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STC|ONE

SMaRT AFIX
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SMaRT AFIX for Independent Partners

Installation Guide

v. July 2019

Support Services

For general support on this product, contact your system administrator or help desk. For up-to-date documentation, visit the STC Documentation Portal at https://documentation.stchome.com/.

Additional Information

This documentation describes the following: SMaRT AFIX installation for independent states.

(20190730)

Table of Contents

SMaRT AFIX for Independent States Installation Instructions

The SMaRT AFIX for Independent States release was requested by the AFIX-IIS Integration Project Consortium and primarily enables Awardee testing to proceed in states with critical timelines and no integration with IWeb.

The following provides an overview of the process for installing the SMaRT AFIX application.

Components

SMaRT AFIX is composed of several server components. The following includes their functions and brief technical descriptions.

Standalone Forecaster (SAF)

SAF is a web application that evaluates patient and vaccination data to produce a vaccination forecast for that patient. It provides both a user interface and a SOAP web service. For SMaRT AFIX, only the web service is used.

SAF runs under Apache Tomcat 7.0 and is deployed as a `.war` file. It utilizes an Oracle Express Database (XE) to store pre-configured vaccination schedules and configuration data.

Standalone Forecaster is installed on the *Service* box.

PostgreSQL

SMaRT AFIX utilizes PostgreSQL 9.4 as a database. An additional Postgres module, pg_partman, is required. The name of the database is *afixdb*. It is created via several `.sql` scripts. See [SMaRT AFIX Database Initialization - Linux](#) or [Windows](#) for the installation instructions.

JasperReports Server (JRS)

JRS is a web application that provides the reports for SMaRT AFIX. These reports are imported into JRS via the JRS Management Console. See [SMaRT AFIX JasperReports Deployment - Linux](#) or [Windows](#) for installation instructions.

Jaspersoft ETL (JETL)

Patient, vaccination, and provider data are batch-loaded into the SMaRT AFIX database on a nightly basis. Once this data has loaded, it is run through the Standalone Forecaster and aggregated into tables that are designed for reporting. These batch processes are scheduled and executed by Jaspersoft ETL.

SMaRT AFIX Application

The UI and application server logic are provided via the SMaRT AFIX application. This is a Node.js application and uses Keycloak for user authentication.

Keycloak

User authentication is provided by Keycloak. It is used by all STC Suite applications for Single Sign-On (SSO). Each application requires a client within Keycloak. The client contains references (URLs, ports, etc.) that are specific to each individual SMaRT AFIX application.

New Application Installations

The following refers to new application installations, not necessarily to upgrade installations. The instructions differ between Linux and Windows installations as well. If you are building a new Linux Server, see the Build a Linux (CentOS) Server instructions.

NOTE: The SMaRT AFIX components should be installed in the order listed below.

Component	Server	Linux	Windows
Keycloak Installation	Service (SVC)	See either *Keycloak Installation Guide for STC-Hosted Clients* or *Keycloak Installation Guide for Self-Hosted Clients*.	
Standalone Forecaster	Service (SVC)	Forecaster Installation Instructions - Linux	Forecaster Installation Instructions - Windows
PostgreSQL Server (if not already installed)	Database and Batch (DBB)	Postgres Database Installation - Linux	Postgres Database Installation - Windows
SMaRT AFIX Database	Database and Batch (DBB)	SMaRT AFIX Database Initialization - Linux	SMaRT AFIX Database Initialization - Windows
SMaRT AFIX Online Tool	Service (SVC)	SMaRT AFIX Online Tool Web Service Installation Instructions - Linux	SMaRT AFIX Online Tool Web Service Installation Instructions - Windows
Jaspersoft ETL Server (if not already installed) (**NOTE:** Initial ETL loads can take several days; it's recommended to have them running while other components are being installed.)	Database and Batch (DBB)	Jaspersoft ETL Installation - Linux	Jaspersoft ETL Installation - Windows
SMaRT AFIX ETL	Database and Batch (DBB)	SMaRT AFIX Jaspersoft ETL Deployment - Linux	SMaRT AFIX Jaspersoft ETL Deployment - Windows
JasperReports Server (if not already installed)	Application (APP)	JasperReports Server Installation - Linux	JasperReports Server Installation - Windows

Component	Server	Linux	Windows
SMaRT AFIX Reports	Application (APP)	SMaRT AFIX JasperReports Deployment - Linux	SMaRT AFIX JasperReports Deployment - Windows
Node.js Server (if not already installed)	Application (APP)	Node.js Installation - Linux	Not supported
SMaRT AFIX Application Installation	Application (APP)	SMaRT AFIX Application Installation Instructions - Linux	SMaRT AFIX Application Installation Instructions - Windows
Keycloak Configuration for SMaRT AFIX	Service (SVC)	Keycloak Configuration for SMaRT AFIX (Linux and Windows)	

Windows Instructions

The following instructions are for the Windows operating system.

## Forecaster Installation Instructions - Windows

The installation of the Standalone Forecaster (SAF) is composed of three major tasks: install Oracle Express, install the SAF database into Oracle Express, and install the Forecaster web application into Tomcat. All three components are installed on the *Service* machine (SVC).

SAF can be installed to Oracle 11g or Oracle Express 11g. The Oracle product you choose will depend on your state's licensing. Oracle Express 11g is free to use for this type of installation. All performance testing, etc., for SAF has been conducted using Oracle Express. These instructions only cover the installation of Oracle Express 11g.

Install Oracle Express

1. If necessary, create an Oracle account at http://www.oracle.com.

2. If using Oracle Express (free), download the appropriate version. The Windows version is approximately 312MB in size.

3. Unzip the downloaded file and run the `DISK1/setup.exe`. When using the installation wizard, the installer creates a database named XE. The installer uses these ports: TNS = 1521, MTS = 2030, HTTP = 8080.

4. There may be two error messages about a missing file named KEY_XE.reg. Just acknowledge them and continue with the installation.

5. Disable the HTTP port by running the following at a command prompt after the installation is complete:

   ```
   echo EXEC DBMS_XDB.SETHTTPPORT(0); | sqlplus / as sysdba
   ```
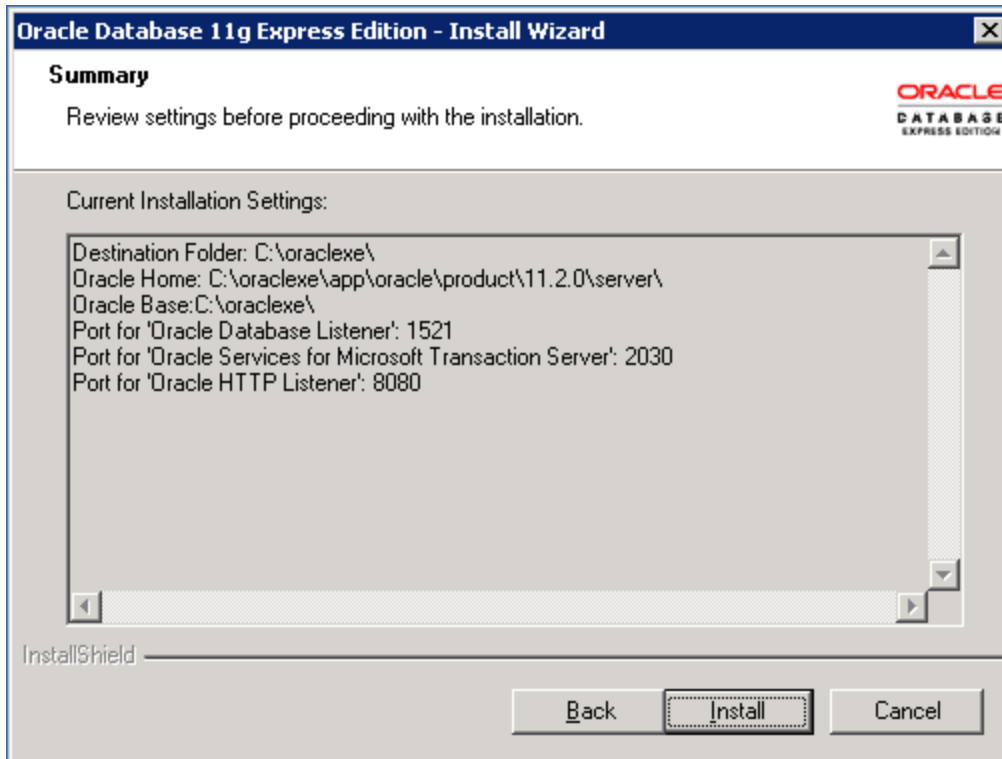
Install the SAF Database (New Installation)

Database objects are created with 5.16.9 CDSi install version.

1. Navigate to the `/SVC/OXE/db/AFIX_CDSI_Install/AFIX_CDSI_v5.16.9_Install/` directory.

2. Run `Install.bat`.

3. Navigate to the `/SVC/OXE/db/Patches/patch_v5_17_CDSI` directory.

4. Run the `forecast.bat` script.

5. Navigate to the `/SVC/OXE/db/Patches/patch_v5_18_CDSI` directory.

6. Run the `forecast.bat` script.

7. Navigate to the `/SVC/OXE/db/Patches/AFIX_March_2019` directory.

8. Run the `forecast.bat` script.

Run Database Patches (Upgrades)

1. Navigate to the `/SVC/OXE/db/Patches/AFIX_March_2019` directory.

2. Run the `forecast.bat` script.

Install the Web Application

Before installing the SMaRT AFIX web application, Java 7 must be installed on the SVC server and Tomcat 7.0 must also be installed and running on the SVC server.

1. Edit the `conf/context.xml` file - Add the lines below (between the `<Context></Context>` tags) to the `CATALINA_HOME/conf/context.xml` file. The added lines should be placed within the `<Context></Context>` tags in the file.

```
<Context>
    <Resource name="jdbc/com/stc/forecaster"
    auth="Container"
    type="javax.sql.DataSource"
    driverClassName="oracle.jdbc.OracleDriver"
    url="jdbc:oracle:thin:@localhost:1521/XE"
    username="SAFUSER"
    password="SAF"
    maxActive="100"
    maxIdle="10"
    maxWait="-1"/>
</Context>
```

2. Copy the `/SVC/SAF/forecaster.war` to `webapps/forecaster.war` under your Tomcat directory.

3. Restart Tomcat.

4. Set the number of threads to the number of processor cores available on your server - Edit `$CATALINA_HOME/webapps/forecaster/WEB-INF/spring-ws-servlet.xml` and set the thread count (see the second line of code below):

```
<bean id="forecastingEndpoint12"
class="com.stchome.saf.ws.endpoint.ForecasterServiceEndpoint12"
scope="prototype">
    <constructor-arg value="1" /><!-- Thread count -->
    <constructor-arg value="60" /><!-- Thread pool termination timeout in
seconds-->
</bean>
```

5. Restart Tomcat.

6. Verify the application is running correctly by navigating to `http://[YOUR SERVER]/forecaster`. The UI displays if the application was successfully installed and configured.

Postgres Database Installation - Windows

The information below describes how to install the Postgres database on Windows Server 2008 R2 64-bit, as well as how to modify relevant Postgres server configuration settings for SMaRT AFIX.

Install on Windows

The following information covers general installation instructions for installing PostgreSQL on Windows. Windows Server 2008 R2 64-bit was used as a reference, but installation on other versions of Windows should be similar.

1. Visit this page and download the latest 64-bit version of Postgres. Version 9.4.x was used for this installation example.

2. Run the downloaded executable to start the installation. It is recommended to use the default installation directories, but they can be customized as needed (make note of the new locations).

3. Choose a password for the Postgres admin user *postgres* and store it securely for when administrative maintenance is required.

4. Use the default port 5432 (recommended). An alternate port can be used, but make sure to configure connecting applications to the Postgres database.

5. Use the default locale.

6. On the last step post installation, you can uncheck the *Stack Builder may be...* option and click **Finish**.

Modify Postgres Server Configuration Settings

Some of the Postgres server configuration settings must be modified. If you used the default installation directory, the following file reference locations should be located in the directory path:

```
C:\Program Files\PostgreSQL\9.4\data\
```

1. Edit the `pg_hba.conf` file to allow connections from other STC servers/applications. Copy/paste the following line:

```
host    all      all      127.0.0.1/32      md5
```

to make the file look something like the following. Let's assume your internal sub-net falls under `192.168.x.x`, which would update the line to:

```
host    all      all      127.0.0.1/32      md5
host    all      all      192.168.0.0/16    md5
```

Save the changes. If you are technical and familiar enough with CIDR notation, you can further customize and restrict connection access as needed.

2. Trigger Postgres to reload with the new configuration changes by running **Reload Configuration**, found under PostgreSQL 9.4 in the Windows Start Menu:
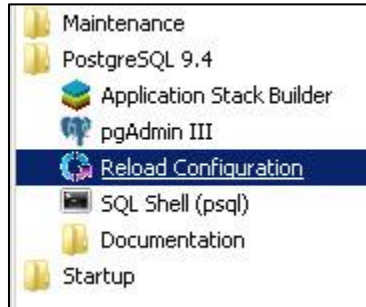
3. Create a custom firewall rule to allow inbound connections on port 5432:
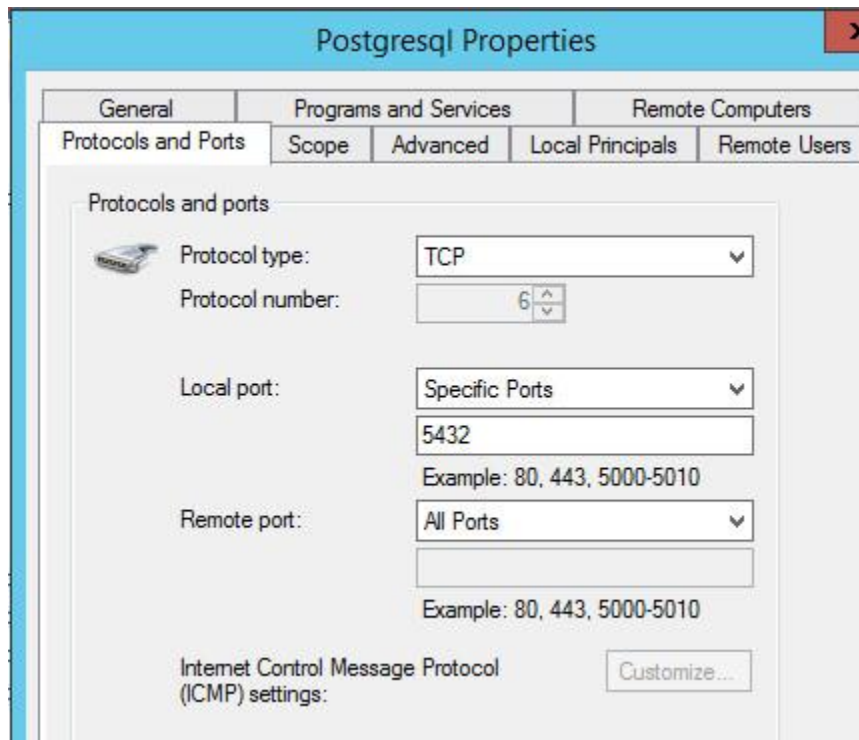
4. Complete the installation by initializing the database (see SMaRT AFIX Database Initialization - Windows).

SMaRT AFIX Database Initialization - Windows

The information below describes how to initialize the database for the first time, how to upgrade/migrate an existing database, and how to set up daily jobs.

Prerequisite Tasks

Perform the following tasks before initializing the database:

1. Confirm that PostgreSQL has been installed.

2. State-specific eligibility: If your state uses one or more state-specific codes for VFC eligibility, you will need to make a modification to the `/DBB/POSTGRES/sql/OLAP/OLAP_V1_0_2__R1_Afix_OLAP_Initial_Data.sql` file. Add the state-specific codes to the DIM_VFC_ELIGIBLE section as noted below. Be sure to increment the vfc_eligible_key value for each state-specific code you add. State-specific codes should be added exactly as they appear in your system database.

```
... --DB_script for DIM_VFC_ELIGIBLE----
   INSERT INTO olap.dim_vfc_eligible(vfc_eligible_key,
vfc_eligible_code, created_ts)
   VALUES (1, 'Not VFC Eligible-Underinsured', current_timestamp),
      (2, 'VFC Eligible - State Specific Eligiblity',
current_timestamp),
      (3, 'Local-Specific Eligiblity', current_timestamp),
      (4, 'Not VFC Eligible', current_timestamp),
      (5, 'American Indian/Alaska Native', current_timestamp),
      (6,'Uninsured', current_timestamp),
      (7,'Federally Qualified Health Center patient',
current_timestamp),
      (8,'Medicaid', current_timestamp),
--Add State Codes here----
      (9, 'State Specific Code', current_timestamp),
      (-1,'Unknown', current_timestamp);
...
```

Initialize a New Database (for the First Time Only)

If this is the first time you are initializing the database, follow the steps below. Otherwise, see the [Upgrade/Migrate an Existing Database](#) instructions.

1. Create a tablespace folder - Use Windows Explorer to create the directory for the tablespace to be used by SMaRT AFIX. Navigate to the folder `C:\Program Files\PostgreSQL\9.4`, click the **New Folder** button, and name the new folder *afixdb*.

2. Set the folder permissions for *afixdb* - In Windows Explorer, right-click on the *afixdb* folder and select **Properties**. Click on the Security tab, then click the **Edit**

button and then the **Add** button. Enter the name *network service* and click on the **Check Names** button.

3. Your window should like the image below, although your location will be different and local to your network. Click **OK**.
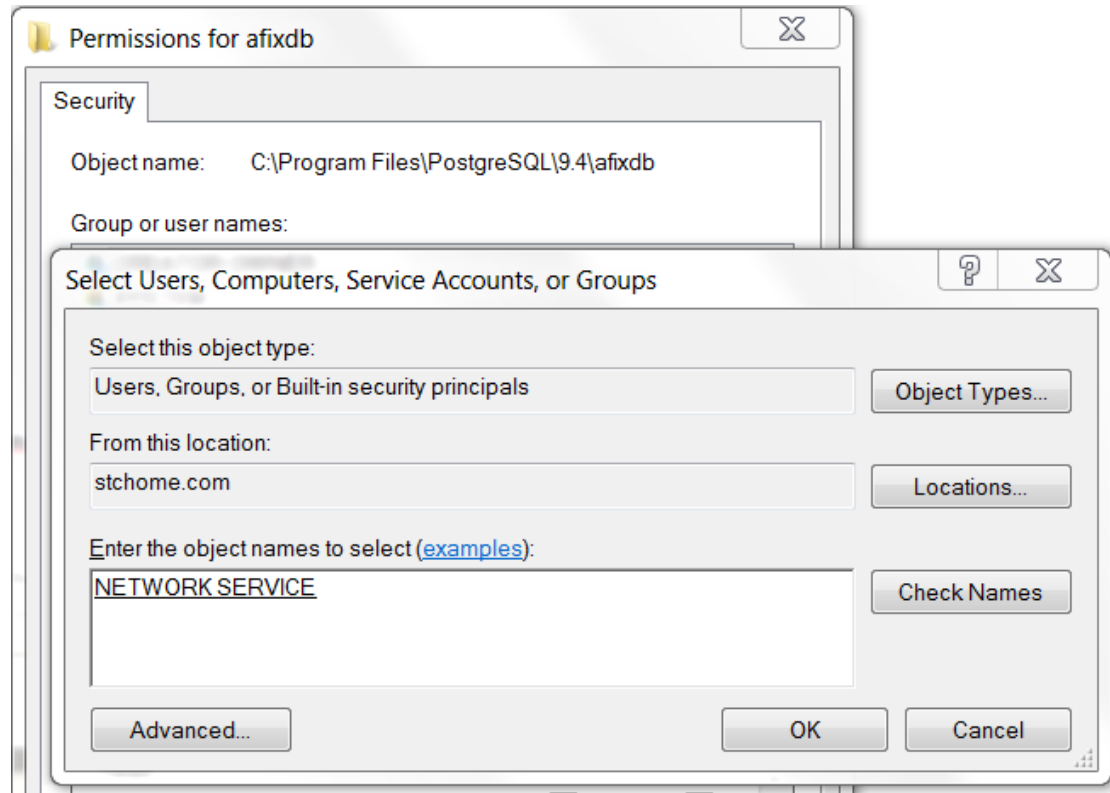
4. Make sure NETWORK SERVICE is selected and that the Full Control option under the Allow column is selected. When finished, click **OK** for all of the remaining open windows to close them.
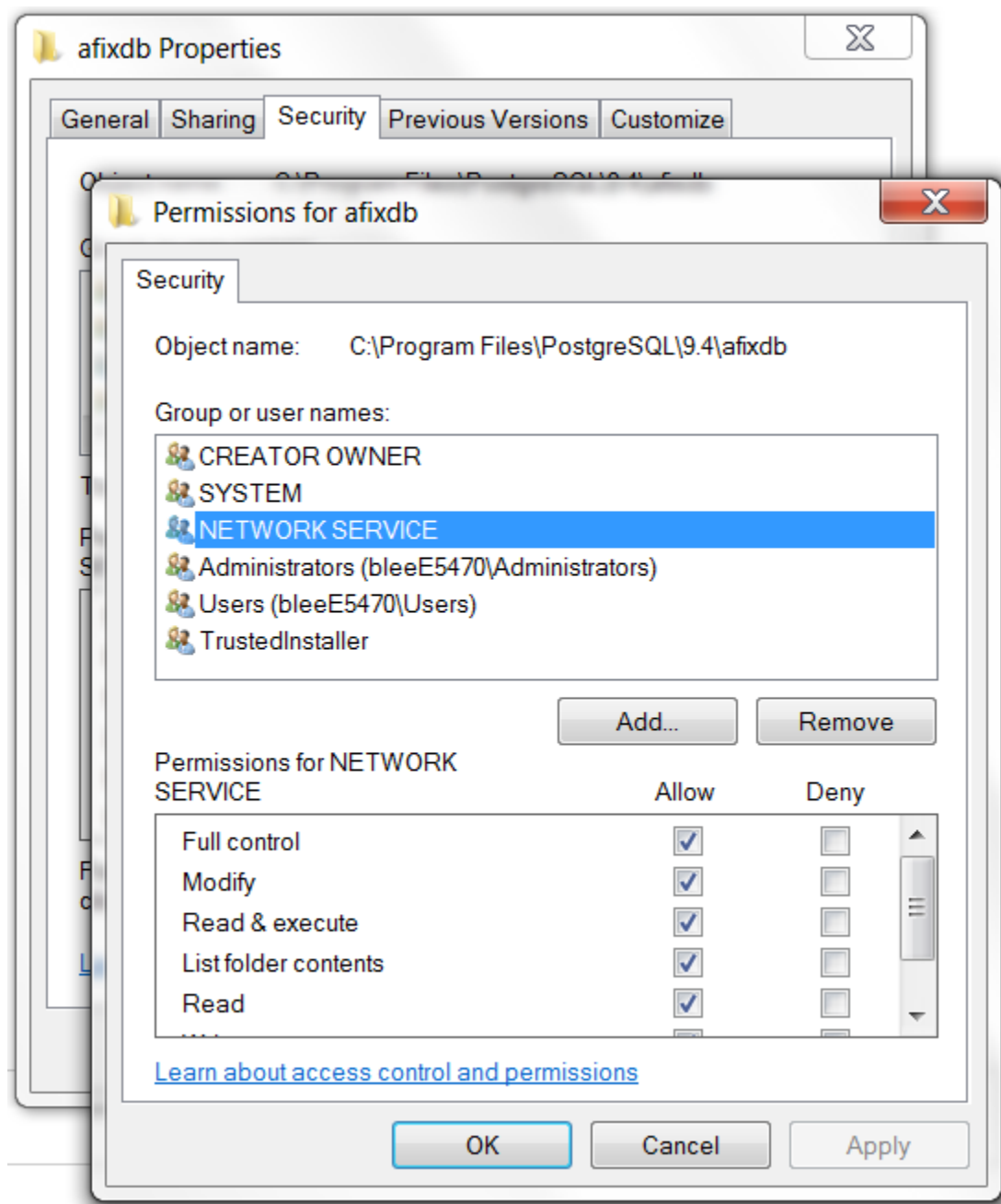
5. Create the `data` directory:

```
C:\Program Files\PostgreSQL\9.4\afixdb\data
```

6. Create the `olapdata` directory:

```
C:\Program Files\PostgreSQL\9.4\afixdb\olapdata
```

7. Download the release distribution zip file and extract the database scripts for the database server in the afixdb folder:

```
\DBB\POSTGRES
```

8. Create the afixdb by navigating to the `/DBB/POSTGRES` directory and executing the following command. If prompted, enter the password that was entered during the Postgres installation.

```
"c:\Program Files\PostgreSQL\9.4\bin\psql.exe" -Upostgres -f
setup_database_win.sql
```

9. Create the database users and roles by navigating to the `/DBB/POSTGRES` directory and executing the following command. If prompted, enter the password that was entered during the Postgres installation.

```
"c:\Program Files\PostgreSQL\9.4\bin\psql.exe" -Upostgres -f
setup_objects.sql afixdb
```

10. Create the APP configuration schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=app -
sqlMigrationPrefix=APP_V -user=afix migrate
```

11. Create the ODS schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=ods -
sqlMigrationPrefix=ODS_V -user=afix migrate
```

12. Create the OLAP schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=olap -
sqlMigrationPrefix=OLAP_V -user=afix migrate
```

Upgrade/Migrate an Existing Database

If this is <u>not</u> the first time you are initializing the database, follow the steps below. Otherwise, see the <u>Initialize a New Database (for the First Time Only)</u> instructions.

1. Migrate the APP configuration schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=app -
sqlMigrationPrefix=APP_V -user=afix migrate
```

2. Migrate the ODS schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=ods -
```

```
sqlMigrationPrefix=ODS_V -user=afix migrate
```

3. Migrate the OLAP schema by navigating to the `/DBB/POSTGRES` directory and executing the following command. Enter the password **AfixQA**.

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=olap -
sqlMigrationPrefix=OLAP_V -user=afix clean
```

```
flyway -url=jdbc:postgresql://localhost:5432/afixdb -schemas=olap -
sqlMigrationPrefix=OLAP_V -user=afix migrate
```

Set Up a Daily Job / Drop Partition

1. Copy `partition.sql` and `partition.bat` from the `/DBB/POSTGRES` directory to `C:\Program Files\PostgreSQL\9.4\afixdb`.

2. Navigate to the `/DBB/POSTGRES` directory and execute this command:

```
copy partition.sql C:\Program Files\PostgreSQL\9.4\afixdb
copy partition.bat C:\Program Files\PostgreSQL\9.4\afixdb
```

3. Create a Task Scheduler to run the `C:\Program Files\PostgreSQL\9.4\afixdb\partition.bat` script daily at 1:00 a.m. to create future partitions and drop old partitions.

SMaRT AFIX Online Tool Web Service Installation - Windows

The SMaRT AFIX Online Tool web service is used by the SMaRT AFIX application to generate an XML file to be uploaded to the CDC's AFIX online tool application. The web service is a simple web application that is installed alongside the Stand Alone Forecaster on the Service machine (SVC).

Prerequisites

1. The Postgres database is installed and configured.

2. The Postgres password for the SMaRT AFIX database is known.

3. The Tomcat instance is installed on the SVC server.

4. All necessary ports are open across all firewalls.

5. The release distribution file for the SMaRT AFIX Online Tool web service is extracted from `/SVC/ONLINE_TOOL/afix.export.ws.war` and copied to your local drive.

Installation Steps

1. Copy the `afix.export.ws.war` file to your Tomcat webapps folder.

2. Restart Tomcat.

3. Update the application properties to point to the proper Postgres database. Make sure the username and password are correct.

4. Edit the `$CATALINA_HOME/webapps/afix.export.ws/WEB-INF/app.properties` file:

```
driverClassName=org.postgresql.Driver
url=jdbc:postgresql://127.0.0.1:5432/afixdb
username=afixUser
password=afixPassword
```

5. Restart Tomcat.

Jaspersoft ETL Installation - Windows

Follow these instructions to install Jaspersoft ETL, Apache Web Server, and Subversion, and to configure the administration console. This installation only needs to occur once.

Prerequisites

1. Java JDK 8 (1.8.91) has been installed.

2. The environment variable JAVA_HOME has been set:

```
JAVA_HOME=[drive]:\directory\Java\1.8_91
```

3. Copy the components from the distribution `/Server Components/ETL` directory into your local directory. These files include:

- license.txt

- TIBCOJaspersoft-JETL-Installer-20150908...zip

- etl.zip

Install Jaspersoft ETL

1. Download the Jaspersoft ETL installer zip file and the license file:

```
Server Components\ETL\TIBCOJaspersoft-JETL-Installer-20150908_1633-
V7.1.1-installer.zip
Server Components\ETL\license.txt
```

2. Copy the installer and license file into a temporary directory:

```
c:\user\[user name]\Downloads
```

3. Unzip the installer into the temporary directory. Several files will be extracted. Keep all of the files in the temporary directory for the duration of the installation.

4. From the temporary directory, execute the Windows installer by clicking on:

```
TIBCOJaspersoft-JETL-Installer-20150908_1633-V7.1.1-windows-
installer.exe
```

5. Follow the prompts to accept the license agreement.

6. Follow the prompts to specify the installation directory, installation type, and license file. Specify `[drive:]\Jaspersoft\7.1.1` for the installation directory, **Easy Install** for the installation type, and `license.txt` (found in the temporary directory).

7. Click the **Next** button and wait until the installation finishes.

8. Click the **Start** button, search for `services.msc`, and then search for any service named TIBCO Jaspersoft Logserver Collector 7.1.1. Stop this service and set it to **Manual**. If there is no service named this, ignore this step.

Start/Stop Jaspersoft ETL Services

The following are the instructions to start and/or stop Jaspersoft ETL services. These steps are not mandatory on a first-time installation because the services will be running by default.

Start/Stop Jaspersoft ETL Admin Console

Command to stop the service:

```
$ cd C:\Jaspersoft\7.1.1\jac
$ stop_tac.bat
```

Command to start the service:

```
$ cd C:\Jaspersoft\7.1.1\jac
$ start_tac.bat
```

Start/Stop Jaspersoft ETL Command Line

Command to stop the service:

```
$ cd C:\Jaspersoft\7.1.1\cmdline
$ stop_cmdline.bat
```

Command to start the service:

```
$ cd C:\Jaspersoft\7.1.1\cmdline
$ start_cmdline.bat
```

Start/Stop Jaspersoft ETL Job Server

Command to stop the service:

```
$ cd C:\Jaspersoft\7.1.1\jobserver
$ stop_jobserver.bat
```

Command to start the service:

```
$$ cd C:\Jaspersoft\7.1.1\jobserver
$ start_jobserver.bat
```

Configure the Admin Console

These steps are used one time only. They should be completed during the server installation.

1. Navigate to `http://[host name]:8080/org.jasper.administrator` and enter the default username and password (admin). For the username, use `admin@yourdomain.com` or replace it with an email group if the user needs email notifications on ETL job failure (example: `email_group@yourdomain.com`).

2. Navigate to **User Settings** on the left menu and update the username (if needed) and library information.
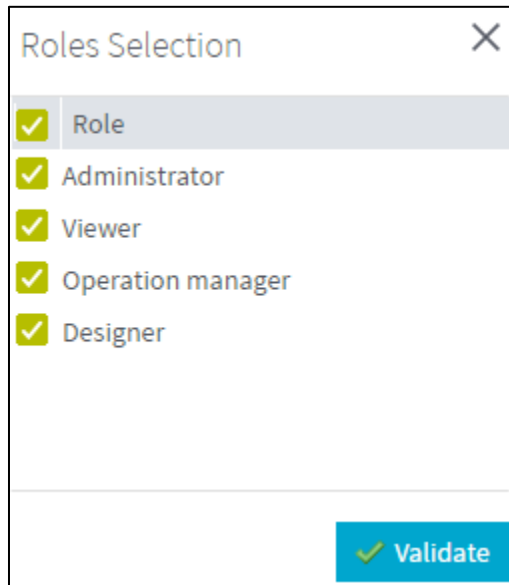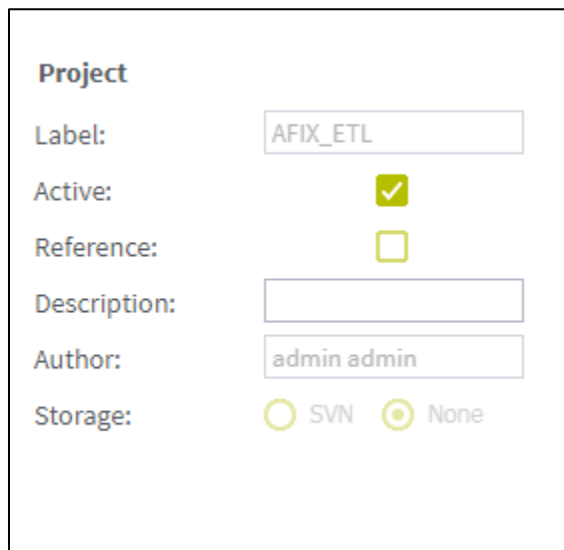
3. Click on **Role** and select all of the roles.

4. Navigate to **Project settings** from the left menu and add a new project by clicking the **Add** button.

5. Name the project as **AFIX_ETL**, select the **Active** option, enter **AFIX_ETL** as the description and **admin admin** as the Author, select **None** as the storage, and save it.

6. Navigate to **Project authorization** from the left menu. Click on each of the newly created projects and assign read/write permissions to the user.

7. Create the following directories and files in the server:

```
C:\Jaspersoft\7.1.1\deploy
C:\Jaspersoft\7.1.1\deploy\generatedJobs
C:\Jaspersoft\7.1.1\deploy\executionLogs
C:\Jaspersoft\7.1.1\cmdline\exports
C:\Jaspersoft\7.1.1\Audit
C:\Jaspersoft\7.1.1\Audit\reports
C:\Jaspersoft\7.1.1\joblogs
C:\Jaspersoft\7.1.1\joblogs\log.txt
```
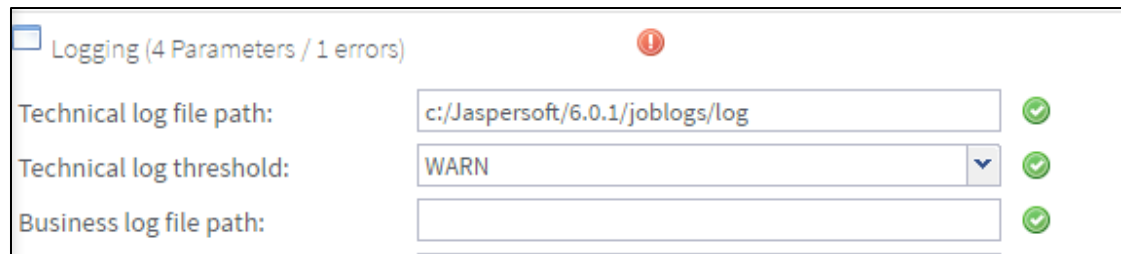
8. In Primary Command Line configuration, set the path for the Job generation folder
    to `C:/Jaspersoft/7.1.1/cmdline/exports`
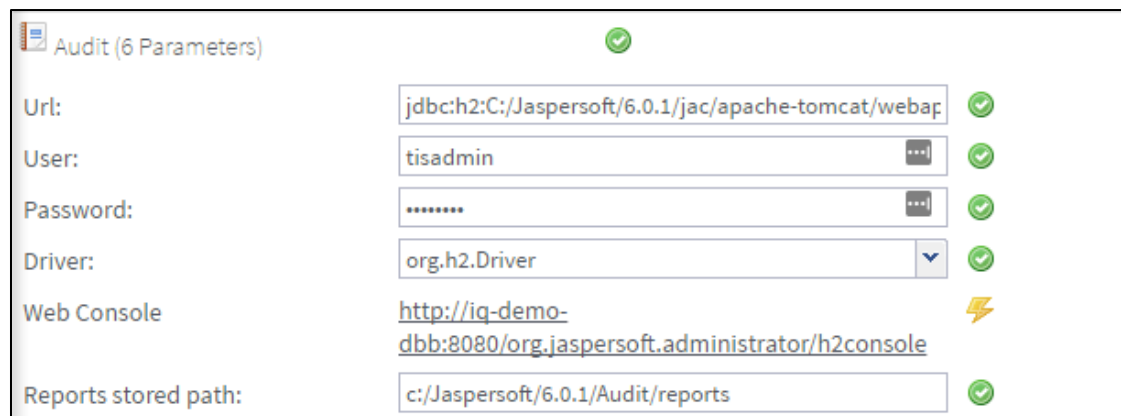
9. In Job Conductor configuration, set the path for the Generated jobs folder to
    `c:/Jaspersoft/7.1.1/deploy/generatedJobs` and the path to the Tasks logs
    folder to `c:/Jaspersoft/7.1.1/deploy/executionLogs`

10. In Logging configuration, set the Technical log file path to
    `c:/Jaspersoft/7.1.1/joblogs/log`

11. In Audit configuration, set the Reports stored path to
    `c:/Jaspersoft/7.1.1/Audit/reports`

12. Navigate to **Servers page** from the menu and create a new execution server with the following settings:

    - Label: Name of the job server

    - Host: ETL Server IP (it usually ends with *dbb*)

    - Command port: 8000

    - File transfer port: 8001

    - Monitoring port: 8888

    - Active: Select this option (enable)

    - Username: the admin username for the ETL

    - Password: the password for the admin ETL user

Execution server

Label:	qa0-etl
Description:	
Host:	10.0.5.137
Time zone:	
Command port:	8000
File transfer port:	8001
Monitoring port:	8888
Timeout on unknown state (s):	120
Username:	admin@stchome.com
Password:	••••••••••••••••••••••••
Use SSL:	☐
Active:	☑

☐ Jaspersoft Runtime

13. Log in via Remote Desktop to Windows Server using ETL server owner.

14. Copy the `etl.zip` file (from `/DBB/ETL`) to a location convenient for you on the ETL Jaspersoft server to unzip the file, such as a home directory.

15. Unzip the `etl.zip` file to the server in (C:\) directory (Windows), which creates a directory structure similar to this:

- C:\etl
- C:\etl\data
- C:\etl\archive

SMaRT AFIX Jaspersoft ETL Deployment - Windows

The following outlines how to import (migrate) Jaspersoft ETL for SMaRT AFIX.

Pre-Migration Checklist

- Confirm that the Postgres database is installed and configured

- Retrieve the passwords for the SMaRT AFIX database (*afixdb*)

- Retrieve the Jaspersoft ETL admin username and password

- Confirm that port 8080 is open across all firewalls

- Confirm that all of the steps in the Admin Console configuration are completed on a first-time installation

- Copy these components from `/DBB/ETL` into your local directory:

  - API_Vaildation_Sequential_Execution_0.1
  - etl
  - etl_201703
  - Forecaster_Sequential_Execution_0.1
  - ODS_Sequential_Execution_0.1
  - OLAP_Sequential_Execution_0.1
  - AFIX_Assessment_Benchmark_0.1
  - UserApi_Sequential_Execution_0.1
- Place all of the API files in `/etl/afix/api/`

- The `API_EXTRACT_Complete.tkn` file should be placed along with the other API files so that it can help trigger ETL jobs.

- Identify whether the installation is an upgrade from prior versions or a fresh installation from scratch.

New Installation Instructions (for the First Time Only)

If this is the first time you deploying Jaspersoft ETL, follow the steps below. Otherwise, see the Upgrade Instructions.

The steps below only need to be performed once. They should be completed during the server installation.

Configure the Admin Console

1. Navigate to `http://[host name]:8080/org.jaspersoft.administrator` and enter the default username and password (admin). For the username, use `admin@yourdomain.com` or replace it with an email group if the user needs email notifications on ETL job failure (example: `email_group@yourdomain.com`).

2. Navigate to **Project settings** from the left menu and add a new project by clicking the **Add** button.

3. Name the new project **AFIX_ETL**. Select the **Active** option, enter **admin admin** as the Author, and select **NONE** as the Storage.

4. Navigate to **Project authorization** from the left menu. Click on the newly created project and assign read/write permission to the user.

5. Navigate to **Servers page** from the menu and create a new execution server with the following settings:

- Label: AFIX_jobServer

- Host: ETL Server IP (it usually ends with *dbb*)

- Command port: 8000

- File transfer port: 8001

- Monitoring port: 8888

- Active: Select this option (enable)

- Username: the admin username for the ETL

- Password: the password for the admin ETL user

Execution server

Label: qa0-etl

Description:

Host: 10.0.5.137

Time zone:

Command port: 8000

File transfer port: 8001

Monitoring port: 8888

Timeout on unknown state (s): 120

Username: admin@stchome.com

Password: •••••••••••••••••••••••••••

Use SSL: ☐

Active: ☑

☐ Jaspersoft Runtime

6. Log in via SSH to the Unix server using the ETL server owner.

7. Copy the `etl.zip` file (from `/DBB/ETL`) to a location convenient for you on the ETL Jaspersoft server to unzip the file, such as a home directory.

8. Unzip the `etl.zip` file to the server in the root directory (Unix), which creates a directory structure similar to this:

- c:\etl\afix
- c:\etl\afix\api
- c:\etl\afix\archive
- c:\etl\afix\bulkload
- c:\etl\afix\dataout
- c:\etl\afix\input
- c:\etl\afix\rejects
- c:\etl\afix\tmp
- c:\etl\afix\validation

Deploy the ETL Components

1. If a previous ETL Projects already exists, perform a backup of it.

2. Copy the following files from the installation files to a convenient location to deploy:

   - UserApi_Sequential_Execution.zip

   - API_Validation_Sequential_Execution.zip

   - ODS_Sequential_Execution.zip

   - Forecaster_Sequential_Execution_0.1.zip

   - OLAP_Sequential_Execution.zip

   - AFIX_Assesment_Benchmark.zip

   - AFIX_Manage_Partition_0.1

3. Navigate to the Job Conductor page.

4. Select **Add > Normal Task** and add the following: Label = User API Execution; Description = User API Execution.

5. Click **Import Generated Jobs** and select the `UserApi_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

6. Click **Save**.

7. Navigate to the task **AFIX IWeb API Validation**.

8. Select **Add > Normal Task** and add the following: Label = AFIX IWEB API Validation; Description = AFIX IWEB API Validation.

9. Click **Import Generated Jobs** and select the `API_Validation_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

10. Click **Save**.

11. Select **Add > Normal Task** and add the following: Label = AFIX Stage 2 ODS Load; Description = AFIX Stage 2 ODS Load.

12. Click **Import Generated Jobs** and select the `ODS_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

13. Click **Save**.
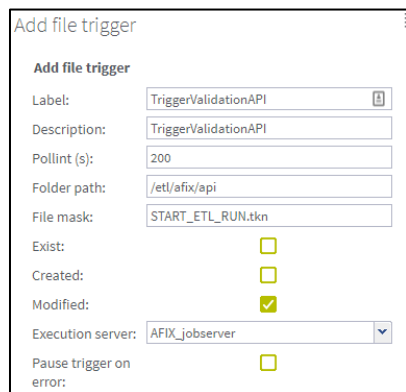
14. Select **Add > Normal Task** and add the following: Label = AFIX Forecast Execution; Description = AFIX Forecast Execution.

15. Click **Import Generated Jobs** and select the `Forecaster_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

16. Click **Save**.

17. Select **Add > Normal Task** and add the following: Label = AFIX OLAP Execution; Description = AFIX OLAP Execution.

18. Click **Import Generated Jobs** and select the `OLAP_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

19. Click **Save**.

20. Select **Add > Normal Task** and add the following: Label = AFIX Assessment Benchmark; Description = AFIX Assessment Benchmark.

21. Click **Import Generated Jobs** and select the `AFIX_Assessment_Benchmark.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

22. Click **Save**.

23. For each job created above, edit c:\etl\afix\input\contextFile.txt and update the below details

    - Email_To
    - Email_SMTP_Host
    - Email_SMTP_Port
    - AFIX_Email_Notification
    - Email_Active
    - Email_UserName
    - Email_Password
    - Web service related parameters (Forecaster):
        - SOAP_ACTION
        - ENDPOINT
    - Database-related parameters:
        - AFIX_DB - Login, Password, Port, Database, and Server

- Source_DB_Context - Login, Password, Port, Database, and Server

- RDS-related parameters for ODS_sequential_job

  - Psql_Path - Path of the psql (by default, it is `/usr/pgsql-9.4/bin`)

  - Rds_Postgres - A boolean parameter; set it to True if the database is RDS

  - Windows_Execution_Environment - A boolean parameter; set it to False; the ID of the ETL execution environment is UNIX.

24. Save when finished.

25. Initial load instructions:

    - Run the **AssessmentBenchmark** task

    - Go to the task **IWeb API Validation** and add a file trigger with the following values: Label = TriggerValidationAPI, Folder Path = /etl/afix/api, File Mask = START_ETL_RUN.tkn , Pollint(s) = 200

    - Go to the task **AFIX Stage 2 ODS Load** and add a file trigger with these values: Label = TriggerODSLoad, Folder Path = /etl/afix/dataout, File Mask = API_VALIDATION_Complete.tkn, Pollint(s) = 200

- Go to the task **AFIX Forecast Execution** and add a file trigger with the following values: Label = TriggerForecast, Folder Path = /etl/afix/dataout, File Mask = API_LOADS_TO_ODS_Complete.tkn, Pollint(s) = 200. Add the JVM parameters -Xms1024M and -Xmx15690M

- Go to the task **AFIX OLAP Execution** and add a file trigger with the following values: Label = TriggerOLAP, Folder Path = /etl/afix/dataout, File Mask = Forecast_Loads_Complete.tkn, Pollint(s) = 200. Add the JVM parameters -Xms1024M and Xmx15690M

- Go to the task **UserApi Sequential Execution** and add a file trigger with the following values: Label = TriggeruserAPI, Folder Path = /etl/afix/dataout, File Mask = OLAP Complete.tkn, Pollint(s) = 200. After that, run the task **UserApi Sequential Execution**.

Add file trigger

Label:	TriggerUserLoad
Description:	TriggerUserLoad
Pollint (s):	400
Folder path:	/etl/afix/dataout
File mask:	OLAP_Complete.tkn
Exist:	☐
Created:	☐
Modified:	☑
Execution server:	AFIX_jobserver
Pause trigger on error:	☐

26. Once the initial loads have completed, the ODS and OLAP tables are populated. Now the daily sequence can be scheduled. Go to the AFIX IWeb API Execution task and add the Cron trigger *Trigger_IWeb_API*. Enter the following values and save:

- Timezone Strategy: TAC Time

- Minutes: 0

- Hours: 0

- Days of Month: Leave blank

- Months: 1,2,3,4,5,6,7,8,9,10,11,12

- Days of the Week: 1,2,3,4,5,6,7

- Years: leave blank

Add Cron trigger

Label:	TriggerIWEBAPI
Description:	
Time zone strategy:	TAC time
Minutes *:	0
Hours *:	0
Days of month **:	
Months *:	1,2,3,4,5,6,7,8,9,10,11,12
Days of week **:	1,2,3,4,5,6,7
Years:	
Pause trigger on error:	☐

27. Turn on the notify/email feature. **Important Note:** SMTP needs to be configured beforehand.

- Select **Notifications** from the left menu

- Click **Add**

- Select the **Tasks** category

- Select **On task failed**

- Select **Enabled**

- Select **Recipients** to specify the user's email. It is better to create an email group as a recipient so that notifications are sent to multiple people

- Select **AFIX ETL Workflow**

If the upgrade needs to be aborted for any reason, import the previously created backup. Alternatively, redeploy the previous version of the content.

Upgrade Instructions

If this is <u>not</u> the first time you are deploying Jaspersoft ETL (i.e., it was deployed earlier), follow the steps below. Otherwise, see the [New Installation Instructions](#).

The steps below only need to be performed once. They should be completed during the server installation.

Configure the Admin Console

1. Navigate to `http://[host name]:8080/org.jaspersoft.administrator` and enter the default username and password (admin). For the username, use `admin@yourdomain.com` or replace it with an email group if the user needs email notifications on ETL job failure (example: `email_group@yourdomain.com`).

2. Log in via SSH to the Unix server using the ETL server owner.

3. Copy the `etl.zip` file (located at `/DBB/ETL`) to the Jaspersoft ETL server. Use a location convenient for you to unzip the file, such as a home directory.

4. Unzip the `etl.zip` file to the server in the Unix root directory (Unix), which adds the following files that were created as part of this release:

   - c:\etl\afix

   - c:\etl\afix\api

   - c:\etl\afix\archive

   - c:\etl\afix\bulkload

   - c:\etl\afix\dataout

   - c:\etl\afix\input

   - c:\etl\afix\rejects

- c:\etl\afix\tmp

- c:\etl\afix\validation

Deploy the ETL Components

1. If a previous ETL Projects already exists, perform a backup of it.

2. Copy the following files from the installation files to a convenient location to deploy:

   - API_Validation_Sequential_Execution.zip

   - ODS_Sequential_Execution.zip

   - Forecaster_Sequential_Execution_0.1.zip

   - OLAP_Sequential_Execution.zip

   - AFIX_Assesment_Benchmark.zip

   - UserApi_Sequential_Execution_0.1

3. Navigate to the Job Conductor page.

4. Navigate to the task **AFIX Assessment Benchmark**.

5. Click **Import Generated Jobs** and select the `AFIX_Assessment_Benchmark.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

6. Click **Save**.

7. Navigate to the task **AFIX IWeb API Validation**.

8. Click **Import Generated Jobs** and select the `UserApi_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

9. Click **Save**.

10. Navigate to the task **AFIX IWeb API Validation**.

11. Click **Import Generated Jobs** and select the `API_Validation_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

12. Click **Save**.

13. Navigate to the task **AFIX Stage 2 ODS Load**.

14. Click **Import Generated Jobs** and select the `ODS_Sequential_Execution.zip` file downloaded as part of the prerequisites.

Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

15. Click **Save**.

16. Navigate to the task **AFIX Forecast Execution**.

17. Click **Import Generated Jobs** and select the `Forecaster_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

18. Click **Save**.

19. Navigate to the task **AFIX OLAP Execution**.

20. Click **Import Generated Jobs** and select the `OLAP_Sequential_Execution.zip` file downloaded as part of the prerequisites. Add the following: Execution server = AFIX_JobServer; On Unavailable JobServer = Recover Task.

21. Click **Save**.

28. For each job created above, edit c:\etl\afix\input\contextFile.txt and update the below details

   - Email_To

   - Email_SMTP_Host

   - Email_SMTP_Port

   - AFIX_Email_Notification

   - Email_Active

   - Email_UserName

   - Email_Password

   - Web service related parameters (Forecaster):

     - SOAP_ACTION

     - ENDPOINT

   - Database-related parameters:

     - AFIX_DB - Login, Password, Port, Database, and Server

     - Source_DB_Context - Login, Password, Port, Database, and Server

   - RDS-related parameters for ODS_sequential_job

     - Psql_Path - Path of the psql (by default, it is `/usr/pgsql-9.4/bin`)

     - Rds_Postgres - A boolean parameter; set it to True if the database is RDS

- Windows_Execution_Environment - A boolean parameter; set it to False; the ID of the ETL execution environment is UNIX.

22. Save when finished.

23. Initial load instructions: Go to the task AFIX IWeb API Execution. Run the task and wait to see if the job executes without any issues. Once it has made progress, make sure each of these tasks is triggered and completes:

    - IWeb API Validation

    - State 2 ODS Load

    - Forecast Execution

    - OLAP Execution

24. Once the initial loads have completed, the ODS and OLAP tables are populated. Now the daily sequence can be scheduled. Resume the CRON trigger *Trigger_IWeb_API*. Go to the task OLAP_Sequential_Execution and change the context parameter *custom date* to the original value in OLAP_Sequential_Execution and save.

If the upgrade needs to be aborted for any reason, import the previously created backup. Alternatively, redeploy the previous version of the content.

JasperReports Server Installation - Windows

The following instructions explain how to install the JasperReports Server on Windows.

Prerequisite

Download all of the JasperReports Server contents from the distribution site. The JRS folder contains the following files:

- applicationContext-externalAuth-oAuth

- applicationContext-security

- applicationContext-security-web

- InstallCert$SavingTrustManager.class

- InstallCert.class

- jasperreports-server-7.1.1-windows-64bit-installer.exe

- jasperserver.license

- LatoFont

- stc-jaspersoft-oauth-0.0.1-SNAPSHOT

Installation Steps

1. Download the JasperReports Server for Windows and the license file from the release distribution:

   ```
   Server Components\JRS\jasperreports-server-7.1.1-windows-64bit-
   installer.exe
   Server Components\JRS\jasperserver.license
   ```

2. Run the JasperReports Server Installer by right-clicking on the file and selecting **Run as administrator:**

   ```
   jasperreports-server-7.1.1-windows-64bit-installer.exe
   ```

3. Follow the prompts to accept the license agreement.

4. Select the **Install All Components and Samples** option.

5. Follow the prompts to specify the installation folder. Specify the following directory:

   ```
   C:\Jaspersoft\jasperreports-server-6.2
   ```

6. On completion of the installation, start the JasperReports server by selecting the following:

   ```
   Launch JasperReports Server Now (for bundled Tomcat and PostgreSQL only)
   If you're installing on Linux, don't close the terminal window running
   the start script.
   ```

7. Validate the installation by logging in to the JasperReports Server console. Use your browser to access the server. Replace `<hostname>` below with the name or IP address of the server:

   ```
   http://<hostname>:8080/jasperserver-pro
   ```

8. Log in with the user ID of *superuser* and the default password of *superuser*.
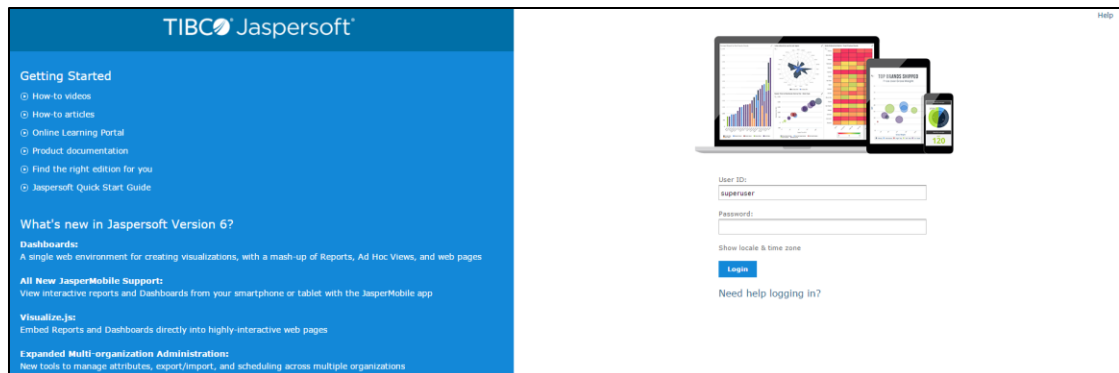
Update the License File
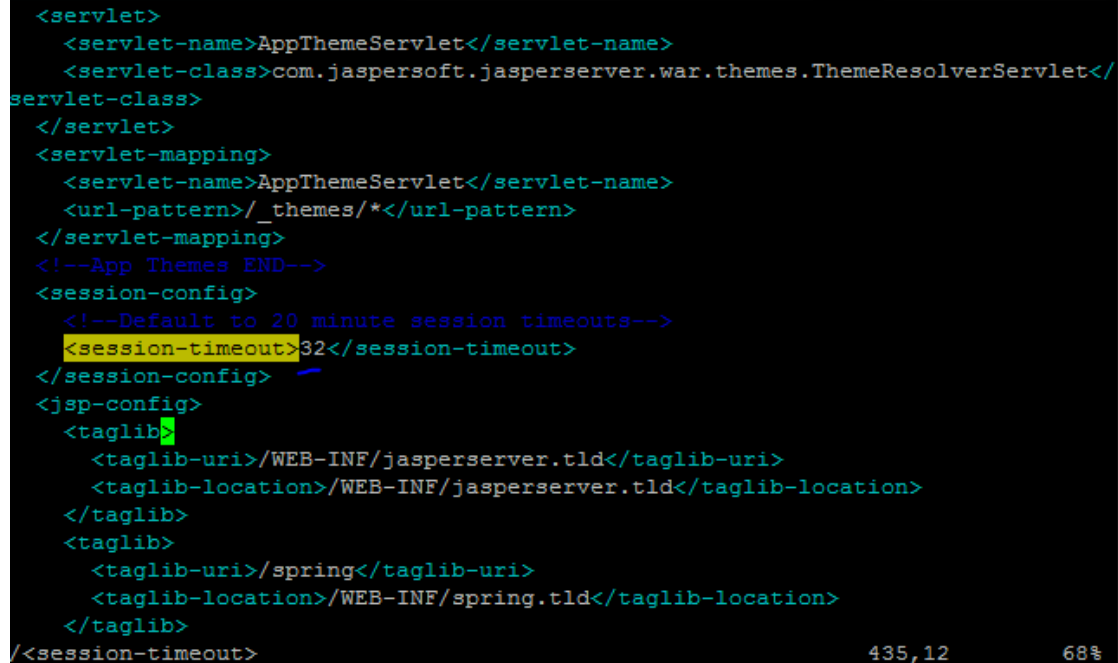
Follow these steps to update the license file for the JasperReports server:

1. Copy the license file (`jasperserver.license`) from the distribution site and move it to your home directory/desktop.

2. Replace the license file in the JasperReports installation directory (`C:\Jaspersoft\jasperreports-server-6.2\`) with the license file from the above step, overwriting the existing `jasperserver.license` file.

3. Restart the JasperReports server (see [Start/Stop the JasperReports Server](#) below).

Increase the JasperReports Session Timeout Period

By default, the JasperReports timeout period is set to 20 minutes. However, the timeout period should be reset to 32 minutes in order to match with Keycloak.

1. Open `web.xml` from the path `C:\Jaspersoft\jasperreports-server-6.2\apache-tomcat\webapps\jasperserver-pro\WEB-INF\web.xml`.

2. Search for the property `<session-timeout>` under `<session-config>` and update the value to **32**. After this, the property and value should be similar to the image below:

3. Restart the JasperReports server (see [Start/Stop the JasperReports Server](#) below).

Start/Stop the JasperReports Server

To start or stop the JasperReports server, click the Start button, go to **All Programs > JasperReports Server > Start or Stop Services**, and then select either **Start Service** or **Stop Service**.

JasperReports Configuration with Keycloak

A few configuration changes need to be made in order for JasperReports to be used with Keycloak.

Prerequisite

Keycloak must be installed and set up, if the SSO-enabled version of IWeb and VOMS is being used.

JasperReports Server Modifications

1. Edit the following values in the `applicationContext-externalAuth-oAuth.xml` file:

Key	XML Tag Name(s) to Update	Value
[KEYCLOAK_URL]	\<authorization_location\> \<token_location\> \<userdetails_location\> \<logoutUrl\>	URL of the Keycloak server. Example: `https://sso-dev.stchome.com/`
[KEYCLOAK_REALM]	\<authorization_location\> \<token_location\> \<userdetails_location\> \<logoutUrl\>	Keycloak realm that the client belongs to. This value needs to be changed, along with \<keycloak_URL\>. In this example, the realm name is *Dev-Integration*: `https://sso-dev.stchome.com/auth/realms/`**`Dev-Integration`**
[JASPERSERVER_URL]	\<property name="redirecturl"\> \<property name="logoutUrl"\>	URL of the Jasper server. Example: `http://<server_name>:8080/jasperserver-pro/oauth`
[CLIENT_ID]	\<property name="client_id"\>	Client ID as set on Keycloak. Example: \<property name="client_id"\> \<value\>jasper-aws-dev\</value\>
[CLIENT_SECRET]	\<property name="clientsecret	Credentials secret key generated by Keycloak.

Key	XML Tag Name(s) to Update	Value
	"> <property name="userdetails _secret">	
State_ID	<property name="state">	This is the global setting used to populate the STATE_ID attribute in Jaspersoft. Example: <bean id="oAuthUserDetailsService" class="com.jaspersoft.jasperserver.ps.OAuth.OAuthUserDetailsServiceImpl"> <property name="state"> <value>WA</value> </property> </bean>
Jaspersoft Roles	<bean id="mtExternalUserSetupProcessor" class="com.jaspersoft.jasperserver.multipleTenancy.security.externalAuth.processors.MTExternalUserSetupProcessor" parent="abstractExternalProcessor"> <property name="organizationRoleMap"> <map> <!-- Example of mapping customer roles to JRS roles --> <entry> <key> <value>ROLE_ADMIN_EXTERNAL_ORGANIZATION</value> </key> <value>ROLE_ADMINISTRATOR</value> </entry> </map>	All the Jaspersoft Roles are configured inside this tag. If any new Jaspersoft Roles are needed, they must be configured here. In the <entry> tag, the key value should match with the client role defined at the Keycloak end. Currently, the following roles are configured: 1. Administrator 2. Superuser 3. User Role

2. Copy the `applicationContext-externalAuth-oAuth.xml` file (edited in Step 1) to `<JASPERSERVER_DIR>/apache-tomcat/webapps/jasperserver-pro/WEB-INF`.

3. Copy stc-jaspersoft-oauth-1.0.0.jar (available in the JRS distribution folder) to `<JASPERSERVER_DIR>/apache-tomcat/webapps/jasperserver-pro/WEB-INF/lib`.

4. Create and save a backup of the `<JASPERSERVER_DIR>/apache-tomcat/webapps/jasperserver-pro/WEB-INF/applicationContext-security.xml` file.

5. In `<JASPERSERVER_DIR>/apache-tomcat/webapps/jasperserver-pro/WEB-INF/applicationContext-security.xml`, replace the access value for the method `com.jaspersoft.jasperserver.api.metadata.user.service.ProfileAttributeService.putProfileAttribute` with **ROLE_USER**.

6. Save a backup copy of the `<JASPERSERVER_DIR>/apache-tomcat/webapps/jasperserver-pro/WEB-INF/applicationContext-security-web.xml` file again and replace the constructor-arg value for org.springframework.security.web.authentication.LoginUrlAuthenticationEntryPoint with **/oauth**.

7. Add the SSL certificate used by Keycloak to the Java installation that Jaspersoft is using. (By default, Java only knows about a small number of root certificates.) To do this, follow these steps:

   a. Copy `InstallCert$SavingTrustManager.class` and `InstallCert.class` (both available in the `STC Suite Distribution/Server Components/JRS` directory) to the `<JASPERSERVER_DIR>/java/bin` directory.

   b. NOTE for sso-dev.stchome.com: This is only for Dev SSO SSL certificate installation. This URL changes based on your server hostname of the Keycloak/SSO server.

   c. Go to the `<JASPERSERVER_DIR>/java/bin` directory and execute these commands. The [sso_link] differs based on the environment; an example might be something like `sso-dev.stchome.com`.

   ```
   java -cp .\ InstallCert [sso_link]
   keytool -exportcert -alias [sso_link]-1 -keystore jssecacerts -
   storepass changeit -file [sso_link].cer
   keytool -importcert -alias [sso_link] -keystore
   ../lib/security/cacerts -storepass changeit -file [sso_link].cer
   ```

8. Make database changes with the following commands. Jaspersoft stores all of its metadata in the Postgres database. All of the user-based profile attributes are stored in the *jiprofileattribute* table in Jaspersoft. By default, user attributes support a character size of 200. In Step E below, the data type size is changed from 200 to 1,000.

   a. Navigate to the `<Jasper Installation Directory>/postgres` directory.

   b. Run this command: `psql -U postgres -W` (the password is *postgres*).

   c. Now you should see at the prompt: `postgres=#`

d. Enter this command to connect to the Jasperserver database in Postgres: `\c jasperserver;` (the password is *postgres*).

e. Execute this SQL alter script: `ALTER TABLE jiprofileattribute ALTER COLUMN attrvalue TYPE character varying(100000);`

9. Restart the Jasper server and navigate to `JasperUrl/oauth` (see example). You should now be redirected to Keycloak to log in. Example: `http://52.10.228.158:8080/jasperserver-pro/oauth`

Steps to Debug Issues Related to Keycloak/JasperReports Server Integration

If there are any issues with integrating Keycloak with Jasper, follow these suggestions below.

Check the applicationContext-externalAuth-oAuth.xml File

Make sure that `applicationContext-externalAuth-oAuth.xml` is configured with the correct Keycloak and Jasper server parameters and with the correct client_secret.

Keycloak Mappers

Make sure that the Jasper client has the below mappers mapped correctly in Keycloak, and check if the Org/fac List mapper contains the correct parameters. (Note that your API-KEY and API-URI will differ from the image below.

Name	Category	Type
org/fac list	Token mapper	Org/fac list
email	Token mapper	User Property
groups	Token mapper	Group Membership
username	Token mapper	User Property
realm roles	Token mapper	Realm Role List
roles	Token mapper	Client Role List
given name	Token mapper	User Property
family name	Token mapper	User Property
full name	Token mapper	User's full name

Validate the IWeb Web Service

Make sure that the IWeb web service URL is accessible. The output of this should return the org/fac list. If there is an error, it needs to be fixed.
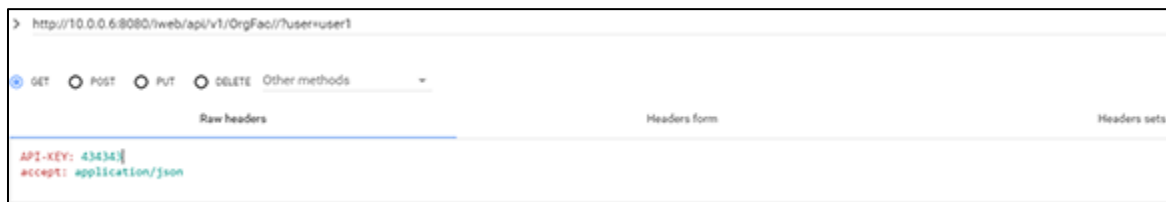
Check the Whitelist Rules

If Jaspersoft is installed in an AWS environment, the outbound connection on port 8080 should be enabled for the IWeb server.

If Keycloak is installed in an AWS environment, the outbound connection on port 8080 should also be enabled for the IWeb server.

Check the Firewall Rules

If there are any special firewall rules preventing the Jasper and/or Keycloak servers from accessing IWeb through port 8080, the need to be fixed so that the port is enabled.

JasperReports Server Upgrade - Windows

These instructions are only required when deploying SMaRT AFIX for the first time or when upgrading from a version of SMaRT AFIX older than 1.17.4. If you have already deployed SMaRT AFIX 1.17.4, you should already have the web service plugin installed on your JasperReports server and can skip these instructions.

As a part of SMaRT AFIX 1.17.4, the new SMaRT AFIX Online Tool web service was introduced to help support the CDC's AFIX Online Tool application. In order to integrate this tool with SMaRT AFIX, a plugin must be added to the existing JasperReports server.

Prerequisites

1. JasperReports server has been installed.

2. The web service plugin zip file has been downloaded to your application server (APP) and the contents extracted. The unzipped folder is referenced as $WS_DS from this point on.

   ```
   \APP\JRS\webserviceds_v1.0_3.zip
   ```

3. Locate your JasperReports server web application folder, which is referred to as $JRS_HOME from this point on. It is recommended that you back up this folder before beginning the plugin installation.

   ```
   C:\Jaspersoft\jasperreports-server-6.2\apache-
   tomcat\webapps\jasperserver-pro\
   ```

Plugin Installation Steps

The installation should be performed as root user.

1. Stop your web server running JasperReports server.

2. Open the folder `$WS_DS/JRS/WEB-INF/bundles` and copy the contents to `$JRS_HOME/WEB-INF/bundles/`. Note that this should not overwrite any existing files.

3. Restart the JasperReports server.

Validation Steps

Follow these steps to confirm that the plugin has been successfully installed:

1. Navigate to your JasperReports server admin console.

2. Log in as an admin-level user.
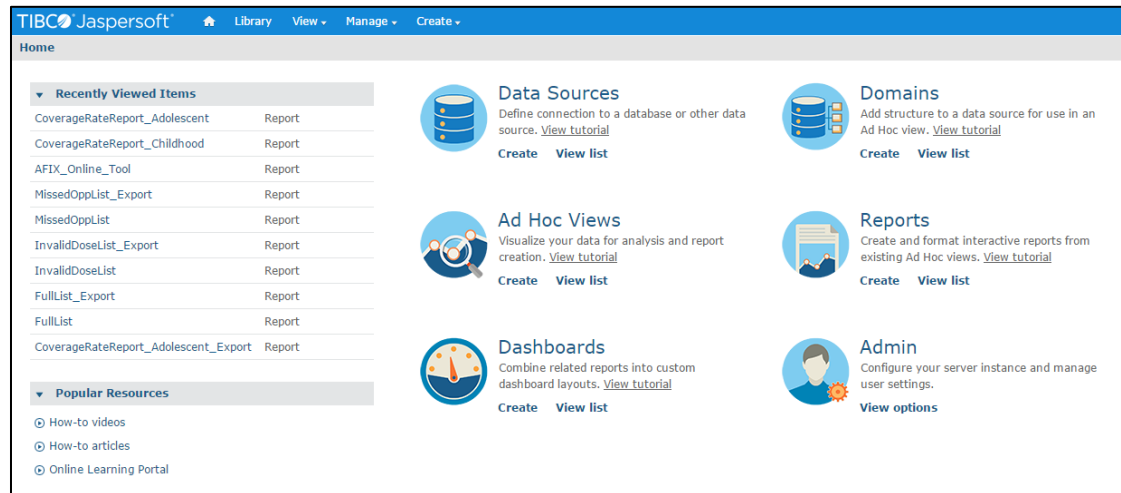
3. Select **Create > Data Source** from the top menu.

4. Confirm that **Web Service Data Source** is listed in the Type drop-down list.

SMaRT AFIX JasperReports Deployment - Windows

The following outlines how to import (migrate) Jaspersoft Reports for SMaRT AFIX.

Pre-Migration Checklist

- Confirm that the Postgres database is installed and configured
- Retrieve the passwords for the SMaRT AFIX database (*afixdb*)
- Retrieve the Jaspersoft superuser username and password
- Confirm that the SMaRT AFIX Online Tool web service is installed

- Confirm that all necessary ports are open across all firewalls (the default port is 80)

- Confirm that the release distribution zip file for Jasper Reports is extracted from `/APP/JRS/AFIX_Reports-[version number].zip` and copied to your local drive.

- **Important:** Be sure to update the JasperReports server by following the instructions in SMaRT AFIX JasperReports Server Upgrade - Windows.

Procedure Steps

Follow these steps to deploy Jaspersoft Reports.

Export the Jaspersoft Repository for Backup

Export the repository by selecting **Manage > Server Settings > Export (Export Everything)** in Jaspersoft. Save the file as a backup.

Import the Content via the Portal

1. Log in to the Jaspersoft BI Portal as the administrator user.

2. Navigate to **Server Settings > Import**.

3. Import the `AFIX_Reports-[version number].zip` file.

4. Update the data source with the database connection information.

Import the Content via the Command Line

1. Confirm that JAVA_HOME is set and your path includes `jre\bin` or `jdk\bin`.

2. Change to the buildomatic directory on the JasperReports server:
   `C:\Jaspersoft\jasperreports-server-7.1.1\buildomatic`

3. Execute the migrate command (adding in the correct version number): `js-import.bat --input-zip "AFIX_Reports-[version number].zip" --update --skip-user-update --include-access-events --include-audit-events --include-monitoring-events`

4. Update the data source with the database connection information: From the left menu, go to **root > AFIX > Data Sources**. Select **AFIX_AWS**, then click the Edit tab. Specify your database connection properties for Host, Port, and Password, then click **Save**.

.
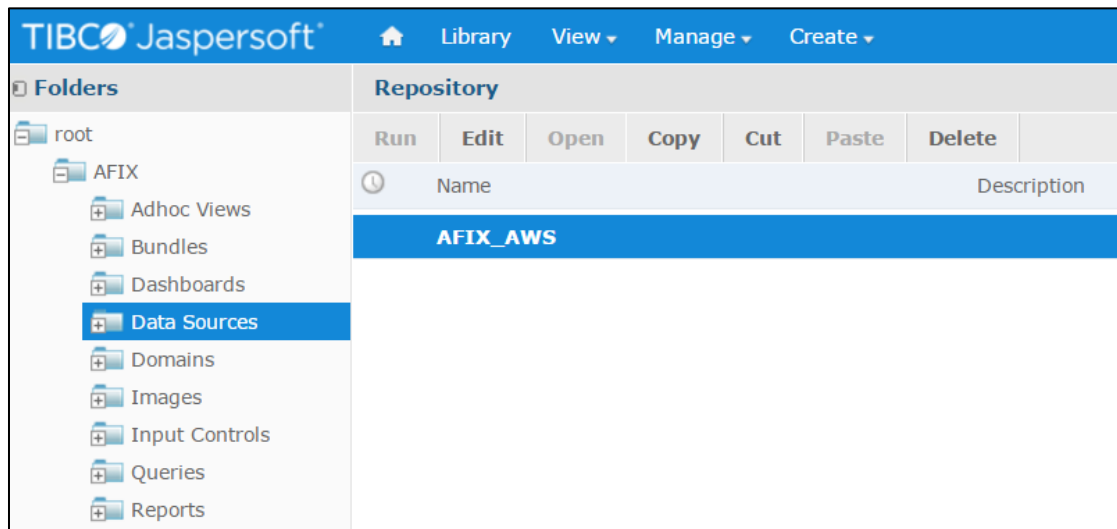
5. Select **AFIX_EXPORT**, then click the Edit tab. This is the web service data source linked to the SMaRT AFIX Online Tool web service.
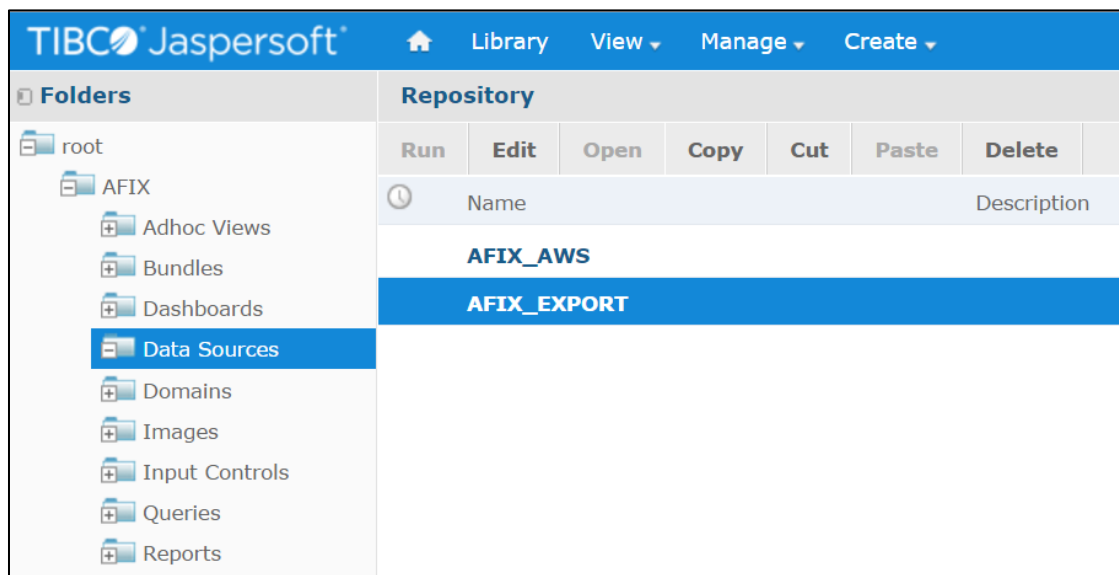
6. Leave the defaults for Auth Type, Language, and Request Verb. Update the web service URI to point to your SMaRT AFIX Online Tool web service deployment. Note that even though the Password field is populated, no password is present or required; leave it as it is. Click **Save** when finished.

Edit Data Source: AFIX_EXPORT

Set Data Source Type and Properties

First, select the type of data source you wish to add, then enter the required property values.

Type: Web Service Data Source ▼

Auth Type:

Language:

xml

Request Verb:

get

Web Service URI:

http://10.0.0.12:8080/afix.export.ws/

Password:

••••••••••••

Username:

Save   Cancel

Validate the New Content

The following steps perform a spot check on the newly created content to validate it and to check for any serious errors. It does not perform a full check of all possible issues and should be followed up with a functional validation of the content.

1. Log on to the Jaspersoft BI server as a user able to run a report. The user should be able to log in successfully and see the subfolders under `/root/AFIX` (select **View > Repositories**).
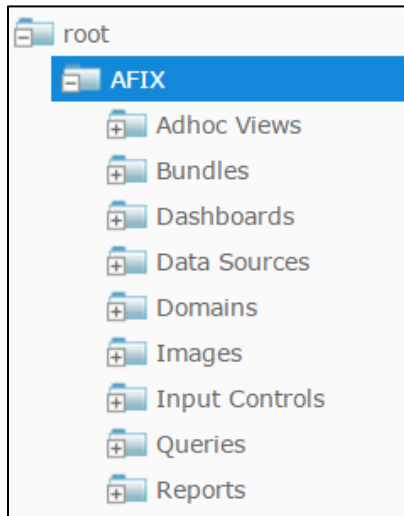
2. Validate that the user can execute and view a report as defined by their class or organization membership: Select the report from `AFIX/Reports/AFIX_Online_Tool`, select one report from any of the other sub-directories of `AFIX/Reports`, and confirm that both reports execute successfully.

Restore the Previous Content (if Necessary)

If there are any uncorrectable issues and the release upgrade needs to be aborted, follow these steps to revert to the previous content:

1. Using the backup exported at the beginning of these steps, import using the steps above. Note that a re-import of the previous version of the content will also achieve the same back-out.

2. Perform the validation steps listed above.

Node.js Installation - Windows

Node.js installation is not supported in Windows.

SMaRT AFIX Application Installation Instructions - Windows

The following instructions explain how to install the application, the Oracle Instant Client, Visual Studio 2013 Community Edition, Windows SDK v8.1, and Redis; how to configure the application dashboard and quick links; specific configuration options, and information on standalone versus multiple application deployment.

If you are upgrading from a previously installed version of SMaRT AFIX, you can skip directly to the Install the Deployment Package section and continue from there.

Prerequisites

The following should already be installed and configured:

- Windows Server 2012

- PostgreSQL server (DBB)

- Oracle server (COR)

- Node.js (APP)

- PM2 (APP)

Installation and Deployment of SMaRT AFIX, iQ, and VOMS

If you are installing SMaRT AFIX alongside the iQ and/or VOMS applications, you only need to install the Oracle Instant Client, Visual Studio, Windows SDK, and Redis with the first application installation. Once these are installed, for subsequent applications that are running on the same server, you can skip down to the Install the Deployment Package section and continue from there instead.

Install the Oracle Instant Client

1. Download Oracle Instant Client Basic and SDK for Windows. Extract Instant Client Basic somewhere on the disk (i.e., `C:\oracle\instantclient_12_1`), then extract Instant Client SDK into the same folder.

2. Add the path you extracted Oracle Instant Client into to the PATH environment variable. This can be accessed via the Advanced System Settings window.

3. Add the following system variables. (See https://github.com/oracle/node-oracledb/blob/master/INSTALL.md#instwin and https://community.oracle.com/docs/DOC-931127 for more information.)

    - OCI_LIB_DIR to `C:\oracle\instantclient_12_1\sdk\lib\msvc`

    - OCI_INC_DIR to `C:\oracle\instantclient_12_1\sdk\include`

Install Visual Studio 2013 Community Edition

See https://www.visualstudio.com/en-us/news/releasenotes/vs2013-community-vs for download and installation instructions.

Install Windows SDK v8.1

See https://developer.microsoft.com/en-us/windows/downloads/windows-8-1-sdk for download and installation instructions.

Install Redis

Use this command:

```
msiexec /i Redis-x64-3.2.100.msi
```

See https://github.com/MicrosoftArchive/redis and https://github.com/MicrosoftArchive/redis/releases/tag/win-3.2.100 for more information.

Install the Deployment Package

Copy the provided zip/tar file to the target server. Extract the archive and change into the parent of the directory where it was extracted.

Configure the Application Dashboard and Quick Links

If you are installing SMaRT AFIX alongside the iQ and/or VOMS applications, the steps below only need to be completed the first time an application is installed. This file should be saved for all subsequent installations.

1. Download the `apps.json` file from the release distribution application components shared folder.

2. Edit this file with a text editor and replace the placeholders DASHBOARD_URL, IWEB_URL, AFIX_URL, PHC-HUB_URL, IQ_URL, and VOMS_URL (if applicable for your installation) with their respective URLs.

3. Save this file and keep it handy as you will need to use it in the installation of iQ, VOMS, and the SSO dashboard.

An example of one such configuration object in the JSON file is shown below. In most cases, only the URL value needs to change:

```
{
"icon": "/static/public/img/STC - SmartAFIX.svg",
"id": "AFIX",
"name": "SMaRT AFIX",
"url": "https://afix.stchome.com ",
"description": "Utilized to make AFIX assessments efficient, standardized and
meaningful.",
"hideIfUnavailable": true,
"accessRole": "Access_afix"
}
```

Copy this file to the following location:

```
<application_install_dir>/src/shared/helpers/appActions/
```

Configure the Reverse Proxy

A reverse proxy is recommended to provide access to the various products. This is not explicitly required unless the products are running with the ENABLE_SSL option set to *true*. However, this will generally be the case when the products are being run in conjunction with IWeb on the same server. See the example Apache configurations at `package/docs/apache`.

General Product Configuration Options

Once the package containing the products has been installed, there are some configuration options that can be set depending on the environment. The majority of these lie in `package/process.json`, which is simply a JSON configuration file for pm2. The options listed in bold below need to be changed to match your environment. Other options not in bold might not need to change, and in most cases can be the default setting. Some options in the `process.json` file are not listed at all below; those options should be left unchanged.

The options are as follows:

Option	Description
script	Location of the startup script application. The path to the script may need to be customized.
cwd	The path to the application. May need to be customized.
PRODUCT	The name of the product.
HOST	The host name for the product.
APIHOST	The host name of the product's respective API server (generally *localhost*).
PORT	The port for the product.
APIPORT	The port for the product's API server.
NODE_ENV	This should always be **production**.
SAML_ISSUER	The SAML issuer (client) from Keycloak.
SAML_ENTRY_POINT	The SAML entry point from Keycloak.
JASPER_SERVER	The domain name of the JasperReports server.
REDIS_URL	The Redis URL used for storing client sessions.
REVERSE_PROXY	When configuring SMaRT AFIX with a reverse proxy, this should be set to *true*.
ENABLE_SSL	When set to *true*, this enables HTTPS support. If REVERSE_PROXY is set to *true*, this should be set to *false* even when the environment is configured for HTTPS.

Option	Description
SECRET_SESSION	The secret key for session storage. **IMPORTANT NOTE:** This value must be exactly the same for every application, in both the server and the API environment variables.

SMaRT AFIX-Specific Configuration Options

The following options are specific to SMaRT AFIX configuration settings:

Option	Description
VOMS_ORACLE_USER	The username for IWeb's SIIS database. This is set to the default user for the SIIS, but may need to be updated depending on your configuration.
VOMS_ORACLE_PASSWORD	The password for IWeb's SIIS database. This is set to the default password for the SIIS, but may need to be updated depending on your configuration.
VOMS_ORACLE_CONNECTION	Connection information for IWeb's SIIS database. This needs to be updated to point to your IWeb's Oracle database instance.
PG_USER	The user account for the SMaRT AFIX PostgreSQL database.
PG_PASSWORD	The password for the associated PG_USER for the SMaRT AFIX PostgreSQL database.
PG_HOST	The hostname for the SMaRT AFIX PostgreSQL database.
PG_PORT	The port number for the SMaRT AFIX PostgreSQL database.
AFIX_EXPORT_URI	The URL for the SMaRT AFIX Online Tool web service. Only the hostname and possibly the port number for the URL need to be updated.
AFIX_EXPORT_KEY	The API Key for the SMaRT AFIX Online Tool web service. This should be left as the default.
CDSI_FORECASTER_VERSION	The current version of the CDSI Forecaster deployed. For the SMaRT AFIX 1.17.5.4 release, it should be set to **5.17.10**.
API_URL_PREFIX	This should be set to **/api**

SMaRT AFIX for Independent States-Specific Options

These options are used for independent builds of SMaRT AFIX (i.e., not connected to IWeb) only and should be left unchanged for builds involving IWeb.

Option	Description
API_URL_PREFIX	This sets the API prefix for independent mappers.
MANAGE_URL_PREFIX	This sets the Manage Users page URL.

Option	Description
IS_INDEPENDENT	When this option is set to *true*, it enables independent build functions.
MANAGE_USER_EMAIL	This enables the password reset functionality for the Manage Users page.
SERVICE_API	This enables custom report template sharing for independent SMaRT AFIX. It should be set to **api/orgFacSearch**.

NOTE: Due to variations in the org-fac-micro-service between the different applications (SMaRT AFIX, VOMS, and iQ), it is recommended that you deploy the service that is bundled with SMaRT AFIX instead of the one bundled with other applications.

Run the Application

Use pm2 to run the deployment package as shown below. In many cases, environment-specific configuration options must be set prior to running an application's package. See the configuration option sections above for more details.

```
pm2 start package-parent/process.json
```

Start the Products upon Bootup

To have the products automatically start on every boot, do the following once it has been verified that they are running correctly:

```
npm install -g pm2-windows-service
pm2-service-install [-n service-name]
pm2 save
```

Keycloak Configuration for SMaRT AFIX

This task is to be performed during SSO installation of the application. The table below lists each application and component, along with the JSON file name, client name, and URL placeholder name for each. Make sure to use the correct file and other information corresponding to the specific application/component installation.

Application Name	JSON File Name	Client Name	URL Placeholder Name
IWeb	iweb.json	iweb	IWEB-URL
PHC-Hub	phchub.json	phc-hub	PHC-HUB-URL
Jasper Report Server	jasper.json	jasper	JASPER-URL
iQ	interop.json	interop	INTEROP-URL
VOMS	voms.json	voms	VOMS-URL
Logviewer	interop-logviewer.json	interop-logviewer	LOGVIEWER-URL
Dashboard	dashboard.json	dashboard	DASHBOARD-URL

Import the Client and Roles (First Time Only)

These steps explain how to import the client and configure the roles.

Prerequisites

The location of the JSON file for the application being installed.

Import Steps

1. Log in to Keycloak.

2. Select the desired realm for the application suite in the top left drop-down list.

3. Click **Import** on the left side menu.

4. Click the **Select File** button and browse to the SMaRT AFIX release `/SSO/JSON` directory.

5. Select the `afix.json` file and click **Open**.

6. **Important:** In the *If a resource exists* drop-down list, select **Skip**.

7. Select the `afix_Provider_Group.json` file and click **Open**.

8. **Important:** In the *If a resource exists* drop-down list, select **Skip**.

9. Select the `afix_ManageUsers_Role.json` file and click **Open**.

10. **Important:** In the *If a resource exists* drop-down list, select **Skip**.

Configure the Client

1. On the left side menu, click **Clients**.

2. Locate the client named *afix* you just imported (see above) and click **Edit**.

3. On the Settings tab, enter the URL to the application everywhere there is a URL placeholder.

4. If the Client Protocol is SAML, expand the Fine Grain SAML Endpoint Configuration section at the bottom of the page and make sure the URL placeholders are replaced with the application URL.

5. Click the **Save** button at the bottom.

6. Click on the Mappers tab.

7. Locate the *user-type* mapper and click the **Edit** button.

8. In the API-URI box, replace the URL placeholder with the URL to your IWeb installation.

9. Verify the API-KEY is set to the API key of your IWeb instance.

10. Click the **Save** button at the bottom.

Additional User Role for Independent States

The SMaRT AFIX build for independent states requires an additional realm role called *ManageUsers*. Follow these instructions to add it:

1. On the left side menu, click **Roles**.

2. On the Realm Roles tab, click the **Add Role** button on the right.

3. In the Role Name box, enter **ManageUsers**.

4. For Description, select to allow Access Manage Users Page.

5. Click the **Save** button at the bottom.

6. Confirm that *ManageUsers* now appears in the Roles drop-down list.

For independent states, a few management users must be configured in Keycloak. Once these users are set up, they can enable all other users on the Manage Users Page in SMaRT AFIX. The following steps can be performed only after the ETL jobs have completed and the users have been successfully migrated to Keycloak.

1. In Keycloak, click **Users** in the left side menu.

2. Either search for a management user by name in the Search box (click the magnifying glass icon to search) or click **View all users** and click on one of the users in the list.
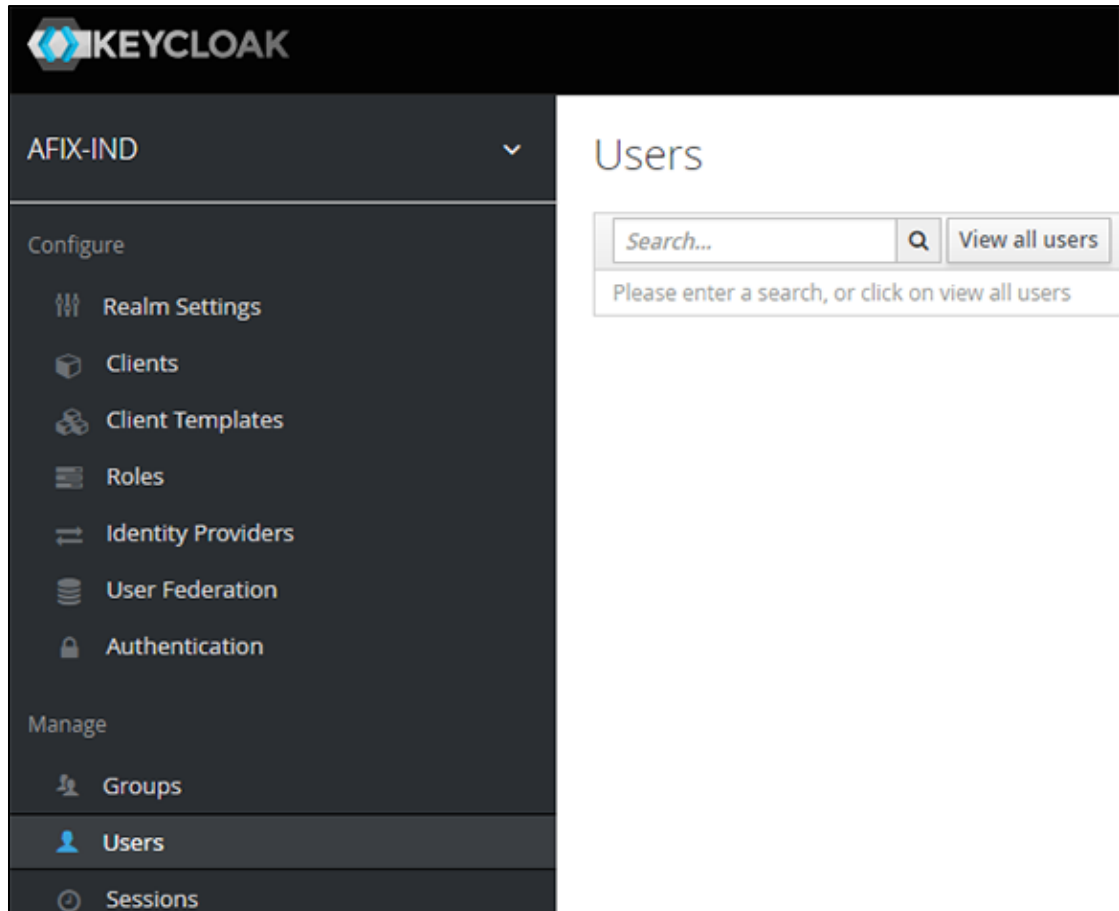

3. After selecting a user, the Users page refreshes with the selected user's information. Click the Role Mappings tab. Notice that the user has two roles assigned: *offline_access* and *State*.
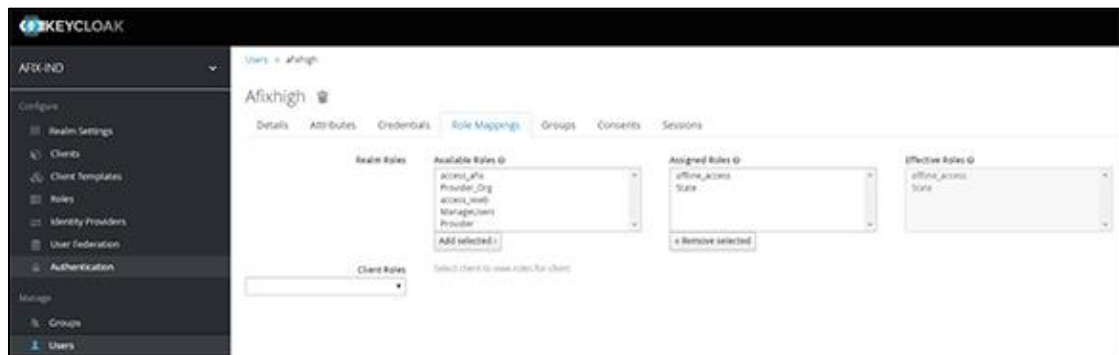
4. From the Available Roles, select *access_afix* and *ManageUsers*, then click Add Selected to apply the roles to the user.
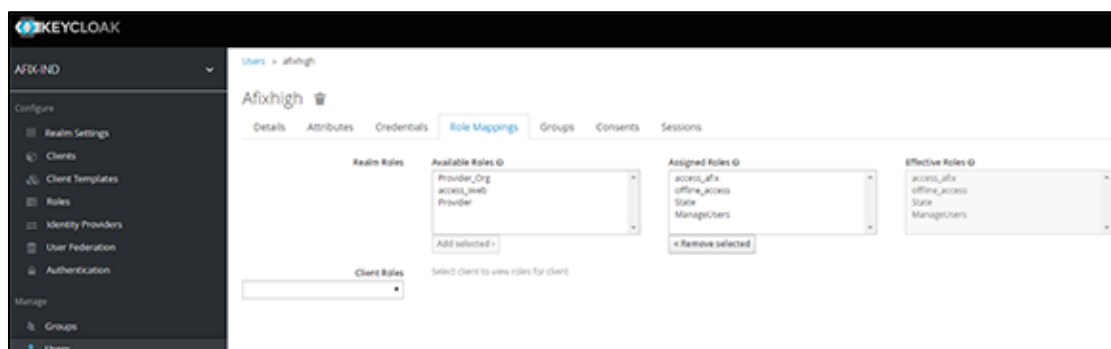
5. Click the Credentials tab and update the user's password. You can set a default password if you want to, but whether you do or not, make sure to select **Update Password** in the Reset Actions drop-down list and then click **Send Email**. This sends an email to the user with a link to reset their own password.
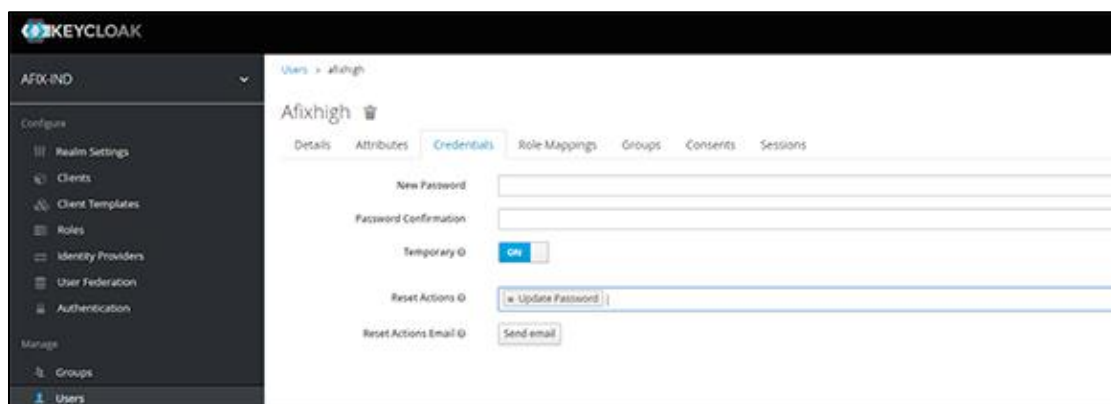
6. Repeat this process for every user that needs to have Manage Users access.

Upgrade Instructions

Before upgrading, make sure you know the location of the JSON file for the application being installed.

Import Steps

1. Log in to Keycloak

2. Select the desired realm for the application suite in the top left drop-down list.

3. Click **Import** on the left side menu.

4. Click the **Select File** button and browse to the SMaRT AFIX release `/SSO/JSON` directory.

5. Select the `afix_Provider_Group.json` file and click **Open**.

6. **Important:** In the *If a resource exists* drop-down list, select **Skip**.

7. Select the `afix_ManageUsers_Role.json` file and click **Open**.

8. **Important:** In the *If a resource exists* drop-down list, select **Skip**.