



# SAS<sup>®</sup> Event Stream Processing 4.3 on Windows: Deployment Guide

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**SAS® Event Stream Processing 4.3 on Windows: Deployment Guide**

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# Introduction

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## About This Guide

SAS Event Stream Processing enables developers to build applications that can quickly process and analyze a large number of continuously flowing events in real time. The deployment installs the programming tools that are required to build and execute event stream processing applications.

SAS Event Stream Processing 4.1 was the first release to include compatibility with the SAS Viya platform and to use the same deployment tools and process. SAS Event Stream Processing 4.3 enhances the deployment experience, extends support to additional platforms, and adds multiple features.

However, SAS Event Stream Processing can still be installed as a stand-alone product without additional SAS Viya components.

Use this guide to deploy SAS Event Stream Processing in your Windows environment. To install on Linux, a separate order that specifies the Linux platform is required.

To use this guide successfully, you should have a working knowledge of the Windows operating system and basic commands.

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## What's New in SAS Deployment

### SAS Software Delivery

To ensure that you deploy the latest software, SAS provides the SAS Event Stream Processing software in repository packages that are maintained by SAS. Specifically, the software is packaged in the Microsoft Installer (MSI) format for Windows, which simplifies installation, uninstallation, and upgrade tasks. Each time you deploy or update your software, you automatically receive the latest MSI files that are available.

**Note:** The MSI-based deployment model does not require a SAS Software Depot in your environment.

## Industry Standard Tools

A simplified, industry-standard deployment model is one of the innovations that SAS Viya offers. You can now deploy SAS Viya and SAS Event Stream Processing with robust tools that are designed for deploying and updating software on Windows operating systems. SAS Viya deployment takes advantage of Windows PowerShell, a software deployment tool for Windows operating systems. Windows PowerShell handles downloads of SAS software from secure repositories and performs the installation of downloaded software in your environment. Native Windows installers perform the installation from MSI files.

**Note:** SAS Deployment Wizard and SAS Deployment Manager that supported SAS 9.4 are not used to install and configure SAS Event Stream Processing 4.3.

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## Support for Upgrades

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.

**Note:** The term *upgrade* is used to refer to a type of software update that introduces new functionality. At SAS, an upgrade generally involves a new release number. By contrast, an *update* refers to minor changes to the software such as fixes. For more information about updating, see [“Updating SAS Event Stream Processing” on page 21](#).

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.
- 2 Install SAS Event Stream Processing 4.3, as instructed in the *SAS Event Stream Processing: Deployment Guide*.
- 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 above, you must run the `dfesp_xml_migrate` script to migrate your XML code to the 4.x XML schema. Some advance preparation is required to install the script on Windows, but you can run it on Linux without installing any prerequisites. For more information, see “[Preparing the Windows Environment for Migration of Your XML Models](#)” on page 16. For information about the migration script, contact SAS Technical Support.

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## Contact SAS Technical Support

Technical support is available to all customers who license SAS software. However, we encourage you to engage your designated on-site SAS support personnel as your first support contact. If your on-site SAS support personnel cannot resolve your issue, have them contact SAS Technical Support to report your problem.

Before you call, explore the SAS Support website at [support.sas.com/techsup/](https://support.sas.com/techsup/). This site offers access to the SAS Knowledge Base, as well as SAS communities, Technical Support contact options, and other support materials that might answer your questions.

When you contact SAS Technical Support, you are required to provide information, such as your SAS site number, company name, email address, and phone number, that identifies you as a licensed SAS software customer.





# System Requirements

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## Hardware Requirements

SAS Event Stream Processing can be installed as a stand-alone product. It can also coexist with either SAS Viya or with SAS 9.4.

A single machine for the SAS Event Stream Processing components (SAS Event Stream Processing, the web application server, and SAS Event Stream Processing Studio) is the minimum requirement. SAS Event Stream Processing can be deployed on a redundant machine for failover, or it can be distributed across multiple machines. On-premises deployments as well as cloud deployments are supported. You can also deploy the software on the compute layer of a Hadoop cluster, or even at the edge (on a gateway node) of a Hadoop cluster.

The following table describes a standard set of specifications for a machine where SAS Event Stream Processing is deployed:

Item	Recommended Level*
CPU	4 cores (x86 architecture) Intel Xeon chip set with a minimum speed of 2.6 GHz
Memory	8 - 16 GB of RAM Memory clock speed of 1600 MHz
Disk Space and Speed	5 GB or more 10,000 RPM

\*The bare minimum requirements for an installation of SAS Event Stream Processing are 4 cores, 4 GB of memory, and 2 GB of disk space. However, a minimum configuration is not recommended.

An additional machine can be used as a thin client from which end users can access the user interface for SAS Event Stream Processing Studio. This machine requires minimal processing power and storage space and can run on Windows or UNIX.

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## Operating System Requirements

### Supported Operating Systems

For a list of supported operating systems, see <https://support.sas.com/en/documentation/third-party-software-reference/viya/support-for-operating-systems.html>.

**Note:** SAS Event Stream Processing can also be installed on Red Hat Enterprise Linux, but a separate package, based on your software order, is required.

### SAS Support for Alternative Operating Systems

SAS provides support on a limited basis for alternative operating system distributions that customers might select. For more information, see the official support policy statement at <http://support.sas.com/techsup/pcn/altopsys.html>.

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## Software Requirements

### Windows PowerShell

Microsoft Windows PowerShell version 5.0 or later is required in order to install SAS Event Stream Processing on Windows. PowerShell is a framework that supports a scripting language and configuration management capabilities on Windows. To determine the current version of PowerShell on the local machine, take the following steps:

- 1 Start PowerShell from the Windows **Start** menu. Enter `powershell` at the **Search** prompt and launch it from the search results.
- 2 At the PowerShell command prompt, enter the following command to find out the PowerShell version:

```
$PSVersionTable.PSVersion
```

Windows PowerShell 5.0 has its own prerequisites, which are documented on the [Microsoft website](#).

**Note:** Be aware that Windows PowerShell does not require a graphical user interface. It can be run on a machine that lacks a monitor.

### Additional Microsoft Requirements

Three versions of the Microsoft Visual C++ Redistributable Package for Visual Studio are required: 2008, 2012, and 2013. Download the packages from the following Microsoft website:

<https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads>

Run the following command to install each redistributable package:

vcredist\_x64.exe

If you have trouble locating and downloading the 2012 package, refer to [SAS Note 60575](#), which contains a link to the required executable.

## Java Requirements

The Java Runtime Environment (JRE) must be installed on each machine where you install SAS Event Stream Processing components. Only the JRE is required. The full JDK is not required. For a list of supported JRE distributions, see

<https://support.sas.com/en/documentation/third-party-software-reference/viya/support-for-jre.html>.

To determine the version of Java that is installed on the local machine, follow these steps:

- 1 From the **Start** menu, select **Control Panel**.
- 2 Select **Programs**, and then click **Programs and Features**.

One or more installed Java versions are listed in the **Programs and Features** panel.

You can also navigate to [java.com](http://java.com) to automatically detect the Java version on your machine and to update your version.

## Web Browsers

SAS Event Stream Processing Studio and Streamviewer include some advanced user interface features, which require a newer web browser. For information about supported browsers, see

<https://support.sas.com/en/documentation/third-party-software-reference/viya/support-for-web-browsers.html>.

If you cannot install one of the supported web browsers for use with SAS Event Stream Processing, be aware of possible unexpected user interface behavior. Because session cookies are required in order to maintain session state, be sure to enable cookies in your browser.

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## User Accounts and Security

The user account that is used to perform the deployment requires Administrator privileges. Administrator privileges are not required after the installation in order to run an instance of a SAS Event Stream Processing engine. The installation directory path enables Write access per user group, and it is owned by the user account that is used to perform the installation. To enable users to edit the product configuration files, the administrator can use a Group policy to grant Write access to these files to any user.

The Event Stream Processing XML server does not support Kerberos authentication on Windows.

### (Optional) Encryption and Authentication

SAS Event Stream Processing provides optional encryption and authentication features. Both of these features require encryption libraries that are included in the SAS Event Stream Processing Encryption and Authentication Overlay package, which is installed automatically when you install SAS Event Stream Processing. You can then enable encryption with OpenSSL on TCP/IP connections within an event stream processing engine.

OpenSSL is included with the SAS Event Stream Processing Encryption and Authentication Overlay package. You can also configure SAS Event Stream Processing engines to require client authentication for SAS TCP/IP clients. Authentication and encryption apply to the following Event Stream Processing Engine APIs:

- C or Java Publish/Subscribe API

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- Connections that are created by a client that uses the C or Java Publish/Subscribe API to communicate with a SAS Event Stream Processing engine
- Connections that are created by an adapter to communicate with a SAS Event Stream Processing engine
- Event Stream Processing XML Server HTTPS API
  - Connections that are created by the Event Stream Processing XML Client (dfesp\_xml\_client) to communicate with the Event Stream Processing XML server using the HTTPS protocol
  - Connections that are created by the Streamviewer component (streamviewer.html) to communicate with the Event Stream Processing XML server using the HTTPS protocol

If you set up authentication for a SAS Event Stream Processing server, you must then provide authentication tokens or credentials in Streamviewer. You can copy and paste the token directly into an appropriate dialog box in Streamviewer. Alternatively, you can specify a URL that supplies the token. Authentication tokens and credentials are cached for the duration of a Streamviewer session. For more information, see *SAS Event Stream Processing 4.3: Security*.

# Installing SAS Event Stream Processing

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## Deploy the Software on Windows

Use the procedures in this section to deploy your SAS software.

The user account that performs the deployment requires Administrator privileges for the Windows machine where the software is installed.

### Deployment Overview

When you order SAS software, SAS sends a Software Order Email (SOE) to your business or organization that includes information about the software order. Your SOE includes some basic instructions, as well as the following attachments:

- A certificate that enables secure access to your software from the SAS repositories (entitlement\_certificate.pfx)
- a license file with filename `SASViyaversion-number_ID_operating-system.txt`

The deployment script receives permission to access content in the SAS repositories based on the certificates. The software is then downloaded in MSI format. The SAS installation user launches each MSI file to install the software.

Before you access the files in your SOE, prepare your environment by setting the environment variables, as instructed below.

### Set the Environment Variables

You must set several environment variables before you install SAS Event Stream Processing. Some variables are required to support core product features. Others are required only to support optional components and features.

- 1 Click **Start** ⇒ **Control Panel** ⇒ **System and Security**.
- 2 Click **System** ⇒ **Advanced System Settings** in the left pane.

The System Properties dialog box appears. Click **Environment Variables**.

- 3 Click **New** to add the following variable definitions. Or select the variable from the list and click **Edit** to modify an existing variable definition:

Variable	Value
DFESP_HOME	C:\PROGRA~1\SAS\Viya \SASEventStreamProcessingEngine\4.3.0  If you installed in a location other than the default, update the path to match the installation directory.
PATH	%DFESP_HOME%\bin;C:\PROGRA~1\SAS\Viya \SASFoundation\sasexe;%PATH%.  If you installed in a location other than the default, update the path to match the installation directory. .
(Optional) DFESP_SSLPATH  Setting this environment variable is required to enable SSL on connections between SAS Event Stream Processing Studio and a SAS Event Stream Processing engine. However, enabling SSL encryption is optional.  This setting assumes that you installed the OpenSSL libraries on all computer systems that run the client and server. When you install the SAS Event Stream Processing Encryption and Authentication Overlay, OpenSSL is automatically installed.	<i>Drive:\path-to-OpenSSL-shared-object</i>  By default, when the Encryption and Authentication Overlay package is installed, the path is %DFESP_HOME%\bin.
(Optional) PYTHONPATH or PYTHONHOME  Enables you to use the Anaconda Python support in SAS Micro Analytic Service.	Add the Python Lib directory to PYTHONPATH. Or set PYTHONHOME to the top-level Python directory:  ■ PYTHONPATH=C:\Program Files \Miniconda3\envs\pythonversion\Lib  ■ PYTHONHOME=C:\Program Files \Miniconda3\envs\pythonversion

- 4 Click **OK** to save your variable settings.

SAS Event Stream Processing includes the internal component SAS Micro Analytic Service. To use the Anaconda Python support in SAS Micro Analytic Service, you must set one of the optional variables listed in the table for your version of Python. For more information, see *SAS Micro Analytic Service: Programming and Administration Guide*, which is available on the [SAS Event Stream Processing product page](#).

## Download and Run the Deployment Script

The SOE provides a link to download a ZIP file onto the host where you are installing SAS software. It instructs you to save both the ZIP file and the files that are attached to the email to a directory on that host. If you have not already done so, you must save those files and uncompress the ZIP file before performing any of the steps in this section.

Take the following steps to start the deployment:

- 1 On the computer where you want to install SAS Event Stream Processing, navigate to the directory where you uncompressed the ZIP file that you downloaded.
- 2 Locate the setup.bat file. Right-click the file, and select **Run as Administrator** from the menu.

As the batch job runs, a `\Downloads` folder is created in the directory where you are running the batch script. The software is downloaded from secure repositories to this new folder on your computer.

- 3 When the script has completed, navigate to the Downloads folder.
- 4 Locate the MSI files that the batch job has downloaded from SAS repositories. Double-click the MSI file named `msiesp-4.3.0.build-ID.msi` to launch the program that installs the software.
- 5 The installer prompts you for a location where you want to install SAS Event Stream Processing. By default, it is installed in `C:\Program Files\SAS\`, but the installer enables you to select another location.

The installation creates a Viya subfolder and adds files to it. When the software installation has completed successfully, a message is displayed that indicates success. You can then install the optional components, SAS Event Stream Processing Studio, Streamviewer, and SAS Text Analytics, as appropriate. The steps are provided below.

## Apply the License

A valid license file is required in order to run any applications that use SAS Event Stream Processing.

Your SOE contained a license file that you were instructed to save. Now you must apply the license file to the local machine by saving it to the license directory. This directory is created automatically during MSI execution.

**Note:** The license file is required only for SAS Event Stream Processing engine. If you installed the optional user interface components on separate machines, copying the license to those machines is not required.

- 1 Locate the license file (in TXT format) that you previously saved. It should be in the Temp directory where you uncompressed the ZIP file.
- 2 Copy (**Ctrl+C**) the license file to the Windows Clipboard.
- 3 Navigate to the default license directory:  
`C:\Program Files\SAS\Viya\SASEventStreamProcessingEngine\4.3.0\etc\license`
- 4 Use **Ctrl+V** to paste the license file into the license directory.

## (Optional) Install SAS Event Stream Processing Studio

When you have installed the contents of the `msiesp-version-number.msi` file that you downloaded, you can install the user interface component, SAS Event Stream Processing Studio. You must manually start the Event Stream Processing XML Server to enable model creation.

Take the following steps:

- 1 Navigate to the directory where you downloaded the MSI files from SAS repositories.
- 2 Double-click the MSI file that installs SAS Event Stream Processing Studio. It has a filename in the format `msiespstudio-4.3.0.build-ID.msi`.
- 3 The installer prompts you for a location where you want to install SAS Event Stream Processing Studio. By default, it is installed in `C:\Program Files\SAS\`, but the installer enables you to select another location.
- 4 Click **OK** to launch the Windows installer. When it has completed, a message is displayed that indicates success.
- 5 Start the SAS ESP Studio service. Click **Start**, and enter `services.msc` in the **Search** box. Select **services.msc** from the search results.

The **Services** panel is displayed.

- 6 Scroll through the list of services and locate the **SAS ESP Studio** service. Click the **Start** link to start the service.
- 7 Launch the SAS Event Stream Processing Studio user interface from a browser window using the following URL: `http://server-host-name:8080/SASEventStreamProcessingStudio/index.html`

For *server-host-name*, substitute the host name or IP address of the server where you installed the SAS Event Stream Processing Studio software.

- 8 You must start the Event Stream Processing XML server in order to enable model creation.  
Open a command prompt by clicking **Start** and entering *cmd* in the **Search** box.
- 9 Change directories to the default installation directory or to its equivalent in your deployment:

```
cd c:\Program Files\SAS\Viya\SASEventStreamProcessingEngine\4.3.0\bin
```

- 10 Run the following command:

```
dfesp_xml_server -pubsub n -http-admin adminport -http-pubsub pubsubport
```

The `-pubsub` argument specifies a port for publish and subscribe actions. Replace *n* with the appropriate port number.

The `-http-admin` argument runs the Event Stream Processing server as a factory server that supports the creation of projects. For *adminport*, specify the port that you want to use for HTTP administration requests.

**Note:** If you have a project that is predefined, use the `-model` argument to run the project as a stand-alone engine.

The `-http-pubsub` argument sets up a publish/subscribe HTTP server that uses the specified port *pubsubport*. For more information about the Event Stream Processing server, see *SAS Event Stream Processing: Using the XML Layer*.

- 11 The following INFO message is displayed:

```
Access control disabled (could not open permissions.yml, error: file not found)
```

The file that is referenced is required only to enable access control on the Event Stream Processing server. You can ignore this message.

Port 8080 is used by default. However, you can set a different port for SAS Event Stream Processing Studio, as necessary. For more information, see [“\(Optional\) Change the Default Port for SAS Event Stream Processing Studio” on page 15](#).

## (Optional) Install the Streamviewer Component

You can install the optional SAS Event Stream Processing Streamviewer user interface on a separate machine from the other SAS Event Stream Processing software. Take the following steps to install it on Windows:

- 1 Navigate to the directory where you downloaded the MSI files from SAS repositories.
- 2 Double-click the MSI file that installs Streamviewer. It has a filename in the format `msiespstvwr-4.3.0.build-ID.msi`.
- 3 The installer prompts you for a location where you want to install Streamviewer. By default, it is installed in `C:\Program Files\SAS\`, but the installer enables you to select another location.
- 4 Click **OK** to launch the Windows installer.

Additional steps are required to configure Streamviewer. For more information, see [Setting Up and Running Streamviewer](#).



## (Optional) Install SAS Text Analytics

If you want to install the optional SAS Text Analytics component, you must install it on the same machine as the “base” SAS Event Stream Processing software. In other words, install it along with the msiesp software. This component is automatically included with your order, but is optional to install.

Perform the following steps to install SAS Text Analytics on Windows:

- 1 On the computer where you installed SAS Event Stream Processing, navigate to the directory where you saved the SAS MSI files.
- 2 Double-click the name of the MSI file that installs SAS Text Analytics. The filename is specified in the format `msitxtmineng-4.3.0.build-ID.msi`.
- 3 The installer prompts you for a location in which to install SAS Text Analytics. Install it in the same directory as SAS Event Stream Processing, which is installed by default in `C:\Program Files\SAS\`.
- 4 Click **OK** to launch the Windows installer.

The Windows installer completes the installation.



# Post-Installation Configuration

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## (Optional) Change the Default Port for SAS Event Stream Processing Studio

By default, SAS Event Stream Processing Studio uses Port 8080. To change the default port, perform the following steps:

- 1 Complete the installation of SAS Event Stream Processing Studio, as instructed in “(Optional) Install SAS Event Stream Processing Studio” on page 11.
- 2 Stop the SAS ESP Studio service. Click **Start**, and type *services.msc* in the **Search** box. Select **services.msc** from the search results.  
The Services panel appears.
- 3 In the list of services, locate the SAS ESP Studio service and select it. Click the **Stop** link to stop the service.
- 4 Navigate to `C:\Program Files\SAS\Viya\SASEventStreamProcessingStudio\4.3.0`. If you selected an alternative location for the installation, navigate to the `SASEventStreamProcessing\4.3.0` subfolder in that location.
- 5 Create a backup copy of the file named `esvvm.xml` by saving the file with a different filename.  
**Note:** You must have Administrator privileges to the installation directories.
- 6 Use your preferred text editor to open `esvvm.xml`, and to locate the following line in the file:  
**Note:** Multiple lines are shown here to improve readability.  

```
"<arguments>-jar "%ProgramFiles%\SAS\Viya\SASEventStreamProcessingStudio\4.3.0\nsas-esp-visualmodeler-4.3.x.jar"</arguments>"
```
- 7 Insert an instruction to use a port other than the default (8080). In the following example, the port is changed to 8181:  

```
"<arguments>-Dserver.port=8181 -jar "%ProgramFiles%\SAS\Viya\SASEventStreamProcessingStudio\4.3.0\nsas-esp-visualmodeler-4.3.x.jar"</arguments>"
```
- 8 Restart the service. Click **Start**, and enter *services.msc* in the **Search** box. Select **services.msc** from the search results.  
The Services panel appears.

- 9 In the list of services, locate and select the SAS ESP Studio service. Click the **Start** link to start the service.

**Note:** The Event Stream Processing XML Server is already running and does not require a restart.

- 10 Launch the SAS Event Stream Processing Studio user interface from a browser window. Specify the following URL, substituting the new port number that you configured:

```
http://server-host-name:port-number/SASEventStreamProcessingStudio/index.html
```

For *server-host-name*, substitute the host name or the IP address of the server where you installed the SAS Event Stream Processing Studio software.

---

## Directory Structure and Permissions

After you install SAS Event Stream Processing, the files for the engine and the authentication package are located in the following directory:

```
C:\Program Files\SAS\Viya\SASEventStreamProcessingEngine\4.3.0
```

Configuration files are located in the following directory:

```
%PUBLIC%\SAS\Viya\SASEventStreamProcessingEngine\4.3.0\default
```

The basic directory path enables write access per user group, and it is owned by the user who performed the installation. To grant permission to users to edit the configuration files, the administrator can set up Group permissions.

Later, if you update your deployment, the configuration files are not altered.

---

## Preparing the Windows Environment for Migration of Your XML Models

SAS Technical Support maintains a migration script that enables you to upgrade the XML models that you previously created using SAS Event Stream Processing 3.x so that they are compatible with SAS Event Stream Processing 4.3.

Before you can run the migration script, you must prepare your Windows environment by installing the XSLT libraries.

- 1 Download the XSLT files from the following FTP site:

```
ftp://ftp.zlatkovic.com/libxml/
```

SAS recommends selecting the 32-bit package. Be sure to install the libxml, libxslt, zlib, and iconv libraries.

- 2 Add the `\bin` folder of each downloaded library to the PATH environment variable.

- 3 Validate the installation by running the following command from a prompt:

```
xsltproc -version
```

For more information about the migration script, contact SAS Technical Support.

## Next Steps

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### Code Examples

The SAS Event Stream Processing code examples are automatically installed along with the software in the following location:

`C:\Program Files\SAS\Viya\SASEventStreamProcessingEngine\4.3.0\examples`

The examples directory includes files for C++, XML, Python, and Java. It also includes a `readme.examples` file, which briefly describes each example and its usage.

SAS recommends that you copy the examples that you require to a writable directory on the local computer so that you can run them.

For help with understanding the examples, see the following documents on the [SAS Event Stream Processing product page](#).

- *DataFlux Expression Language Reference Guide*
- *SAS Micro Analytic Service: Programming and Administration Guide*

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### Product Documentation

After you install, configure, and verify the deployment, you are ready to begin writing applications that capture and analyze streaming event data in real time.

The next step is to consult the product documentation. The product documentation is included in SAS Help Center. A link to all SAS Event Stream Processing documentation is available on the [SAS Event Stream Processing product page](#). All product user documentation is also available via single sign-on from the SAS Event Stream Processing user interfaces (SAS Event Stream Processing Studio and Streamviewer).

SAS recommends starting with *SAS Event Stream Processing 4.3: Overview*, which provides an introduction to product features and explains how to proceed with creating event stream processing models and incorporating them into applications.

If you have set up the optional Streamviewer component, you can find more information about it in a separate guide. For a full set of instructions about using Streamviewer, see [Visualizing Event Streams with Streamviewer](#).



# Uninstalling SAS Event Stream Processing

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## Uninstall SAS Event Stream Processing

You can use the native Windows installation features to uninstall SAS Event Stream Processing software:

- 1 Create a backup copy of the SAS Event Stream Processing Studio database in order to preserve project files. Follow these steps:
  - a Stop the SAS ESP Studio service by accessing the Windows **Services** panel.
  - b Scroll through the list of services and locate the **SAS ESP Studio** service. Click **Stop** to stop the service.
  - c Create a backup copy of the database, which is a single binary file (default.mv.db). You can copy it to any directory location outside the SAS Event Stream Processing installation directory structure.
 

The location and filename of the database are determined by the environment variable `ESP_STUDIO_DB`. By default, it is stored in `drive-letter:\Users\Public\SAS\Viya\SASEventStreamProcessingStudio\`
- 2 Access **Control Panel** from the **Start** menu.
- 3 Click **Programs** or, in some versions of Windows, **Add/Remove Programs**.
- 4 Click **Uninstall a Program**.
 

The list of programs that are installed on the computer is displayed.
- 5 Locate **SAS Event Stream Processing** in the list.
- 6 Right-click, and select **Uninstall**.
 

The uninstallation removes all files and directories that are associated with SAS Event Stream Processing.
- 7 Locate **SAS Event Stream Processing Studio** in the list of installed programs.
- 8 Right-click, and select **Uninstall**.
 

The uninstallation removes all files and directories that are associated with SAS Event Stream Processing Studio.
- 9 (Optional) If you installed the optional Streamviewer component, locate **SAS Event Stream Processing Streamviewer** in the list of installed programs.

- 10 Right-click, and select **Uninstall**.

The uninstallation removes all files and directories that are associated with Streamviewer.

- 11 (Optional) If you installed the optional SAS Text Analytics component, locate **SAS Text Analytics** in the list of installed programs.

- 12 Right-click, and select **Uninstall**.

The uninstallation removes SAS Text Analytics.

- 13 When the uninstallation completes, restart the computer.



# Updating SAS Event Stream Processing

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## About Updates

A software update makes your deployed software up-to-date with the latest software. Updates are performed by running the same tools that you ran during the initial deployment. You might determine that your software needs to be updated, or you might be notified by SAS that updates are available.

The term *upgrade* is used to refer to a type of software update that introduces new functionality. At SAS, an upgrade generally involves a new release number. By contrast, an *update* refers to minor changes to the software such as fixes. A new Software Order Email (SOE) is not required in order to retrieve the updated software packages.

## Applying Updates

You apply updates to the deployed software environment in order to bring the software to the latest version. For SAS Event Stream Processing, you can perform the update using Windows installation tools along with MSI files.

After an update has completed, any user-modified configuration values are maintained.

## Update SAS Event Stream Processing on Windows

You can use Windows installation tools that work with MSI files to apply all available updates to SAS Viya software on a selected machine.

- 1 (Optional) Create a backup copy of SAS Event Stream Processing configuration by saving copies of any files that are located in `C:\Users\Public\SAS\Viya\SASEventStreamProcessing`. Save them in a directory outside of the installation directory, which is `C:\Program Files\SAS\` by default.
- 2 On the computer where you installed SAS Event Stream Processing, navigate to the directory where you uncompressed the ZIP file that you downloaded.
 

**Note:** The SOE that enabled you to install the SAS software provided a link to the ZIP file to be downloaded.
- 3 Locate the `setup.bat` file. Right-click the file, and select **Run as Administrator** from the menu.

As the batch job runs, a `\Downloads` folder is created in the directory where you are running the batch script. The software is downloaded from secure repositories to this new folder on your computer.

- 4 When the script has completed, navigate to the new `\Downloads` folder.
- 5 Locate the MSI files that the batch job has downloaded from the SAS repositories. Double-click the most recent version of the MSI file named `msiesp-4.3.1.build-ID.msi` to launch the program that installs the updated software.

The update proceeds automatically. Repeat the preceding steps on each Windows machine where you installed SAS Event Stream Processing.

When the software update has completed successfully, a message is displayed that indicates success.