it was possible for the Prometheus integration to return invalid numeric data. This issue has been resolved.

- PAM-30025

  Re-reading and updating license files does not work correctly.

  It was possible to replace the Apama license file and the correlator failed to update to the new license details. This has now been fixed.

- PAM-30018

  `Platform::generateUniqueId()` is not unique in Docker containers with `--network host`.

  When running multiple "`engine_`" tools from Docker containers with `--network host` started at the same time, the tools could get disconnected. This has been fixed by adding additional checks for generating unique physical IDs on Linux.

- PAM-30017

  `dictionary.remove` never decreases the size of the dictionary object.

  EPL dictionary objects which were very large and then shrunk via the `dictionary.remove` method could still use a lot of memory. The `dictionary.remove` method has been changed so that it can shrink the underlying data structure when it is much larger than now necessary.

Dashboards

- PAM-30860

  Apama query `Extra params` not showing the expected values (fixed in 10.5.0.1).

  When making an attachment to an `Extra Param` table and a query is used as the basis, an incorrect table was displayed showing the query fields and not the key and value columns. This has been fixed.

- PAM-30844

  Unable to see OHLC data with `dataview` (fixed in 10.5.0.1).

  When making an attachment to OHLC data in a dashboard, an incorrect table would be displayed showing the `dataview` fields and not the "Open", "High", "Low", "Close" fields. This has been fixed.

Installer

- PAM-30845

  Windows `apama_env` path should include python\Scripts (fixed in 10.5.0.1)

  On Windows, the Python utility executables (such as pip) are not in the same directory as the main Python executable. So they were not available by default on the path in an Apama Command Prompt. The Scripts directory has been added to the path on Windows so that pip can now be used without further qualification.

Release 10.3.1.5

EPL Plug-ins

- PAM-30242
  Warnings of thread leaks and functional problems when running against LLVM using TCStore.
  Using Apama MemoryStore with Terracotta 10.x could produce thread leak warnings at shutdown.
  This issue has been addressed, but does slightly increase injection times with LLVM enabled. The
  increase in injection time is proportional to the total memory used by the correlator, so is worse in
  very large correlators.

Connectivity and Adapters

- PAM-30544
  Cumulocity IoT connectivity plug-in should be configurable with a tenant ID and a URL.
  Previously, it was required of Cumulocity IoT transport users to configure the tenant in the
  connectivity plug-in YAML file. Now, the tenant is an optional configuration parameter and the
  transport will operate based on whether the URL or tenant option is specified.

- PAM-30311
  Add gzip encoding support to HTTP client.
  The HTTP client transport can encode HTTP requests with gzip or deflate compression format.
  Users can set `metadata.http.headers.content-encoding` to indicate which compression
  format they want to compress the HTTP requests.

- PAM-29863
  Apama Docker images contain invalid DES license.
  Docker images used to contain an expired Digital Event Services license. This has been fixed and
  now a license will last for 30 days from when the container was created.

Cumulocity IoT Transport

- PAM-30514
  Attempt to update objects in Cumulocity fails if `creationTime` and `lastUpdated` are present.
  The Cumulocity IoT transport fails to update a managed object/event/operation that contains
  `creationTime` or `lastUpdated` in the params dictionary. This is because Cumulocity IoT does
  not accept these fields while making a REST request. This is fixed now.

- PAM-30400
  Missing timestamps of `ManagedObject` within `com.apama.cumulocity`.
  Timestamps fields such as `creationTime` and `lastUpdated` were missing from the
  `com.apama.cumulocity.ManagedObject` object when using the query interface
  (`requestAllDevice=true` or `FindManagedObject`) to retrieve managed objects from
  Cumulocity IoT. `creationTime` and `lastUpdated` are now added to the params dictionary of
  the `ManagedObject` event.

- PAM-30265
  `SocketTimeout` if sending a response after 10 minutes of nothing.
  The Cumulocity IoT transport fails to send a message to Cumulocity IoT in scenarios where the transport is idle (that is, no messages are being sent from the transport to Cumulocity IoT) for a long duration (more than 10 minutes). This is fixed now.

Correlator

- PAM-30359
  GC after running spawned-to actions.
  In earlier releases, spawned actions which immediately free monitor variables but do not receive events soon afterwards may go a long time without being garbage-collected. Spawned actions are now always immediately garbage-collected to guard against this.

Release 10.3.1.1

Software AG Designer

- PAM-30252
  The `apama_project` tool creates non-portable projects with hardcoded local path.
  The newly introduced `apama_project` tool was found to be creating projects containing absolute paths, which could not then be successfully used or deployed on another machine. This issue has now been resolved, and `apama_project` correctly creates new projects in the same portable format used by Software AG Designer.

Release 10.3.1

Connectivity and Adapters

- PAM-29743
  Using the URL `terracotta:<port-number>` to connect to Teracotta fails to connect .
  When configuring a connection to TerracottaDB where the host name (as described in the `storeName` configuration) is simply "terracotta", the store would fail at the preparation stage in EPL. This has now been fixed.

- PAM-29549
  A connectivity chain returning events into the correlator can deadlock if the input log is enabled.
  Occasionally, the correlator would deadlock when the input log was in use and all of the following were true:
  - A listener in the main context is sending events to a connectivity chain.
  - The transport is synchronously sending events back into the main context.
  - The output queue for the chain and the input queue is full.
  - An external sender is attached, sending events into the main context.
  This issue has now been fixed.

ADBC

- PAM-29477
  ADBCHelper API - Queries retried when they shouldn't and not retried when they should.
  The following ADBCHelper reconnect options have been marked as deprecated: `RECONNECT` and
  `RECONNECT_AND_CLEAR_REQUEST_QUEUE`.
  Please continue to use `RECONNECT_AND_RETRY_LAST_REQUEST` or `DO_NOT_RECONNECT`.
  The behavior of the reconnect policy options in the ADBCHelper API was incorrect in some
  situations and now behaves correctly to match the documentation.
  In the ADBCHelper API, any queries that fail because a connection has been deliberately closed by
  the user will be removed from the queue, regardless of the reconnection policy.

- PAM-24717
  ADBC incorrect behavior using `force` on `closeDatabase` for shared connections.
  Queries/commands previously failed to be stopped when closing a shared database connection
  with the `force` flag set to true. This issue has been fixed. A warning is given to the last closing
  connection if any queries from any connection are still running.

Correlator

- PAM-29036
  Hostile network conditions slow down client connections due to `gethostbyname` timeouts.
  Client connections to a correlator which is having network issues and cannot look up host names
  are no longer very slow to connect.

- PAM-28549
  Can't cast negative numbers to `any` without parentheses.
  In order to cast a negative number to an `any` type, we needed to wrap the negative number with
  parentheses. Negative numbers can now be cast as `any` types without adding any such parentheses.

- PAM-28489
  `\u` Unicode escape sequences provided via the properties file are not well processed by the
  correlator.
  Correlator properties files now correctly implement `\u` escape sequences to encode UCS-2
  characters. Characters from outside the Basic Multilingual Plane are only supported via a property
  file with the UTF-8 BOM at the start of the file.

- PAM-27825
  Performance regression in Java event parser.
  In the 10.1 release, the Java event parser performance degraded compared to the previous release.
  This is now fixed.

Software AG Designer

- PAM-29398
  Performing `engine_deploy` for a project while in the project's directory can lead to an infinite loop.
  In earlier releases, when using `engine_deploy` with an output directory below the input directory, infinite loops would result. The output directory will now be added as an implicit exclusion to prevent infinite loops.
  The `engine_deploy` tool will now report an error if the same directory is provided for input and output, or if ".." (that is, the parent directory) is used as part of an include or exclude pattern. Note that to include or exclude both a directory and its contents, both `**/dir` and `**/dir/**` need to be specified.

- PAM-29375
  Designer project tree does not update when adding adapters until manual refresh.
  A regression introduced in 10.2.0 which caused adapter nodes to not update until manually refreshed has been fixed so the adapter nodes will update when modified.

Other

- PAM-29520
  Latency sample produces incorrect output.
  The provided latency sample was not generating "Nth percentile sample latency" as described in the readme. The sample has been updated to produce the correct output as mentioned in the readme and improved to use the `any` type.

Release 10.3.0

Connectivity and Adapters

- PAM-29835
  OutOfMemoryError in JMS XPath due to Saxon-B TinyTree averageNamespaces bug after processing large number of messages.
  XPath expressions evaluated by JMS mapping/conditional rules could lead to a sudden out of memory condition as a result of an integer overflow in the library used. This error would only manifest after a very large number of XPath evaluations (close to 2^31), so in practice would only be seen after at least several 10s of millions of messages had been received. This issue has now been resolved.

- PAM-29518
  Correlator shutdown hangs indefinitely if HTTP client requests are outstanding.
  If the remote HTTP server starts to time out before the correlator is shut down, then the HTTP client request times out for any queued or current requests. This HTTP client request timeout can take a long time. This issue has been fixed. Now, the HTTP client request will go through only one timeout, and then ignore all of the other queued requests.

Correlator

- PAM-29838

  Correlator crash spawning `any`.

  A crash has been fixed spawning to a context an action variable closed over a type with string constants where the type was only referenced via an `any` and not statically in the spawning context.

- PAM-29634

  Correlator crashes upon accessing management plug-in API.

  Due to a race condition it was possible for the correlator to crash during startup if EPL injection was performed using the `initialization` YAML configuration, and if that EPL invoked the management plug-in's `Component.getInfo()` action. This issue is now resolved.

- PAM-28664

  Correlator abort in `debugProgressLocalsGetFn/toStringGraph` while debugging.

  An issue causing a crash when inspecting uninitialized `optional` values in the correlator debugger was found. This issue has now been resolved.

- PAM-29565

  Permanent split brain in clustered queries due to the primary key optimization.

  A bug was fixed in which the contents of an Apama queries window could diverge between correlators that were executing Apama queries in a cluster. This data divergence would only usually occur if the injection order of the Apama queries differed between correlators. Since this fix will change how some data is stored in the underlying data store, if you were running queries prior to the fix installation, there may be a loss of temporary in-process data after the fix is applied. For proper Apama query results, all correlators in the cluster must have the fix applied.

- PAM-29311

  LLVM caching does not take primitive constants into account as dependencies.

  EPL that uses only primitive constants in the event type is not counted as depending on that event type and that breaks the LLVM caching. This issue has been fixed. Now data-only events are counted as dependent on whatever uses them.

- PAM-29377

  Occasionally lose a few lines or crash during log rotation.

  The issue has been fixed whereby in some cases, it was possible for the correlator to lose a few lines or, in extreme cases, crash during log rotation.

- PAM-29233

  Correlator crash on Linux when logging bumps up against disk limits.

  When the correlator cannot log due to disk limits, the correlator will now attempt to log a helpful error message and call immediate exit instead of crashing.

- PAM-29143

  Correlator crash in interpreter for unmatched `switch` case.

  In some cases, it was possible for the correlator to crash if an EPL exception were thrown during `switch` statement execution. This issue has been fixed.

Dashboards

- PAM-29215

  Images from SL-supplied jar files not rendering correctly.

  Images from the embedded SL jars, that were attached to HTML5 labels, were broken and the invalid path of the image was shown in place of the broken image. This issue was seen only in the Display Server deployed dashboard. This issue has now been fixed and images from the SL jars are now rendered properly in the deployed dashboard.

- PAM-29291

  In dashboards, the button foreground (font) property is not honored when the button is disabled (always grey).

  In previous versions of Apama dashboards, the foreground color of a disabled button was always grey. In this fix, there is a new property to allow for the selection of a specific foreground color when a button is disabled. The default will remain grey.

EPL Plug-ins

- PAM-29511

  Python plug-in logging needs to be less spammy.

  The Python plug-in would log messages unnecessarily at `INFO` log level. The implementation has been changed to log several issues at `DEBUG` to reduce `INFO` level logging.

- PAM-29295

  HTTP client transport should not send `Accept-Encoding: *` since we do not support all encodings.

  The HTTP client no longer incorrectly sends `Accept-Encoding: *` as a header since we do not accept gzip encoding.

- PAM-29260

  Crash sending recursive types from plug-ins.

  A crash in the correlator when sending events containing cycles or any values from EPL plug-ins has been fixed.

- PAM-29116

  HTTP Generic client sends `GET` requests with payload = "" by default.

  If no value was specified for the payload in EPL, we sent an empty string as a payload. Some servers assume that there will be no payload, despite a `Content-Length` header and fail to read the request. This issue has been fixed. Now `GET` requests do not have any payload unless the user specifies this in the EPL.

- PAM-29115

  Mapper codec - `defaultValue` overrides metadata values.

  The `defaultValue` rule of the Mapper codec will no longer always be applied to metadata fields, and instead will only be applied in the case of an empty/null metadata field.

- PAM-29039

  The `persist()` method on the Management interface sometimes fails to call back.
  The persistence thread would sometimes get blocked while waiting for a large snapshot interval to expire. The fix mitigates the issue which happens only when `snapshotInterval` is set to a very large number causing the thread to miss the signal from a context.

Software AG Designer

- PAM-29521

  No Designer support for `hash` methods.
  The `hash()` method has been added to the completion proposal list for the following built-in types: `boolean`, `any`, `Channel`, `context`, `location`, `decimal`, `dictionary`, `Exception`, `float`, `integer`, `optional`, `sequence`, `StackTraceElement`, and `string`.

- PAM-29434

  Issue with auto-completion of several methods of the `any` type.
  The following methods have been added to content-assist for the `any` type :
  `hasAction(string actionName)`, `hasEntry(any key)`, `hasField(string fieldName)`, `parseType(string typeName, string stringForm)`, `empty()`, and `hash()`.

- PAM-29231

  `engine_deploy --outputCDP` does not correctly package queries.
  When using the `engine_deploy` tool to create a correlator deployment package from a project using the `--outputCDP` option, any query files (.qry) in the project would not be correctly converted. This would manifest as injection errors at the point the user attempted to inject the CDP into the correlator. This issue has been fixed.

- PAM-28577

  Linked-resources are not getting honored from dependent bundles.
  Projects were not considering linked resources inside of dependant bundles when resolving dependencies, leading to errors for the dependant bundles. Linked resources will now be included when resolving dependencies of dependant bundles.

- PAM-28576

  Terminate and relaunch from history fails for Apama correlator.
  In previous versions, the Designer process would sometimes hang if **Terminate and Relaunch from history** was used. The confirmation dialog to confirm stopping of the project was removed as this caused a race which led to a Designer deadlock.

- PAM-28026

  Connectivity and Adapters node should be visible in all projects.
  The **Connectivity and Adapters** and the **EPL bundles** nodes are now shown for every project irrespective of whether the project has an adapter/bundle or not. Now users can add adapters/bundles by right-clicking the respective node . The **Add Connectivity and Adapters** and **Add Bundle** commands have therefore been removed from the **Apama** context menu.

Documentation

- PAM-28945
  `optional.parse` is wrong about the string form of optionals.
  The EPL comments which generate the ApamaDoc documentation for `optional.parse` have been updated to correctly reflect the correct string form which can be parsed.

APIs

- PAM-29583
  Connectivity and EPL plug-in headers - bugs with modern compilers.
  An error in the connectivity and EPL plug-in headers has been fixed, which failed to compile in more recent compilers than provided by default on C++11. An issue has also been fixed which assumed you would be importing with `using namespace` instead of importing symbols individually.

Release 10.2.0

Correlator

- PAM-29143
  Correlator crash in interpreter for unmatched switch case.
  In some cases, it was possible for the correlator to crash if an EPL exception was thrown during switch statement execution. This issue has been fixed.

- PAM-29092
  Crash when quitting event expressions with a single string equality filter.
  A correlator crash caused by the incorrect management of the lifetime of string objects used in single-value listeners has been fixed.

- PAM-28797
  `StatusItem::setStatus(const std::string &)` not thread safe in C++ connectivity API.
  The connectivity helper class function `StatusReporter::setStatus(std::string)` is now thread safe.

- PAM-28663
  Correlator crash when calling action on an event instance created through reflection.
  A potential crash while calling an action on an event created through reflection has been fixed.

- PAM-28643
  Intermittent crash in persistObjects.
  A rare crash when a context goes empty (when the last monitor instance in it terminates) while events are being delivered to it when using persistence has been fixed.

- PAM-28591
  Correlator crash in LLVM mode when using `any()` syntax to create an empty `any` value.
  A correlator crash in LLVM mode when creating an empty `any` value using `any()` syntax has been fixed.

EPL Plug-ins

- PAM-29091
  Connectivity "weather" sample relies on an API being removed in July.
  The geo-location API used for the Weather sample (freegeoip.net deprecated in July 2018) has been updated.

Dashboards

- PAM-24000
  Dashboard HTTP XML request for `info/envp` fails if environment variable has invalid Unicode characters.
  An issue has been fixed so that Unicode characters, both valid and invalid ones, can be passed. Even the surrogate pairs (multi-byte or wide characters) can be passed. No exception shall happen.

Release 10.1.0

Software AG Designer

- PAM-26968
  Cannot install Apama products incrementally using Command Central.
  Once Apama server is installed via Command Central, attempting to install components via Command Central that have a dependency on Apama server will fail. The only alternative is to install all components that have a dependency on Apama server at the same time. This issue has been fixed.

Adapters

- PAM-28320
  RabbitMQ should be enabled as a JMS provider.
  Support for RabbitMQ as a JMS provider has been added. There is no drop-down to select RabbitMQ in Software AG Designer 10.1, but RabbitMQ can be configured using JNDI configuration.

ADBC

- PAM-28264
  Memory leak in ADBCHelper API `doSQLQuery`.
  A per-query memory leak in the ADBC adapter has been fixed when running multiple `select` queries.

Correlator

- PAM-28338
  Copies of optionals in cyclic values are not persisted correctly.
  A bug has been fixed where cloned `optional` values containing cyclic types could result in a corrupt persistence database which would crash the correlator when trying to recover.

- PAM-28309
  Monitors may not be garbage-collected sufficiently frequently - large strings.
  Monitor instances now count the sizes of containers and strings and use these sizes to determine when to perform garbage collection. This avoids excessive memory usage and improves performance if using persistence by reducing the amount of garbage objects persisted.

- PAM-28269
  Persistent monitors may not be garbage-collected sufficiently frequently - large containers.
  Monitor instances now count the sizes of containers and strings and use these sizes to determine when to perform garbage collection. This avoids excessive memory usage and improves performance if using persistence by reducing the amount of garbage objects persisted.

- PAM-28248
  Race to losing context names and state from persistence database.
  A defect has been fixed to prevent a race condition in an edge case that could, if certain application patterns were followed, lead to a context losing its name and public flag (that is, not receiving events sent to the default channel).

- PAM-28169
  Crash in garbage collection in a persistent correlator: persisting an event on a queue incorrectly sets `containingContext`).
  A correlator defect has been fixed where an event on a context queue at the point when a persistent snapshot was taken would be left in a slightly incorrect state. If the context that was processing it then performed certain actions, this could lead to a race condition whereby subsequent garbage collection of a string from the event in a monitor instance could crash.

- PAM-28137
  Deadlock in persistent correlator during CDP injection.
  A rare deadlock which was introduced by a previous fix, has been fixed. This deadlock could occur when injecting a CDP containing event files into a persistent correlator.

- PAM-27506
  Flow control is to be added if persistence snapshots fail to complete in a reasonable time.
  Tighter flow control has been implemented, blocking external senders sending events into a persistent correlator if the correlator has not been able to complete a persistent snapshot. This should avoid excessive queuing of JMS events in reliable receive databases.

- PAM-27991

    Crash in recovering a `MonitorAdder` of a non-persistent monitor instance.
    A defect where the correlator could crash if recovered immediately after injecting a non-persistent monitor has been fixed.

- PAM-27964

    Monitor-internal events of non-persistent monitors should be persistable.
    A defect where the correlator would not correctly handle monitor-internal events from other monitors in a persistent monitor accessed via the `any` type has been fixed.

- PAM-27775

    `engine_debug` cannot access numbers above 999.
    The command line EPL debugger (`engine_debug`) and the EPL debugger available through Software AG Designer did not work with monitor instance IDs (or other numbers) above 999. This restriction has been removed.

- PAM-27626

    Terminated mThread's dictionary contents are not removed from persistence database.
    A correlator defect has been fixed which would leave redundant entries in the persistence database if a monitor instance was terminated while it had non-empty dictionary objects.

- PAM-27370

    Coassigning a cyclic object in a persistent monitor can cause the correlator to crash.
    A defect with the incorrect persistence of an object with a cyclic data structure that is copied into a persistent monitor has been fixed.

EPL Plug-ins

- PAM-28374

    Profiling showing zero for `getTotal` output for plug-ins.
    The profiling option `getTotal` no longer incorrectly returns zero for all columns other than cumulative time and CPU time.

- PAM-28159

    HTTP server and client fail to parse unknown content-type parameter.
    A bug has been fixed where the HTTP server and transport would reject messages which had a `Content-Type` with a non-standard parameter which also did not have a `charset` parameter. These messages are now accepted and the non-standard parameters are ignored.

- PAM-27910

    MQTT transport requires explicit configuration of SSL options for non-SSL use.
    The default value for `acceptUnrecognizedCertificates` in the MQTT bundle has been corrected to be `false` rather than the empty string.

- PAM-27816

  Occasional core dump in `MQTTAsync_receiveThread`/`MQTTAsync_retry`.
  When the MQTT transport dropped a connection to a broker due to an authentication or SSL error, on very rare occasions the transport would lock up or cause a correlator crash. This has now been fixed.

- PAM-27360

  HTTPClient inserts nulls into data stream around the 100k mark.
  The HTTP client with long messages could insert nulls into the message if it was longer than 100k (but not all bytes after 100k), which then caused the resulting string to appear truncated. The result would be 100k of data, then 100k of 0s, followed by more data. This has been fixed so that all the message data is now available.

- PAM-27296

  Wrong object type created when a `Channel` object is constructed from a context inside a Java plug-in.
  In a Java plug-in, if a `com.apama.epl.plugin.Channel` object was constructed from a `com.apama.epl.plugin.Context`, the returned object type was `com.apama.epl.plugin.Context` - which is incorrect. This issue has been fixed such that the expected object type is now returned.

- PAM-27150

  Sending events to Kafka at a high rate can result in some being dropped.
  This is a Kafka issue. The producer should not be dropping events when there is progress. The workaround is defaulting `request.timeout.ms` to `Integer.MAX_VALUE`. This value is now the default (the user can override it though).

Dashboards

- PAM-28121

  Improper handling of decimal types with `--enhancedQuery` mode.
  Decimals support in the dashboards as double with `enhancedQuery` mode is now enabled.

Other

- PAM-26580

  `engine_management` return code is 0 for failure.
  In the majority of cases, `engine_management` gave a zero return code in the previous release, even when it failed. It will now give a non-zero return code on failure.

Release 10.0.0

ADBC

- PAM-24864
  ADBC `deleteStoreStatement` does nothing and cannot be used.
  The `deleteStoreStatement()` now works correctly.

Software AG Designer

- PAM-27151
  The command `engine_deploy --outputDeployDir <relative path>` fails only when DES
  is enabled.
  YAML generation was failing when a project with Digital Event Services (DES) enabled was
  exported to an output directory specified with a relative path. This issue is fixed now.

- PAM-27177
  ApamaDoc export fails when the Apama project contains query files.
  When ApamaDoc is generated for an Apama project containing query files, the operation fails. This
  issue has been fixed.

- PAM-27039
  Ant run fails if a project has a parent excluded folder and a child folder has a jar.
  If an Apama project contains an excluded parent folder and an included inner child folder which
  contains a jar file, Ant failed with this error:
  `"IllegalStateException: Workspace is closed"`
  This issue has been fixed whereby any included folders, inside the excluded folder, will have their
  files injected correctly into the correlator.

- PAM-27012
  Ant exported build.xml has absolute path for the standard-codecs.yaml configuration file.
  When a Software AG Designer project containing connectivity plug-ins was exported to an Ant
  script, the resulting build.xml used an absolute path to refer to some of the YAML files. This may
  have prevented the script from running correctly on other machines and operating systems. This
  issue was fixed in 10.0.0.1.

- PAM-26942
  Exporting CDP to the same (exported earlier) location is showing an error dialog in Designer.
  If a CDP file was exported to an already existing file, then the CDP export wizard showed a
  warning and after clicking **Finish**, it failed with the exception "File already exists". This has been
  fixed to just show a warning, but no exception will be thrown. Also, if there are multiple projects
  with the scenario file using project blocks and if the user tries to do a CDP export without opening
  the scenario file, then the export failed with an exception. This issue was fixed in 10.0.0.1.

- PAM-26189

  Invalid stream query inputs in combination with equi-join can crash the correlator/Designer.
  An EPL stream query that uses an equi-join and has an invalid input item will cause the correlator to crash upon injection, or cause a fatal error in Software AG Designer when built inside an Apama project. For example:
  ```
  from e1 in noSuchVariable join e2 in all E() on e1.i equals e2.i select
  f(e1, e2)
  ```
  This has now been fixed in both the correlator and Software AG Designer.

Correlator

- PAM-26964

  It is no longer possible to inject the Management.mon file followed by the OutOfBandEventDefs.mon file, due to a change in the management plug-in which both use.
  When injecting the Management.mon file followed by the OutOfBandEventDefs.mon file, the error message looked like:
  ```
  Error injecting monitorscript from file
  monitors/outofband/OutOfBandEventDefs.mon: Error on line 138: Trying to
  return a 'sequence<unknown type>' from an action which returns a
  sequence<com.apama.oob.ReceiverConnected> (error reported to client)
  ```
  This was fixed in 10.0.0.1. The OutOfBandEventDefs.mon file now uses the new OOBPlugin, not the ManagementPlugin, which removes an injection ordering dependency between Management.mon and OutOfBandEventDefs.mon.

- PAM-26730

  Repeated calls to `monitor.subscribe()` cause memory leak.
  In previous releases, calling `monitor.subscribe()` from EPL would allocate some additional memory for each call even if the current context was already subscribed, which in some cases would mean EPL applications would have needed to perform their own reference counting to avoid repeated calls using more memory. This has now been fixed and EPL applications can call `monitor.subscribe()` any number of times from a given context without any extra memory being allocated.

- PAM-27032

  Correlator crashes with YAML configuration files with invalid spacing in maps.
  The correlator would crash if a YAML file with invalid spacing in maps was provided. This has been fixed such that an error will be generated in lieu of crashing when invalid YAML files are read.

- PAM-27017

  Changing storeLocation, storeName is broken when writing input log.
  An error has been fixed in handling command line arguments where the correlator would always use the default persistence database name and location as the source to copy the persistence database into the input log.

- PAM-26826

  Correlator crash when sending in malformed `&TIME` events.

  This issue is with the correlator crashing on Windows while trying to parse an `&TIME` event containing a single backslash inside, for example:

  `&TIME("a\")`

  The backslash was expected to be followed by a valid escape sequence such as n, quote, t etc. If the backslash was not followed by a valid escape sequence, then this resulted in an unhandled exception on Windows, causing a correlator crash. This has now been fixed.

Release 9.12.0

EPL Plug-ins

- PAM-24713

  Emitting a string to a map connectivity chain causes a correlator crash.

  Emitting a string to a connectivity plug-in chain using the `eventMap` would crash the correlator. This is now reported as an error.

Software AG Designer

- PAM-24170

  Editing connectivity plug-in configuration in Software AG Designer can contaminate it with tabs.

  The issue of contamination of YAML files with tabs has been resolved.

- PAM-24638

  Stopping a correlator launch in Software AG Designer can take longer than in previous releases.

  Correlator shutdown from Software AG Designer can take a longer time than in previous releases. This issue is observed in a project where the Dashboard Viewer and the IAF plug-in are used. There is a race which causes the termination of all processes to wait, which again causes the termination of the correlator to lag. This issue has now been fixed, so that when a shutdown is initiated, it terminates all the processes (IAF etc.), which results in a proper correlator shutdown.

- PAM-24254

  Variables in assign template are not being added as nodes in correlator-JMS adapter mapping rules.

  When configuring correlator-JMS send mapping rules using the **Assign Template** dialog, mappings may not be added as expected, with error messages related to "Velocity" in the Software AG Designer log file. This issue has been resolved.

Dashboards

- PAM-26817
  Dashboard files with query attachments do not work if opened with 9.12 Dashboard Builder.
  When opening a dashboard file with an old query attachment or command created before the 9.12
  release, the attachment and command dialog box do not show the correct contents. When clicking
  OK/**Apply** and **Save**, the dashboard file is corrupted. This issue has been fixed by allowing those
  dashboards files to be treated as the native query attachment/command.

- PAM-24227
  `IDashboardContext`'s `getSubstitutionValue()` should clarify the expected behavior and
  avoid returning null.
  The `getSubstitutionValue()` API in the `IDashboardContext` interface now returns an
  empty string instead of null. The corresponding Javadoc has been changed to say that explicitly.

Correlator

- PAM-26619
  Core dump in persistent `dictionary.parse`.
  The `dictionary.parse` method has been corrected to write the correct state to a persistent
  database if running in a persistent monitor. If this function has been used, then the persistence
  database may have an incorrect state in it. The database should be cleared and the application re-
  started by re-injecting the EPL.

- PAM-24162
  Arbitrary streams behavior – adding "select" projection changes window semantics.
  In previous releases, there was a bug which would cause these two constructs to behave differently:
  ```
  from sA: local { ... }
  from a in sA select a: local { ... }
  ```
  Specifically, this happened when sA was a stream with a `within` window and an aggregate.
  Updates to the window caused by events getting too old rather than new events arriving could be
  missed by the second listener.
  This has been fixed in 9.12, but may cause a change in behavior in any customer applications which
  were relying on the incorrect behavior.

IAF

- PAM-26657
  Vulnerable libxml2 third party used.
  Libxml2 has been updated to the latest version 2.9.4, due to a known security issue.

Other

▪ PAM-23946

Ant copy tasks are much slower than they should be (since JDK1.7.0_06).

The version of Ant being shipped with Apama 9.12.0 has been updated to version 1.9.7. This update fixes the issue of Ant copy tasks taking logarithmically longer to copy as file size increases when using a Java Virtual Machine version of 1.7 Update 6 or greater.

Release 9.10.0

ADBC

▪ PAM-22738

ADBC event mapper does not work with empty namespace.

An issue has been fixed where the ADBC event mapper GUI would not display the mapper objects when an event with no package was selected to be mapped.

Queries Runtime

▪ PAM-23131

Definitive time moves backwards.

In cases where multiple events are processed in a short amount of time, the correlator may have logged the definitive time of an event as being earlier than previous events, which should not happen. This has been corrected. This only affects query diagnostic logging, not the behavior, which was correct previously anyway.

▪ PAM-22873

Queries performance is heavily affected when using external clocking.

The issue causing performance to be affected when external clocking is used with queries has been fixed.

▪ BF-3573

Queries documentation updated.

The Apama queries documentation has been updated to include more detailed information, especially regarding tooling.

▪ PAM-22821

Query runtime leaks on every aggregate evaluation.

The issue causing a listener and stream to be leaked on aggregate evaluations has been fixed.

▪ PAM-22806

A query with multiple `having` clauses with no `select` clause generates invalid EPL.

The issue, of queries with multiple `having` clauses and no `select` clause to generate invalid EPL, has been fixed.

Dashboards

- PAM-24049
  Queries do not show up in the Apama attach and command dialogs of the Dashboard Builder.
  The issue with queries not showing up in the attach and command dialogs of the Dashboard Builder has been resolved.

- PAM-23442
  Data server does not disconnect cleanly. Socket for management port left in `TIME_WAIT` for several seconds.
  After shutting down dashboard/display server processes on Linux, the management port was held open by the operating system until the socket timed out. As a result, the subsequent restarting of the dashboard/display server processes would fail until the port was released by the operating system. This issue has been solved in this release.

- PAM-23044
  Deployed dashboards can throw `NullPointerException` in Init Local Var function.
  Under certain circumstances, "Init Local Var" and other Apama-provided dashboard functions could throw a `NullPointerException`. This issue has been solved in this release.

- PAM-22993
  XSS Security vulnerability in dashboard display server.
  A vulnerability issue was found in the display server client. This issue has been solved with this release.

- PAM-22484
  Dashboard `SQLDataException` with `--enhancedQuery` mode.
  When `--enhancedQuery` is being used and DataView/scenario contains a long string value, a `SQLDataException` may be seen in dashboard log files. This issue has been solved in this release.

- PAM-22142
  Dashboard class cast exception may be raised when using `enhancedQuery` option.
  When `--enhancedQuery` option is used, the following `ClassCastException` may be found in dashboard log files:
  ```
  java.lang.ClassCastException: java.lang.Integer cannot be cast to
  java.lang.Long
  at
  com.apama.sl.data.scenario.ScenarioCurrentTable.setCellValue(ScenarioCurr
  entTable.java:1474)
  at
  com.apama.sl.data.scenario.ScenarioCurrentTable.getSqlResultsTable(Scenar
  ioCurrentTable.java:1229)
  ```
  This issue has been fixed in this release.

- PAM-22032
  Dashboard processes are unable to use shipped JDBC drivers.
  The issue affecting the JDBC jars, shipped with Apama, which previously prevented them from being used by Dashboard processes, has been resolved.

Software AG Designer

- **PAM-23742**
  EPL color coding is lost when opening Designer with .mon file open.
  Activation of plug-in preferences after loading a monitorscript file would cause color coding to be lost on the file. This issue has been fixed.

- **PAM-23630**
  FrameworkEvent ERROR on Unresolved requirement while starting Suite Designer session.
  Bundle dependency resolution errors between com.apama.thirdparty and com.ctc.wstx plug-ins due to conflicting exported packages have been resolved.

- **PAM-23618**
  Correlator JMS mapper - constants in event definitions break mapping, should be ignored.
  An issue, where constants defined in an event would cause errors in JMS mapping rules, has been resolved.

- **PAM-23566**
  Invalid thread access from `MSPluginActivator.start`.
  Apama plug-in may occasionally fail with the error message `"An error occurred while automatically activating bundle com.apama.text"` ... `"Caused by: org.eclipse.swt.SWTException: Invalid thread access"` in the apama_designer.log file. This issue has now been fixed.

- **PAM-23394**
  `BasicIndexOutOfBoundsException` and internal error dialog when manually adding `time from` clause in queries source editor.
  In a query source tab, on adding the `time from` clause in the input section, an exception would be thrown. This has been fixed.

- **PAM-23332**
  Errors in **Edit Query Send Event Action** dialog for ImprobableWithdrawal.qry in ATM_Fraud_Sample sample.
  In the ATM_Fraud_Sample, on opening "Send Fraud2_Alert event" in the Actions section of an ImprobableWithdrawal.qry file, errors are shown up in the dialog. This issue has been fixed.

- **PAM-23327**
  Added input events should not be listed in Event chooser dialog while editing query input.
  For any query file in the design tab, when adding two input events and on editing either of the input events, the added inputs event should not be available on clicking **Choose**. This issue has been fixed.

- **PAM-23324**
  Error should not be flagged when the channel field is empty in Send Event action.
  In a **Send Event Action** dialog, if the value of **Channel** is empty, then the dialog shows up an error. This issue has been fixed.

- PAM-23298

  Null pointer exception in queries editor when user deletes all code from source view and then tries to edit query in design tab.

  An empty query file can no longer be injected into the correlator as it is considered invalid.

- PAM-23295

  Designer is logging GCMB "Lost connection to agent" after shutting down queries project.

  On launching a queries project and terminating it, Software AG Designer would continually log the message
  `"AbstractGenericComponentManagementBean$ConnectionPollingThread.run() -`
  `Lost connection to agent."` This issue has been solved in this release.

- PAM-23177

  Renaming a query in Software AG Designer confuses Designer.

  The issue with Software AG Designer becoming "confused" when renaming a query file, has been resolved. It is no longer necessary to close and re-open the editor when renaming a query file.

- PAM-22814

  Query editor goes into incorrect syntax state if aggregates are present and pattern is removed and re-added.

  In a query file, having an aggregates clause if a find node is removed and added back again, then the query file goes into a syntax error state. This issue has been resolved.

- PAM-22942

  Excluded EPL files are getting added to launch configuration on editing them.

  Monitor files which had been explicitly excluded from the injections list in the launch configuration of a Software AG Designer project were added back in if the excluded monitor was subsequently edited. Designer now behaves correctly, and respects the exclusion when making edits.

- PAM-22809

  Incorrect completion proposals in the queries editor.

  In the queries editor, several issues that caused some invalid completion proposals to be offered, and also prevented other valid completion proposals from being suggested, have been resolved.

- PAM-22367

  Incorrectly flagged errors in Query Designer action panel and send event action dialog.

  An issue has been fixed where valid hand-written code would be flagged as an error in the query designer and send event dialog.

- PAM-22369

  Pattern drag and drop does not always retain package relative values.

  The issue is now fixed so pattern drag and drop and **Without Conditions** dialog will now retain package relative values.

- PAM-22474

  A blank query shows as an error in Query Designer.

  An issue has been fixed where, under certain conditions, empty queries could be flagged as being in error in the Query Designer.

- PAM-22377

  Errors related to `every` keyword are not reported against aggregates in Query Designer.

  Errors related to `every` keyword should be reported against aggregates in the Query Designer.

- BF-2980

  Missing documentation on queries tooling.

  Several sections documenting various features of Query Designer tooling have been added.

- PAM-21873

  A default filter added to **Event Chooser** dialog.

  A default filter with value "com.apama.*" has been added to the **Event Chooser** dialog to automatically remove events in the "com.apama" namespace from the event list.

- PAM-21016

  Ability to select multiple EDA events for mapping in both send and receive.

  Multiple EDA events for mapping can now be selected in both send and receive.

Management

- PAM-23959

  `engine_management` dumps core when any `--<anything>` argument is passed after `-r`.

  An `engine_management` crash has been fixed when invalid parameters were supplied, specifically when `-r` was not followed by a valid request.

Correlator

- PAM-23703

  Correlator crash during GC caused by bug in pile deletion (`PersistentDictionary::preDelete`).

  An issue has been fixed where a correlator crash could occur with dictionaries in persistent monitors that have string keys which are "garbage" on the first garbage collection run.

- PAM-23635

  Latency regression - max latency is worse.

  A performance regression causing intermittent high latencies (over 1 millisecond at 99 percentile) has been fixed.

- PAM-23519

  Correlator crashes on Windows if the time zone has DST disabled.

  An error has been fixed in logging the time zone which could cause a crash at correlator startup on Windows if the time zone does not use daylight savings time.

- PAM-23245

  Parsing strings parallelism hit by `CorrelatorString.getInterned` read lock.
  A scalability issue which would reduce performance when multiple threads were parsing events with a lot of interned strings has been fixed. Performance now scales well with the number of threads sending events or calling `event.parse()`.

- PAM-22879

  Ctrl+C or termination of parent command prompt kills background correlator process on Windows.
  Customers using Ant for deployment or testing on Windows should be aware that when using Ant launches a correlator, IAF or other background process from an interactive Command Prompt, these processes will be automatically terminated when the Command Prompt window is closed, or when Ctrl+C is pressed at any time within that Command Prompt. This is the result of a reported bug in the Java Runtime Environment (since 1.7.0_60).
  Until the underlying Java bug can be fixed, customers should be careful not to use an interactive Command Prompt for launching any important server processes using Ant.

- PAM-22959

  Crash caused by incorrect escape flags on dictionary methods.
  Some EPL methods were incorrectly considered by the correlator to not escape their parameters, which when optimizations were enabled (the default) could in particular cases lead to the correlator crashing. This has been fixed to avoid optimizing out copies in code using methods where it is not safe to avoid the copy.

- PAM-22830

  Status lines do not show in log file when the correlator is started through Software AG Designer.
  Correlators started from Software AG Designer will no longer have the logging of "Status:" lines automatically disabled if logging to a file.

- PAM-22774

  Race when disconnecting and connecting using `engine_connect` concurrently.
  The use of multiple disconnecting and connecting `engine_connect` clients no longer results in a correlator crash.

- PAM-22621

  The correlator is not passing all UM SSL Cert options to UM.
  An issue has been fixed where several of the documented UM configuration properties were not properly passed when configured for UM integration.

- PAM-22100

  Correlator input log does not contain the channel name.
  The addition of channels in 5.2.0.0 was missing support for them in the input log. This has been corrected so that input log files of applications using channels can be used correctly for replay.

- PAM-21634
  Memory may not be returned when using `dictionary.clear()`.
  The `clear()` method on the EPL `dictionary` type could previously cause a memory leak. Prior to the fix, if a monitor instance invoked this method on a dictionary in a certain set of circumstances, garbage collection would no longer run for EPL objects on the monitor instance. All current and future EPL objects on the instance would leak correlator memory, even if they were no longer in use.

- PAM-21516
  Correlator or IAF process sometimes log exceptions and unload monitors when using Universal Messaging integration during a cluster failover.
  A defect, where a channel that is being looked up on a UM broker (as it has not been recently sent-to or subscribed-to) during failover of UM brokers could result in silently killing a monitor, has been fixed; the correlator will now re-try channel look-ups during failover until it can contact a UM broker.

- PAM-21579
  UM enabled correlator performance enhancement.
  The correlator now publishes events in batches to Universal Messaging in lieu of individually publishing events. This change can improve throughput by as much as 4X the previous implementation.

Release 9.9.0

- PAM-22168
  Small leak in .NET client disconnect
  The .NET client library, under unusual circumstances, would leak a small amount of memory when it disconnected and reconnected. This issue has been resolved.

- PAM-1920
  `TimeFormatPlugin` use of `TZ` environment variable
  The `TimeFormatPlugin` now honors the `TZ` environment variable on Windows as well as on UNIX. Note that the rest of the correlator processing will continue to use the system-configured time zone on Windows.

6.0   Documentation Changes

This section describes significant changes to the documentation, such as the addition, relocation, or removal of product guides, online help, chapters, or other major content. A release is listed in this section only if changes occurred in that release.

Release 9.10

PDF documentation is no longer included in the installed product. It can be viewed and downloaded from the [Documentation website](#) if required.

7.0   Terminology Changes

A release is listed in this section only if changes occurred in that release.

Release 9.12

Old Term	New Term
Correlator plug-in	EPL plug-in

Release 9.9

Old Term	New Term
Apama Studio	Software AG Designer

8.0   Added, Removed, Deprecated, or Changed Items

See *Release Notes* in the Apama documentation.

9.0   Added, Removed, Deprecated, or Changed Built-In Services

See *Release Notes* in the Apama documentation.

10.0 Added, Removed, Deprecated, or Changed Parameters

See *Release Notes* in the Apama documentation.

11.0 Added, Removed, Deprecated, or Changed APIs

See *Release Notes* in the Apama documentation.

12.0 Copyright Information

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13.0 Support

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