Kofax SignDoc Standard

Installation Guide

Version: 3.0.0

Date: 2021-08-06

KOFAX

Table of Contents

Preface

SignDoc Standard transforms customer experiences by streamlining the signing of documents. SignDoc Standard accelerates business workflows by removing steps such as printing, routing, and shipping documents back and forth. Constituents can sign electronically on any device anywhere resulting in significant operational cost reductions, productivity increases, and improved compliance.

Related documentation

The full documentation set for SignDoc Standard is available at the following location:

https://docshield.kofax.com/Portal/Products/SD/3.0.0-7s9x4v5c5f/SD.htm

In addition to this guide, the documentation set includes the following items:

- *Help for Kofax SignDoc Standard*
- *Help for Kofax SignDoc Standard Administration Center*
- *Help for Signing Documents with Kofax SignDoc*
- *Kofax SignDoc Standard Administrator's Guide*
- *Kofax SignDoc Standard Developer's Guide*
- *Kofax SignDoc Technical Specifications*

Offline documentation

Customers who require offline documentation can download the KofaxSignDocDocumentation_3.0.0_EN.zip from the Kofax Fulfillment Site. The .zip file includes both help and print folders.

1. From the Kofax Fulfillment site, download the documentation .zip file.
2. Extract the contents of the compressed documentation file.
3. Navigate for online help to folder help. Navigate for all other documentation to folder print.

Training

Kofax offers both classroom and online training to help you make the most of your product. To learn more about training courses and schedules, visit the Kofax Education Portal on the Kofax website.

Getting help with Kofax products

The Kofax Knowledge Base repository contains articles that are updated on a regular basis to keep you informed about Kofax products. We encourage you to use the Knowledge Base to obtain answers to your product questions.

To access the Kofax Knowledge Base, go to the Kofax website and select **Support** on the home page.

Note The Kofax Knowledge Base is optimized for use with Google Chrome, Mozilla Firefox or Microsoft Edge.

The Kofax Knowledge Base provides:

- Powerful search capabilities to help you quickly locate the information you need.

  Type your search terms or phrase into the **Search** box, and then click the search icon.
- Product information, configuration details and documentation, including release news.

  Scroll through the Kofax Knowledge Base home page to locate a product family. Then click a product family name to view a list of related articles. Please note that some product families require a valid Kofax Portal login to view related articles.
- Access to the Kofax Customer Portal (for eligible customers).

  Click the **Customer Support** link at the top of the page, and then click **Log in to the Customer Portal**.
- Access to the Kofax Partner Portal (for eligible partners).

  Click the **Partner Support** link at the top of the page, and then click **Log in to the Partner Portal**.
- Access to Kofax support commitments, lifecycle policies, electronic fulfillment details, and self-service tools.

  Scroll to the **General Support** section, click **Support Details**, and then select the appropriate tab.

Chapter 1

Introduction

SignDoc Standard

- is designed to manage document-based transactions in a multi-channel environment.
- is the fastest way to get a signature from people in a convenient and secure process.
- is an end-to-end solution enabling preparation, execution and management of transactions in a digital environment across organizations and individuals.
- is compliant with federal e-signature legislation, which gives electronic documents and signatures the same legal standing as paper documents and ink signatures.
- provides a signed document containing all audit information if desired (self-contained document).
- supports multiple signature types such as click-to-sign, handwritten, and photo.
- can be operated behind the firewall (in-house) or in an enterprise cloud environment.

The SignDoc Standard fundamentals are

- intuitive UI (self manageable process)
- customizable workflow (who, what, where, how & when, expiration, call back)
- signer authentication (options and API)
- sign anywhere and anytime - individually adapted to environment (click, mouse, photo, handwritten - be mobile and flexible)
- audit trail included in signed documents
- self-contained documents ("standard" PDF viewer also for audit trail)

For enterprise workflow applications SignDoc Standard provides integration interfaces via web services.

SignDoc Standard has been designed to be flexible - for SignDoc Standard users and recipients of signing packages.

Note Recipients of SignDoc Standard do not need a SignDoc Standard account.

General overview

Layer 1 - Operating systems

SignDoc Standard can be installed on Windows and Linux operating systems with a 64-bit architecture.

Layer 2 - SignDoc Standard application

The application consists of two WAR (web application archive) files which are deployed into a web application server. The sdweb.war file contains Native Libraries which are used for licensing and

PDF handling. The configuration files are stored outside of the WAR files in directory referenced by environment variable SIGNDOC_HOME.

Layer 3 - REST interface

It is possible to interact with the system via REST API that supports almost all aspects of the application. Amongst many other things, it is possible to create and schedule signing packages with one REST request. A detailed API documentation is included.

Layer 4 - Web application server

SignDoc Standard runs on Apache Tomcat, the standard web application server used within the industry. For supported versions and prerequisites, see *Kofax SignDoc Technical Specifications* document.

Chapter 2

Base installation

General notes

SignDoc Standard can run on Windows and Linux operating systems. For a list of supported environments, see *Kofax SignDoc Technical Specifications* document.

This guide assists in setting up a standard installation on a Windows 64-bit. Screen shots might look different depending on the Windows version used. For an installation on Linux systems, see the provided and documented Dockerfile.

The installed system consists at least of these components:

- Database (Microsoft SQL Server)
- Application Server (Apache Tomcat + SignDoc Standard)

SignDoc Standard is executed as J2EE compatible application in the Application Server. Apache Tomcat and Microsoft SQL Server are usually installed on different computers (nodes) for various reasons, but they can also be installed on the same computer (node).

Reverse Proxy / Load Balancing

This installation guide does not consider/discuss the setup of a Reverse Proxy or Load Balancing.

SSL Setup

This installation guide does not consider/discuss an SSL configuration, since this usually depends on local IT regulations and is effectively transparent to SignDoc Standard.

Software requirements for this guide

For version details, see *Kofax SignDoc Technical Specifications* document.

To be able to use SignDoc 3.0.0, you have to install these Microsoft Visual C++ Redistributable Packages:

- Visual Studio 2017 (depending on the Windows version, it might be necessary to install some updates via Windows Update before this setup can be successfully installed)
- Windows PowerShell (powershell.exe) must be in the system path. This should be the normal case for the Windows Server OS.
- If this is an upgrade of SignDoc Standard, check Upgrade from SignDoc Standard 2.2.1 to 3.0.0.
- Microsoft SQL Server is required (the express version is sufficient).

Installation as a Windows service

This section provides information on installing SignDoc Standard as a Windows service.

Definitions

- `INSTALLDIR` is the directory of the unpacked SignDoc*-tomcat.zip file. See Quickstart procedure.
- `CIRRUS_HOME` is the home directory of the web application (cirrus) that composes SignDoc Standard. Starting with SignDoc Standard 2.2.0 the `SDWEB_HOME` directory is no longer required. See Content of the SignDoc Standard ZIP archive, section "Directories".

General prerequisites

Before starting the installation it is required to install and check the following prerequisites.

- To be able to use SignDoc Standard 3.0.0, you have to install the Microsoft Visual C++ Redistributable Package.

  Depending on the Windows version, it might be necessary to install some updates via Windows Update before this setup can be successfully installed.
- Windows PowerShell (powershell.exe) must be in the system path. This should be the normal case for the Windows Server OS.
- If this is an upgrade of SignDoc Standard, check Upgrade from SignDoc Standard 2.2.1 to 3.0.0

Note It is recommended to install SignDoc Standard behind a reverse proxy. If the reverse proxy is also used to load-balance requests, it can be done stateless (e.g. round-robin).

Quickstart

Getting a simple local accessible SignDoc Standard installation running can be achieved in less than 5 minutes. It is not wasted time doing this, since it is a base for a production ready setup.

Quickstart goals

- Install SignDoc Standard as a Windows service.
- Database: preconfigured for a local file-based H2 database

  Important The data stored in the local file-based H2 database cannot be migrated to a production database based on Microsoft SQL Server.

- SMTP configuration: preconfigured for localhost with port 1025 (no authentication or encryption).
  - Works with MailHog out of the box.
  - MailHog can be stopped and deleted at any time. After a real SMTP server is configured, there is no more need for it.

Quickstart prerequisites

- 8 GB RAM
- Download and run MailHog: https://github.com/mailhog/MailHog. If this is not possible or not wanted, a real SMTP server must be configured first. See Configure SMTP server connection.
- Access MailHog: http://localhost:8025 (if applicable)

- Enable startup email feature. See Production setup, section "Startup email".

  Note MailHog is only needed for the quickstart scenario. When using startup email with a real SMTP server, make sure to use a real email address.

Quickstart procedure

- Double-check that General prerequisites are fulfilled.
- Unpack the signdoc-standard*-tomcat.zip file in a new directory `INSTALLDIR`.
  Example
  `C:\Program Files\signdoc-standard-3.0.0`
- Double-click `INSTALLDIR\service_up.cmd`
- Wait approximately 1 minute on first start.
- A SignDoc Standard startup email should be sent to the specified startup email recipient while starting up.
- Open SignDoc Standard: http://localhost:6611.

Content of the SignDoc Standard ZIP archive

The relevant and configurable content of SignDoc Standard consists basically of 3 files:

- a configuration file
- a script to install and configure the SignDoc Standard Windows service
- a script to deregister the SignDoc Standard Windows service

Tools

- `INSTALLDIR\service_up.cmd` installs, applies configuration, and restarts the SignDoc Standard Windows service.
- `INSTALLDIR\service_remove.cmd` stops and deregisters the SignDoc Standard Windows service. No files are deleted.
- `INSTALLDIR\service_configuration.properties` is the configuration file of the SignDoc Standard Windows service. This file can be edited with a regular text editor. The syntax and usage is described in the file.

Directories

- `INSTALLDIR\signdoc_home` is the consolidated default CIRRUS_HOME directory. Starting with SignDoc Standard 2.2.0 there is no need to maintain a SignDoc Web configuration directory.

Production setup

The following sections describe basic tasks that should or must be completed for a production setup.

Goals for production

- Configure SMTP server connection
- Configure database connection
- Configure network settings
- Configure reverse proxy setup (optional)

- Advanced configuration (optional)
- KTA integration (optional)
- LDAP integration (optional)

Prerequisites for production setup

- Application server
  - minimum 8 GB RAM. See Advanced configuration, section "Tune Java memory settings".
  - minimum 2 GB free disk space
- Database
  Installed Microsoft SQL Server with a database for SignDoc Standard and a database user with database owner (dbo) credentials for this database. See Prepare Microsoft SQL database.
- SignDoc Standard
  Install SignDoc Standard as described in Quickstart.

Procedure for production

The following topics do not depend on each other and can be executed independently. What is common for all settings: The settings must be applied by executing (i.e. double-clicking) INSTALLDIR \service_up.cmd.

Configure SMTP server connection

A valid and trustworthy SMTP connection is required to be able to send emails.

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to `# [EMAIL CONFIGURATION].`
3. Amend the settings with the configuration parameters of real SMTP server.
   See also the commented examples at the bottom of the file.

SMTP TLS example

```
mail.smtp.host=email-smtp.us-east-1.amazonaws.com
mail.smtp.port=587
mail.smtp.user=<Access key ID>
mail.smtp.from=dont_reply@mydomain.com
mail.smtp.password=<Secret access key>
mail.smtp.starttls.enable=true
mail.smtp.starttls.required=true
mail.smtp.ssl.checkserveridentity=false
```

Startup email

It can be useful to send a startup email to a predefined address whenever the SignDoc Standard server is starting. SignDoc Standard can be configured for this purpose. The startup email contains information about configuration, the environment and start parameters of the SignDoc Standard application.

To enable the startup email follow these steps:

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to `# [EMAIL CONFIGURATION].`
3. Uncomment the line starting with `#cirrus.startup.email`.

4. Set a valid email address.

Example

```
cirrus.startup.email=ksdadmin@localhost
```

Configure JDBC Server connection

Note

For production purposes only Microsoft SQL Server is supported.

Since SignDoc 2.2.1.2.0.64 the jdbc.url value MUST NOT be enclosed in single quotes anymore.

To configure JDBC Server connection follow these steps:

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to `# [DATABASE CONFIGURATION]`
3. Amend the setting with the configuration parameters and credentials of the JDBC connection. See also the commented examples at the bottom of service_configuration.properties.

Microsoft SQL Server example

```
jdbc.url=jdbc:sqlserver://my-mssql-server:1433;databaseName=signdoc
jdbc.username=signdoc
jdbc.password=2beChanged!
```

Configure network settings

To configure SERVICE_HTTP_PORT follow these steps:

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to `SERVICE_HTTP_PORT`.
3. Set the preferred port number.

Example

```
SERVICE_HTTP_PORT=6611
```

Configure SERVICE_EXTERNAL_HOST_URL:

A production service must be accessible via official domain name, so it can be accessed from other computers. See section "Configure reverse proxy setup".

HTTPS/TLS support

While it is possible to use TLS with SignDoc directly, it is generally recommended to use a reverse proxy to offload the TLS connections. This reduces the load and provides more flexibility for hosting and maintaining the SignDoc application.

To enable HTTPS/TLS the following configuration changes must be done:

1. Edit the file `INSTALLDIR\service_configuration.properties`.
   Use `https://` for the SERVICE_EXTERNAL_HOST_URL setting.
   Example
   `https://localhost:${SERVICE_HTTP_PORT}`
2. Edit the file `INSTALLDIR\_conf_templates\service_configuration.properties`.
   - Comment the default `http` connector (as described in the documentation notes of the file).
   - Uncomment and configure the `https` connector (as described in the documentation notes of the file).
     - By default the `https` connector will use a self-signed certificate that can only be used for test purposes.
     - To use an individual and trustworthy certificate, at least keystoreFile, keystorePass, keyAlias must be adjusted.
     - It is recommended to use a PKCS#12 cert store (*.pfx, *.p12) that contains a private key as well as all required certificates.
3. Apply the configuration and restart the service using `service_up.cmd`.

Configure reverse proxy setup

In a reverse proxy scenario it is important to configure the application URLs correctly.

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to SERVICE_EXTERNAL_CONTEXT_URL.
   This is the context URL that is used to access the application. This URL must be reachable from anywhere and is part of the signing links that are sent via email.
3. Change the values if required.

Example

```
SERVICE_EXTERNAL_CONTEXT_URL=https://signdoc.mydomain.com
```

KTA integration

As of SignDoc Standard 2.1.0 the KTA (Kofax TotalAgility) connection is individually defined per account/tenant in the SignDoc Standard Manage Client or SignDoc Standard Administration Center. See Related documentation:

- *SignDoc Standard Administration Center Help*, section "Plugins"
- *SignDoc Standard Administrator's Guide*, section "KTA state change plugin"

LDAP integration

LDAP (or Active Directory) can be used to authenticate SignDoc Standard users in the Manage Client.

Configure LDAP settings in `INSTALLDIR\service_configuration.properties` (section `# LDAP integration`) as described in chapter Authentication LDAP.

Note It's recommended to do the configuration in `INSTALLDIR\service_configuration.properties` instead of the cirrus.properties file.

See also Advanced configuration - Option 2

Advanced configuration

General

To configure more features of SignDoc Standard, there are 2 options:

Option 1 - service_configuration.properties (generally recommended)

Amend the file `INSTALLDIR\service_configuration.properties` with additional settings.

Option 2 - cirrus.properties (backwards compatible and for special configurations)

1. Edit the file:
   `INSTALLDIR\_conf_templates\cirrus.properties`
   The default location is:
   `INSTALLDIR\bin\signdoc_home\conf\cirrus.properties`
2. Apply the configuration by executing `INSTALLDIR\service_up.cmd`.

   Note The configuration defined in `INSTALLDIR\service_configuration.properties` takes precedence over settings with the same name in cirrus.properties.

Special configuration settings

The following configuration setting should always be configured in cirrus.properties and not in service_configuration.properties:

- ldap.user.search.filter
  Example
  ```
  ldap.user.search.filter=(&(objectClass=person)(|(cn=John Doe)
  (mail=john.doe@example.com)))
  ```
- jdbc.password
  The jdbc.password setting can consist only of ASCII characters.

  Important If characters outside the ASCII character set are being used, the server cannot start up.

  This restriction does not apply, when the password is declared as encrypted configuration property (see next chapter).

Encrypted configuration properties

It is possible to create symmetrically encrypted configuration data. This is a pragmatic approach for SignDoc Standard to protect sensitive configuration data. By default the data will be encrypted using an AES-256 key. Configuration is applied using service_up.cmd.

1. Delete or comment the property_name from service_configuration.properties, otherwise the encrypted value will not be used.
2. Double-click the command service/speh.cmd.
3. Enter in the input field the configuration to encrypt (e.g. the jdbc password).
4. The next dialog displays the encrypted data.
5. The next dialog displays the configuration entry that must be added to `INSTALLDIR\_conf_templates\cirrus.properties`. Must be replaced with the correct property name.
6. Restart service with service_up.cmd.

Step by step example for configuration property jdbc.password.

1. Delete or comment the jdbc.password setting from `INSTALLDIR\service_configuration.properties`.
2. Double-click the command service/speh.cmd.
3. Enter "1234" as password.
4. The next dialog shows 2682e444e7935f2af0b9e20a4266e29b.
5. The next dialog shows .encrypted_string_256=2682e444e7935f2af0b9e20a4266e29b. Add jdbc.password.encrypted_string_256=2682e444e7935f2af0b9e20a4266e29b to `INSTALLDIR\_conf_templates\cirrus.properties`.
6. Restart the service with service_up.cmd.

Control database migrations

If SignDoc Standard is run in a clustered environment, it makes sense to disable the automatic database migrations. See Database migration.

1. Open `INSTALLDIR\service_configuration.properties` in a text editor.
2. Navigate to section `# Database migrations`.
3. Set cirrus.migrations.enabled to false.

Example

```
# disable automatic migrations
cirrus.migrations.enabled=false
```

Tune Java memory settings

1. Open the file `INSTALLDIR\_conf_templates\SignDocStandard.xml` with a text editor.
2. Look for the following lines and change the values to your needs:

```
<!-- minimum Java HEAP -->
<argument>-Xms1024m</argument>
```

```
<!-- maximum Java HEAP -->
<argument>-Xmx2048m</argument>
```

3. After having changed one of these values, service_up.cmd must be executed to apply the new values.

Use SignDoc Standard in a clustered environment

SignDoc Standard can be used in a clustered environment. A typical use case is load balancing.

Starting with SignDoc 2.2.0 the application server is stateless and can therefore be used with simple round-robin load balancing.

If multiple instances should be installed on the same operating system, it must be ensured to use a different HTTP/TCP port for each instance. See Production setup, section "Configure network settings". The default HTTP/TCP port for SignDoc Standard is 6611.

Note If the server.xml file must be changed, it should be done in the file `INSTALLDIR\_conf_templates\server.xml`. Execute service_up.cmd to apply the change. See Content of the SignDoc Standard ZIP archive, section "Tools".

Configuration backup

For a backup of the SignDoc Standard instance configuration it is sufficient to backup the files and directories listed below. Such a backup set can be applied 1:1 to a new SignDoc Standard installation (e.g. for additional instances in a cluster). If a SignDoc Standard update is done make sure to check Upgrade SignDoc Standard first. It is also possible to simply backup the complete directory.

Required

- `INSTALLDIR\service_configuration.properties` is the main configuration file of the SignDoc Service.

Optional

- `INSTALLDIR\_conf_templates` contains the potentially modified configuration templates cirrus.properties, logging.properties, server.xml. If none of these files were modified, there is no need to backup them.
- `INSTALLDIR\signdoc_home\conf` contains basic configuration. If this was not customized manually, there is no need to backup the files.
- `INSTALLDIR\signdoc_home\fonts` contains the font configuration. If this was not customized manually, there is no need to backup the files.
- `INSTALLDIR\signdoc_home\bin\db` if existing, this directory contains the file based default database. If this database is not used, there is no need to backup the files.

Advanced information

View service details

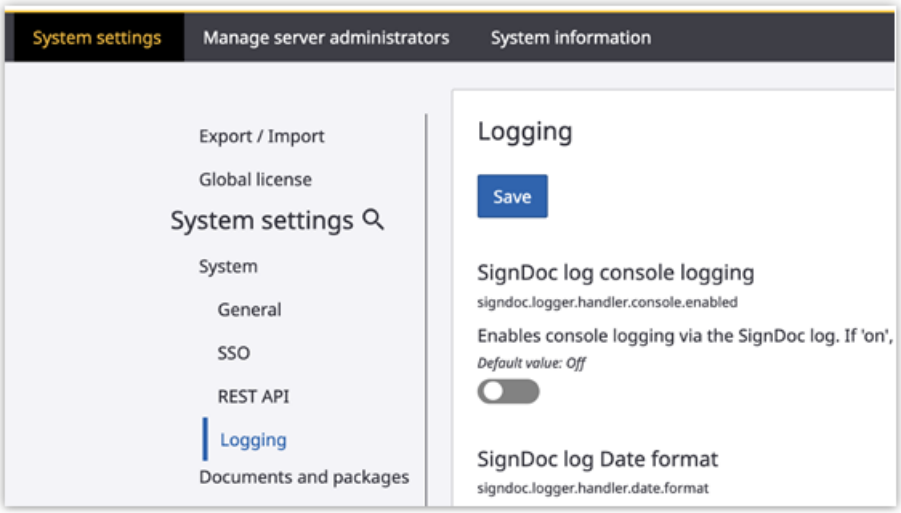
To view a detailed service information double-click

`INSTALLDIR\service\bin\SignDocStandard.exe`

It is not recommended to change settings with this tool, since they are being overwritten whenever service_up.cmd is executed. See Content of the SignDoc Standard ZIP archive, section "Tools" and Advanced configuration.

Logging

Since SignDoc 3.0.0, logging is configured in the SignDoc Administration Center.



There is also a configuration file (`INSTALLDIR\signdoc_home\conf\signdoc-logger.properties`) that is only considered, if configuration options in the Administration Center are not changed. It is recommended to use the configuration options of the Administration Center, since configuration changes are applied without having to restart the service.

The SignDoc Standard Windows service uses the file `INSTALLDIR\signdoc_home\conf\tomcat-logging.properties` for the logging configuration file of the Tomcat application server. Consult the Tomcat configuration if changes should be made.

Prepare Microsoft SQL database

To be able to use SignDoc Standard for production usage, it is required to set up a database and database user that can be used by SignDoc Standard. This can either be achieved using the GUI tools provided by MS-SQL or with a T-SQL script.

Example T-SQL script

```
CREATE DATABASE signdoc
GO
USE signdoc
GO
CREATE LOGIN signdoc WITHPASSWORD='2beChanged!'
GO
CREATE USER signdoc FOR LOGIN signdoc
GO
ALTER ROLE db_owner ADD MEMBER signdoc
GO
```

Monitoring application using JMX

VisualVM in conjunction with JMX can be used to monitor the process and to create a heap dump.

These system properties of the SignDoc Standard process must be set to enable the Java process to open a JMX port. Please note that the connection described below is not secured.

```
-Dcom.sun.management.jmxremote=true
-Dcom.sun.management.jmxremote.port=9090
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.authenticate=false
-Djava.rmi.server.hostname=127.0.0.1
```

For version 2.2.1.2.0.67 or newer, it should be sufficient to perform the following steps:

1. Stop the service with `service_remove.cmd`
2. Add these argument lines to `_conf_templates/SignDocStandard.xml` just before the line:

   ```
   <argument>-Dcom.sun.management.jmxremote=true</argument>
   <argument>-Dcom.sun.management.jmxremote.port=9090</argument>
   <argument>-Dcom.sun.management.jmxremote.ssl=false</argument>
   <argument>-Dcom.sun.management.jmxremote.authenticate=false</argument>
   <argument>-Djava.rmi.server.hostname=127.0.0.1</argument>
   ```
3. Restart the service with `service_up.cmd`
4. Start VisualVM on the same machine and attach it to the service using this JMX connection: localhost:9090

Additional information

- JMX documentation: https://docs.oracle.com/en/java/javase/11/management/monitoring-and-management-using-jmx-technology.html#GUID-6F896ED5-D517-4825-869B-BB045AF51A92
- VisualVM: https://visualvm.github.io/

Installation on Tomcat without using the provided service installer

SignDoc can be installed on an already existing Tomcat server.

See the *Technical Specifications* document available on the Kofax SignDoc 3.0.0 product documentation page for information about supported versions of Tomcat server and Java Runtime server you must use for the installation.

Follow these steps:

1. Unpack the cirrus.war file manually in `%CATALINA_HOME%\webapps` so that there is a cirrus context directory.
2. Copy the following jar files from the `service\lib` directory to the `lib` directory of the Tomcat directory (usually CATALINA_HOME):
   - splm2jni-*.jar
   - SPSignDoc-*.jar
3. Make sure that the directory with the native libraries `service\lib\native\Win64` is in the PATH of the Tomcat process.

4. Make sure that there are no older SignDoc native libraries in the PATH of the Tomcat process.
5. Copy the `signdoc_home` directory to the desired location. This location must be readable and writable for the Tomcat process.
6. Copy `_conf_templates\cirrus.properties` to the `signdoc_home/conf` directory and configure it as desired.
7. To allow big file uploads it might be required to adjust the maxPostSize attribute of the <Connector> element of Tomcat's server.xml.
8. Start the Tomcat service with the following system properties.
   Required properties:

```
-DCIRRUS_HOME=<path_to_signdoc_home_directory>
-DSERVICE_EXTERNAL_HOST_URL=<generally_accessible_url_to_root_context>
```

   Example:

```
-DCIRRUS_HOME="c:/signdoc_home"
-DSERVICE_EXTERNAL_HOST_URL=http://mysigndocserver.example.com
```

Installation on other JEE compliant application servers

Installation on other JEE compliant servers is not supported.

Additional information

Device Connector - Certificate provider plugin

To be able to use a certificate provider plugin with SignDoc Standard, it must be recompiled due to improved encryption standards.

In SignDoc Standard 2.0.x it was required to use these RSA parameters:

- Padding algorithm: PKCS1

Since SignDoc Standard 2.1.0 it is required to use these RSA parameters:

- Padding algorithm: OAEP
- Message digest: SHA-1
- Mask generation function: MGF1

Install and configure Microsoft SQL Server

For production purposes, SignDoc Standard requires a database server to be able to store application data. Currently Microsoft SQL Server is supported. While installing the database server, use the suggested defaults unless noted otherwise.

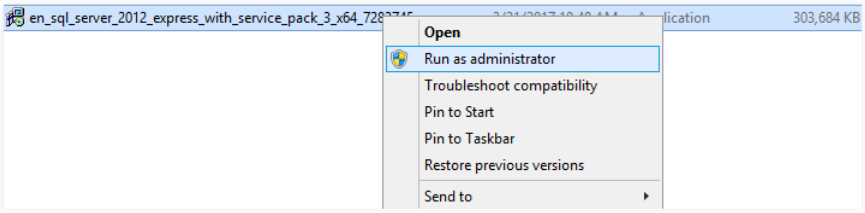
For this guide Microsoft SQL Server 2012 will be used as database service.

Database installation

Example

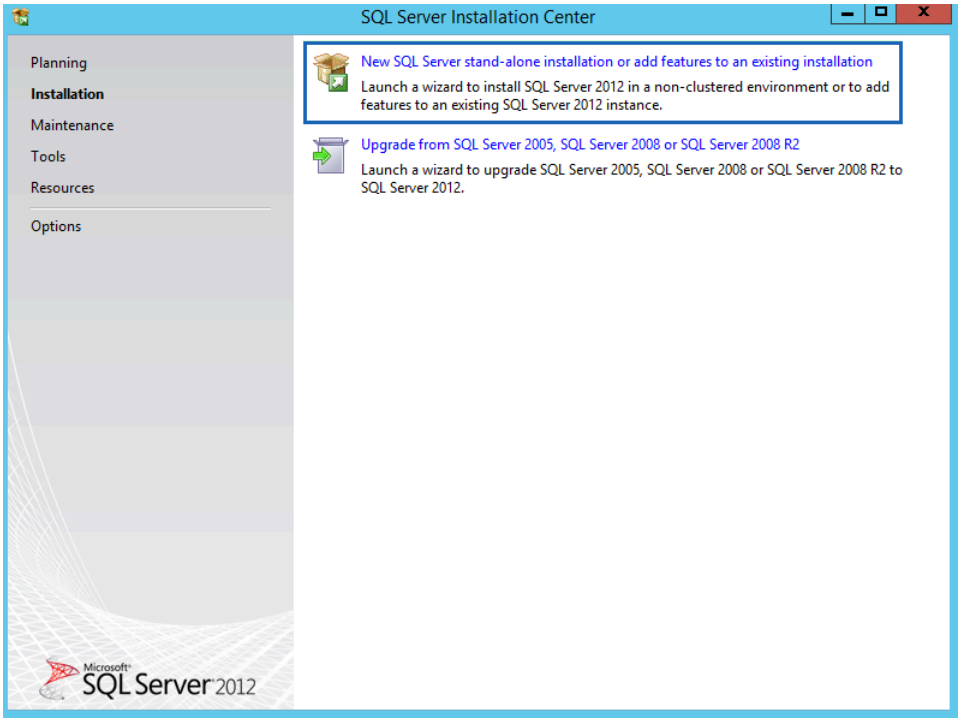
Microsoft SQL Server 2012 Express
(en_sql_server_2012_express_with_service_pack_3_x64_7283745.exe)

1. Run the installation with administrator rights (if required).



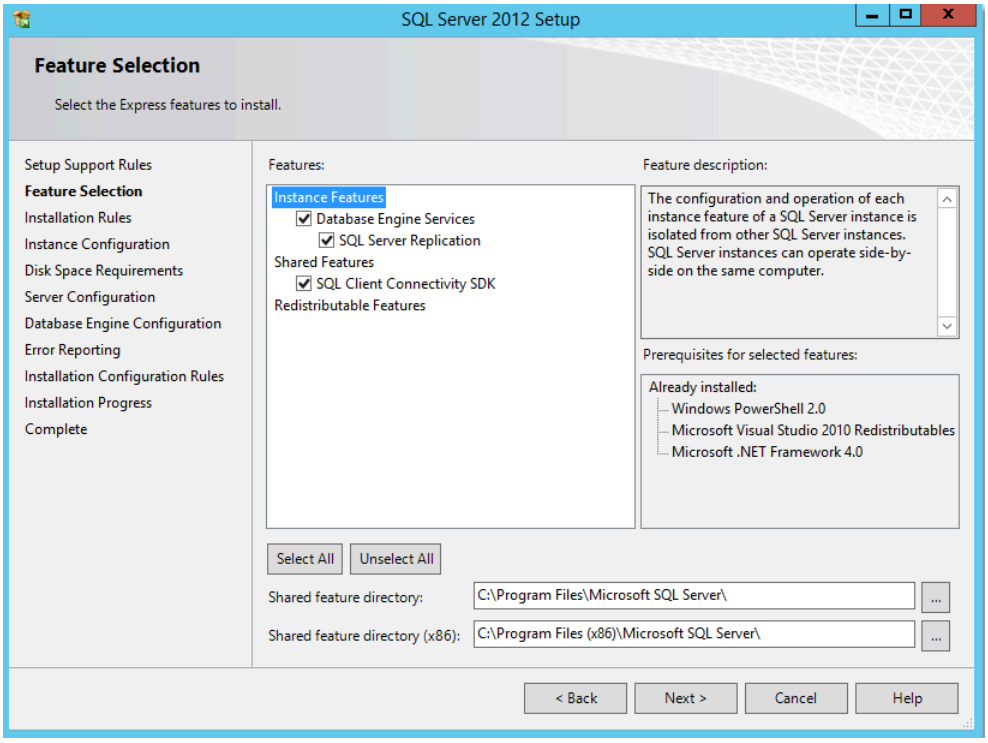
The **SQL Server Installation Center** window appears.

2. From the **Installation** menu select **New SQL Server stand-alone installation or add features to an existing installation**.

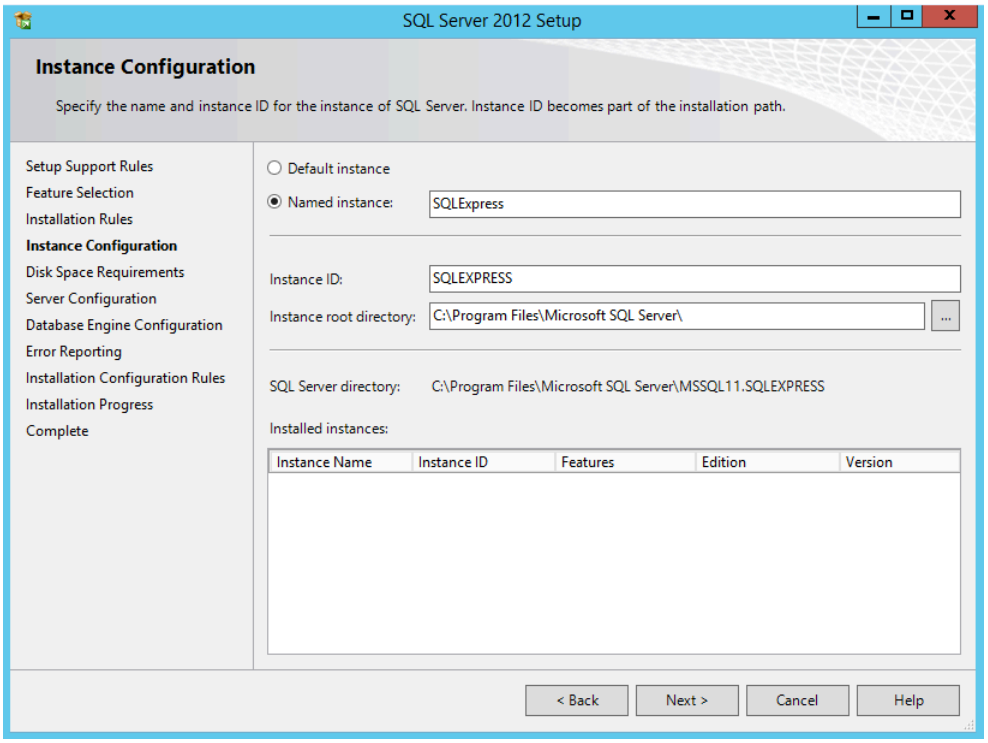


After following the installation steps the **SQL Server 2012 Setup** window appears.

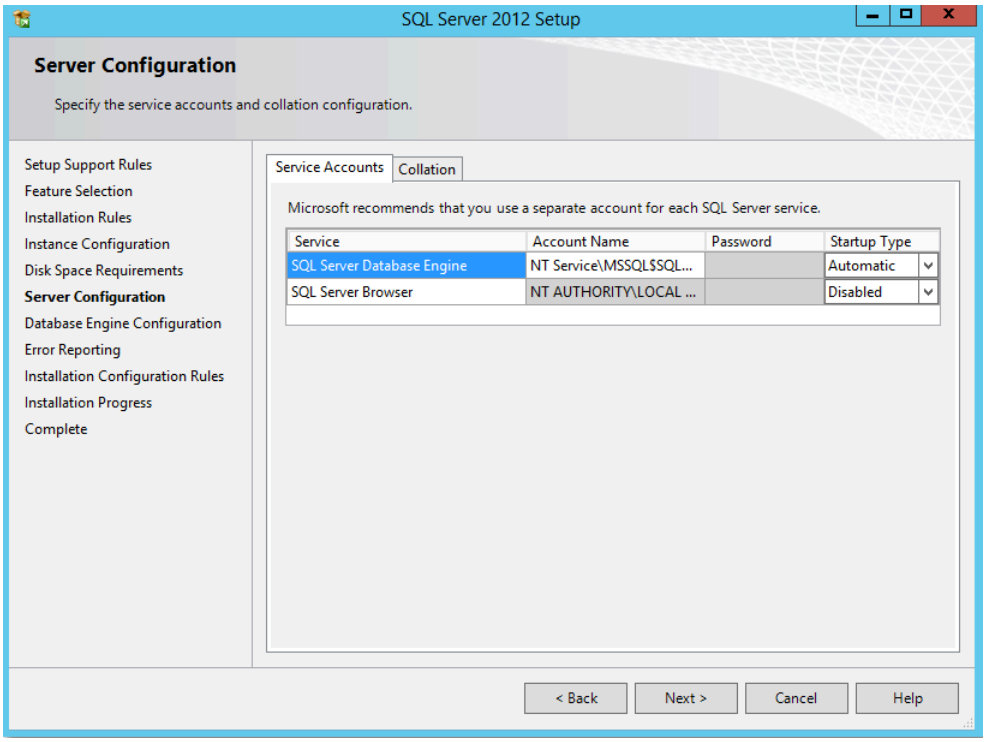
3. Click **Feature Selection** and select all available features.



4. Click **Instance Configuration**.

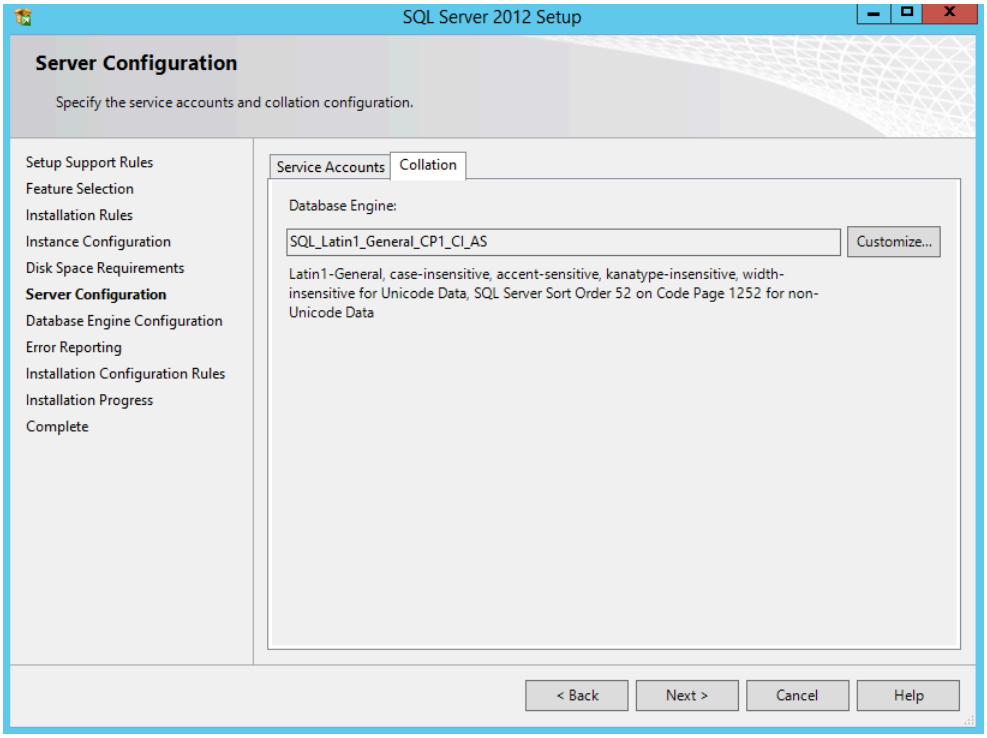


5. Then click **Server Configuration**.



6. Click **Collation** tab.

Important Choose a collation which is case-insensitive and also accent-sensitive (e.g. Latin1_General_CI_AS, which is the default for Microsoft SQL Server). This ensures that no duplicates are stored for particular data like email addresses and object identifiers.



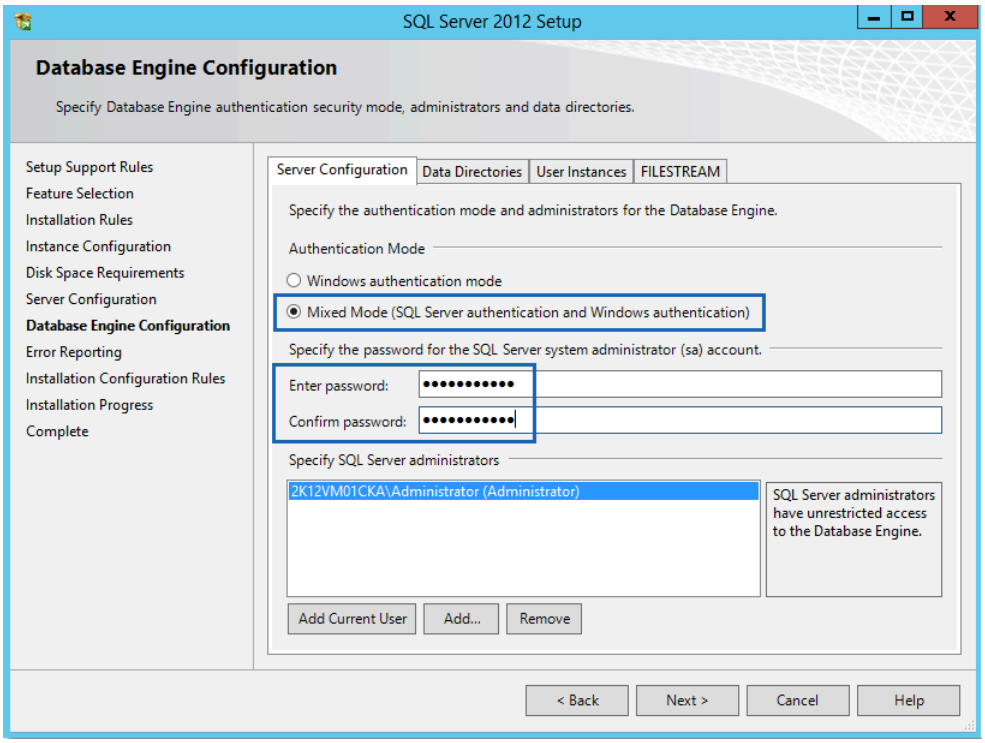
Note The application will not startup if the collation is not suitable. An IllegalStateException("The database collation '<collationName>' is not suitable for the application.") is written to the log file in that case.

Database engine configuration

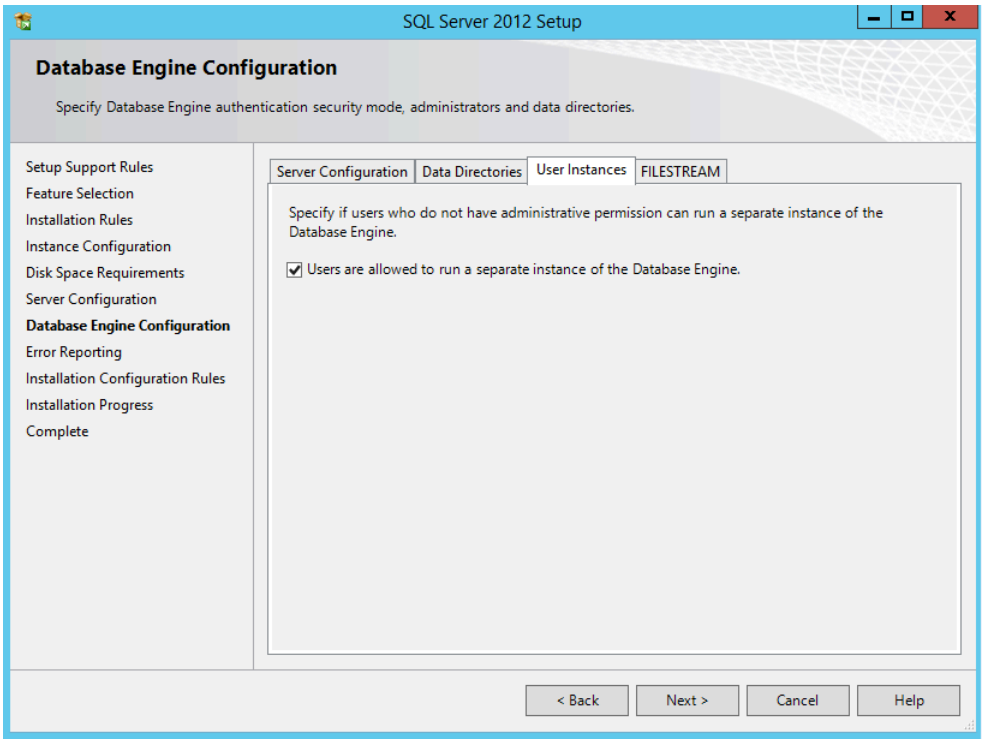
Example

Microsoft SQL Server 2012 Express
(en_sql_server_2012_express_with_service_pack_3_x64_7283745.exe)

1. In the **SQL Server 2012 Setup** window, click **Database Engine Configuration**.
   With the **Server Configuration** tab opened, select the **Mixed Mode** option button.
   Then define the password for the system administrator (sa) user. For this guide **2beChanged!** will be used.



2. Click the **User Instances** tab .



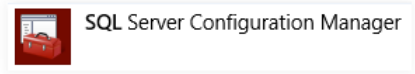
3. Finish the installation.

Set the preferred TCP port for connections

Make sure that the server listens on the preferred TCP port for connections. For this guide port 1433 will be used.

Example

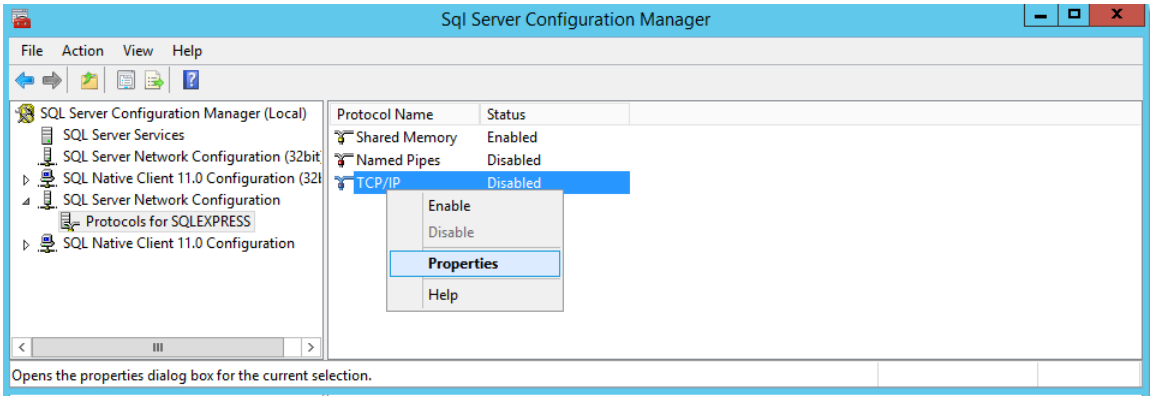
1. Start the **SQL Server Configuration Manager**



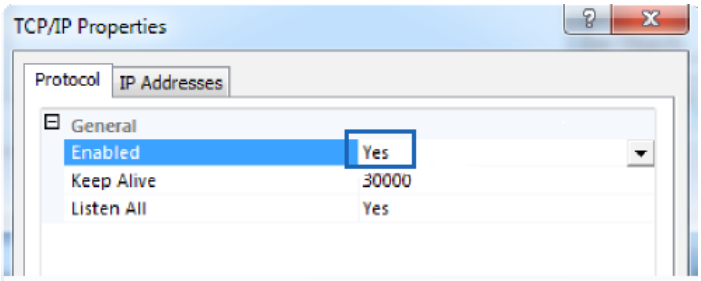
   and run the program as administrator.

2. Select **SQL Server Network Configuration** > **Protocols for SQLEXPRESS**.

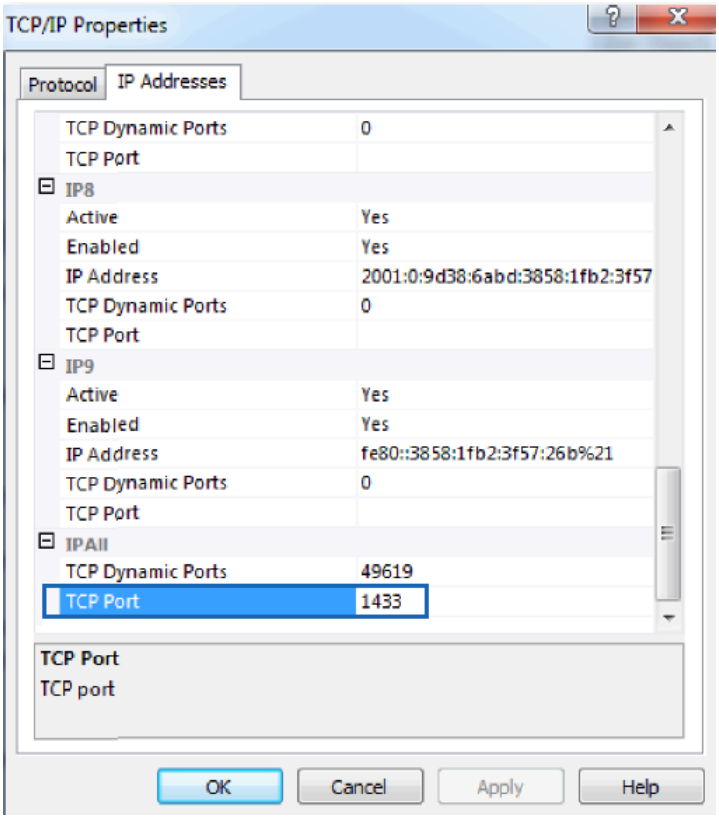
3. Right-click **TCP/IP** and select **Properties**.



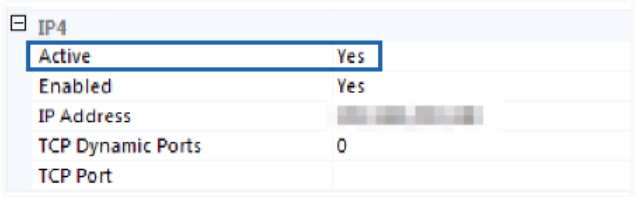
4. Select the **Protocol** tab, set the property **Enabled** to **Yes** and confirm the changes.



5. Select the **IP Addresses** tab, scroll down to section **IPALL** and enter the value1433 for the **TCP Port**.



6. Make sure to activate the IP Addresses the server should listen on by setting **Active** to **Yes**: It's possible to activate all first and limit them later to the real needs.



   Apply changes with **OK**.

7. Stop and start service.

Create an empty or new database instance

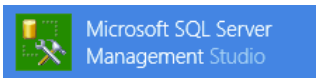
For this guide **signdoc** will be used.

A new database instance can be created using the SQL Server Management Studio (SSMS).

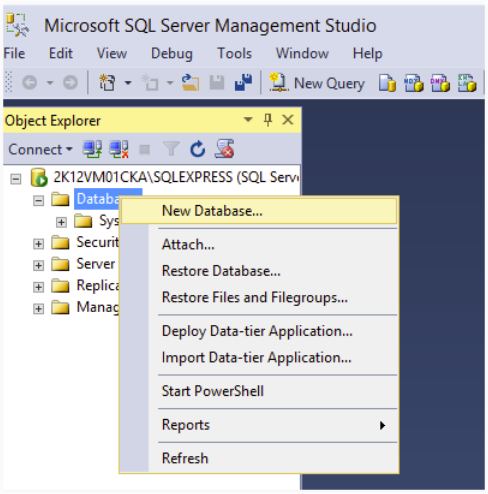
Example

1. Download SSMS from Microsoft and install the program with administrator rights.

2. Start SSMS

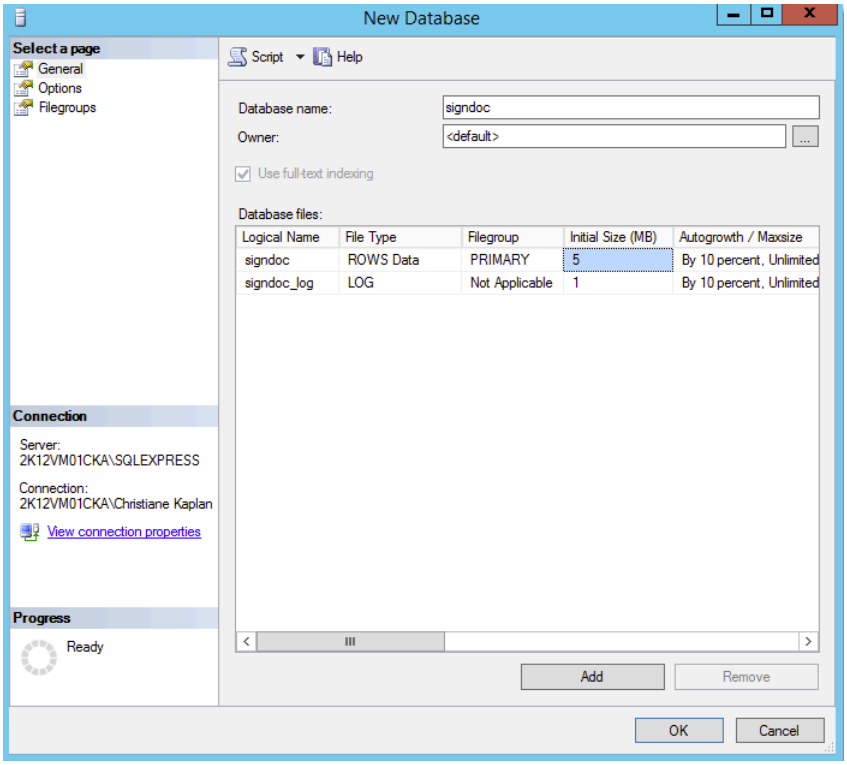


3. Connect to the server.
4. To create a new database, right-click **Database** and select **New Database**.

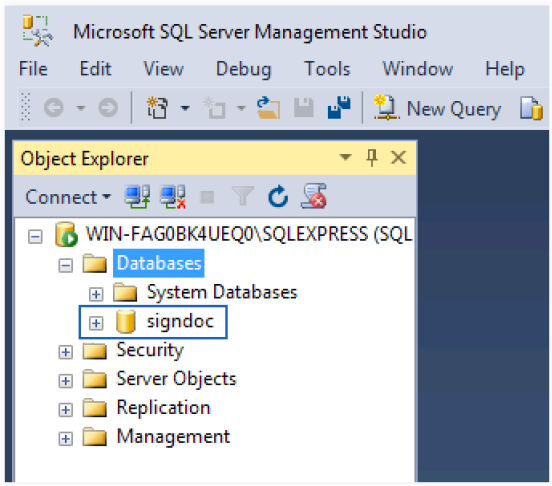


The **New Database** window appears.

5. On the **General** page, enter a name for the database. For this guide **signdoc** is used as database name.



6. After confirming the input, the new database **signdoc** is listed under **Databases**.



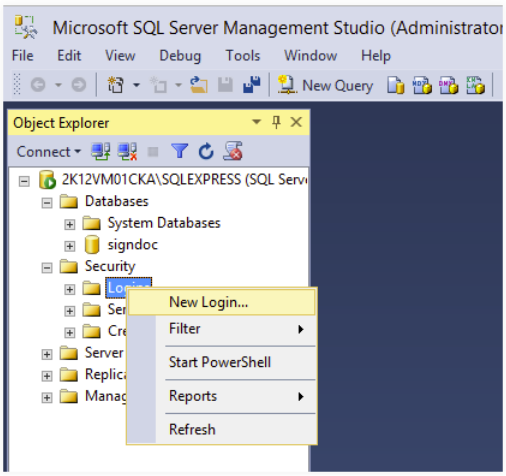
Create a new database user

The new database user is a member of the role **db_owner** of the **signdoc** database and uses "SQL Server authentication".

For this guide **signdoc** will be used also as user name. The new user requires also a password – make sure to unselect “”.

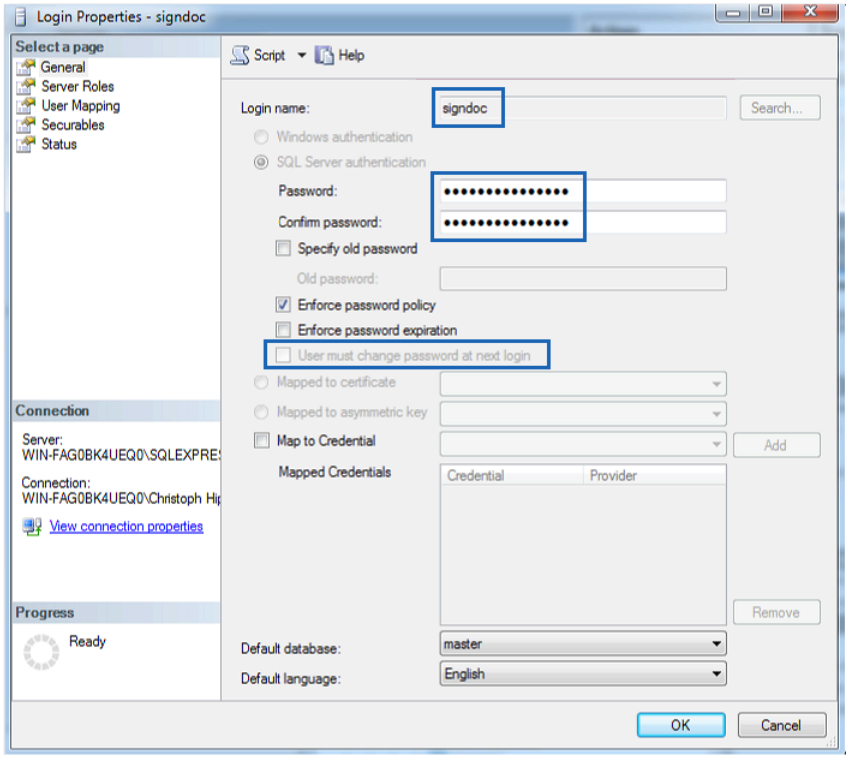
For this guide **2beChanged!** will be used.

1. To create a new login, click **Security**, then right-click **Logins** and select **New Login**.



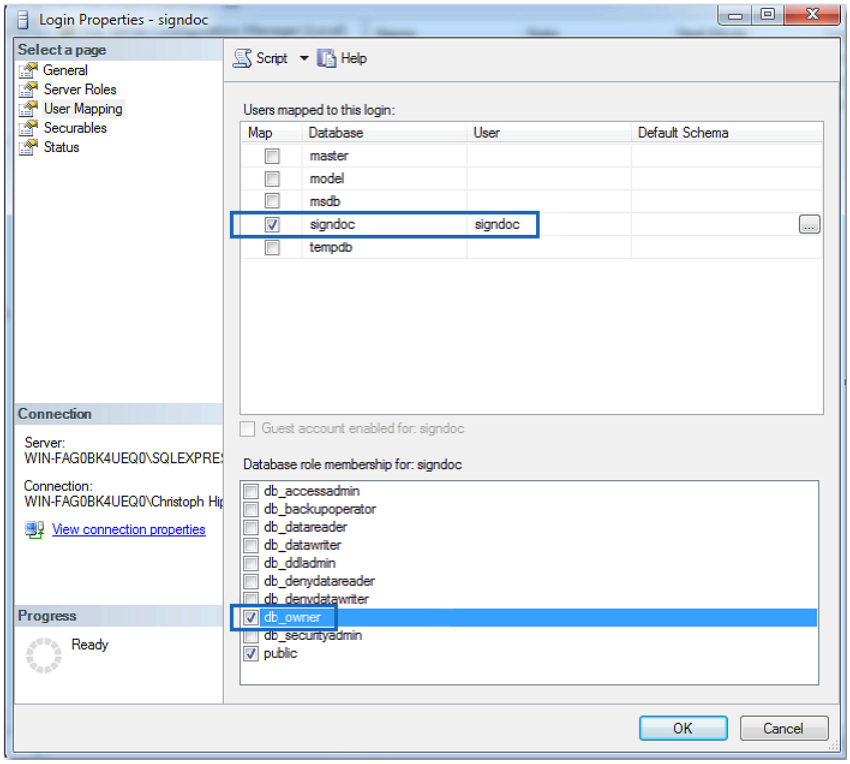
The **Login Properties** window appears.

2. Go to **General** pane and enter the according information:



Note Ensure that the check box is not selected for "User must change password at next login".

3. Go to **User Mapping** pane and select database **signdoc** and role membership:



Administration Center

Open the **Administration Center** to create accounts and users:

```
http[s]://<server>/cirrus/admin-center
```

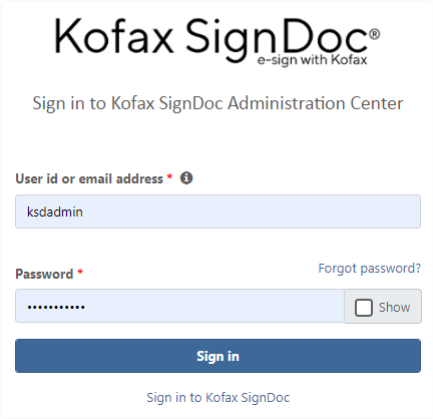
For this guide this is (see service_configuration.properties in chapter Production setup):

```
http://<SERVICE_EXTERNAL_HOST_URL><SERVICE_HTTP_PORT>/cirrus/admin-center
```

Example

When <SERVICE_EXTERNAL_HOST_URL> is localhost and SERVICE_HTTP_PORT is 6611 then the URL is

```
http://localhost:6611/cirrus/admin-center
```



To create accounts and users see Related documentation, *Kofax SignDoc Standard Administration Center Help*.

Deployment on Linux

If SignDoc is to be deployed under Linux, it is recommended to use Docker. SignDoc provides several sample Dockerfiles (in the docker directory). These Dockerfiles contain documentation and describe the basic installation procedure for a Linux environment. These files can also be used and amended/adapted for deployment, if required/desired.

Installation in Docker environment

SignDoc Standard can be run in Docker Linux or Windows container.

Note Additional information can be found in the `docker` directory of the SignDoc Standard ZIP archive.

Content of the docker directory

The `docker` directory in the SignDoc Standard ZIP archive consists of tools and sub directories with example configurations.

Tools

- **build_images.cmd** builds the required Windows Docker images.
- **build_images.sh** builds the required Linux Docker images.
- **start_server.ps1** starts SignDoc Standard as service inside Docker Windows container.
- **start_server.sh** starts SignDoc Standard inside Docker Linux container.

Directories

- **01_base_image** is an example of base configuration for running SignDoc Standard. Also contains SignDoc Standard Docker files that are used in other samples.
- **02_high_availability** is an example of how to run SignDoc Standard behind a load balancing reverse proxy. It is possible to scale SignDoc Standard instances transparently and independently of other services without breaking the client sessions.
- **03_high_availability_ssl** is an example of how to run SignDoc Standard in HTTPS configuration. This is an extension of 02_high_availability example.
- **04_env_variables** is an example of SignDoc Standard configuration using environment variables. There is no need to rebuild the Docker image to apply new SignDoc Standard service configuration properties. Windows Docker containers only.
- **mssql_database** contains everything you need to build Docker image of Microsoft SQL Server with prepared SignDoc Standard database.
- **plugins** contains extension files. You can implement your own logic for starting SignDoc Standard inside the Docker container. In this case, all additional files must be put in this directory. For instance, 04_env_variables example has additional configuration checks for Mail and SQL servers. The PowerShell scripts used are located in this directory. Windows Docker containers only.

How to run

There are different possibilities to run SignDoc Standard in Docker container. Follow the recommendation on the official Docker website and your preferred orchestration tools.

As a basic example, it can be run with Docker CLI:

```
docker run -init-d -p 8080:8080 -name=signdoc_standard_basicsigndoc_standard
```

Note Due to a bug in Docker Build Kit, it might be required to do 'docker login' before building the SignDoc images. See also: https://github.com/moby/buildkit/issues/1271

Chapter 3

Advanced installation

Hardening a SignDoc installation

Hardening a SignDoc Setup means to apply best practices and security measures to a SignDoc installation for production usage.

Reverse Proxy

It is recommended to run SignDoc behind a reverse proxy, since this provides an additional abstraction layer between the application server and the users. The reverse proxy

- can act as TLS/SSL endpoint for the system, what simplifies deployment and maintenance.
- is usually capable of load-balancing requests to multiple SignDoc installations what improves the high-availability of an installation.
- can be configured to set specific HTTP header attributes to minimize common known attack vectors like e.g. XSS.

HTTP Headers

Additional HTTP response headers can be set or added using the configuration options security.http.response.headers.set or security.http.response.headers.add of the Administration Center.

Make sure to set these HTTP headers concerning security:

```
X-Frame-Options "SAMEORIGIN";
X-Content-Type-Options "nosniff";
X-XSS-Protection "1; mode=block";
```

Turn off server tokens

Application servers and reverse proxies often announce their identity and version via server tokens in the HTTP response. This information is superfluous an should be avoided.

Block too large uploads

The reverse proxy should reject upload requests that are too big. But it must also allow uploads that are justified. Some reverse proxies have a too small upload limit that must be increased. The limit must be at least 33%, better 50%, larger than a single to be uploaded document can be in size.

Example: If the largest acceptable document size is 60 MByte, the upload limit (i.e. maximum body size) 90 MByte (+50%) would be a safe limit.

TLS/SSL

When the reverse proxy acts as TLS endpoint, it must reject unsafe or outdated SLL protocols or cipher versions. Besides this, the HTTP protocol should be disabled.

Block access to URIs

Some resources are not needed for a typical production environment and can be safely blocked:

- /cirrus/swagger
- /cirrus/api-docs
- /cirrus/static/swagger-ui

Example configurations

The following files show an example configuration for a Nginx web server.

File: my_proxy.conf

```
server_tokens off;
client_max_body_size 100m;
```

File: default

```

add_header X-Frame-Options "SAMEORIGIN";
add_header X-Content-Type-Options "nosniff";
add_header X-XSS-Protection "1; mode=block";

location cirrus/swagger {
    return 404;
}
location cirrus/api-docs {
    return 404;
}
location cirrus/static/swagger-ui {
    return 404;
}
location /cirrus/swagger {
    return 404;
}
location /cirrus/api-docs {
    return 404;
}
location /cirrus/static/swagger-ui {
    return 404;
}
```

Context Security Policy (CSP)

The following CSP related HTTP headers can be set in a reverse proxy to enable Context Security Policy for the Manage and Signing Client.

Manage Client and Signing Client combined (URI: <SignDoc Standard context, usually /cirrus>)

If you want to tailor the CSP for the specific clients one can do it like this:

```
Content-Security-Policy: default-src 'none'; style-src 'self' 'unsafe-inline'; script-
src 'self' 'unsafe-inline' 'unsafe-eval'; img-src 'self' data: blob:; frame-src 'self';
 connect-src 'self' localhost:6613; font-src 'self'; media-src 'self'; object-src
 'none'; form-action 'self'
```

Manage Client (URI: /cirrus/static/mc)

```
Content-Security-Policy: default-src 'none'; style-src 'self' 'unsafe-inline'; script-
src 'self' 'unsafe-inline' 'unsafe-eval'; img-src 'self' data: blob:; frame-src 'self';
 connect-src 'self'; font-src 'self'; media-src 'self'; object-src 'none'; form-action
 'self'
```

Signing Client (URI: /cirrus/static/sc)

```
Content-Security-Policy: default-src 'none'; style-src 'self' 'unsafe-inline'; script-
src 'self' 'unsafe-inline' 'unsafe-eval'; img-src 'self' data: blob:; frame-src 'self';
 connect-src 'self' localhost:6613; font-src 'self'; media-src 'self'; object-src
 'none'; form-action 'self'
```

Authentication LDAP

Important SignDoc Standard before version 2.1.0 was mainly configured with the configuration file cirrus.properties. This file moved to `INSTALLDIR\_conf_templates\cirrus.properties` with version 2.1.0.

Since SignDoc Standard 2.1.0, it is highly recommended to use the file `INSTALLDIR\service_configuration.properties` (instead of cirrus.properties) whenever it is required to configure SignDoc with a configuration file. Configurations set in this file are applied as Java system property and have therefore highest precedence.

General

This section describes the specification of the basic authentication via LDAP provided with SignDoc Standard 3.0.0.

Prerequisites

The LDAP support in SignDoc Standard is not usable and not supported in a multi-tenant environment. SignDoc Standard maps LDAP user entries to SignDoc Standard users by the unique email address. A SignDoc Standard multi-tenant installation requires email addresses only to be unique within a single account.

The user's id is defined by the setting ldap.user.mail.attr. It must represent the email address of the user.

Note This is not a standard LDAP attribute and may have to be added by a system administrator.

Activating LDAP

LDAP support is activated by setting the property authentication.provider to the value LDAP,CIRRUS.

Note Activate LDAP only after you have created the single account.

Auto creating a user

If a user logs in and a user with the mail address received from LDAP does not exist, a user is created automatically in SignDoc Standard. SignDoc Standard maps LDAP attributes to SignDoc Standard user

attributes. Each name of an LDAP attribute has a default value but can be customized by a SignDoc Standard property:

SignDoc Standard property	Default value	Mapped to this SignDoc Standard user attribute	Constraints
ldap.user.name.attr	cn	user name	
ldap.user.mail.attr	mail	OID	(mandatory setting) Must not already exist as a SignDoc Standard user. The email address must match this regular expression: ^[A-z0-9\\._%+\\-]+@[A-z0-9\\.\\-_]+
ldap.user.uid.attr	uid		(optional setting) Must not already exist and match the SignDoc Standard validation rule for OID (regex ^[a-zA-Z0-9_\-]+$)

Note If one of the above constraints are violated SignDoc Standard will report an error and LDAP integration will not work reliably.

All values can be customized by the INSTALLDIR\service_configuration.properties file:

- **authentication.provider** (string): Activates LDAP support. Must be ‘LDAP,CIRRUS’.
- **ldap.url** (string): The URL to connect to an LDAP server.

  Important It is strongly recommended to use the ldaps protocol because passwords are send in plain text over the network. A suitable certificate must be installed at the server in that case.

  Example

  ```
  ldap://ad.kofax.com:389/dc=kofax,dc=de
  ```
- **ldap.manager.dn** (string): The manager DN. If your LDAP implementation does not allow anonymous access a suitable user and password must be defined here.

  Example

  ```
  uid=admin,ou=system
  ```
- **ldap.manager.password** (string): The manager password.

  Example

  ```
  ldap.manager.password=secret
  ```

  Omit manager dn and password for anonymous access.
- **ldap.userdn.patterns** (string): The value is a list of distinguished names (DN) separated by a colon.

  Note Because the field delimiter is the colon (':'), a DN containing colon(s) must be double-quoted. And a double-quoted DN must escape any double-quote sign with the escape character '\', should it be present in the DN.

  Example

  ```
  uid={0},ou=Users
  ```

  The key '{0}' will be substituted with the login name.

- **ldap.user.search.base** (string): The base DN for starting a search.
  Example
  ```
  dc=kofax,dc=de
  ```
- **ldap.user.search.filter** (string): A filter for the search (see RFC 2254)
  Example
  ```
  (cn=Babs Jensen)
  ```
- **ldap.user.name.attr** (string): The LDAP attribute which maps to a SignDoc Standard user name.Default: cn
  Example
  ```
  ldap.user.name.attr=cn
  ```
- **ldap.user.mail.attr** (string):
  The LDAP attribute which maps to a SignDoc Standard user email. Default: mail
  Example
  ```
  ldap.user.mail.attr=mail
  ```

Note Additional "Brute Force Authentication Prevention" is not implemented if LDAP Authentication is configured.

Chapter 4

SignDoc Authentication Module (SAM)

Purpose

The SignDoc Authentication Module (SAM) is required to support Single Sign-on (SSO) scenarios with SignDoc Standard (SDS). This version implements authentication using SAML2. Supported IDPs are okta (http://www.okta.com) and Active Directory Federation Services (ADFS).

Requirements

- From the IDP: IDP_METATDATA can be a URL or a local file
- From the SP: SP_ENTITY_ID and SSO_URL

See also Identity provider related configuration.

Installation

- Unpack the SDS zip and go to directory modules.
- Unpack the embedded
  `signdoc-auth-module-service-*-windows-zip`
  in a separate directory (SAM_DIR).
- Configure the service. See Configuration of SAM.
- Doubleclick on
  `SAM_DIR\service_up.cmd`
  After a few seconds the Windows Service "SignDoc Authentication Module" should appear in the Windows Service Panel.
- Configure SSO config options in SDS (optional) SDS SSO configuration options.

Usage with browser

The SP entrypoint of SAM is the / (root) context

For example

`http://localhost:6612`

If a browser opens this URL, SAM will try to authenticate the user as defined by the configuration.

Query parameters (optional)

- return_url: SAM will return to this URL, after a successful user authentication.

Configuration of SAM

Service configuration

The SAM Windows service is configured using the XML file `SAML_DIR\SignDocAuthModule.xml`

Note Because of XML restrictions, it is not possible to put 2 consecutive hyphen ("-") characters in an XML comment, we are using the - escape sequence to substitute a "-" character. This applies especially to the content of the argument elements that usually start with a double hyphen. This escape character can optionally be replaced for better readability with a simple hyphen ("-") character when uncommented.

General service configuration options

- **service.context.url** (required)
  `<argument>--service.context.url=http://localhost:6612</argument>`
  Set the value to the URL the SAM service can be accessed externally. One must be especially careful, if the SAM service is hosted behind a reverse proxy that does the SSL offloading.
  Default value: http://localhost:6612
- **server.port** (required)
  `<argument>--server.port=6612</argument>`
  Defines the TCP port the Service will use to listen on requests. Make sure that the port is not used by other services on the same system.
  Default value: 6612
- **cirrus.url** (required)
  `<argument>--cirrus.url=http://localhost:6611/cirrus</argument>`
  The URL to the SDS cirrus context. This is usually SERVICE_EXTERNAL_HOST_URL/cirrus. SERVICE_EXTERNAL_HOST_URL is the SDS config property of service_configuration.properties. See also SDS configuration documentation.
  Default value: http://localhost:6611/cirrus
- **cirrus.sso.default.account** (optional)
  `<argument>--cirrus.sso.default.account=REPLACE_WITH_REAL_VALUE</argument>`
  SAM can be configured to use a default account if the IDP user has no account attribute set - what is probably the normal case. It should be noted that this setting is optional, since the SDS server setting `cirrus.sso.create.user.account` fulfills the same purpose.
  Default value: REPLACE_WITH_REAL_VALUE

Identity provider related configuration

SignDoc users are identified via email address and SignDoc account. Therefore, the IDP SAML Name ID Format should be set to EmailAddress.

Disclaimer: This section describes the configurations that have to be done in the IDP application. The way of how this is to be done, might be changed by the IDP. Especially the screen shots might be out of date, if the IDP changes its user interface.

SAML2 specific configuration options

This section describes the common IDP SAML2 settings that are required to enable the functionality.

- **saml.idp.metadata.urlOrFile** (required)
  `<argument>--saml.idp.metadata.urlOrFile=%BASE%\idp-metadata.xml</argument>`
  This property provides access to the IPD_METADATA. There are 2 options to set the IPD_METADATA: URL or local file.
  - URL: The IDP_METADATA must be accessible via simple GET request. Advantage: The IDP_METADATA can be changed by the IDP without having to reconfigure SAM.
  - Local file: The IDP_METADATA (usually XML) is provided in a local file. The absolute filepath must be used. Example: C:\

  Default value: %BASE%\idp-metadata.xml (i.e. SAML_DIR\idp-metadata.xml)

  Note The default value is a configuration for an internal SignDoc Demo Service at okta. This service can not be used for any practical purposes, but can provide a quick check that the basic installation works.

- **saml.spEntityId** (required)
  `<argument>--saml.spEntityId=signdoc-demo-saml</argument>`
  This property defines the unique ID of the SAML2 service provider. It can be freely chosen, but must be compatible with the URI specification (https://tools.ietf.org/html/rfc3986).
  Default value: signdoc-demo-saml

  Note The default value is a configuration for an internal SignDoc Demo Service at okta. This service can not be used for any practical purposes, but can provide a quick check that the basic installation works.

User attribute mapping

It is possible to map SAML user attributes to SignDoc user attributes. This is especially useful for the user name when a user is automatically created in SignDoc.

saml.user.attribute.key.display_name

Optional setting. Is useful when users should be auto created. display_name (i.e. the full name) has precedence over first and last name. Default: signdoc_name or name (signdoc_name has precedence)

Azure AD Example:

```
<argument>--saml.user.attribute.key.display_name=http://schemas.microsoft.com/
identity/claims/displayname</argument>
```

saml.user.attribute.key.first_name & **saml.user.attribute.key.last_name**

Optional setting. Only useful when saml.user.attribute.key.display_name is not set. first_name and last-name - will only be considered, if saml.user.attribute.key.display_name is not set.

Defaults...

first name: signdoc_firstname or firstname (signdoc_firstname has precedence) last name: signdoc_lastname or lastname (signdoc_lastname has precedence)

Azure AD Example:

```
<argument>--saml.user.attribute.key.first_name=http://schemas.xmlsoap.org/
ws/2005/05/identity/claims/givenname</argument>

<argument>--saml.user.attribute.key.last_name=http://schemas.xmlsoap.org/
ws/2005/05/identity/claims/surname</argument>
```

saml.user.attribute.key.email

Optional setting. Usually not needed. The user's email attribute. Usually this is not required, since the principal is usually the users email but pointing this setting to a custom attribute would allow the user to use different email in SignDoc than in the IDP.

Default: signdoc_email or email (signdoc_email has precedence)

Azure AD Example:

```
<argument>--saml.user.attribute.key.email=http://schemas.xmlsoap.org/
ws/2005/05/identity/claims/name</argument>
```

saml.user.attribute.key.login

Optional setting. Usually not needed. If the user wants to login with the SignDoc user id, the attribute name can be specified here.

Default: signdoc_login or login (signdoc_login has precedence)

Azure AD Example:

```
<argument>--saml.user.attribute.key.login=http://schemas.xmlsoap.org/
ws/2005/05/identity/claims/signdoc_login</argument>
```

saml.user.attribute.key.account

Optional setting. Usually not needed. If the user wants to login always into a specific account, it can be specified here.

Default: signdoc_account or account (signdoc_account has precedence)

Azure AD Example:

```
<argument>--saml.user.attribute.key.account=http://schemas.xmlsoap.org/
ws/2005/05/identity/claims/signdoc_account</argument>
```

ADFS

To configure ADFS to work with SAM, the MMC snap-in for ADFS should be added. Add a Relying Party Trust with the following properties:

- In the Identifiers tab, add a Relying Party Identifier that will match the SP_ENTITY_ID.
- In the Endpoints tab, add the SSO_URL that will process SAML responses to the list, using POST for the Binding value.

To obtain the metadata provider XML, load this url in your browser:

```
https://myserver.domain.com/FederationMetadata/2007-06/FederationMetadata.xml
```

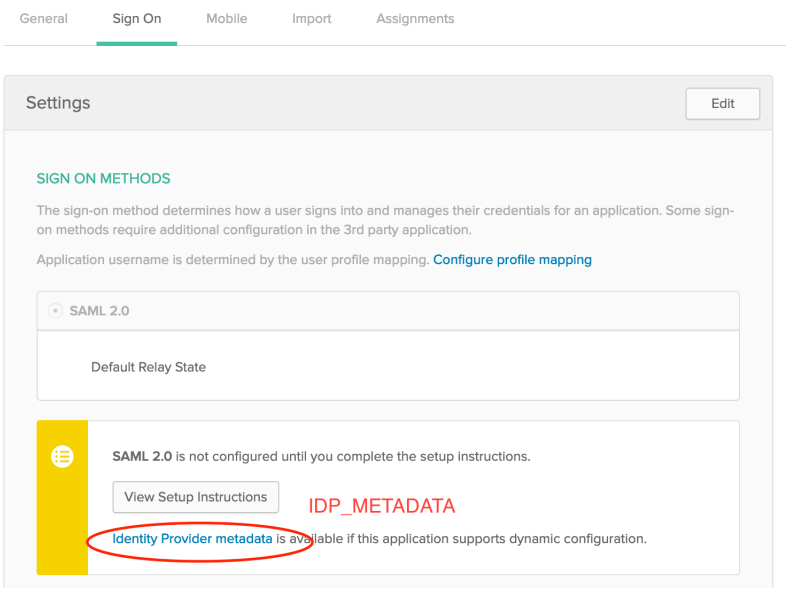
Okta

To configure Okta to work with SAM, create an SAML 2.0 application (one must currently use the "Classic UI") with the following settings:

- The Single sign on URL should be the URL that processes SAML responses (e.g. assertions).
- The Audience URI is set to the SP_ENTITY_ID.

SSO_URL and SP_ENTITY_ID in okta

IDP_METADATA in okta



SDS SSO configuration options

There are several configuration options in SDS that can modify the SSO behavior of SDS. See also the SDS documentation for further explanation.

- **cirrus.sso.auth.module.url**

  This is the same as service.context.url. Setting this config option enables SP_INITIATED_LOGIN from SDS. SDS will display a SSO login button on the login screen, if this information is set.

  Examples: http://localhost:6612, https://sso.mysigndocserver.com

  Default value: not set
- **cirrus.sso.autologin**

  If this setting is ON, SDS will try to do an SSO login automatically, whenever possible.

  Default value: OFF
- **cirrus.sso.create.user**

  If this setting is ON, SDS will try to create new users in SDS if a matching user account is missing for an authenticated IDP user in SDS. See also cirrus.sso.create.user.account.

  Default value: ON
- **cirrus.sso.create.user.account**

  If this setting should be set, to let SDS know in what account new user profiles should be added in SDS. See also cirrus.sso.create.user. Alternatively, it is possible to set the SAM configuration cirrus.sso.default.account (optional). See Service configuration.

  Default value: not set
- **cirrus.sso.sanitize.userid**

  If this setting is ON, SDS will sanitize unusable user ids (e.g. email addresses) that are provided via IDP metadata. See Supported IDP user metadata.

Automatic user creation

New SDS users can be created by SAM, if the feature is enabled and a SignDoc user is missing for the corresponding authenticated IDP user. SignDoc users will always be searched via their email address not user id. The IDP SAML Name ID Format should be set to EmailAddress.

The account information can be provided by different means, as explained in:

- cirrus.sso.default.account (optional). See Configuration of SAM.
- cirrus.sso.create.user.account. See SDS SSO configuration options.
- Supported IDP user metadata

Note

- Existing SignDoc users will never be modified by SAM
- To create a user, SAM needs at least the email address of the user.
- If only the email address is available, the SignDoc user will be created with predefined attributes
  - name: "unknown"
  - userid: random UUID

Supported IDP user metadata

Mapping of IDP user attributes to SDS user attributes.

IDP user attribute	SDS user attribute	Remarks
implicit userid or signdoc_email or email	email	Provided by IDP.
signdoc_name or name	name	Alternatively first- and lastname can be used. Has priority over first- and lastname settings. If not set the name "unknown" is used.
signdoc_firstname, firstname, signdoc_lastname, lastname	name	First- and lastname will be concatenated with a whitespace
signdoc_login, login	userid	Can be automatically sanitized. If not set, a random value is used.
signdoc_account, account	accountid	This information defines the SDS account the user belongs to. Alternatively this can be defined by the corresponding SAM (cirrus.sso.default.account (optional) SDS (cirrus.sso.create.user.account) configurations. See Automatic user creation.

SSL configuration

The SAM Service can be also be run with an SSL configuration by setting some configuration values. To activate the setting they must be specified like the other configuration options above.

Example settings for using a PKCS#12 cert stores:

```
<argument>--erver.ssl.key-store-type=PKCS12</argument>

<argument>--server.ssl.key-store=file:path_to_my_keystore.pfx</argument>

<argument>--server.ssl.key-store-password=2beChanged!</argument> <argument>--
server.ssl.key-alias=1</argument>
```

Stop / Start / Uninstall the SAM Service

SAM is provided as a standard Windows Service.

Starting the SAM service

Adds the Windows Service "SignDoc Authentication Module" from the Windows Service panel.

- Doubleclick on: SAM_DIR\service_up.cmd

Stopping the SAM service

Removes the Windows Service "SignDoc Authentication Module" from the Windows Service panel.

- Doubleclick on: SAM_DIR\service_remove.cmd

Uninstalling the SAM service

- Stop the service. See Stopping the SAM service.
- Delete SAM_DIR.

Glossary

ADFS

Active Directory Federation Services (from Microsoft)

IDP

Identity provider. A software service that can authenticate users.

IDP_METADATA

Metadata that establishes the bond between SP and IDP. SAM accepts local files or a remote URL to retrieve the IDP Metadata.

Related SAM setting: saml.spEntityId

SAM

SignDoc Authentication Module (this Software package)

SAM-DIR

The directory where SAM is installed. Example: C:\Program Files\SignDoc Authentication Module

Example: C:\Program Files\SignDoc Authentication Module

SDS

SignDoc Standard (2.2.1 or newer)

SP

Service provider. A service that grants IDP authenticated users access to a system. SAM is a service provider.

SP_ENTITY_ID

A unique ID (URI syntax) that identified the SAM service.

Related SAM setting: saml.idp.metadata.urlOrFile

SP_INITIATED_LOGIN

The IDP authentication session is started by the SP

SSO

Single Sign-on. An environment that allows a user to authenticate against a central instance (IDP). By doing this the user gets implicit authorization services supporting Single Sign-on.

SSO_URL

This is the URL that SAM uses to process SAML2 assertions.

Definition: ${service.context.url}/saml/SSO

Example: http://localhost:6612/saml/SSO

Chapter 5

Uninstall SignDoc Standard

To uninstall SignDoc Standard follow these steps:

1. Double-click `INSTALLDIR\service_remove.cmd`. Confirm the dialog boxes and wait until the Windows service "SignDoc Standard" is stopped and deregistered.
2. Delete the installation directory `INSTALLDIR`.

Chapter 6

Upgrade SignDoc Standard

SignDoc can be upgraded from any previous version. If nothing else is specified in the version list below, the following generic upgrade procedure can be applied:

- Stop SignDoc using service_remove.cmd. See Content of the SignDoc Standard ZIP archive, section "Tools".
- Make a backup of the database or create a snapshot of the database that can be restored, in case the upgrade fails.
- Install the new SignDoc version as described in Quickstart.
- Apply the existing old SignDoc configuration to the new SignDoc installation. I.e. apply any existing configuration from service_configuration.properties (and possibly other configuration files) to the new installation. This usually concerns, among other things: database connection, SMTP server, SERVICE_EXTERNAL_HOST_URL, and so on.
- Make sure database migrations are enabled (this is the default). See Advanced configuration, section "Control database migrations".
- Start the new SignDoc version using service_up.cmd. See Content of the SignDoc Standard ZIP archive, section "Tools".

Note After the system is upgraded, it is no longer possible or supported to connect the old SignDoc installation to the upgraded/migrated database.

Upgrade from SignDoc Standard 2.2.1

Important Configuration changes are required for SignDoc 3.0.0 or newer.

If you are upgrading an existing SignDoc 2.2.1 installation (version<=2.2.1.2.0.63) there are a few configuration options that must be slightly changed to work again.

File: service_configuration.properties

- The jdbc.password configuration setting must not contain any of these 3 characters: < > &
- The jdbc.url configuration setting MUST NO LONGER be enclosed in quotes as it was true for SignDoc up to 2.2.1.2.0.63. Until now, the jdbc.url value had to be enclosed in single quotes, if there were spaces in jdbc.url. If this should be the case for the installation to upgrade, the single quotes must now be removed.

Example

Invalid with SignDoc 3.0.0 (was valid up to version 2.2.1.2.0.63):

```
jdbc.url='jdbc:h2:${SIGNDOC_HOME}/db/
signdoc_database;MVCC=TRUE;DB_CLOSE_DELAY=-1;INIT=SET COLLATION ENGLISH
STRENGTH SECONDARY'
```

Valid with SignDoc 3.0.0:

```
jdbc.url=jdbc:h2:${SIGNDOC_HOME}/db/
signdoc_database;MVCC=TRUE;DB_CLOSE_DELAY=-1;INIT=SET COLLATION ENGLISH
STRENGTH SECONDARY
```

Upgrade from SignDoc Standard 1.3.1 or earlier versions

To upgrade an existing SignDoc Standard 1.3.1 or earlier version, the following steps need to be performed:

1. Stop and disable automatic restart for all existing SignDoc Standard and/or SignDoc Web instances older than SignDoc 2.1.0.

   Don't stop the SignDoc Standard database.

   If applicable: Remove any global or system PATH setting, that contains the existing SignDoc Standard instance.
2. Install SignDoc 2.1.0 as described in Quickstart above.
3. Make sure database migrations are enabled (this is the default). See Control database migrations.
4. Configure SignDoc 2.1.0 for production as described in Production setup. It is recommended to apply the configuration fresh.
   - If **KTA integration** is used, the existing configuration section of cirrus.properties can be copied to the new installation. See KTA integration.
   - If **LDAP authentication** is used, the existing configuration section of cirrus.properties can be copied to the new installation. See LDAP integration.
5. Start the new SignDoc version using service_up.cmd. See Content of the SignDoc Standard ZIP archive, section "Tools".
6. Open http://<your_server>:<port>/cirrus/client and log in.

Upgrade troubleshooting

It should be sufficient to make sure that there are no PATH entries that point to an old SignDoc Standard installation. If an installation fails, the following should be double-checked:

- Double-check General prerequisites.
- The installation should be done on a supported Windows Server operating system such as Windows Server 2012 R2.
- There should be no Windows PATH (system or user) entry (i.e. Environment variable) pointing to an old SignDoc Standard installation.
- There should be no CIRRUS_HOME Environment variable set (system or user).
- There should be no SDWEB_HOME Environment variable set (system or user).

Chapter 7

Database migration

This chapter describes the database migration mechanism used by SignDoc starting with version 1.1.0.1.

Overview

Any product that uses a schema based database and gets past its first version faces the problem of tackling database changes while migrating from one version to another. This includes changes to the database schema, like adding a new column, moving data from a location to another etc. Not only the database has to be adapted to the new schema, also the existing data has to be migrated to fit it.

Database migrations standardize the way this is done, keeping track of the versions that have been applied to the data.

Flyway

SignDoc uses Flyway to standardize database migration scripts. You can read about flyway at https://flywaydb.org. In short (check the Flyway documentation at the website), Flyway uses migrations that are named to a specific schema, containing the version number and description in the file name. It also keeps track of the version the database currently has and all applied changes by creating a database table named schema_version and recording all migrations it has done.

Since the migration scripts (or migration Java classes) are part of the product, one can always tell what state the database is in and what changes still need to be applied.

Flyway migrations can either be run from the command line, or be integrated into the product itself. When the application starts, it checks the database version and executes any outstanding migrations in the order of their version number, thus bringing the database up to date.

Flyway use in SignDoc

Integration and configuration

Flyway is built into SignDoc, starting with release 1.1.0.1. Each time SignDoc is started, it will check if the database is up to date and can run any outstanding database migrations.

Migrations can be configured to run either automatically or manually. Running migrations automatically can be convenient for a classic deployment with a single server, or a test environment with frequent changes. In a cloud environment running multiple servers a manual invocation of the database migration

is recommended. This allows for a better control of the process, including the necessary backup and QA steps.

The way migrations are run is controlled by the cirrus.migrations.enabled property:

true
Enables automatic migrations. The application will compare the version currently stored in the database and attempt to migrate it to the one used by the application. It will apply all necessary steps in sequence, without needing confirmation.

false
Disables automatic migrations. The application will compare the version currently stored in the database and refuse to start if it does not match the one used by the application (will throw an exception). The migration step has to be run manually using the command line tool or Docker container.

Important Regardless of the setting used it is strongly recommended to perform a database backup before attempting to migrate the database. Due to the nature of some migration steps and the fact that multiple migration steps are applied during a version update, a database rollback is not possible.

Version numbers

Following schema is used for SignDoc migration version numbers:

```
<ver major>.<ver minor>.<release>.<bugfix>.<hotfix>_<migration sequence>
```

The migration also includes a short textual description. A sample output of the version information is shown below:

```
+--------------+---------------------------+---------------------+---------+
| Version      | Description               | Installed on        | State   |
+--------------+---------------------------+---------------------+---------+
| 1.1.0.0.0.0  | Baseline                  | 2015-11-24 17:56:54 | Success |
| 1.1.0.1.0.1  | Upgrade                   | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.1  | Release upgrade           | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.2  | NewAccountLicenseHandling | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.3  | Add package counter       | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.4  | AddDnsLabel               | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.5  | AddTimeZoneToAccount      | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.6  | RemoveUserStateINACTIVE   | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.7  | AddContactInfoToAccount   | 2015-11-24 17:56:54 | Success |
| 1.2.0.0.0.8  | HandleKeysTable           | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.9  | AddSignatureSettings      | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.10 | AddAccountPersonalization | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.11 | UserRolesNotNullable      | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.12 | DropObsoleteTimestamps    | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.13 | Add document counter      | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.14 | RemoveUnusedUserStates    | 2015-11-24 17:56:55 | Success |
| 1.2.0.0.0.15 | NotDeleteAuditTrails      | 2015-11-24 17:56:55 | Success |
+--------------+---------------------------+---------------------+---------+
```

Classic deployment

The classic deployment describes the installation of SignDoc in a servlet container (Tomcat), without the use of Docker containers.

Automatic migration

To enable automatic migrations you have to set cirrus.migrations.enabled to true in cirrus.properties. SignDoc will check the database version and run pending migrations automatically during system start.

Manual migration

If is set to false, SignDoc will only verify if the database has been updated to the current version. Migrations have to be run manualy using the flyway command line tool.

Command line tool

The flyway command line tool can be used to query the database version information, check outstanding migrations, perform migrations and clean or repair the database. All necessary information, like database driver, URL, login info, etc. can be given as arguments. A more convenient way is to store them in a configuration file. A sample configuration (flyway.conf) is shown below:

```
# Database URL
flyway.url=jdbc:jtds:sqlserver://servername/database_name
# User to use to connect to the database (default: <<null>>)
flyway.user=username
# Password to use to connect to the database (default: <<null>>)
flyway.password=password

# Locations starting with filesystem: point to a directory on the filesystem and may
 only contain sql migrations.
flyway.locations=classpath:sql/migration/
net_sourceforge_jtds_jdbc_Driver,classpath:sql/migration/common,classpath:de/softpro/
cirrus/db/migrations

# Comma-separated list of directories containing JDBC drivers and Java-based
 migrations. (default: <INSTALL-DIR>/jars)
# flyway.jarDirs=<path to flyway>/flyway-3.2.1/jars,<path to cirrus-db-<versionnumber>
 directory>
flyway.jarDirs=/flyway/jars,/tomcat/webapps/cirrus/WEB-INF/lib

# The version to tag an existing schema with when executing baseline. (default: 1)
flyway.baselineVersion=1.1.0.0.0_0
# Whether to automatically call baseline when migrate is executed against a non-empty
 schema with no metadata table.
flyway.baselineOnMigrate=true
```

Fields that have to be configured are marked in bold.

You can check the status of the database using the command:

```
flyway info
```

Migrations can be applied using:

```
flyway migrate
```

The flyway command line and the flyway web page provide a reference on the available commands and options.

If Flyway is not included in the deliverables, it can be downloaded and installed from https://flywaydb.org.

Docker deployment

In case of a Docker deployment, the complete application environment is packaged inside a Docker container. This includes the migration tool. The default migration setting for a Docker container is false.

Automatic migration

If automatic migrations are desired the migration property can be set to true by providing the environment variable

```
SPEC_CIRRUS_MIGRATIONS=true
```

at container start:

```
docker run –e SPEC_CIRRUS_MIGRATIONS=true … softpro/signdoc-standard:<version>
```

Manual migration

Running migrations manually is the default setting for the Docker container. Migrations can be run by overriding the flyway.conf and invoking flyway migrations. It is generally recommended to add a Docker layer to the container that copies the flyway.conf file into a configured container version (to set the database URL and credentials). The sample shown above lists the configuration needed for the Docker container (notably the flyway.jardirs setting). A configured container can be run using:

```
docker run –ti softpro/signdoc-standard:<version> flyway <command>
```

FAQ

General

- Useful logfiles for support requests
  - INSTALLDIR\signdoc_home\logs\ (all files)
  - INSTALLDIR\service\logs\ (all files)
  - Windows event log
  - Firewall logs
  - Browser console log
- Useful configuration files for support requests
  - INSTALLDIR\signdoc_home\conf\ (all files, make sure to delete sensitive information)

Email settings

- An error occurred sending an email
  - You specified the wrong server. The server you specified exists, but it is not an SMTP server.
  - You specified the wrong port number. Ask whoever runs the SMTP server what the correct port number is.
  - The server is down. This is usually temporary. If it persists, contact whoever administers the server.
  - Your firewall is blocking the port.

- Your ISP is blocking the port. This usually affects port 25, and you can often work around it by using port 587, but details depend on your ISP and on the SMTP server's configuration.
- You specified TLS, but the server does not support it.

Apache Tomcat

- Security
  - For a production environment restrict the communication between cirrus and sdweb to local interfaces.
- Performance
  - The connector default size in bytes for POST requests is limited to 2 Megabytes, increase the size to handle larger documents by adding the attribute maxPostSize="52428800" to the tomcat connector definition.