





STC | iQ Installation Guide





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This documentation describes the following: STC|iQ (v. April 2018) installation

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STC|iQ Installation Instructions

The following provides an overview of the process for installing the STC|iQ application (also referred to as *iQ*).

Components

iQ is composed of several server components. The following includes their function and a brief technical description.

Apache ActiveMQ

ActiveMQ is an open-source message broker. ActiveMQ provides asynchronous message communication. PHC Hub sends transaction messages to iQ via ActiveMQ.

STC Consumer

This is a Java process that is responsible for processing the messages sent by PHC Hub to ActiveMQ. As messages are processed, they are parsed and inserted into the iQ ODS database. As noted above, messages in and out of ActiveMQ are asynchronous. That is, PHC Hub can send messages to ActiveMQ whether or not the consumer process is running.

PostgreSQL

iQ utilizes PostgreSQL 9.4 as a database. The name of the database is *interop*. It is created via several .sql scripts.

JasperReports Server (JRS)

JRS is a web application that provides the reports for iQ. These reports are imported into JRS via the JRS Management Console. See <u>iQ JasperReports Deployment - Linux</u> or <u>Windows</u> for installation instructions.

Jaspersoft ETL (JETL)

Transaction data asynchronously streams into iQ via a Message Queue (JMS). A nightly ETL (Extract, Load, Transform) batch job processes the data into a form optimized for BI (Business Intelligence).

iQ Application

The UI and application server logic are provided via the iQ application (formal name: STC|iQ). 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 iQ 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 <u>Build a Linux (CentOS) Server</u> instructions.

Component	Server	Linux	Windows
Keycloak Installation	Service (SVC)	See either Keycloak Instal Hosted Clients or Keycloal Self-Hosted Clients.	llation Guide for STC- k Installation Guide for
PostgreSQL Server (if not already installed)	Database and Batch (DBB)	Postgres Database Installation - Linux	Postgres Database Installation Windows
iQ Database	Database and Batch (DBB)	<u>iQ Database</u> Initialization - Linux	iQ Database Initialization - Windows
MongoDB Server	Database and Batch (DBB)	<u>MongoDB</u> Installation - Linux	<u>MongoDB Installation -</u> <u>Windows</u>
ActiveMQ Server	Service (SVC)	ActiveMQ Installation - Linux (and then ActiveMQ Credential Encryption - Linux)	<u>ActiveMQ Installation -</u> <u>Windows (</u> and then <u>ActiveMQ Credential</u> <u>Encryption - Windows</u>)
JMS Consumer	Service (SVC)	JMS Consumer Installation - Linux	JMS Consumer Installation - Windows
Jaspersoft ETL Server	Database and Batch (DBB)	Jaspersoft ETL Installation <u>- Linux</u>	Jaspersoft ETL Installation <u>- Windows</u>
iq etl	Database and Batch (DBB)	iQ Jaspersoft ETL Deployment <u>- Linux</u>	iQ Jaspersoft ETL Deployment <u>- Windows</u>
JasperReports Server	Application (APP)	JasperReports Server Installation - Linux	JasperReports Server Installation - Windows
iQ Reports	Application (APP)	<u>iQ JasperReports</u> Deployment - Linux	iQ JasperReports Deployment - Windows
Node.js Server (if not already installed)	Application (APP)	<u>Node.js Installation -</u> Linux	Node.js Installation - Windows
iQ Application	Application	iQ Application	iQ Application

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

Component	Server	Linux	Windows		
Installation	(APP)	Installation Installation Instructions - Linux Instructions - Win			
iQ Application Configuration	Application (APP)	iQ Application Configuratio	on		
Keycloak Configuration for iQ	Service (SVC)	Keycloak Configuration for	<u>iQ</u>		

Linux Instructions

The following instructions are for the Linux operating system.

Build a Linux (CentOs) Server

The instructions below explain how to install CentOS 7 Minimal and configure it. This is a base configuration suitable for reuse for all servers. An image or snapshot should be taken, if possible (such as in a cloud or AWS environment), so that these steps do not need to be performed again. Initially, the server is usually set up with the following:

- CentOS 7 Minimal (64-bit)
- 64-bit CPU
- 2GB RAM minimum
- 50GB HD minimum

These requirements are only for the initial setup. CPU, RAM, and storage requirements vary based on server use. Check the STC Suite specifications document prior to installing additional components on the server.

The instructions below explain how to build a base server from scratch. After following these steps, an image should be created so that these steps do not need to be performed again.

Install CentOS 7 Minimal and Configure

CentOS 7 Minimal is installed in order to be able to start from a lean Linux installation. Packages and software components are added as needed.

- 1. Disable the SSH login as root Run the remainder of this steps as root or use sudo.
- 2. Edit sshd_config. Vi is used here, but any editor can be used.

sudo vi /etc/ssh/sshd_config

3. On the line that says *#PermitRootLogin yes*, update it to the following (remember to remove the *#*):

PermitRootLogin no

4. Restart the sshd service:

sudo service sshd restart

5. By default, SELinux is set to be enforced. Change this by running:

sudo setenforce 0

6. Edit the following file so *permissive* persists across reboots:

sudo vi /etc/selinux/config

7. Change the line *SELINUX=enforcing* to the following and save the changes:

SELINUX=permissive

8. Make sure the software is completely up to date:

sudo yum update

9. Finally, install some basic packages:

```
sudo yum -y install net-tools gcc-c++ openssl-devel make git unzip bzip2
wget vim-enhanced ntp epel-release tmux dos2unix patch
```

Postgres Database Installation - Linux

The information below describes how to install the Postgres database on Linux CentOS 7, as well as how to modify relevant Postgres server configuration settings for iQ (Interop).

Install on Linux CentOS 7

Currently, iQ is using CentOS 7 as its Linux distribution. CentOS 7 has Postgres 9.2 included with its default repositories. Postgres 9.4 is required for iQ. The following steps detail how to upgrade to Postgres 9.4.

Before continuing, it is assumed that you have already followed the <u>Build a Linux</u> (<u>CentOS</u>) <u>Server</u> instructions.

 Exclude the postgresql package from the CentOS base repositories - Edit /etc/yum.repos.d/CentOS-Base.repo and add the exclude lines below to the [base] and [updates] sections, then save the changes. Note that this must be sudo'd to act as root to edit the file:

```
[base]
name=CentOS-$releasever - Base
mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=
os&infra=$infra
#baseurl=http://mirror.centos.org/centos/$releasever/os/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
exclude=postgresql*
```

```
#released updates
[updates]
name=CentOS-$releasever - Updates
mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=
updates&infra=$infra
#baseurl=http://mirror.centos.org/centos/$releasever/updates/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
exclude=postgresql*
```

2. Install the PGDG RPM file:

```
sudo yum install -y
https://download.postgresql.org/pub/repos/yum/9.4/redhat/rhel-7-
x86_64/pgdg-centos94-9.4-2.noarch.rpm
```

3. Trigger the packages update:

sudo yum update

4. Install the Postgres 9.4 server/packages:

sudo yum install -y postgresql94-server postgresql94-libs

5. Initialize the Postgres database:

sudo /usr/pgsql-9.4/bin/postgresql94-setup initdb

6. Set Postgres to run as a service and start Postgres:

```
sudo systemctl enable postgresql-9.4
sudo systemctl start postgresql-9.4
```

Modify Postares Server Configuration Settings

Some of the Postgres server configuration settings must be modified.

1. Act as the *postgres* user to perform admin level changes:

```
sudo su - postgres
cd 9.4/data/
```

2. Add the Postgres /bin/ directory to your path. Edit the ~/.bash_profile and add the following to the end of the file, then save the file:

```
PATH=/usr/pgsql-9.4/bin:$PATH
export PATH
```

3. Run the following to update the bash environment PATH:

source ~/.bash_profile

4. Edit postgres.conf with your favorite editor and add the following line right after
 # - Connection Settings -, then save the file:

listen_addresses = '*'

5. Edit the pg_hba.conf file to allow connections from other STC servers/applications and secure the connection using md5 instead of clear text passwords. Change the following line:

host all all 127.0.0.1/32 md5

to something like the following, which will enforce md5-encrypted password communication. Let's assume your internal sub-net falls under 192.168.x.x, which would update the line to:

host all all 192.168.0.0/16 md5

- 6. Save the changes. If you are technical and familiar enough with CIDR notation, you can further customize and restrict connection access as needed.
- 7. Trigger Postgres to reload with the new configuration changes by running:

pg_ctl restart

8. Complete the installation by initializing the database (see <u>iQ Database</u> <u>Initialization - Linux</u>).

Add Fuzzy Search Module to Postares DB

In independent deployments of SMaRT AFIX, provider data is pulled from the SMaRT AFIX Postgres database. This requires that an additional plugin be added to the database to enable fuzzy searching.

1. Log in to the database server (dbb) as a root user:

sudo su - root

2. Install the contrib package:

yum install postgresql-contrib

- 3. Enter "Y" when prompted.
- 4. Switch to postgres user:

sudo su - postgres

5. Log in to afixdb and create an extension for the fuzzy search:

```
psql -d afixdb
afixdb=# create extension fuzzystrmatch;
CREATE EXTENSION
```

iQ Database Initialization - Linux

The information below describes how to initialize the iQ database on Linux.

Prerequisites

- 1. Confirm that PostgreSQL has been installed.
- Download the release distribution zip file from Application Components/IQ/POSTGRES and extract the database scripts for the database server.
- As a root user, give read, write, and execute permissions on the flyway command

 Navigate to the Application Components/IQ/POSTGRES directory and execute this command:

```
cd Application/Components/IQ/POSTGRES/
chmod 755 flyway
```

4. As a root user, install the dos2unix package:

yum install dos2unix

5. As a POSTGRES user, run the dos2unix command for the flyway file to make it compatible for Linux - Navigate to the Application Components/IQ/POSTGRES directory and execute this command:

```
cd Application/Components/IQ/POSTGRES/
dos2unix flyway
```

Initialization Steps

1. Act as user postgres:

sudo su - postgres

2. Prepare the tablespace by creating the directory for the tablespace to be used by Interopdb:

```
mkdir /var/lib/pgsql/9.4/interopdb
mkdir /var/lib/pgsql/9.4/interopdb/data
mkdir /var/lib/pgsql/9.4/interopdb/idx
```

3. From the downloaded release distribution zipped file, extract the database scripts for the database server:

Application Components/IQ/POSTGRES

4. Add postgres to the path:

export PATH=\$PATH:/usr/pgsql-9.4/bin

5. Create the interopdb by navigating to the Application Components/IQ/POSTGRES directory and executing the following command:

```
cd Application Components/IQ/POSTGRES
psql -U postgres -f setup_database.sql
```

6. Create the database users and roles by navigating to the Application Components/IQ/POSTGRES directory and executing the following command:

psql -U postgres -f setup_objects.sql

 Create the ETL config schema by navigating to the Application Components/IQ/POSTGRES directory downloaded as part of the prerequisites and execute the following command:

```
./flyway.sh -url=jdbc:postgresql://localhost:5432/interopdb -
schemas=etlconfig -sqlMigrationPrefix=ETL_V -user=interop migrate
```

 Create the OLAP schema by navigating to the Application Components/IQ/POSTGRES directory downloaded as part of the prerequisites and execute the following command:

```
./flyway.sh -url=jdbc:postgresql://localhost:5432/interopdb -
schemas=interopolap -sqlMigrationPrefix=OLAP_V -user=interop migrate
```

9. Create the ODS schema by navigating to the Application Components/IQ/POSTGRES directory downloaded as part of the prerequisites and execute the following command:

```
./flyway.sh -url=jdbc:postgresql://localhost:5432/interopdb -schemas=ods
-sqlMigrationPrefix=ODS_V -user=interop migrate
```

MongoDB Installation - Linux

The following instructions describe how to install MongoDB on Linux CentOS 7 and how to set the MongoDB server configuration changes for Interop (iQ).

Install MongoDB on Linux (CentOS 7)

Interop (iQ) is currently using CentOS 7 as its Linux distribution. CentOS 7 also currently has MongoDB 2.6.11 in its repository.

Before continuing, make sure you have followed the sever preparation steps in <u>Building a</u> <u>Linux (CentOS) Server</u>.

1. Trigger a packages update:

sudo yum update

2. Install the MongoD 2.6 server/packages:

sudo yum install -y mongodb-server mongodb

3. Set MongoD to run as a service and start MongoD:

sudo systemctl enable mongod
sudo systemctl start mongod

Make MongoDB Server Configuration Changes for Interop (iQ)

1. Obtain the Mongo distribution files.

Copy the following two files and one folder from the Interop package to the Linux server. Make sure to run the following steps in the same folder where the files are placed. (Note: If you are trying to copy the files from a Windows machine, you can use a tool such as <u>psftp.exe</u> to transfer the files.)

- stc-mongo-admin-db.js
- stc-mongo-stc-db.js
- MONGO_STC_DB

2. Set the passwords for the MongoDB users.

First, create the *superuser* account. By default, there is no password set (pwd: "",). Edit stc-mongo-admin-db.js and set a unique password, then save it and keep the file nearby. The file should look like this, but with the new password ("MySUpassword"):

```
db.createUser(
{
    user: "superuser",
    pwd: "MySUpassword",
    roles: [ "root" ]
})
```

Next, set the password for the STC account that will be used by the Interop portal application (iQ). Edit stc-mongo-stc-db.js and set a unique password, using the same process as above. This password should be different from the superuser account, however.

NOTE: The *stcadmin* user and password you selected will be needed during installation of the Interop portal application (iQ). It will be entered on the ./production/deploy.sh command.

3. Apply the MongoDB scripts.

With MongoDB now installed, the server running and the passwords configured, you can run the client interface by entering the commands at the Linux prompt:

```
mongo admin stc-mongo-admin-db.js
mongorestore --host localhost --db stc --drop MONGO_STC_DB
mongo stc stc-mongo-stc-db.js
```

4. Edit/Update /etc/mongod.conf.

Using an editor, edit the mongod configuration file; vi is used here.

```
sudo vi /etc/mongod.conf
```

With the default recommendation, the services that will use MongoDB reside on the same server. If you have a different configuration, you must change the $bind_{ip} = 127.0.0.1$ line. Examples:

```
# this would allow any IP to connect
bind_ip = 0.0.0.0
-or-
# this would allow the localhost as well as the interface IP address 1.2.3.4
(meaning the assigned IP address of this server machine running MongoDB)
bind_ip = 127.0.0.1,1.2.3.4
```

Remove the *#* from the line *#auth* to the following (around line 70 in the file):

```
# Run with/without security (without by default)
auth = true
#noauth = true
```

Now save the file and exit back to the Linux prompt. Restart the MongoDB sever with the following:

```
sudo systemctl restart mongod
```

MongodB for Interop (iQ) is now set up and complete.

ActiveMQ Installation - Linux

The following information describes the prerequisites and steps for installing ActiveMQ, plus how to verify the installation and set up the autostart. All actions are performed on Server 2 (Message Queue).

Prerequisites

The Java Runtime (1.7 or higher) JRE must be installed.

Installation Steps

1. If not done already, download the ActiveMQ distribution and configuration files:

```
Server Components/AMQ/apache-activemq-5.13.0-bin.tar.gz
Server Components/AMQ/activemq.xml
Server Components/AMQ/jetty-realm.properties
Server Components/AMQ/credentials-enc.properties
Server Components/AMQ/webconsole-embedded.xml
```

- 2. Place ActiveMQ into the temporary directory: /tmp
- 3. Unzip the ActiveMQ distribution file:

```
$ cd /tmp
$ gunzip /tmp/apache-activemq-5.13.0-bin.tar.gz
$ tar xvf /tmp/apache-activemq-5.13.0-bin.tar
```

4. Copy the ActiveMQ distribution file to the installation directory:

\$ sudo mv apache-activemq-5.13.0 /usr/local/

5. Create a symbolic link:

\$ sudo ln -sf /usr/local/apache-activemq-5.13.0 /usr/local/activemq

6. Create the *activemq* user:

\$ sudo adduser activemq -s /bin/bash

7. Set a password (enter the password at the prompt):

\$ sudo passwd activemq

8. Modify /home/activemq/.bashrcfor the activemq user, adding JAVA_HOME and PATH to the Java executable (the actual path may be different on your system):

```
$ sudo vi /home/activemq/.bashrc
```

```
# add your JAVA_HOME location
export JAVA_HOME=/usr/lib/jvm/jre-1.8.0
```

```
# add java to your path
export PATH=$JAVA_HOME/bin:$PATH
```

9. Copy the configuration files:

```
$ sudo cp /tmp/Server Components/AMQ/activemq.xml
/usr/local/activemq/conf/
$ sudo cp /tmp/Server Components/AMQ/jetty-realm.properties
/usr/local/activemq/conf/
$ sudo cp /tmp/Server Components/AMQ/credentials-enc.properties
/usr/local/activemq/conf/
$ sudo cp /tmp/Server Components/AMQ/webconsole-embedded.xml
/usr/local/activemq/webapps/admin/WEB-INF/
```

10. Change the owner and group to *activemq* for all files in the installation directory:

```
$ sudo chown -R activemq /usr/local/apache-activemq-5.13.0
$ sudo chgrp -R activemq /usr/local/apache-activemq-5.13.0
$ sudo chown -R activemq /usr/local/activemq
$ sudo chgrp -R activemq /usr/local/activemq
```

11. Start ActiveMQ (ActiveMQ is started in the background):

\$ sudo /usr/local/apache-activemq-5.13.0/bin/activemq start

Verify Installation

Follow these steps to verify the installation was successful:

- Open a browser to this URL (enter your ActiveMQ server address): http://yourmq-server:8161/admin/
- 2. Use the default credentials: user admin and password t2X599apg

You should see the welcome page. The actual values for your server will differ from this example:

X	CtiveMQ	Software Foundation
Home Queues Tep	vice Subscribers Connections Network Scheduled Send	() Despect
Walaamat		Queue Views
welcome.		e Graph • XM
Welcome to the	Apache ActiveMQ Console of Interop.qa1 (ID:interop-qa1-mq.stchome.com-52288-1461339933274-0:1)	
You can find mor	re information about Apache ActiveMQ on the Apache ActiveMQ Site	Topic Views
Broker		- Subscribers
Terra	interne get	Views
Venture	3.118	= XHL
20	IDiantarup 441 mg 40/homa.com 52/08-1461300033/74-0.1	With shall be been
Vetime	4 kours 47 minutes	Concentration
then partect used		• FAQ
Names partent used	•	. Foruma
Temp percent used		1000 1000 A. 4 100

CAUTION: The default password should be changed prior to production. See <u>ActiveMQ</u> <u>Credential Encryption - Linux</u>.

Autostart

Follow these steps to set up autostart:

1. Copy the file:

```
cp /usr/local/apache-activemq-5.13.0/bin/activemq /etc/init.d/
chmod 755 /etc/init.d/activemq
```

2. Edit the /etc/init.d/activemg file and locate this code:

```
# Active MQ installation dir
if [ -z "$ACTIVEMQ_HOME" ] ; then
ACTIVEMQ_HOME="`getActiveMQHome`"
```

3. Change it to this:

Active MQ installation dir if [-z "\$ACTIVEMQ_HOME"] ; then ACTIVEMQ_HOME="/usr/local/activemq"

4. Locate this code:

```
# Configure a user with non root privileges, if no user is specified do
not change user
if [ -z "$ACTIVEMQ_USER" ] ; then
ACTIVEMQ_USER=""
```

5. And change it to:

```
# Configure a user with non root privileges, if no user is specified do
not change user
```

if	[-z	"\$Z	ACTIVEN	4Q_	USER"]	;	then
A	CЛ	IVE	EMQ_	_USER='	'ac	tivem	q"		

6. Restart and enable ActiveMQ:

systemctl daemon-reload systemctl enable activemq

ActiveMQ Credential Encryption - Linux

The instructions below detail how to encrypt credentials for the Web Admin user and for the JMS connection. Note that all paths are relative to your ActiveMQ installation directory (example: /usr/local/apache-activemq-5.13.0).

Encrypt Credentials for Web Admin User

There are two steps for this: generate the encrypted password, then set the encrypted password for the user.

Step 1: Generate the Encrypted Password

Use the jetty password utility to generate an encrypted password for a specific user. Note that [version] is the specific version of your distribution, [user] is the name of the user for whom the password is being generated, and [password] is the password to be encrypted.

```
$ java -cp ./lib/web/jetty-all-[version].jar
org.eclipse.jetty.util.security.Password [user] [password]
```

Example: Generate an encrypted password for the admin user (where the password is *myPassword*):

```
$ java -cp /usr/local/apache-activemq-5.13.0/lib/web/jetty-all-
9.2.13.v20150730.jar org.eclipse.jetty.util.security.Password admin
myPassword
```

Here is the output:

```
2016-08-25 14:45:58.469:INFO::main: Logging initialized @89ms
myPassword
OBF:1uh41zly1qw01vu11ym71ym71vv91qxq1zlk1ugm
MD5:deb1536f480475f7d593219aa1afd74c
CRYPT:adtJskS8cjahg
```

Note that the encrypted password is *CRYPT: adtJskS8cjahg* in the last line of code above.

Step 2: Set the Encrypted Password for the User

Edit the Jetty realm properties (apache-activemq-[version]/conf/jettyrealm.properties). Replace the password with the CRYPT line from the generated output.

Example: Set the encrypted password (*CRYPT: adtJskS8cjahg* in the second-to-last line of code below):

\$ vi /usr/local/apache-activemq-5.13.0/conf/jetty-realm.properties

Licensed to the Apache Software Foundation (ASF) under one or more ## contributor license agreements. See the NOTICE file distributed with ## this work for additional information regarding copyright ownership. ## The ASF licenses this file to You under the Apache License, Version 2.0 ## (the "License"); you may not use this file except in compliance with ## the License. You may obtain a copy of the License at ## ## http://www.apache.org/licenses/LICENSE-2.0 ## ## Unless required by applicable law or agreed to in writing, software ## distributed under the License is distributed on an "AS IS" BASIS, ## WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. ## See the License for the specific language governing permissions and ## limitations under the License. ## ----# Defines users that can access the web (console, demo, etc.) # username: password [,rolename ...] #admin: admin, admin admin: CRYPT:adtJskS8cjahg, admin user: user, user

Encrypt Password for JMS Connection

There are also two steps for this one: generate the encrypted password, then set the encrypted password for the connection users.

Step 1: Generate the Encrypted Password

Use the ActiveMQ password utility to generate an encrypted password for a specific user. Note that [password] is the encryptor's password and [input] is the password to be encrypted.

\$ bin/activemq encrypt --password [password] --input [input]

Example: Generate an encrypted password (where the password is *myPassword*):

\$ /usr/local/apache-activemq-5.13.0/bin/activemq encrypt --password activemq --input myPassword Here is the output:

```
ACTIVEMQ_HOME: /usr/local/apache-activemq-5.13.0
ACTIVEMQ_BASE: /usr/local/apache-activemq-5.13.0
ACTIVEMQ_CONF: /usr/local/apache-activemq-5.13.0\conf
ACTIVEMQ_DATA: /usr/local/apache-activemq-5.13.0\data
Encrypted text: n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp
```

Note that the encrypted password is *n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp* in the last line of code above.

Step 2: Set the Encrypted Password for the Connection Users

Edit the conf/credentials-enc.properties file, setting the encrypted value *ENC(encrypted password)*. Replace the password with the encrypted text line from the generated output.

Example: Set the encrypted password (*password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp*) lines of code below):

\$ vi /usr/local/apache-activemq-5.13.0/conf/credentials-enc.properties

```
## -----
## Licensed to the Apache Software Foundation (ASF) under one or more
## contributor license agreements. See the NOTICE file distributed with
## this work for additional information regarding copyright ownership.
## The ASF licenses this file to You under the Apache License, Version 2.0
## (the "License"); you may not use this file except in compliance with
## the License. You may obtain a copy of the License at
##
## http://www.apache.org/licenses/LICENSE-2.0
##
## Unless required by applicable law or agreed to in writing, software
## distributed under the License is distributed on an "AS IS" BASIS,
## WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
## See the License for the specific language governing permissions and
## limitations under the License.
## -----
# Defines credentials that will be used by components (like web console) to
access the broker
activemq.username=system
activemq.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
guest.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
user.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
producer.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
admin.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
```

Then edit conf/activemq.xml and verify the lines:

 $<\!\!\!!$ -- Licensed to the Apache Software Foundation (ASF) under one or more

```
contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
the License. You may obtain a copy of the License at
http://www.apache.org/licenses/LICENSE-2.0
Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<!-- START SNIPPET: example -->
<beans xmlns="http://www.springframework.org/schema/beans"</pre>
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd
http://activemq.apache.org/schema/core http://activemq.apache.org/schema/core/activemq-
core.xsd">
<bean id="configurationEncryptor"</pre>
class="org.jasypt.encryption.pbe.StandardPBEStringEncryptor">
<property name="algorithm" value="PBEWithMD5AndDES"/>
<property name="password" value="activemq"/>
</bean>
<bean id="propertyConfigurer"</pre>
class="org.jasypt.spring31.properties.EncryptablePropertyPlaceholderConfigurer">
<constructor-arg ref="configurationEncryptor" />
<property name="location" value="file:${activemq.conf}/credentials-enc.properties"/>
</bean>
<!-- Allows accessing the server log -->
<bean id="logQuery" class="io.fabric8.insight.log.log4j.Log4jLogQuery" lazy-</pre>
init="false" scope="singleton" init-method="start" destroy-method="stop"></bean>
<!--
The <br/>broker> element is used to configure the ActiveMQ broker. -->
<broker xmlns="http://activemq.apache.org/schema/core" brokerName="interop.qal"</pre>
dataDirectory="${activemq.data}">
<plugins>
<simpleAuthenticationPlugin>
<users>
<authenticationUser username="admin" password="${admin.password}"</pre>
groups="users,admins"/>
<authenticationUser username="system" password="${activemq.password}"
groups="users,admins"/>
<authenticationUser username="user" password="${user.password}" groups="users"/>
<authenticationUser username="producer" password="${producer.password}"</pre>
groups="producers"/>
<authenticationUser username="guest" password="${guest.password}" groups="guests"/>
</users>
</simpleAuthenticationPlugin>
<authorizationPlugin>
<map>
<authorizationMap>
<authorizationEntries>
<authorizationEntry queue=">" read="admins" write="admins" admin="admins" />
<authorizationEntry queue="Interop.>" read="producers" write="producers"
```

```
admin="producers" />
<authorizationEntry topic=">" read="admins" write="admins" admin="admins" />
<authorizationEntry topic="ActiveMQ.Advisory.>"
read="guests,users,producers" write="guests,users,producers"
admin="guests,users,producers"/>
</authorizationEntries>
</authorizationMap>
</map>
</authorizationPlugin>
</plugins>
<destinationPolicy>
<policyMap>
<policyEntries>
<policyEntry topic=">">
<!-- The constantPendingMessageLimitStrategy is used to prevent slow topic consumers to
block producers and affect other consumers by limiting the number of messages that are
retained For more information, see: http://activemq.apache.org/slow-consumer-
handling.html -->
<pendingMessageLimitStrategy>
<constantPendingMessageLimitStrategy limit="1000"/>
</pendingMessageLimitStrategy>
</policyEntry>
</policyEntries>
</policyMap>
</destinationPolicy>
<!--
The managementContext is used to configure how ActiveMQ is exposed in JMX. By default,
ActiveMQ uses the MBean server that is started by the JVM. For more information, see:
http://activemg.apache.org/jmx.html -->
<managementContext>
<managementContext createConnector="false"/>
</managementContext>
<!--
Configure message persistence for the broker. The default persistence mechanism is the
KahaDB store (identified by the kahaDB tag). For more information, see:
http://activemg.apache.org/persistence.html -->
<persistenceAdapter>
<kahaDB directory="${activemq.data}/kahadb"/>
</persistenceAdapter>
<1--
The systemUsage controls the maximum amount of space the broker will use before
disabling caching and/or slowing down producers. For more information, see:
http://activemq.apache.org/producer-flow-control.html -->
<systemUsage>
<systemUsage>
<memoryUsage>
<memoryUsage percentOfJvmHeap="70" />
</memoryUsage>
<storeUsage>
<storeUsage limit="100 gb"/>
</storeUsage>
<tempUsage>
<tempUsage limit="50 gb"/>
</tempUsage>
```

```
</systemUsage>
</systemUsage>
<!--
The transport connectors expose ActiveMQ over a given protocol to clients and other
brokers. For more information, see: http://activemq.apache.org/configuring-
transports.html -->
<transportConnectors>
<!-- DOS protection, limit concurrent connections to 1000 and frame size to 100MB -->
<transportConnector name="openwire"
uri="tcp://0.0.0.0:61616?maximumConnections=1000&wireFormat.maxFrameSize=104857600"/>
<transportConnector name="amqp"
uri="amqp://0.0.0.0:5672?maximumConnections=1000&wireFormat.maxFrameSize=104857600"/>
<transportConnector name="stomp"
uri="stomp://0.0.0.0:61613?maximumConnections=1000&wireFormat.maxFrameSize=104857600"/>
<transportConnector name="mqtt"
uri="mqtt://0.0.0.0:1883?maximumConnections=1000&wireFormat.maxFrameSize=104857600"/>
<transportConnector name="ws"
uri="ws://0.0.0.0:61614?maximumConnections=1000&wireFormat.maxFrameSize=104857600"/>
</transportConnectors>
<!-- destroy the spring context on shutdown to stop jetty -->
<shutdownHooks>
<bean xmlns="http://www.springframework.org/schema/beans"</pre>
class="org.apache.activemq.hooks.SpringContextHook" />
</shutdownHooks>
</broker>
<!--
Enable web consoles, REST and Ajax APIs and demos The web consoles requires by default
login, you can disable this in the jetty.xml file Take a look at
${ACTIVEMQ_HOME}/conf/jetty.xml for more details -->
<import resource="jetty.xml"/>
</beans>
<!-- END SNIPPET: example -->
```

JMS Consumer Installation - Linux

These instructions address the installation of ActiveMQ on Server 2 (Message Queue).

Prerequisites

- 1. PostgeSQL has been installed on the DBB server (see <u>Postgres Database</u> <u>Installation - Linux</u>).
- 2. ActiveMQ has been installed and configured on the SVC server (see <u>ActiveMQ</u> <u>Installation - Linux</u>).
- 3. The distribution release zip file has been downloaded and unzipped into your home directory.

Installation Steps

1. Create the *batch* user:

\$ sudo adduser batch -s /bin/bash

2. Set the password (enter it at the prompt):

\$ sudo passwd batch

3. Modify /home/batch/.bashrcfor the batch user, adding JAVA_HOME and PATH to the Java executable:

```
$ sudo vi /home/batch/.bashrc
# add your JAVA_HOME location
export JAVA_HOME=/usr/lib/jvm/jre-1.8.0
```

- # add java to your path
 export PATH=\$JAVA HOME/bin:\$PATH
- 4. Create the installation directory:

```
sudo mkdir /usr/local/batch
sudo mkdir /usr/local/batch/consumer
```

5. Copy STCConsumer.zip into the installation directory:

```
$ sudo cp Application Components/IQ/AMQ/STCConsumer.zip
/usr/local/batch/consumer/
```

6. Unzip STCConsumer.zip:

```
$ cd /usr/local/batch/consumer
$ sudo unzip STCConsumer.zip
```

7. Change ownership and group it to batch:

```
$ cd /usr/local
$ sudo chown batch -R batch
$ sudo chgrp batch -R batch
```

8. Log in as the *batch* user:

\$ sudo su - batch

9. Edit /usr/local/batch/consumer/etc/stcConsumer.properties and set the ActiveMQ details and state code:

```
#activemg details
stc.mq.user=producer
stc.mq.password=g512x1773v
stc.mq.brokerUrl=failover://tcp://your-mq-server:61616
stc.mq.queueName=Interop.milestone
```

```
## State Code
stateCode=??
```

 Edit /usr/local/batch/consumer/etc/hibernate.cfg.xml and set the database connection details:

```
<property name="connection.url">jdbc:postgresql.Driver</property
<property name="connection.url">jdbc:postgresql.//your-db-
server:5432/interopdb</property>
<property name="connection.username">interop</property>
<property name="connection.username">interop</property>
<property name="connection.password">your-db-password</property>
<!-- Database details: End →
```

11. Edit /usr/local/batch/consumer/Start_IQ_Consumer.sh and set JAVA_HOME to the location of your Java executable (see the last line in the code below - your path may differ from the example):

```
## Please make sure jdk 1.8 is installed and java command on the server
is pointing to JDK8
## set java executable to below variable
## example set JAVA_HOME="/usr/jdk8/java"
JAVA_HOME="/usr/lib/jvm/jre-1.8.0"
```

12. Set the execute permission in STC_IQ_Consumer.sh:

\$ chmod 755 Start_IQ_Consumer.sh

13. Execute the dos2unix command in theStart_IQ_Consumer.sh file:

\$ dos2unix Start_IQ_Consumer.sh

14. Start the Consumer process:

\$./Start_IQ_Consumer.sh

Stop Consumer

Follow these steps to stop the Consumer process:

1. Set the execute permission on the Stop_IQ_Consumer.shfile:

\$ chmod 755 Stop_IQ_Consumer.sh

2. Execute the dos2unix command on the Stop_IQ_Consumer.sh file:

\$ dos2unix Stop_IQ_Consumer.sh

- 3. Stop the Consumer process:
 - \$./Stop_IQ_Consumer.sh

Autostart

Follow these steps to set up the autostart:

1. Run this command:

cp /usr/local/batch/consumer/Start_IQ_Consumer.sh /etc/init.d/consumer

2. Edit the Consumer script to add the chkconfig requirements and the CONSUMER_HOME variable. First, add this to the very top of the file:

```
#!/bin/bash
#chkconfig: 234 90 10
#description: JMS Consumer
```

3. Next, add this after the JAVA_HOME line:

```
CONSUMER_HOME="/usr/local/batch/consumer"
```

4. Finally, modify this line:

```
nohup $JAVA_HOME/bin/java -jar lib/stcconsumer.jar > runtimeconsole.log
2>&1&
-to-
nohup $JAVA_HOME/bin/java -jar $CONSUMER_HOME/lib/stcconsumer.jar >
runtimeconsole.log 2>&1&
```

Jaspersoft ETL Installation - Linux

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 variables JAVA_HOME, JDK_HOME, and PATH have been set. Example:

```
export JAVA_HOME=/usr/lib/jvm/jdk1.8_91
export JDK_HOME=/usr/lib/jvm/jdk1.8_91
export PATH=$JAVA_HOME/bin:$PATH
export PATH=$JDK_HOME/bin:$PATH
```

- 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:

```
Server Components/ETL/TIBCOJaspersoft-JETL-Installer-20150908_1633-V6.0.1-installer.zip
```

2. Place the installer into the installation directory:

/opt/TIBCOJaspersoft-JETL-Installer-20150908_1633-V6.0.1-installer.zip

3. Navigate to the installation directory:

\$ cd /opt

4. Install the Unzip utility if it is not already present:

\$ sudo yum install zip unzip -y

5. Unzip the installer:

```
$ sudo unzip TIBCOJaspersoft-JETL-Installer-20150908_1633-V6.0.1-
installer.zip
```

6. Set the execute permission on the installer:

```
$ sudo chmod +x TIBCOJaspersoft-JETL-Installer-20150908_1633-V6.0.1-
linux64-installer.run
```

7. Execute the installer:

```
$ sudo ./TIBCOJaspersoft-JETL-Installer-20150908_1633-V6.0.1-linux64-
installer.run
```

- 8. Follow the prompts to accept the license agreement.
- 9. Follow the prompts to specify the installation folder. Specify the /opt/TIBC0Jaspersoft-6.0.1 directory.
- 10. Follow the prompts to select the install style of item 1 (Easy).
- 11. Follow the prompts to select the install type of item 1 (Server).

- 12. Follow the prompts to select the license file (provide the location of the license file).
- 13. Wait until the installation completes.

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 /opt/TIBCOJaspersoft-6.0.1/jac
$ sudo ./stop_tac.sh
```

Command to start the service:

```
$ cd /opt/TIBCOJaspersoft-6.0.1/jac
$ sudo ./start_tac.sh
```

Start/Stop Jaspersoft ETL Command Line

Command to stop the service:

```
$ cd /opt/TIBCOJaspersoft-6.0.1/cmdline
$ sudo ./stop_cmdline.sh
```

Command to start the service:

```
$ cd /opt/TIBCOJaspersoft-6.0.1/cmdline
```

\$ sudo ./start cmdline.sh

Start/Stop Jaspersoft ETL Job Server

Command to stop the service:

```
$ cd /opt/TIBCOJaspersoft-6.0.1/jobserver
$ sudo ./stop_jobserver.sh
```

Command to start the service:

```
$ cd /opt/TIBCOJaspersoft-6.0.1/jobserver
```

```
$ sudo ./start_jobserver.sh
```

Configure the Admin Console

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

- 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 **User Settings** on the left menu and update the username (if needed) and library information.

admin@stchome.com	
admin	1
admin	0000
change password	
tisadmin	
Data Integration	~
Administrator/Viewer/	0
Z	
nistration Center 2016-05-25 14:15:16 2016-05-25 14:15:16 1 0	
	10.00
	1.9
	admin admin change password tisadmin Data Integration Administrator/Viewer/ s stats nistration Center 2016-05-25 14:15:16 2016-05-25 14:15:16 1

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.
- 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.

Project	
Label:	AFIX_ETL
Active:	
Reference:	
Description:	
Author:	admin admin
Storage:	🔵 SVN 💿 None

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.

User Authorizations for the Project: AFIX_ETL							
	Authorizations by Project	Autho	rizations by User				
Project		User A	uthorizations for the Project	AFIX_ETL			\sim
Project Label	8	🎾 Туре	Login	Last name	First na	Active	Right
AFIX_ETL	1 1		admin@stchome.com	admin	admin	\bigcirc	8 🗞

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

sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/deploy
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/deploy/generatedJobs
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/deploy/executionLogs
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/cmdline/exports
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/Audit
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/Audit/reports
sudo	mkdir	/opt/TIBCOJaspersoft-6.0.1/joblogs
sudo	touch	/opt/TIBCOJaspersoft-6.0.1/joblogs/log

8. In Primary Command Line configuration, set the path for the Job generation folder to/opt/TIBCOJaspersoft-6.0.1/cmdline/exports

CommandLine/primary (5	Parameters)	
Host:	localhost	0
Port:	8002	
Job generation folder:	/opt/TIBCOJaspersoft-6.0.1/cmdline/exports	Validity of path cannot be checked
User component path:		Validity of path cannot be checked
Version	6.0.1.20150908_1633	0

9. In Job Conductor configuration, set the path for the Generated jobs folder to /opt/TIBCOJaspersoft-6.0.1/deploy/generatedJobs and the path to the Tasks logs folder to /opt/TIBCOJaspersof-6.0.1/deploy/executionLogs

Job Conductor (7 Parameters)	0		
Generated jobs folder:	/opt/TIBCOJaspersoft-6.0.1/deploy/generatedJobs	\bigcirc	
Tasks logs folder:	/opt/TIBCOJaspersoft-6.0.1/deploy/executionLogs	\bigcirc	
Number of executions log:	1000	\bigcirc	
Maximum age of log file(d):	0	\bigcirc	
Maximum number of generated	3	\bigcirc	
jobs:			
Maximum age of generated job(d):	0	\bigcirc	
Quartz servlet		\bigcirc	Initialized

10. In Logging configuration, set the Technical log file path to /opt/TIBCOJaspersoft-6.0.1/joblogs/log

Logging (4 Parameters / 1 errors)	0	
Technical log file path:	/opt/TIBCOJaspersoft-6.0.1/joblogs/log	\bigcirc
Technical log threshold:	WARN 👻	\bigcirc
Business log file path:		\bigcirc

11. In Audit configuration, set the Reports stored path to /opt/TIBCOJaspersoft-6.0.1/Audit/reports

🗏 Audit (6 Parameters)	0
Url:	jdbc:h2:/opt/TIBCOJaspersoft-6.0.1/jac/apache-tomca
User:	tisadmin …
Password:	•••••
Driver:	org.h2.Driver
Web Console	http://52.33.215.54:8080/org.jaspersoft.administra tor/h2console
Reports stored path:	/opt/TIBCOJaspersoft-6.0.1/Audit/reports

- 12. Navigate to **Servers page** from the menu and create a new execution sever 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: | 0008 | | | |
| File transfer
port: | 8001 | | | |
| Monitoring port: | 8888 | | | |
| Timeout on | 120 | | | |
| unknown state
(s): | | | | |
| Username: | admin@stchome.com | | | |
| Password: | ••••• | | | |
| Use SSL: | | | | |
| Active: | Image: A set of the | | | |
| Jaspersoft Runtime | | | | |

- 13. Log in via SSH to the Unix server using the 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 the root directory (Unix), which creates a directory structure similar to this:
 - /etl
 - /etl/data
 - /etl/archive

STC|iQ Jaspersoft ETL Deployment - Linux

The following outlines how to import (migrate) Jaspersoft ETL for STC|iQ on Linux.

Pre-Migration Checklist

• Confirm that the Postgres database is installed and configured

- Retrieve the passwords for the SMaRT AFIX database (*interopdb*)
- 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
- Retrieve the link for the IWeb Org/Fac web services
- Retrieve the username and password for the PHC Hub database
- Copy these components from Application Components/ETL into your local directory:
 - WF_Reset_DataMart.zip
 - WF_Int_DataMart_Map_x.x.zip (where x.x is the version number)

Deploy the ETL Components

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

- Copy these files to a convenient location to deploy: WF_Int_DataMart_Map_x.x.zip and WF_Reset_DataMart.zip.
- 2. Navigate to the Job Conductor page.
- 1. Select **Add** > **Normal Task** and add the following: Label = iQ Reset Data Mart; Description = iQ Reset Data Mart.
- 2. Click **Import Generated Jobs** and select the WF_Reset_DataMart.zip file downloaded as part of the prerequisites.
- 3. On successful import of the file, verify these properties:
 - Active: Selected (checked)
 - Project: InteropProject (auto-populated based on the imported file)
 - Branch: (auto-populated based on the imported file)
 - Name: WF_Int_DataMart_Map (auto-populated based on the imported file)
 - Version: (auto-populated based on the imported file)
 - Context: Config (auto-populated based on the imported file)
 - Apply Context to Children: Selected (checked)
 - Execution Server: Interop_JobServer
- Select Add > Normal Task and add the following: Label = WF_Int_DataMart_Map; Description = iQ Execution Plan.

- 5. Click **Import Generated Jobs** and select the WF_Int_DataMart_Map_x.x.zip file downloaded as part of the prerequisites.
- 6. On successful import of the file, verify these properties:
 - Active: Selected (checked)
 - Project: InteropProject (auto-populated based on the imported file)
 - Branch: (auto-populated based on the imported file)
 - Name: WF_Int_DataMart_Map (auto-populated based on the imported file)
 - Version: (auto-populated based on the imported file)
 - Context: Config (auto-populated based on the imported file)
 - Apply Context to Children: Selected (checked)
 - Execution Server: Interop_JobServer
- 7. For each job created above, update the following Contexts within the Context tab located at the bottom of the page. Select custom values as needed.
 - Web service related parameters:
 - Ws_Url: http://[IWeb server name]:8080/iweb/api/v1/OrgFac/
 - Ws_Api_Key: Secret key for IWeb
 - Database-related parameters:
 - DB_JDBC_ETLCONFIG:
 - DB_JDBC_ETLCONFIG_ -->
 [jdbc: postgresql: //(PostgresServer: 5432/interopdb]
 - DB_JDBC_ETLCONFIG_Login --> username for the database
 - DB_JDBC_ETLCONFIG_Password --> password for the database user
 - DB_ORCL_PHCHUB:
 - DB_ORCL_PHCHUB_Schema --> CPWEB
 - DB_ORCL_PHCHUB_Login --> cpweb
 - DB_ORCL_PHCHUB_Password --> password for the login user
 - DB_ORCL_PHCHUB_SID --> CPWEB
 - DB_ORCL_PHCHUB_Port --> 1521 or other port if selected during installation

- DB_PGRS_INTEROPOLAP:
 - DB_PGRS_INTEROPOLAP_Schema --> interopolap
 - DB_PGRS_INTEROPOLAP_Login --> interop (modify if different)
 - DB_PGRS_INTEROPOLAP_Password --> password for the login user
 - DB_PGRS_INTEROPOLAP_Database --> interopdb
 - DB_PGRS_INTEROPOLAP_Port --> 5432
- DB_PGRS_ODS:
 - DB_PGRS_ODS_Schema --> ods
 - DB_PGRS_ODS_Login --> interop (modify if different)
 - DB_PGRS_ODS_Password --> password for login user
 - DB_PGRS_ODS_Database --> interopdb
 - DB_PGRS_ODS_Port --> 5432
- 8. Save when finished.
- 9. Verify that the jobs deployed correctly: Click on WF_Int_DataMart_Map created in Step 4 above, then click **Run**. Deployment succeeded if no errors occur.
- 10. Go to the execution plan and click **Add**, then enter the details of the execution plan on the right side of the screen and click **Save**.

Plan	
Execution Plan	
Label:	IQ Main Job 🔤
Description:	Main ETL Job - delta ena
Timeout(s):	
Pause triggers on error:	

11. Add jobs to the execution plan: Click on the execution plan created in the previous step, then in the middle of the window select Root. On the third window, select the WF_Int_DataMart_Map task and click **Save**.

😫 Refresh 🛛 Add	Cenerate	😨 Deploy 曼 Stop					Refresh O Add OnOk O Add OnError O Add After X Delete	Execution t	task el task
🗶 Delete	Pause plan(s)	Resume plan				1	Root: please configure this node (65)	Ute para	allel execution
State Status E	rror status Label		Time left	Trigger st	Actions			Task:	WF_bit_DataMar
Ready to run	IQ Main Job			×				🗑 Save	S Cancel

12. After the last step, the execution plan looks like this:

٥	Refresh ③ Add OnOk ④ Add OnError ③ Add After ¥ Delete Task: "WE Int. DataMart. Man" (65)	Edit planned task		
Actions	 rask: wF_Int_DataMart_Map (65) 	Task: WF_Int_DataMar		
۹ 🖀		🔚 Save 🙁 Cancel		

13. On that same page, click the Triggers tab for the execution plan at the bottom right to schedule the plan. Click the **Add trigger...** drop-down menu to open it and then select **Add CRON trigger**.

					• Triggers	Parameter	Context p	arameters	
😫 Refresh	🔾 Add trigger • 🛛 🧧	Duplicate	🗙 Dele	te 🖸 Pause t	rigger 🖸 Ret	ume trigger			
Label 🔺	 Add simple trigger Add CRON trigger Add file trigger 	pe	Status	Previous trig	Time left befo	Next triggerin	Next triggerin	Number of tri	Final triggeri

14. On the Add Cron trigger page, enter IQ Main Job Trigger in the label and click the **Open UI configurer** button.

Add Cron trigger	
Label:	IQ Main Job Trigger 🔤
Description:	Triggers the Incremental Loa
Time zone strategy:	TAC time
Open UI configu	rer 🛛 💱 Open Cron Help
Minutes *:	
Hours *:	
Days of month **:	
Months *:	
Days of week **:	
Years:	
Pause trigger on error:	

utes *	Hours *	Davs of	Months *	Davs of	Year
30	00	1	lanuary	Sunday	2014
31	01	2	February	Monday	2015
32	02	3	March	Tuesday	2016
33	03	4	April	Wednesday	2017
34	04	5	May	Thursday	2018
35	05	6	June	Friday	2019
36	06	7	July	Saturday	2020
37	07	8	August		2021
38	08	9	September		2022
39	09	10	October		2023
40	10	11	November	***	2024
41	11	12	December		2025
42	12	13			2026
43	13	14			2027
44	14	15			2028
45	15	16			
46	16	17			
47	17	18			
48	18	19			
49	19	20			
50	20	21			
51	21	22			
52	22	23			
53	23	24			
54		25			
55		26			
56		27			
57		28			
58		29			
59		30			
		31			
	utes * 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58	utes Hours 30 00 31 01 32 02 33 03 34 04 35 05 36 06 37 07 38 08 39 09 40 10 41 11 42 12 43 13 44 14 45 15 46 16 47 17 48 18 49 19 50 20 51 21 52 22 53 23 54 55 56 57 58 58	utes * Hours * Days of 30 00 1 31 01 2 32 02 3 33 03 4 34 04 5 35 05 6 36 06 7 37 07 8 38 08 9 39 09 10 40 10 11 41 11 12 42 12 13 43 13 14 44 14 15 45 15 16 46 16 17 47 17 18 48 18 19 49 19 20 50 20 21 51 21 22 52 22 23 53 23 24 54 25 55 55 26 56 56 27 57<	utes * Hours * Days of Months * 30 00 1 January 31 01 2 February 32 02 3 March 33 03 4 April 34 04 5 May 35 05 6 June 36 06 7 July 37 07 8 August 38 08 9 September 39 09 10 November 40 10 11 November 41 11 12 December 42 12 13 November 43 13 14 14 44 14 15 16 46 16 17 17 48 18 19 19 49 19 20 21 51 21 22 23 53 23 23 24 54 25	utes * Hours * Days of Months * Days of 30 00 1 January Sunday 31 01 2 3 32 02 3 March Tuesday 33 03 4 April Wednesday 34 04 5 June Friday 36 06 7 July Saturday 38 08 9 September October 39 09 10 October December 40 10 11 November December 41 11 12 December December 44 14 15 16 16 46 16 17 17 18 48 18 19 20 11 50 20 21 12 12 51 21 22 23 14 48 18 19 20 14 51 21 22 23 14 52 22 23 23 24 54 25 26 16 55 26 26

15. Configure how often the job should run and click **Apply Modifications**.

16. Note that after the trigger times are selected, the Add Cron trigger looks similar to this:

Add Cron trigge	r 🔳
Add Cron trigger	
Label:	IQ Main Job Trigger 🛛 📟
Description:	Triggers the Incremental Loz
Time zone	TAC time
strategy:	
Open UI configu	irer 🛛 🕺 Open Cron Help
Minutes *:	0
Hours *:	6,7,8,9,10,11,12,13,14,15,16
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:	

17. To manually run an ETL job, click on the iQ main job created here and click **Run**.

Menu	• EXECUTIO	ON PLAN			
Settings BUsers Brojects Project sutherizations Project references	(\$ Refresh Q Add X Deleta	Cenerate Run Run Recover Last execution	Deploy Stop C Resume plan on		0
Configuration	State Status Ready to run	Error status Label KQ Main Job		Time left_ Trigger st	Actions
Agris mangement Agris mangement Agris mangement Mostifications O Conductor					
Job Conductor Sig Data Streaming Discution Plan Servers					

- 18. 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 iQ 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.

JasperReports Server Installation - Linux

The following instructions explain how to install the JasperReports Server.

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-6.2.1-linux-x64-installer.exe
- jasperserver.license
- LatoFont
- stc-jaspersoft-oauth-0.0.1-SNAPSHOT

Installation Steps

1. Download the JasperReports Server installer from the release distribution:

```
/Server Components/JRS/jasperreports-server-6.2.1-linux-x64-installer.run
```

2. Place the JasperReports Server installer into the target directory:

/opt/jasperreports-server-6.2.1-linux-x64-installer.run

3. Navigate to the target directory:

\$ cd /opt

4. Set the execute permissions for the JasperReports Server installer:

\$ sudo chmod u+x ./jasperreports-server-6.2.1-linux-x64-installer.run

5. Run the installer:

\$ sudo ./jasperreports-server-6.2.1-linux-x64-installer.run

- 6. Follow the prompts to accept the license agreement.
- 7. Follow the prompts to select an install option. Select option 1 Install All Components and Samples.
- 8. Follow the prompts to specify the installation folder. Specify the following directory:

/opt/jasperreports-server-6.2.1

- 9. When the installer completes, start the JasperReports Server (see <u>Start/Stop the</u> <u>JasperReports Server</u> below).
- 10. Before continuing, you need to update a configuration file on the JasperReports Server. Navigate to:

/opt/jasperreports-server-6.2.1/apache-tomcat/webapps/jasperserverpro/WEB-INF/classes/

11. Open jasperreports.properties for editing and add the following under the section marked # Highcharts static export properties:

com.jaspersoft.jasperreports.highcharts.function.properties.allowed=true

It should look something like this:



12. Save the file and restart the JasperReports Server (see <u>Start/Stop the</u> <u>JasperReports Server</u> below).

13. 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

14. Log in with the user ID of *superuser* and the default password of *superuser*.

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Getting Started © How to sticks © How to articles © Collect Learning Fortal © Product documentation
© red the right dation for you © Jeopensit Quick Start Guide What's new in Jaspersoft Version 5? Nashboards:
A single was deviced into a fragment visualization, where a mater up to inspects we need to view, any web pages All free Jung-control handles Supports View interactive reports and Datahbands from your amarphone or tablet with the aspertifiable sep Visualizacijes Tabled Reports and Datahbands directly into highly-interactive web pages
Espanded Multi-organization Administration: New toxis to minage attributes, export/import, and scheduling across multiple organizations

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 using FTP or WinSCP.
- Replace the license file in the JasperReports installation directory (/opt/jasperreports-server-6.2.1/) with the license file from the above step, overwriting the existing jasperserver.license file.
- 3. Restart the JasperReports server (see <u>Start/Stop the JasperReports Server</u> 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 /opt/jasperreports-server-6.2.1/apachetomcat/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 <u>Start/Stop the JasperReports Server</u> below).

Start/Stop the JasperReports Server

Use these commands to start and stop the JasperReports server.

Start

```
$ cd /opt/jasperreports-server-6.2.1
$ ./ctlscript.sh start
```

Stop

```
$ cd /opt/jasperreports-server-6.2.1
$ ./ctlscript.sh stop
```

JasperReports Configuration with Kevcloak

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:

Кеу	XML Tag Name(s) to Update	Value
[KEYCLOAK_URL]	<authorization_location> <token_location> <userdetails_location> <logouturl></logouturl></userdetails_location></token_location></authorization_location>	URL of the Keycloak server. Example: https://sso- dev.stchome.com/
[KEYCLOAK_REALM]	<authorization_location > <token_location> <userdetails_location> <logouturl></logouturl></userdetails_location></token_location></authorization_location 	Keycloak realm that the client belongs to. This value needs to be changed, along with <keycloak_url>. In this example, the realm name is <i>Dev-Integration</i>: https://sso- dev.stchome.com/auth/realms/Dev-Integration</keycloak_url>
[JASPERSERVER_URL]	<property name="redirecturl"> <property name="logoutUrl"></property </property 	URL of the Jasper server. Example: http:// <server_name>:8080/jasper server-pro/oauth</server_name>
[CLIENT_ID]	<property name="client_id"></property 	Client ID as set on Keycloak. Example: <property name="client_id"> <value>jasper-aws-dev</value></property>
[CLIENT_SECRET]	<property name="clientsecret"> <property name="userdetails_sec ret"></property </property 	Credentials secret key generated by Keycloak.
State_ID	<property name="state"></property 	This is the global setting used to populate the STATE_ID attribute in Jaspersoft. Example: <bean <br="" id="oAuthUserDetailsService">class="com.jaspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. OAuth.OAuthUserDetailsServiceImpl"> <property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </property.aspersoft.jasperserver.ps. </bean>
Jaspersoft Roles	 <bean </bean id="mtExternalUserSet upProcessor" class="com.jaspersoft.j asperserver.multipleTe nancy.security.external Auth.processors.MTExt ernalUserSetupProcess or" parent="abstractExtern alProcessor"><	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</entry>

Кеу	XML Tag Name(s) to Update	Value
	name="organizationRol eMap"> <map> <!-- Example of<br-->mapping customer roles to JRS roles> <entry> <key> <value>ROLE_ADMIN_ EXTERNAL_ORGANIZAT ION</value> </key> <value>ROLE_ADMINI STRATOR</value> </entry> </map>	

- 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.
- Create and save a backup of the <JASPERSERVER_DIR>/apachetomcat/webapps/jasperserver-pro/WEB-INF/applicationContextsecurity.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.ProfileAttribut eService.putProfileAttribute with ROLE_USER.
- 6. Save a backup copy of the <JASPERSERVER_DIR>/apachetomcat/webapps/jasperserver-pro/WEB-INF/applicationContext-securityweb.xml file again and replace the constructor-arg value for org.springframework.security.web.authentication.LoginUrlAuthenticationEntryPoin t with /oauth.
- 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:

```
sudo ./java InstallCert sso-dev.stchome.com
sudo ./keytool -exportcert -alias sso-dev.stchome.com-1 -keystore
jssecacerts -storepass changeit -file sso-dev.stchome.com.cer
sudo ./keytool -importcert -alias sso-dev.stchome.com -keystore
../lib/security/cacerts -storepass changeit -file sso-
dev.stchome.com.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>/postgresdirectory.
 - b. Run this command: sudo bin/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.

Org/fac List	
Protocol 📀	openid-connect
ID	fce1efb4-6796-4106-824d-2549b87be6ab
Name 🖗	org/fac list
Consent Required 🕢	OFF
Mapper Type 😡	Org/fac list
Token Claim Name 🕼	org-fac
API-KEY @	645645
API-URI 🛛	http://20.0.0.9\8080/jweb/apj/x1/QrgFac/
Response format @	application/json V
	Save Cancel

Name	Category	Туре
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.

> http://10.0.0.6/8080//web/api/v1/0rgFaci//tuser+user1		
S GET O POST O PUT O DELETE Other methods - Raw headers	Headers form	Headers set
APT-KEY: #J#JANU +CCOPT: #DPlication/json		

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 Migration for STC iO

See <u>iQ JasperReports Deployment - Linux</u> for specific instructions for iQ.

STC|iQ JasperReports Deployment - Linux

The following outlines how to import (migrate) Jaspersoft Reports for STC|iQ on Linux.

Pre-Migration Checklist

- Confirm that the Postgres database is installed and configured
- Retrieve the passwords for the STC | iQ database (*interopdb*)
- Retrieve the Jaspersoft superuser username and password
- 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 Application Components/JRS/iQ_Report_Repository.zip and copied to your local drive.

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.

TIBC@ Jaspersoft	☆ Library View → Manage →	Create 🗸			
Settings	Export				
Log Settings					
Log Collectors	File Properties				
Ad Hoc Settings	Export Data File Name (required):				
Ad Lles Casha	export.zip				
Ad Hoc Cache					
OLAP Settings	Export Options:				
AWS Settings	Export Everything				
Server Attributes	Roles and Users to Export				
Restore Defaults	Selected roles and users	Users with selected roles	Roles with selected users		
Import	Roles:	Use	ers:		
Export		Q	Q		
	ROLE_ADMINISTRATOR	10	04user		
	ROLE_ANONYMOUS	20	centeruser		
	ROLE_DEMO	ar	my_int		
	ROLE_PORTLET	ar	my_prov		
	ROLE_SUPERMART_MANAGER	ar	my_rc		
	ROLE_SUPERUSER	ar	narayan		
	ROLE_USER	ar	ndadminqa0 🗸		
	Select A	All Roles	 Select All Users 		
	Resources to Export	Assets to Export	Events to Export		
	Data Sources	🖉 Sub-organizatio	ons Access Events		
	Domains	Ø Dependencies	Audit Events		
	Ad Hoc Views	Permissions	Monitoring Events		
	Export				

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 iQ_Report_Repository.zip file.
- 4. Use the defaults and click the **Import** button at the bottom.
- **5.** After the import completes, it should display a confirmation message. Click **Close** at the top.

Import the Content via the Command Line

- 1. Confirm that JAVA_HOME is set and your path includes jre\bin or jdk\bin.
- 2. Stop the Tomcat instance from running by using this command in the /opt/jasperreports-server-6.2.1 directory:

```
sudo ./ctlscript.sh stop tomcat
```

3. Change to the buildomatic directory on the JasperReports server:

/opt/jasperreports-server-6.2.1/buildomatic

4. Execute the migrate command:

```
sudo ./js-import.sh --input-zip "/[home
directory]/iQ_Report_repository.zip" --update --include-access-events --
include-audit-events --include-monitoring-events --include-server-
settings --include-themes
```

5. Start the Tomcat server:

sudo ./ctlscript.sh start tomcat

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

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.

 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/interop (select View > Repositories).

noot
🗐 Interop
🗐 Adhoc Views
🗐 Bundles
🗐 Dashboards
🗐 Data Sources
🗐 Domains
🗐 Images
🗐 Input Controls
🗐 Input Controls Onb
🗐 Reports
🗐 Style Variables

2. Validate that the user can execute and view a report under interop/reports as defined by their class or organization membership.

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.

Deploy the LatoFont.jar File

This installation only needs to be performed once.

- Copy the LatoFont.jar executable file from Server Components\JRS into jasperreports-server-6.2.0\apache-tomcat\webapps\jasperserverpro\WEB-INF\lib.
- Restart the JasperReports server. See <u>Start/Stop the JasperReports Server</u> for instructions on how to do this.

Node.js Installation - Linux

Follow these steps to install Node.js on Linux.

1. Create the user environment: A user needs to be created to run Node.js applications. However, it is not recommended that Node.js applications be run as a privileged user.

```
sudo adduser node
```

2. Become the node user:

sudo su - node

3. To install Node.js for the previously created node user, Node Version Manager is recommended. This allows for more flexible control over the environment and an easier future upgrade path.

```
curl -o-
https://raw.githubusercontent.com/creationix/nvm/v0.32.1/install.sh |
bash
source ~/.bashrc
```

4. Install the required version of Node.js:

```
nvm install 6.9.1
nvm use 6.9.1
nvm alias default 6.9.1
```

5. Install the PM2 node process manager:

npm install -g pm2

STC|iQ Application Installation Instructions - Linux

The following instructions explain how to install the application, the Oracle Instant Client, and Redis; how to configure the application dashboard and quick links; general configuration options; and information on how to run the application and start the application upon bootup.

Prerequisites

The following should already be installed and configured:

- Linux CentOS 7
- PostgreSQL server (DBB)
- Mongo server (DBB)
- Oracle server (COR)
- Node.js (APP)
- PM2 (APP)

Installation and Deployment of iQ, SMaRT AFIX and VOMS

If you are installing iQ alongside the SMaRT AFIX and/or VOMS applications, you only need to install the Oracle Instant Client 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 <u>Install the Deployment Package</u> section and continue from there instead.

Install the Oracle Instant Client

- 1. Download and install the Oracle Instant Client (both basic and SDK). The .rpm files can be found at <u>http://www.oracle.com/technetwork/topics/linuxx86-64soft-092277.html</u>. Install them with the RPM command.
- 2. Add the following to the users: .bashrc, .cshrc, and .zshrc, or use the default per-interactive-shell startup file of the default shell of the user for which you want to run the application. Optionally, instead of adding them on a per-user basis, the following can be added to /etc/profileor/etc/profile.d/oracle.sh:

```
export OCI_LIB_DIR=/usr/lib/oracle/12.1/client64/lib
export OCI_INC_DIR=/usr/include/oracle/12.1/client64
```

3. Create a file in /etc/ld.so.conf.d/oracle.conf with the path to the Oracle Instant Client libraries, which by default are as follows:

/usr/lib/oracle/12.1/client64/lib

Install Redis

1. Ensure epel repo is enabled and run the following with sudo/root:

yum install redis

2. Edit the /etc/redis.conf file and make sure the following variable line is set as follows (the default is usually set to an empty string ""):

notify-keyspace-events EKx

3. Set redis to autostart across system boots and start the service:

```
systemctl enable redis systemctl start redis
```

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 iQ alongside the SMaRT AFIX 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 SMaRT AFIX, 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/iQ_dark.svg",
  "name": "iQ",
  "url": "http://iq.stchome.com/",
  "description": "An application that allows for an efficient assessment of HL7
Data quality, and provides tools and metrics to help onboard new providers
and improve data quality.",
  "accessRole": "Access_interop"
}
```

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.

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 <i>localhost</i>).		
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 VOMS with a reverse proxy, this should be		

The options are as follows:

Option	Description
	set to true.
ENABLE_SSL	When set to <i>true</i> , this enables HTTPS support. If REVERSE_PROXY is set to <i>true</i> , this should be set to <i>false</i> even when the environment is configured for HTTPS.
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.

Run the Application

Use pm2 to run the deployment package as shown below. In many cases, environmentspecific 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:

pm2 save pm2 startup

Windows Instructions

The following instructions are for the Windows operating system.

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 iQ (Interop).

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 <u>this page</u> and download the latest 64-bit version of Postgres. Version 9.4.x was used for this installation example.

Please Note	e: Cookies should be	enabled for the downlo	ad process to function	correctly	
Installer ver	rsion Version 9.5.2 [F	Readme file for custome	ers interested in using F	UPerl, PL/Python	or PL/TcI]
5	Linux x86-32	Linux x86-64	Win x86-32	Win x86-64	🗳 Mac OS X

- 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

2.

to make the file look something like the following. Let's assume your internal subnet 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	

3.

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

4. Trigger Postgres to reload with the new configuration changes by running **Reload Configuration**, found under PostgreSQL 9.4 in the Windows Start Menu:



5. Create a custom firewall rule to allow inbound connections on port 5432:

Genera	l l	Programs	and Services	;	Remot	e Computers
Protocols a	nd Ports	Scope	Advanced	Loca	I Principals	Remote Use
Protocol	s and ports	3				
and the second	Protocol	type:	TCP			~
	Protocol	number:		6~		
	Local por	t:	Specific I	Ports		~
			5432			_
			Example:	80, 44	3, 5000-5010)
	Remote p	port:	All Ports			~
			Example:	80, 44	3, <mark>5000-5</mark> 010)

6. Complete the installation by initializing the database (see <u>iQ Database</u> <u>Initialization - Windows</u>).

iQ Database Initialization - Windows

The information below describes how to initialize the iQ database on Windows.

Prerequisites

PostgreSQL has been installed.

<u>Steps</u>

 Create a tablepsace folder - Use Windows Explorer to create the directory for the tablespace to be used by iQ. Navigate to the folder C:\Program Files\PostgreSQL\9.4 and then click New Folder. Name the new folder interopdb.

🌀 🕤 🗸 🔸 🗸 Computer 🔹 Local Disk	(C:) • Program Files • PostgreSQL • 9.4 •
Organize 💌 Include in library 💌 Sha	are with New folder
Computer Local Disk (C:) PerfLogs Program Files Common Files GIMP 2 Internet Explorer PostgreSQL	▲ Name - bin data doc include installer ib ib jpgAdmin III
9.4 bin data doc include installer	 scripts share StackBuilder symbols 3rd_party_licenses.txt license.txt

- 2. Set the folder permissions for the *interopdb* folder:
 - a. In Windows Explorer, right-click on the *interopdb* folder and select **Properties**.
 - b. Click on the Security tab.
 - c. Click the Edit button.
 - d. Click the Add button.
 - e. Enter the name *NETWORK SERVICE* and click on the **Check Names** button. The window should look like the following image, although your location will be different and local to your network:

Security	
Object name: C:\Program Files\PostgreSQL\9.4\interopdb	ta
Group or user names:	
Select Users, Computers, Service Accounts, or Groups	? ×
Select this object type:	
Users, Groups, or Built-in security principals	Object Types
, From this location:	
stchome.com	Locations
Enter the object names to select (<u>examples</u>):	
NETWORK SERVICE	Check Names
	5
Advanced OK	Cancel

- 3. Still in the same window, click OK.
- 4. Make sure NETWORK SERVICE is selected and also select the checkbox under Allow for *Full control*.
- 5. Click **OK** on the remaining open windows to close them.
- 6. Back in Windows Explorer (interopdb directory), create the *data* directory:

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

7. Create the *idx* directory:

C:\Program Files\PostgreSQL\9.4\interopdb\idx

8. Download the release distribution zipped file and extract the database scripts for the database server in the interopdb folder:

Application Components\IQ\POSTGRES

9. Edit the Application Components\IQ\POSTGRES\setup_database.sqlscript, changing the following:

```
create tablespace odstbs owner interop location
'/var/lib/pgsql/9.4/interopdb';
-to-
create tablespace odstbs owner interop location 'C:\Program
Files\PostgreSQL\9.4\interopdb';
```

10. Edit the Application Components\IQ\POSTGRES\setup_objects.sqlscript, changing the following:

```
-- Create Tablespace
CREATE TABLESPACE "interopdata" OWNER interop LOCATION
'/var/lib/pgsql/9.4/interopdb/data';
CREATE TABLESPACE "interopidx" OWNER interop LOCATION
'/var/lib/pgsql/9.4/interopdb/idx';
-to-
-- Create Tablespace
CREATE TABLESPACE "interopdata" OWNER interop LOCATION 'C:\Program
Files\PostgreSQL\9.4\interopdb\data';
CREATE TABLESPACE "interopidx" OWNER interop LOCATION 'C:\Program
Files\PostgreSQL\9.4\interopdb\data';
```

11. Create the interopdb database - From the command prompt, navigate to the Application Components\IQ\POSTGRES directory and execute the following command. Enter the password that was configured during the Postgres installation, if prompted.

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

12. Create the database users and roles - From the command prompt, navigate to the Application Components\IQ\POSTGRES directory and execute the following command. Enter the password that was configured during the Postgres installation, if prompted.

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

13. Create the ETL config schema by navigating to the Application Components\IQ\POSTGRES directory and execute the following command:

```
flyway -url=jdbc:postgresql://localhost:5432/interopdb -
schemas=etlconfig -sqlMigrationPrefix=ETL_V -user=interop migrate
```

14. Create the OLAP schema by navigating to the Application Components\IQ\POSTGRES directory and execute the following command, using the password InteropQA:

```
flyway -url=jdbc:postgresql://localhost:5432/interopdb -
schemas=interopolap -sqlMigrationPrefix=OLAP_V -user=interop migrate
```

15. Create the ODS schema by navigating to the Application Components\IQ\POSTGRES directory and execute the following command, using the password InteropQA:

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

MongoDB Installation - Windows

The following instructions describe how to install MongoDB on Windows Server and how to set the MongoDB server configuration changes for Interop (iQ).

1. Install MongoDB.

Since the August 2016 release, Interop (iQ) requires MongoDB v2.6.11 or 2.6.12. You can find the download link at <u>https://www.mongodb.com/download-center</u> (search for previous versions, either 2.6.11 or 2.6.12).

Follow the instructions for installing MongoDB that are listed here:

<u>https://docs.mongodb.com/v2.6/tutorial/install-mongodb-on-windows/</u>. It is recommended that you simply copy all of the files in the \bin directory inside the zip file directly into c:\mongodb (**NOT** into c:\mongodb\bin).

2. Create the configuration file.

For the purpose of these instructions, the following reference folders are used (substitute custom folders as needed:

- c:\mongodb MongoDB binaries
- c:\data\db STC database folder
- c:\data\log Mongo logs

Create the configuration file in the folder c:\mongodband name it mongod.cfg. Use these contents, or copy this file from the STC deployment folder at \Application Components\DB\IQ]MONGO from the configuration instructions in the next section below.

```
systemLog:
    destination: file
    path: c:\data\log\mongod.log
storage:
    dbPath: c:\data\db
net:
    bindIp: 127.0.0.1
    port: 27017
setParameter:
    enableLocalhostAuthBypass: false
```

3. Add Mongo Binaries Directory to Command Path

Add c:\mongodb (or use the location you selected, if different) to your Windows Command Path. This is usually found in Windows under **Control Panel > System > Advanced > Environment Variables**.

Make MongoDB Server Configuration Changes for iQ

1. Obtain the Mongo distribution files.

Copy these three files into your c:\mongodb directory. These are located in your STC distribution directory (\Application Components\DB\IQ\MONGO):

- mongod.cfg
- stc-mongo-admin-db.js
- stc-mongo-stc-db.js

Copy the Mongo MONGO_STC_DB directory into the c:\mongodb directory.

NOTE: It is highly recommended to install MongoDB as a service. This process is documented under the section Configure a Windows Service for MongoDB here: <u>https://docs.mongodb.com/v2.6/tutorial/install-mongodb-on-windows/</u>.

Open a command window, cd to c:\mongodb, and execute the following:

```
mongorestore.exe -d stc MONGO_STC_DB
```

2. Set the passwords for the MongoDB users.

First, create the *superuser* account. By default, there is no password set (pwd: "",). Edit stc-mongo-admin-db.js and set a unique password, then save it and keep the file nearby. The file should look like this, but with the new password ("MySUpassword"):

```
db.createUser(
{
    user: "superuser",
    pwd: "MySUpassword",
    roles: [ "root" ]
})
```

Next, set the password for the STC account that will be used by the Interop portal application (iQ). Edit stc-mongo-stc-db.js and set a unique password, using the same process as above. This password should be different from the superuser account, however.

NOTE: The *stcadmin* user and password you selected will be needed during installation of the Interop portal application (iQ). It will be entered on the ./production/deploy.sh command.

3. Apply the MongoDB scripts.

With MongoDB now installed, the server running and the passwords configured, you can run the client interface by entering the commands at a CMD prompt. Make sure you are in the c:\mongodb directory. Enter the following commands:

```
mongo admin stc-mongo-admin-db.js
mongo stc stc-mongo-stc-db.js
```

4. Edit/Update c:\mongodb\mongod.cfg.

Edit the mongod.cfg file, editing the net section as follows (or customize it to your network subnet), then add the following security section lines to the file. Save the file when finished.

net: bindIp: 0.0.0.0 security: authorization: enabled

Restart the MongoDB sever with the following:

net stop mongodb net start mongodb

MongodB for Interop (iQ) is now set up and complete.

ActiveMQ Installation - Windows

The following information describes the prerequisites and steps for installing ActiveMQ on Windows.

Prerequisites

The Java Development Kit (1.7 or higher) JDK must be installed.

<u>Steps</u>

1. Create the ACTIVEMQ_HOME environmental variable in Windows with the path of C:\activemq\apache-activemq-5.13.0.

Edit System Variable		
Variable name: Variable value:	ACTIVEMQ_HOME C:\activemg\apache-activemg-5.13.0	
	OK Cancel	

2. Copy the ActiveMQ release distribution installation file into the directory of your choice. For the purposes of these instructions, this location is referred to as *ACTIVEMQ_HOME*.

```
Server Components\AMQ\apache-activemq-5.13.0-bin.zip
```

- 3. Unzip the file into the C:\activemq directory (this is ACTIVEMQ_HOME).
- 4. Once unzipped, the directory looks like this:

```
c:\activemq\apache-activemq-5.13.0
```

- 5. Verify that java.exe is in your PATH and that the environment variable JAVA_HOME is set.
- 6. Copy the configuration files:

```
copy Server Components\AMQ\activemq.xml %ACTIVEMQ_HOME%\apache-activemq-
5.13.0\conf\
copy Server Components\AMQ\jetty-realm.properties
%ACTIVEMQ_HOME%\apache-activemq-5.13.0\conf\
copy Server Components\AMQ\credentials-enc.properties
%ACTIVEMQ_HOME%\apache-activemq-5.13.0\conf\
copy Server Components\AMQ\webconsole-embedded.xml
%ACTIVEMQ HOME%\apache-activemq-5.13.0\webapps\admin\WEB-INF\
```

7. Start ActiveMQ - from the command prompt, navigate to the %ACTIVEMQ_HOME%\apache-activemq-5.13.0 directory and execute the following command:

bin\activemq start

Verify Installation

Follow these steps to verify the installation was successful:

- Open a browser to this URL (enter your ActiveMQ server address): http://yourmq-server:8161/admin/
- 2. Use the default credentials: user *admin* and password *t2X599apg*

You should see the welcome page. The actual values for your server will differ from this example:

	ICTIVEMU	Software Foundation
Home Queues Teo	ics Subscribers Connections Network Scheduled Send	Topped
'eleome!		E Queue Views
Welcome to the	kpache ActiveMQ Console of interop.ga1 (ID:interop-ga1-mg.stchome.com-52288-1461339933274-0:1)	• XML
You can find mor	e information about Apache ActiveMQ on the Apache ActiveMQ Site	Topic Views
roker		- Subscribers
Rame	And annya - gal b	Views
Yerstor	3.12.6	= XHL
30	IDianta-rap-qa1-raq,stchiama.com-52/289-54615309331/94-0:1	In the other to be been
Uptime	4 bases 67 minutes	Organization
then partent used	•	• FAQ
Terrory period used		. Foruma
Terry percent used		and the second s

CAUTION: The default password should be changed prior to production. See <u>ActiveMQ</u> <u>Credential Encryption - Windows</u>.

Stop ActiveMQ

From the command window, press CTRL+C on the keyboard.

Create the Service

Follow these steps to create the service:

- 1. From an administrative command prompt, go to ACTIVEMQ_HOME/bin/win64.
- 2. Run InstallService.bat.

After running InstallService.bat, the ActiveMQ service should be added to the list of NT services. It is not started by default.

To verify, go to the **Control Panel > Administrative Tools > Services** and look for the ActiveMQ service. Here you can start the ActiveMQ service or configure it to start automatically every time the system boots.

ActiveMQ Credential Encryption - Windows

The instructions below detail how to encrypt credentials for the Web Admin user and for the JMS connection. Note that all paths are relative to your ActiveMQ installation directory (example: c:\activemq\apache-activemq-5.13.0).

Encrypt Credentials for Web Admin User

There are two steps for this: generate the encrypted password, then set the encrypted password for the user.

Step 1: Generate the Encrypted Password

Use the Jetty password utility to generate an encrypted password for a specific user. Note that [version] is the specific version of your distribution, [user] is the name of the user for whom the password is being generated, and [password] is the password to be encrypted.

```
$ java -cp .\lib\web\jetty-all-[version].jar
org.eclipse.jetty.util.security.Password [user] [password]
```

Example: Generate an encrypted password for the admin user (where the password is *myPassword*):

```
$ java -cp c:\activemq\apache-activemq-5.13.0\lib\web\jetty-all-
9.2.13.v20150730.jar org.eclipse.jetty.util.security.Password admin
myPassword
```

Here is the output:

```
2016-08-25 14:45:58.469:INFO::main: Logging initialized @89ms
myPassword
OBF:1uh41zly1qw01vu11ym71ym71vv91qxq1zlklugm
MD5:deb1536f480475f7d593219aa1afd74c
CRYPT:adtJskS8cjahq
```

Note that the encrypted password is CRYPT: adtJskS8cjahg in the last line of code above.

Step 2: Set the Encrypted Password for the User

Edit the jetty realm properties (apache-activemq-[version]\conf\jettyrealm.properties). Replace the password with the CRYPT line from the generated output.

Example: Set the encrypted password (*CRYPT: adtJskS8cjahg* in the second-to-last line of code below):

c:\\activemq\apache-activemq-5.13.0\conf\jett-realm.properties

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##

Encrypt Password for JMS Connection

There are also two steps for this one: generate the encrypted password, then set the encrypted password for the connection users.

Step 1: Generate the Encrypted Password

Use the ActiveMQ password utility to generate an encrypted password for a specific user. Note that [password] is the encryptor's password and [input] is the password to be encrypted.

```
$ bin\activemq encrypt --password [password] --input [input]
```

Example: Generate an encrypted password (where the password is *myPassword*):

```
$ c:\activemq\apache-activemq-5.13.0\bin\activemq encrypt --password activemq
--input myPassword
```

Here is the output:

```
ACTIVEMQ_HOME: c:\activemq\apache-activemq-5.13.0
ACTIVEMQ_BASE: c:\activemq\apache-activemq-5.13.0
ACTIVEMQ_CONF: c:\activemq\apache-activemq-5.13.0\conf
ACTIVEMQ_DATA: c:\activemq\apache-activemq-5.13.0\data
Encrypted text: n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp
```

Note that the encrypted password is *n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp* in the last line of code above.

Step 2: Set the Encrypted Password for the Connection Users

Edit the conf\credentials-enc.properties file, setting the encrypted value *ENC(encrypted password)*. Replace the password with the encrypted text line from the generated output.

Example: Set the encrypted password (*password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp*) lines of code below):
c:\\activemq\apache-activemq-5.13.0\conf\credentials-enc.properties

```
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##
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## limitations under the License.
## ----
# Defines credentials that will be used by components (like web console) to
access the broker
activemg.username=system
activemq.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
guest.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
user.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
producer.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)
```

admin.password=ENC(n8PLSJGxRKx0wSaCWsSXWfnbK79F5kmp)

JMS Consumer Installation - Windows

These instructions address the installation of ActiveMQ on Windows.

Prerequisites

- 1. PostgeSQL has been installed on the DBB server (see <u>Postgres Database</u> <u>Installation - Linux</u>).
- 2. ActiveMQ has been installed and configured on the SVC server (see <u>ActiveMQ</u> <u>Installation - Linux</u>).
- 3. The distribution release zip file has been downloaded and unzipped into your home directory.
- 4. Decide whether to perform a <u>basic</u> installation or to install JMS Consumer as a Windows service (<u>advanced</u>).

Installation Steps (Basic)

- Copy the Application Components\iQ\AMQ\STCConsumer.zipfile to c:\consumer.
- 2. Unzip the STCConsumer.zip file.
- 3. Verify that the java.exe file is in your PATH and the environment variable JAVA_HOME is set.
- 4. Edit c:\consumer\etc\stcConsumer.properties to change the stc.mq.brokerUrl to the hostname of the ActiveMQ server and to set the ActiveMQ details and state code:

```
#frequency of the scheduler to check the queue
stc.consumer.cron=0 0/1 * * * ?
#frequency of the scheduler to process the open messages
stc.payload.cron=0 0/3 * * * ?
#activemq details
stc.mq.user=admin
stc.mq.password=t2X599apg
stc.mq.brokerUrl=failover://tcp://52.39.220.0:61616
stc.mq.queueName=Interop.milestone
## Run MQ Active Queue
mq.enable=true
## Retrieving data in milestone dump table once
run.once=false
## State Code
stateCode=AZ
```

5. Edit RunSTCConsumer.bat to set JAVA_EXC to the path of your java.exe file:

```
ECHO OFF

REM Please make sure jdk 1.8 is installed and java command on the server

is pointing to JDK8

REM set java executable to below variable

REM example set JAVA_EXC="/usr/jdk8/java" set

JAVA_EXC="c:\java\bin\java.exe"

REM export JAVA_EXC echo %JAVA_EXC%

IF EXIST "consumer.lck" (

echo "Consumer process is currently running. Please make sure only one

process is running"

) ELSE (

copy /y nul consumer.lck

%JAVA_EXC%\bin\java -jar lib/stcconsumer.jar

del consumer.lck echo "Running"

)
```

6. Start the Consumer process:

\$./Start_IQ_Consumer.sh

Installation Steps (Advanced)

Follow these steps to install JMS Consumer as a Windows service. The service installation components are located in Application Components\iQ\AMQ\STCConsumerService.zip.

1. Download the STCConsumerService.zip file and unzip it into your installation directory (c:\consumer). Your installation directory should have these files:

```
etc
lib
RunSTCConsumer.bat
Start_IQ_Consumer.sh
Stop_IQ_Consumer.sh
STCConsumer.exe
STCConsumer.xml
STCConsumer.zip
```

- 2. Follow the basic steps 2-6 above.
- 3. Install the service: From the command prompt, execute the following:

C:\consumer> STCConsumer install

4. Start the service:

C:\consumer> STCConsumer start

5. Stop the service:

C:\consumer> STCConsumer stop

6. Monitor the service:

C:\consumer> STCConsumer status

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.

Prereauisites

- 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-
V6.0.1-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-V6.0.1-windows-installer.exe
```

- 5. Follow the prompts to accept the license agreement.
- Follow the prompts to specify the installation directory, installation type, and license file. Specify [drive:]\Jaspersoft\6.0.1 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 6.0.1. 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\6.0.1\jac
$ stop_tac.bat
```

Command to start the service:

```
$ cd C:\Jaspersoft\6.0.1\jac
$ start_tac.bat
```

Start/Stop Jaspersoft ETL Command Line

Command to stop the service:

```
$ cd C:\Jaspersoft\6.0.1\cmdline
$ stop_cmdline.bat
```

Command to start the service:

```
$ cd C:\Jaspersoft\6.0.1\cmdline
$ start cmdline.bat
```

Start/Stop Jaspersoft ETL Job Server

Command to stop the service:

```
$ cd C:\Jaspersoft\6.0.1\jobserver
$ stop_jobserver.bat
```

Command to start the service:

```
$$ cd C:\Jaspersoft\6.0.1\jobserver
$ start_jobserver.bat
```

Configure the Admin Console

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

- 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).
- Navigate to User Settings on the left menu and update the username (if needed) and library information.

Logini	a deale distributers a serie	0000
Login:	admin@stchome.com	1000
First name:	admin	
Last name:	admin	LEEU
Password:	change password	
Svn login:	tisadmin	
Svn		[100]
password:		1.000
Type:	Data Integration	~
Role:	Administrator/Viewer/	00
Constant		
Connection	ns stats	
Connection To the Adm First:	inistration Center	
Connection To the Adm First: Last:	2016-05-25 14:15:16	
Connection To the Adm First: Last: Number:	2016-05-25 14:15:16 2016-05-25 14:15:16 2016-05-25 14:15:16	
Connection To the Adm First: Last: Number: To the Stud	ns stats 2016-05-25 14:15:16 2016-05-25 14:15:16 1	
Connection To the Adm First: Last: Number: To the Stud First:	Inistration Center 2016-05-25 14:15:16 2016-05-25 14:15:16 1 1	
Connection To the Adm First: Last: Number: To the Stud First: Last:	Inistration Center 2016-05-25 14:15:16 2016-05-25 14:15:16 1 1	

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.
- 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.

Project	
Label:	AFIX_ETL
Active:	Z
Reference:	
Description:	
Author:	admin admin
Storage:	🔵 SVN 💿 None

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.

User Authorizations for the Project: AFIX_ETL								
	Authorizations by Project	ct	Authori	zations by User				
Project			User Ai	uthorizations for the Project: A	FIX_ETL			\sim
Project Label	8		Туре	Login	Last name	First na	Active	Right
AFIX_ETL	1	1	1	admin@stchome.com	admin	admin	\bigcirc	8 🐉

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

C:\Jaspersoft\6.0.1\deploy
C:\Jaspersoft\6.0.1\deploy\generatedJobs
C:\Jaspersoft\6.0.1\deploy\executionLogs
$C:\Jaspersoft\6.0.1\cmdline\exports$
C:\Jaspersoft\6.0.1\Audit
C:\Jaspersoft\6.0.1\Audit\reports
C:\Jaspersoft\6.0.1\joblogs
C:\Jaspersoft\6.0.1\joblogs\log.txt

8. In Primary Command Line configuration, set the path for the Job generation folder to C:/Jaspersoft/6.0.1/cmdline/exports

CommandLine/primary (5 Parameters)							
Host:	localhost	Ø					
Port:	8002	Ø					
Job generation folder:	C:/Jaspersoft/6.0.1/cmdline/exports/	Ø	Validity of path cannot be checked				
User component path:		\bigcirc	Validity of path cannot be checked				
Version	6.0.1.20150908_1633	\bigcirc					

9. In Job Conductor configuration, set the path for the Generated jobs folder to c:/Jaspersoft/6.0.1/deploy/generatedJobs and the path to the Tasks logs folder to c:/Jaspersoft/6.0.1/deploy/executionLogs

📰 Job Conductor (7 Parameters)	0	
Generated jobs folder:	c:/Jaspersoft/6.0.1/deploy/generatedjobs	C
Tasks logs folder:	c:/Jaspersoft/6.0.1/deploy/executionLogs	C
Number of executions log:	1000	C
Maximum age of log file(d):	0	C
Maximum number of generated jobs:	3	
Maximum age of generated job(d):	0	0

10. In Logging configuration, set the Technical log file path to c:/Jaspersoft/6.0.1/joblogs/log

Logging (4 Parameters / 1 errors)	0	
Technical log file path:	c:/Jaspersoft/6.0.1/joblogs/log	\bigcirc
Technical log threshold:	WARN	\bigcirc
Business log file path:		\bigcirc

11. In Audit configuration, set the Reports stored path to c:/Jaspersoft/6.0.1/Audit/reports

🖻 Audit (6 Parameters)	0	
Url:	jdbc:h2:C:/Jaspersoft/6.0.1/jac/apache-tomcat/webap	C
User:	tisadmin	0
Password:		0
Driver:	org.h2.Driver	0
Web Console	<u>http://iq-demo-</u> <u>dbb:8080/org.jaspersoft.administrator/h2console</u>	4
Reports stored path:	c:/Jaspersoft/6.0.1/Audit/reports	C

- 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	r
Label:	qa0-etl
Description:	
Host:	10.0.5.137
Time zone:	
Command port:	0008
File transfer port:	8001
Monitoring port:	8888
Timeout on	120
unknown state (s):	
Username:	admin@stchome.com
Password:	•••••
Use SSL:	
Active:	Image: A set of the
🔲 Jaspersoft Runi	time

- 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

STC|iQ Jaspersoft ETL Deployment - Windows

The following outlines how to import (migrate) Jaspersoft ETL for STC|iQ on Windows.

Pre-Migration Checklist

- Confirm that the Postgres database is installed and configured
- Retrieve the passwords for the SMaRT AFIX database (*interopdb*)
- 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
- Retrieve the link for the IWeb Org/Fac web services
- Retrieve the username and password for the PHC Hub database
- Copy these components from Application Components/ETL into your local directory:
 - WF_Reset_DataMart.zip
 - WF_Int_DataMart_Map_x.x.zip (where x.x is the version number)

Deploy the ETL Components

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

- Copy these files to a convenient location to deploy: WF_Int_DataMart_Map_x.x.zip and WF_Reset_DataMart.zip.
- 2. Navigate to the Job Conductor page.
- Select Add > Normal Task and add the following: Label = iQ Reset Data Mart; Description = iQ Reset Data Mart.
- 2. Click **Import Generated Jobs** and select the WF_Reset_DataMart.zip file downloaded as part of the prerequisites.
- 3. On successful import of the file, verify these properties:
 - Active: Selected (checked)
 - Project: InteropProject (auto-populated based on the imported file)
 - Branch: (auto-populated based on the imported file)
 - Name: WF_Int_DataMart_Map (auto-populated based on the imported file)
 - Version: (auto-populated based on the imported file)
 - Context: Config (auto-populated based on the imported file)
 - Apply Context to Children: Selected (checked)

- Execution Server: Interop_JobServer
- Select Add > Normal Task and add the following: Label = WF_Int_DataMart_Map; Description = iQ Execution Plan.
- 5. Click **Import Generated Jobs** and select the WF_Int_DataMart_Map_x.x.zip file downloaded as part of the prerequisites.
- 6. On successful import of the file, verify these properties:
 - Active: Selected (checked)
 - Project: InteropProject (auto-populated based on the imported file)
 - Branch: (auto-populated based on the imported file)
 - Name: WF_Int_DataMart_Map (auto-populated based on the imported file)
 - Version: (auto-populated based on the imported file)
 - Context: Config (auto-populated based on the imported file)
 - Apply Context to Children: Selected (checked)
 - Execution Server: Interop_JobServer
- 7. For each job created above, update the following Contexts within the Context tab located at the bottom of the page. Select custom values as needed.
 - Web service related parameters:
 - Ws_Url: http://[IWeb server name]:8080/iweb/api/v1/OrgFac/
 - Ws_Api_Key: Secret key for IWeb
 - Database-related parameters:
 - DB_JDBC_ETLCONFIG:
 - DB_JDBC_ETLCONFIG_ -->
 [jdbc:postgresql://(PostgresServer:5432/interopdb]
 - DB_JDBC_ETLCONFIG_Login --> username for the database
 - DB_JDBC_ETLCONFIG_Password --> password for the database user
 - DB_ORCL_PHCHUB:
 - DB_ORCL_PHCHUB_Schema --> CPWEB
 - DB_ORCL_PHCHUB_Login --> cpweb
 - DB_ORCL_PHCHUB_Password --> password for the login user

- DB_ORCL_PHCHUB_SID --> CPWEB
- DB_ORCL_PHCHUB_Port --> 1521 or other port if selected during installation
- DB_PGRS_INTEROPOLAP:
 - DB_PGRS_INTEROPOLAP_Schema --> interopolap
 - DB_PGRS_INTEROPOLAP_Login --> interop (modify if different)
 - DB_PGRS_INTEROPOLAP_Password --> password for the login user
 - DB_PGRS_INTEROPOLAP_Database --> interopdb
 - DB_PGRS_INTEROPOLAP_Port --> 5432
- DB_PGRS_ODS:
 - DB_PGRS_ODS_Schema --> ods
 - DB_PGRS_ODS_Login --> interop (modify if different)
 - DB_PGRS_ODS_Password --> password for login user
 - DB_PGRS_ODS_Database --> interopdb
 - DB_PGRS_ODS_Port --> 5432
- 8. Save when finished.
- 9. Verify that the jobs deployed correctly: Click on WF_Int_DataMart_Map created in Step 4 above, then click **Run**. Deployment succeeded if no errors occur.
- 10. Go to the execution plan and click **Add**, then enter the details of the execution plan on the right side of the screen and click **Save**.

Plan	
Execution Plan	
Label:	IQ Main Job 🔤
Description:	Main ETL Job - delta ena
Timeout(s):	
Pause triggers on error:	

11. Add jobs to the execution plan: Click on the execution plan created in the previous step, then in the middle of the window select Root. On the third window, select the WF_Int_DataMart_Map task and click **Save**.



12. After the last step, the execution plan looks like this:

9	Refresh Image: Add OnOk Add OnError Add After Delete Task: "WF_Int_DataMart_Map" (65)	Execution task Edit planned task Use parallel execution Task: WF_Int_DataMar
Actions		
۹ 🖀		Save 🙁 Cancel

13. On that same page, click the Triggers tab for the execution plan at the bottom right to schedule the plan. Click the **Add trigger...** drop-down menu to open it and then select **Add CRON trigger**.

					• Triggers	Paramete	r 🔲 Context p	arameters	
😫 Refresh	🔾 Add trigger • 🛛 🧧	Duplicat	te 🔀 Dele	rte 🖸 Pauset	trigger 🗔 Re	sume trigger			
Label 🔺	 Add simple trigger Add CRON trigger Add file trigger 	pe	Status	Previous trig	Time left befo	Next triggerin	Next triggerin	Number of tri	Final triggeri

14. On the Add Cron trigger page, enter IQ Main Job Trigger in the label and click the **Open UI configurer** button.

Add Cron trigger			
Label:	IQ Main Job Trigger 🔤		
Description:	Triggers the Incremental Loa		
Time zone strategy:	TAC time 💌		
Open UI configu	irer 🛛 😰 Open Cron Help		
Minutes *:			
Hours *:			
Days of month **:			
Months *:			
Days of week **:			
Years:			
Pause trigger on error:			

Maria	. *	11		David	Marshert	Deve	Vee
Minute	S	Hours		Days of	Months	Days of	Year
00 30	00	1	1		January	Sunday	2014
01 31	01		2		February	Monday	2015
02 32	02	1	3		March	Tuesday	2016
03 33	03	5	4		April	Wednesday	2017
04 34	04	£	5		May	Thursday	2018
05 35	05		6		June	Friday	2019
06 36	06	;	7		July	Saturday	2020
07 37	07	t.	8		August		2021
08 38	08	1	9		September		2022
09 39	09	5	10		October		2023
10 40	10)	11		November		2024
11 41	11		12		December		2025
12 42	12	2	13				2026
13 43	13	E.	14				2027
14 44	14		15				2028
15 45	15	E	16				
16 46	16	i .	17				
17 47	17		18				
18 48	18	1	19				
19 49	19	1	20				
20 50	20	i.	21				
21 51	21		22				
22 52	22	2	23				
23 53	23	5	24				
24 54			25				
25 55			26				
26 56			27				
27 57			28				
28 58			29				
29 59			30				
			31				
			last	t day of month			

15. Configure how often the job should run and click **Apply Modifications**.

16. Note that after the trigger times are selected, the Add Cron trigger looks similar to this:

Add Cron trigge	r 🔳
Add Cron trigger	
Label:	IQ Main Job Trigger 🔤
Description:	Triggers the Incremental Loz
Time zone strategy:	TAC time 💌
Open UI configu	rer 🛛 😰 Open Cron Help
Minutes *:	0
Hours *:	6,7,8,9,10,11,12,13,14,15,16
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:	

17. To manually run an ETL job, click on the iQ main job created here and click **Run**.

Menu	• EXECUTIO	ON PLAN			
Settings BUsers Brojects Project sutherizations Project references	(\$ Refresh Q Add X Deleta	Cenerate Run Run Recover Last execution	Deploy Stop C Resume plan on		0
Configuration	State Status Ready to run	Error status Label KQ Main Job		Time left_ Trigger st	Actions
Agris mangement Agris mangement Agris mangement Mosfications O Conductor					
Job Conductor Sig Data Streaming Discution Plan Servers					

- 18. 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 iQ 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.

JasperReports Server Installation - Windows

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

Prereauisite

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-6.2.1-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-6.2.1-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-6.2.1-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.

 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*.

TIBC ⊘ Jaspersoft
Cetting Started Cetting Start
© Hot De Inglit addon for you © Jaepenet Quick Start Guide What's new in Jaspersoft Version 6?
Dashboards: A single web servironment for creating visualizations, with a mash up of Reports, Ad Hoc View, and web pages All New JaxperNobile Support: View interactive reports and Dashboards from your unartphone or tablet with the JaxperNobile app Viewalize_jee Finded Reports and Dashboards directly into highly interactive web pages
Expanded Multi-organization Administration: New tools to manage attributes, export/import, and scheduling across multiple organizations

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.

- 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 <u>Start/Stop the JasperReports Server</u> 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.

- Open web.xml from the path C:\Jaspersoft\jasperreports-server-6.2\apache-tomcat\webapps\jasperserver-pro\WEB-INF\web.xml.
- 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 <u>Start/Stop the JasperReports Server</u> 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

Edit the following values in theapplicationContext-externalAuth-oAuth.xml file:

Кеу	XML Tag Name(s) to Update	Value
[KEYCLOAK_URL]	<authorization_loc ation> <token_location> <userdetails_locat ion> <logouturl></logouturl></userdetails_locat </token_location></authorization_loc 	URL of the Keycloak server. Example: https://sso- dev.stchome.com/
[KEYCLOAK_REALM]	<authorization_loc ation> <token_location> <userdetails_locat ion> <logouturl></logouturl></userdetails_locat </token_location></authorization_loc 	Keycloak realm that the client belongs to. This value needs to be changed, along with <keycloak_url>. In this example, the realm name is <i>Dev</i>- <i>Integration</i>: https://sso- dev.stchome.com/auth/realms/Dev- Integration</keycloak_url>
[JASPERSERVER_URL]	<property name="redirecturl "> <property name="logoutUrl" ></property </property 	URL of the Jasper server. Example: http:// <server_name>:8080/jasperserv er-pro/oauth</server_name>
[CLIENT_ID]	<property name="client_id" ></property 	Client ID as set on Keycloak. Example: <property name="client_id"> <value>jasper-aws-dev</value></property>
[CLIENT_SECRET]	<property name="clientsecre t"> <property name="userdetail s_secret"></property </property 	Credentials secret key generated by Keycloak.
State_ID	<property name="state"></property 	This is the global setting used to populate the STATE_ID attribute in Jaspersoft. Example: <bean <br="" id="oAuthUserDetailsService">class="com.jaspersoft.jasperserver.ps.OA uth.OAuthUserDetailsServiceImpl"></bean>

Кеу	XML Tag Name(s) to Update	Value
		<property name="state"> <value>WA</value> </property>
Jaspersoft Roles	<bean id="mtExternalUs erSetupProcessor" class="com.jasper soft.jasperserver. multipleTenancy.s ecurity.externalAu th.processors.MTE xternalUserSetupP rocessor" parent="abstractE xternalProcessor" >name="organizati onRoleMap"> <map> <!-- Example of<br-->mapping customer roles to JRS roles > <entry> <key> <value>ROLE_AD MIN_EXTERNAL_O RGANIZATIONalue> </value></key> <value>ROLE_AD MINISTRATORalue> </value></entry> </map></bean 	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</entry>

- 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.
- Create and save a backup of the <JASPERSERVER_DIR>/apachetomcat/webapps/jasperserver-pro/WEB-INF/applicationContextsecurity.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.ProfileAttribut
eService.putProfileAttribute With ROLE_USER.

- 6. Save a backup copy of the <JASPERSERVER_DIR>/apachetomcat/webapps/jasperserver-pro/WEB-INF/applicationContext-securityweb.xml file again and replace the constructor-arg value for org.springframework.security.web.authentication.LoginUrlAuthenticationEntryPoin t with /oauth.
- 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>/postgresdirectory.
 - 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.

Org/fac List	
Protocol 😡	openid-connect
ID	fce1efb4-6796-4106-824d-2549b87be6ab
Name 😡	org/fac list
Consent Required 😨	OFF
Mapper Type 🛿	Org/fac list
Token Claim Name 🕼	org-fac
API-KEY @	645645
API-URI Ø	http://20.0.0.9 8080/iweb/api/v1/OrgFac/
Response format 😡	application/json 🔻
	Save

Name	Category	Туре
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

Name	Category	Туре
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.

> http://10.0.0.6.8080//web/api/v1/0rgFac//?user-user1		
Get O Host O Hut O courte Other methods -		
Raw headers	Headers form	Headers sets
apjory: data] +copt: applcation/jeen		

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 Migration for STC iO

See <u>iQ JasperReports Deployment - Windows</u> for specific instructions for iQ.

STC|iQ JasperReports Deployment -Windows

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

Pre-Migration Checklist

- Confirm that the Postgres database is installed and configured
- Retrieve the passwords for the SMaRT AFIX database (interopdb)
- Retrieve the Jaspersoft superuser username and password

- 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 Application Components/JRS/iQ_Report_Repository.zip and copied to your local drive.

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.

TIBC@ Jaspersoft	📩 🏫 Library View 🗸 Manage 🗸	Create 🗸		
🛛 Settings	Export			
Log Settings	the second second second second			
Log Collectors	File Properties			
Ad Hoc Settings	Export Data File Name (required):			
	export.zip			
Ad Hoc Cache				
OLAP Settings	Export Options:			
AWS Settings	Export Everything			
Server Attributes	Roles and Users to Export			
Restore Defaults	Selected roles and users	Users with selected ro	les Roles with selected users	
Import	Roles:		Users:	
Export		Q		Q
- Export	ROLE_ADMINISTRATOR		104user	
	ROLE_ANONYMOUS		2centeruser	
	ROLE_DEMO		amy_int	
	ROLE_PORTLET		amy_prov	
	ROLE_SUPERMART_MANAGE	R	amy_rc	
	ROLE_SUPERUSER		anarayan	
	ROLE_USER		andadminqa0	•
	✓ Select	All Roles	✓ Select All Users	
	Resources to Export	Assets to Export	Events to Ex	port
	Data Sources	Sub-organiz	ations Access	Events
	Domains	Dependenci	es 🗌 Audit I	Events
	Ad Hoc Views	Permissions	s Monitoring Events	

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 iQ_Report_Repository.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-6.2.1\buildomatic
- 3. Execute the migrate command: js-import.bat --input-zip "C:\source\interop-portal\develop\Reporting\iQ_Report_Repository.zip" --update --skip-user-update --include-access-events --include-auditevents --include-monitoring-events
- 4. Update the data source with the database connection information.

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.

 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/Interop (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 interop/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

Follow these steps to install Node.js on Windows:

- 1. Go to <u>https://nodejs.org</u> and download the recommended version of Node.js.
- 2. Run the installer you downloaded.
- 3. Follow the prompts in the installer.
- 4. Restart your computer.
- 5. Open a command window and type: npm install pm2 -g
- 6. After the above, type: npm i pm2-windows-service -g

STC|iQ 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 iQ, you can skip directly to the <u>Install the Deployment Package</u> section and continue from there.

Prereauisites

The following should already be installed and configured:

- Windows Server 2012
- PostgreSQL server (DBB)
- Mongo server (DBB)
- Oracle server (COR)
- PM2 (APP)

Installation and Deployment of iO, SMaRT AFIX, and VOMS

If you are installing iQ alongside the SMaRT AFIX 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 <u>Install the Deployment</u>. <u>Package</u> 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 Instanct 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 toC:\oracle\instantclient_12_1\sdk\lib\msvc
 - OCI_INC_DIR toC:\oracle\instantclient_12_1\sdk\include

Install Visual Studio 2013 Community Edition

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

Install Windows SDK v8.1

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

Install Redis

See <u>https://github.com/MicrosoftArchive/redis</u> for more information. Download the release at <u>https://github.com/MicrosoftArchive/redis/releases/tag/win-3.2.100</u>.

1. Use this command to install Redis as a Windows Service:

msiexec /i Redis-x64-3.2.100.msi

 Edit the redis.widnows-service.conf file which is located (in default installations) in C:\Program Files\Redis. Update the following variable line as follows (the default is usually set to an empty string ""):

notify-keyspace-events EKx

3. Restart the Redis Windows Service for the above change to take effect.

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 iQ alongside the SMaRT AFIX 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.
- 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/iQ_dark.svg",
"name": "iQ",
"url": "http://iq.stchome.com/",
"description": "An application that allows for an efficient assessment of HL7
Data quality, and provides tools and metrics to help onboard new providers
and improve data quality.",
"accessRole": "Access_interop"
}
```

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 <i>localhost</i>).		
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 VOMS with a reverse proxy, this should be set to <i>true</i> .		
ENABLE_SSL	When set to <i>true</i> , this enables HTTPS support. If REVERSE_PROXY is set to <i>true</i> , this should be set to <i>false</i> even when the environment is configured for HTTPS.		
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.		

Run the Application

Use pm2 to run the deployment package as shown below. In many cases, environmentspecific 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
```

STC|iQ Application Configuration

The following information describes how to configure the STC|iQ application.

STC | iQ Web Server-Specific Options

There are currently no options available for the STC|iQ web server.

STC | iQ API - Specific Options

The table below lists the available API-specific options:

Option	Description	
INTEROP_POSTGRES_USER	The iQ PostgreSQL user.	
INTEROP_POSTGRES_PASSWORD	The iQ PostgreSQL password.	
INTEROP_POSTGRES_CONNECTION_STRING	The iQ PostgreSQL connection string.	
INTEROP_MONGODB_CONNECTION_STRING	The iQ MongoDB connection string.	
STATE_LOGO_PATH	The path to the state logo image file.	

Organization/Facility Micro-Service-Specific Options

The table below lists the available options for the organization/facility micro-service:

Option	Description		
VOMS_ORACLE_USER	The username to the Oracle database.		
VOMS_ORACLE_PASSWORD	The password to the Oracle database.		
VOMS_ORACLE_CONNECTION	The Oracle database connection string for the IWeb		
	database.		

Keycloak Configuration for STC | iQ

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
Dashboard	dashboard.json	dashboard	DASHBOARD-URL

Import the Client and Roles

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 VOMS release Application Components/IQ/SSO/JSON directory.
- 5. Select the interop.json file and click **Open**.
- 6. 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 *interop* 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.