

# Apama 10.1.0.5 Readme

## March 2018

This file contains important information you must read before using Apama 10.1. 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.

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## 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 or on the [Documentation website](#). Adobe Reader version 8.0 or greater is required to view the included PDF documentation.

## 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](#).

- PAM-24741  
Apama HTML documentation is not usable within Microsoft Edge (since 9.12).  
There are numerous rendering errors when viewing the Apama HTML documentation with Microsoft Edge. We recommend either using Internet Explorer 11, or the PDF-based documentation.
- WF-5508  
Designer does not start after install if UAC is turned on (since 9.9.0).  
If this issue is encountered, see the section "Managing Designer User Configuration" in *Working with Software AG Designer*, which can be found in the "Guides for Tools Shared by Software AG Products" section of the [Documentation website](#).
- PAM-26947  
Apama can no longer be installed into "Program Files" folder on Windows (since 10.0.0.0).  
Due to dependencies which do not support installation into the "Program Files" folder on Windows, the Apama product cannot be installed into that folder in this release. This limitation will be fixed in a future release.
- PAM-26182  
`engine_connect` change of behavior in 5.2 (since 5.2.0).  
As of Apama 5.2, the change in behavior of `engine_connect` switching to persistent connections and other changes in Apama messaging means that two connections for the same component and channel but using different hostnames for the connections (for example, some combination of full hostname, short hostname or IP address, or multiple different addresses/ hostnames) will create multiple connections, potentially duplicating events.  
Apama recommends ensuring all correlators are named consistently. In default (not parallel) mode, multiple connections using the same hostname will be flattened to a single connection, avoiding duplicate events.

## 3.0 Usage Notes

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

### ***ADBC***

- PAM-23265  
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-15644  
Unicode variable names in mapping rules cannot be resolved (since 5.0).  
Mapping in Web Services Client adapter and 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.
  
- PAM-21516  
Universal Messaging channel subscriptions can throw an exception during creation (since 5.2.0.0). Occasionally, when a UM session fails over from one broker to another while a channel is being subscribed to or emitted to which has not been recently used, the correlator or IAF may throw an exception instead of re-trying if the session loses its connection to the broker. This may result in the subscribe or emit throwing an exception, which may terminate the EPL monitor if not caught.

## **EPL Plug-ins**

- PAM-22345  
Correlator JMS throughput with HornetQ 2.4 is reduced (since 5.3.0.0).  
Throughput of JMS message receiving is significantly reduced using the 2.4 version of HornetQ that is supported by the 5.3.0 Apama release, compared to the 2.3 HornetQ supported in previous releases. This is caused by the HornetQ library taking a lot longer to acknowledge large batches of messages than it used to. The recommended workaround is to edit the `maxBatchSize` property of `JMSReceiverSettings` (see documentation for details), to a low value such as 30.

## **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 reset  
error 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, restart 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/depoyed_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-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.
- 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 please try the value of "2".

## 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 10.0***

- PAM\_10.0.0\_Fix3

### ***Release 9.12***

- PAM\_9.12.0\_Fix7

### ***Release 9.10***

- PAM\_9.10.0\_Fix8

### ***Release 9.9***

- PAM\_9.9.0\_Fix9

### ***Release 5.3***

- PAM\_5.3.0\_Fix7

### ***Release 5.2***

- PAM\_5.2.0\_Fix8

### ***Release 5.1***

- PAM\_5.1.1\_Fix4

## 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 10.1.0**

#### *Software AG Designer*

- PAM-26968  
Cannot install Apama products incrementally using Command Central (since 9.12.0.0).  
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 (since 10.1.0.3).  
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` (since 10.1.0.3).  
A per-query memory leak in the ADBC adapter has been fixed when running multiple `select` queries.

#### *Correlator*

- PAM-28663  
Correlator crash when calling action on an event instance created through reflection (since 10.1.0.5).  
A potential crash while calling an action on an event created through reflection has been fixed.
- PAM-28643  
Intermittent crash in `persistObjects` reflection (since 10.1.0.5).  
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 (since 10.1.0.5).  
A correlator crash in LLVM mode when creating an empty “any” value using “any()” syntax has been fixed.
- PAM-28502  
Leak-like behavior with persisting contexts (and other types) reflection (since 10.1.0.5).  
The amount of state stored between persistence snapshots for listeners and contexts has been changed from being  $O(\text{number of objects created since last snapshot})$  to  $O(\text{number of objects created and still live since last snapshot})$ . This improves performance of persistence snapshots and can avoid subsequent snapshots getting longer and longer to commit to disk in pathological cases.
- PAM-28338  
Copies of optionals in cyclic values are not persisted correctly (since 10.1.0.3).  
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 (since 10.1.0.3).  
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 (since 10.1.0.3).  
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 (since 10.1.0.3).  
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` (since 10.1.0.3)  
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 (since 10.1.0.3)  
 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 (since 10.1.0.3).  
 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 (since 10.1.0.2).  
 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 (since 10.1.0.2).  
 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 (since 10.1.0.2).  
 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 (since 9.9.0.0).  
 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 (since 9.9.0.0).  
 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 (since 10.1.0.3).  
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 (since 10.1.0.3).  
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 (since 10.1.0.2).  
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` (since 10.1.0.2).  
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 (since 9.12.0.0).  
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 (since 9.9.0.0).  
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 (since 10.0.0.0).  
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 (since 10.1.0.3).  
Decimals support in the dashboards as `double` with `enhancedQuery` mode is now enabled.

## *Other*

- PAM-26580  
`engine_management` return code is 0 for failure (since 9.9.0.0).  
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 (since 10.0.0.2).  
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 (since 10.0.0.0).  
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 (since 10.0.0.2).  
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 (since 10.0.0.0).  
 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 (since 10.0.0.0).  
 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 (since 9.10.0.0).  
 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 (since 10.0.0.0).  
 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 (since 9.10.0.0). 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 (since 10.0.0.2). 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 (since 9.9.0.0). 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. (9.10.0)  
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. (9.10.0)  
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. (9.10.0)  
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. (9.9.0)  
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. (9.12.0.5)  
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. (9.9.0.3)  
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`. (9.12.0.4)  
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. (9.10.0)  
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. (9.12.0.5)  
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) (5.3.0)  
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. (5.3.0.1)  
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. (9.10.0)  
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. (5.3.0.3)  
The issue causing performance to be affected when external clocking is used with queries has been fixed.

- BF-3573  
Queries documentation updated. (5.3.0.3)  
The Apama queries documentation has been updated to include more detailed information, especially regarding tooling.
- PAM-22821  
Query runtime leaks on every aggregate evaluation. (5.3.0.2)  
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. (5.3.0.2)  
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. (9.10.0)  
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. (9.10.0)  
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. (9.9.0)  
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. (5.3.0.3)  
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. (5.3.0.1)  
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. (since 5.3.0.0)  
 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(ScenarioCurrentTable.java:1474)
at
com.apama.sl.data.scenario.ScenarioCurrentTable.getSqlResultsTable(ScenarioCurrentTable.java:1229)
```

 This issue has been fixed in this release.
- PAM-22032  
 Dashboard processes are unable to use shipped JDBC drivers. (5.2.0.2)  
 The issue affecting the JDBC jars, shipped with Apama, which previously prevented them from being used by Dashboard processes, has been resolved.

## *Designer*

- PAM-23742  
 EPL color coding is lost when opening Designer with `.mon` file open. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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`. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (9.10.0)  
 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. (5.3.0.3)  
 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. (5.3.0.2)  
 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. (5.3.0.1)  
 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. (5.3.0.1)  
 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. (5.3.0.1)  
 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. (5.3.0.1)  
 Errors related to `every` keyword should be reported against aggregates in the Query Designer.
- BF-2980  
 Missing documentation on queries tooling. (5.3.0.1)  
 Several sections documenting various features of Query Designer tooling have been added.
- PAM-21873  
 A default filter added to **Event Chooser** dialog. (since 5.3.0.0)  
 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. (since 5.2.0.0)  
 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. (9.10.0)  
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). (9.10.0)  
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. (9.10.0)  
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. (9.10.0)  
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. (9.10.0)  
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. (9.10.0)  
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. (5.3.0.3)  
 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. (5.3.0.2)  
 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. (5.3.0.2)  
 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. (5.3.0.1)  
 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. (5.3.0.0)  
 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()`. (5.2.0.1)  
 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. (5.2.0.1)  
 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. (5.2.0.1)  
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 (9.9.0)  
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 (9.9.0)  
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.

## **Release 5.3.0**

- PAM-21911  
ADBC transport reversed counts for TrEvRx and TrEvTx in log (since 5.3.0.0)  
The ADBC adapter status log line previously had its events received (TrEvRx) and events transmitted (TrEvTx) reversed, this has been corrected.
- PAM-14809  
Log message improvements when a plug-in call fails (since 5.3.0.0)  
When a C++ EPL plug-in throws an exception, it is possible for an application to catch it in EPL, and to take action based on the type and message in the caught `com.apama.exceptions.Exception` object. A small change has been made to the format of the message that results from a plug-in method call error, which could potentially affect EPL logic that depends on the message string. The old message was "Caught exception (%s) while executing plugin method %s", but from 5.3 onwards this has been simplified to "%s (in plugin method %s)".
- PAM-13580  
Simplify how to cleanly remove event .NET consumers/suppliers (since 5.3.0.0)  
For users of the low-level EngineManagement layer in the .NET API, the rules for safely disposing of the EngineManagement, EventSupplier and EventConsumer have been changed to be more simple, more robust and better documented. Instead of calling various `Disconnect()` methods, all objects should be cleaned up by calling the `Dispose()` method, with any EventSupplier objects disposed before EventConsumer and EngineManagement objects.  
An INFO level warning will now be written to the client logger (if enabled) during finalization of the objects if `Dispose` was not called. The `Api.DisconnectFromEngine` and

`EventSupplier.Disconnect` methods have been deprecated. For C# developers, the simplest way to ensure objects are disposed correctly is usually to construct them in a `using` clause (see C# language documentation for more information).

- PAM-21566  
Subscriber element in "Configuring adapters to use UM" incorrectly written as optional (5.3.0.0)  
The IAF configuration for Universal Messaging requires that the `<subscriber>` element is present in the `<universal-messaging>` element. This was previously incorrectly marked as optional.

## 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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