What’s New for SAS Event Stream Processing 4.3

SAS Event Stream Processing Analytics
SAS Event Stream Processing Analytics enables you to execute the analytics that are produced by various SAS products, such as SAS Visual Statistics. This separately orderable package provides five new window types:

- score
- train
- calculate
- model reader
- model supervisor

For more information, see SAS Event Stream Processing: Using Streaming Analytics.

Changes to SAS Event Stream Processing Studio
Based on feedback from users, changes have been made to SAS Event Stream Processing Studio to improve the user experience and to expand available functionality. A new architecture makes it more extensible in the future:

- An XML editor is now included.
- Better management of project and engine files is now available.
- Tighter integration with other SAS Viya micro services is now provided.

For more information, see SAS Event Stream Processing: Using SAS Event Stream Processing Studio.

Enhancements to Streamviewer
SAS Event Stream Processing 4.3 provides the following enhancements to Streamviewer:

- The configuration process has been simplified.
There are now two ways to embed Streamviewer components in external web pages: Javascript and Iframes.

You can now import Streamviewer configuration data into a running instance.

You can export the entire set of configuration data contained in a Streamviewer instance.

The ESP Model Visualizer enables you to view models that exist in a server or in a static file.

For more information, see *SAS Event Stream Processing: Visualizing Event Streams with Streamviewer*.

**New Geofence Window**

SAS Event Stream Processing 4.3 provides a new geofence window. This window determines whether a location position coming from an event stream is inside or close to a defined location of interest.

For more information, see *Creating Geofence Windows*.

**New Text Topic Window**

SAS Event Stream Processing 4.3 provides a new text topic window that runs SAS Text Miner Analytics on events. Text topic windows receive and process text from documents as string fields.

For more information, see *Creating Text Topic Windows*.

**Access Control**

SAS Event Stream Processing 4.3 now enables you to set up the event stream processing server to use explicit read/write permissions on engine, project, query, and window objects based on the user.

For more information, see “Using Access Control” in *SAS Event Stream Processing: Security*.

**Support for Kerberos Authentication**

You now can enable Kerberos authentication on a SAS Event Stream Processing server as long as it can reach a Kerberos server. For more information, see “Server Requirements for Kerberos Authentication” in *SAS Event Stream Processing: Security*.

Note: The XML server does not support Kerberos authentication on the Microsoft Windows platform.

**Enhancements to Compatibility with SAS Viya**

The espCluster CAS action set is now available for the SAS Cloud Analytics server. This action set, which interfaces directly with SAS Event Stream Processing, enables a CAS server to start and view a cluster of event stream processing XML servers.

You can use the Cluster Manager to push projects to spawned XML servers, to connect to streaming sources, and to forward data to the servers running in CAS for processing.

For more information, see the *SAS Cloud Analytic Services: System Programming Guide*.

**Enhancements to Connectors and Adapters**

- A new Nurego connector is now available.
- The rmqvhost parameter was added to the RabbitMQ connector and adapter to handle virtual hosts.
- The usecorrelid parameter was added to the IBM WebSphere MQ connector and adapter for Read and Write operations.
An opaque string was added to IBM WebSphere MQ, RabbitMQ, Kafka, MQTT, Tibco Rendezvous, HDFS, and Java Message Service subscriber connectors and adapters.

Message bus CSV subscribers can now write a single CSV event per message, unless the event block is transactional.

Message bus CSV publishers can now read multiple new-line separated CSV events per message.

The Kafka connector and adapter now allows configuration of any `librdkafka` parameter, including SSL-enabled Kafka broker connections.

The Python publish/subscribe interface was enhanced to add Python 3.x support.

For more information, see SAS Event Stream Processing: Connectors and Adapters.

**Cluster Manager**

The Adapter Manager has been renamed the Cluster Manager. For more information, see “Using the Cluster Manager” in SAS Event Stream Processing: Advanced Topics.

**New Engine-Level Attribute for the SAS Micro Analytic Service**

You now can add the element `mas-threads='N'` to the `engine` element of your XML code. This sets the SAS Micro Analytic Service engine to use at most `N` threads.

When you use MAS modules in your Python code, you must set `mas-threads=1` to avoid errors or crashes. Python is not thread safe. It requires that the MAS environment use only one thread. This setting is independent of the thread pool that you specify on the project element.

**Check for Software Updates**

Updates to this release of SAS Event Stream Processing are available. To determine whether updates have been installed on your system, run the following on the Linux command line:

```
$ grep Release $DFESP_HOME/etc/changlog.txt
```

Run the following on the Windows command line:

```
findstr Release %DFESP_HOME%\etc\changlog.txt
```

When updates have been applied, a message like this one appears:

```
Release 4.3.0 -- baseline SAS Release
Release 4.3.1 -- platform specific hotfix #1:
```

If the following message appears on the Linux console, updates have not been applied:

```
grep: $DFESP_HOME/etc/changlog.txt: No such file or directory
```

If the following message appears on the Windows console, updates have not been applied:

```
FINDSTR: Cannot open %DFESP_HOME%\etc\changlog.txt
```

For more information about software updates to SAS Event Stream Processing, contact your SAS representative.
## Changed XML Elements from Release 3.2 to Release 4.x

<table>
<thead>
<tr>
<th>Release 3.2 Element</th>
<th>Release 4.x Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>window-procedural/context-plugin</td>
<td>cxx_context_plugin</td>
</tr>
<tr>
<td>window-procedural/plugin</td>
<td>cxx_plugin</td>
</tr>
<tr>
<td>ds2-code</td>
<td>ds2-tableserver</td>
</tr>
<tr>
<td>program code enclosed by a tag</td>
<td>code or code-file</td>
</tr>
<tr>
<td>ds-code</td>
<td>ds-external</td>
</tr>
<tr>
<td>ds-file</td>
<td>code or code-file</td>
</tr>
<tr>
<td>dateformat within an engine</td>
<td>removed</td>
</tr>
<tr>
<td>left-fields</td>
<td>left-expr</td>
</tr>
<tr>
<td>right-fields</td>
<td>right-expr</td>
</tr>
</tbody>
</table>

## Upgrading Models and Data

**Note:** Upgrading SAS Event Stream Processing software is not supported. Instead, you must uninstall the older version of the software and then install the newer version.

Migrating models and data that you generated from a previous release of SAS Event Stream Processing is supported on a limited basis. You can import files from SAS Event Stream Processing 3.2, 4.1, or 4.2. However, if you plan to import files that you created with SAS Event Stream Processing 3.2, be aware of the following issues:

- Multiple XML elements in SAS Event Stream Processing 4.x have changed since 3.2. You must replace the elements that differ. Opening a legacy project in SAS Event Stream Processing Studio does not automatically upgrade your XML code to a valid format.
  
  You can use the dfesp_xml_migrate script to migrate your XML code to the 4.x XML schema.

- Review your C++ code that was used with SAS Event Stream Processing 3.2. You must replace the registerMethod_ds2 function with the registerMethod_DS2TS function.

- The default date format of %Y-%m-%d %H:%M:%S for CSV timestamp and datetime fields is no longer valid. The new ESP_DATETIME fields contain a 64-bit integer that represents seconds since UNIX epoch. The new ESP_TIMESTAMP fields contain a 64-bit integer that represents microseconds since UNIX epoch.

- In addition, you can no longer specify an alternative date format when initializing a SAS Event Stream Processing engine. To pass CSV events using an alternative date format, that format must now be specified on the connector or adapter that is the source or sink of CSV data. All connectors and adapters that support CSV include an optional DateFormat parameter for this purpose.

To upgrade models that you created in SAS Event Stream Processing 4.2 to version 4.3, take the following steps:
1. In SAS Event Stream Processing Studio 4.2, export the 4.2 models that you want to use in the newer version of SAS Event Stream Processing.


3. Use SAS Event Stream Processing Studio to import the 4.2 models that you previously exported. For more information, see SAS Event Stream Processing: Using SAS Event Stream Processing Studio.

To import models that you created in SAS Event Stream Processing Studio 3.2, a separate migration step is required. As noted, you must run the dfesp_xml_migrate script to migrate your XML code to the 4.x XML schema. For more information about the migration script, contact SAS Technical Support.