

# Secure ActiveMQ

## Setting up ActiveMQ with package bundle

### Open the package bundle folder

Replace the wrapper.conf file located in activemq/bin/win64 with the one inside the bundle

### Inside the folder tools/activemq/conf

Delete the following files: broker.ks, broker.ts, broker-localhost.cert, client.ks, client.ts.

Move the remaining file to this folder (broker.ks, broker.ts, broker\_cert, client.ks, client.ts, client\_cert, activemq-security.xml, credentials-enc.properties).

## Setting up ActiveMQ without package bundle (Creating broker and client keystore and truststore)

### Inside the folder tools/activemq/conf

Delete the following files: broker.ks, broker.ts, broker-localhost.cert, client.ks, client.ts.

Copy over the activemq-security.xml file located in the tool/activemq/examples/conf to this folder.

### Open bash and cd into the same conf folder

```
## Create a keystore for the broker SERVER and set the keystore password as Fractals
$ keytool -genkey -alias amq-broker -keyalg RSA -keysize 2048 -validity 90 -keystore broker .ks

## Export the broker SERVER certificate from the keystore
$ keytool -export -alias amq-broker -keystore broker .ks -file broker_cert

## Create the CLIENT keystore and set the keystore password as FractalsClient
$ keytool -genkey -alias amq-client -keyalg RSA -keysize 2048 -validity 90 -keystore client.ks

## Import the previous exported broker's certificate into a CLIENT truststore and set the keystore password as FractalsClient
$ keytool -import -alias amq-broker -keystore client.ts -file broker_cert

## If you want to make trusted also the client, you must export the client's certificate from the keystore
$ keytool -export -alias amq-client -keystore client.ks -file client_cert

## Import the client's exported certificate into a broker SERVER truststore and set the keystore password as Fractals
$ keytool -import -alias amq-client -keystore broker .ts -file client_cert
```

### Editing the activemq-security.xml file

Open activemq-security.xml in notepad (located in the activemq/conf folder)

Replace the broker section of code with the following.

```
<broker xmlns="http://activemq.apache.org/schema/core" brokerName="localhost" dataDirectory="${activemq.data}">

  <sslContext>
    <sslContext keyStore="file:${activemq.conf}/broker.ks"
      keyStorePassword="{key.password}" trustStore="file:${activemq.conf}/broker.ts"
      trustStorePassword="{trust.password}"/>
  </sslContext>

  <transportConnectors>
    <transportConnector name="ssl" uri="ssl://0.0.0.0:61617?maximumConnections=1000&transport.closeAsync=false&
wantClientAuth=true&needClientAuth=true;wireFormat.maxFrameSize=104857600"/>
  </transportConnectors>

</broker>
```

At the bottom of the file, there should be a line like so,

```
<import resource="demo-jetty.xml"/>
```

Change it to.

```
<import resource="jetty.xml"/>
```

## Editing the credentials-enc.properties file

Open credentials-enc.properties in notepad (located in the activemq\conf folder)

Add these two lines at the end.

```
trust.password=ENC(q+OlpSIlanpkCgWxy5OLGuFSjn3UYTfW)
```

```
key.password=ENC(q+OlpSIlanpkCgWxy5OLGuFSjn3UYTfW)
```

If your broker password is not Fractals, then you will have to encrypt your password. You can by going in bash and cd into your activemq folder. Enter in this command.

```
$ bin/activemq encrypt --password activemq --input password
```

Put your encrypted password between the parentheses in the two lines you added.

## Editing the wrapper.conf file

Open wrapper.conf in notepad (located in the activemq\bin\win64 folder)

At line 50 and 51, replace the password for trustStorePassword and keyStorePassword to ENC(q+OlpSIlanpkCgWxy5OLGuFSjn3UYTfW).

If your broker password is not Fractals, then you will have to encrypt your password. You can by going in bash and cd into your activemq folder. Enter in this command.

```
$ bin/activemq encrypt --password activemq --input password
```

Put your encrypted password between the parentheses in the two lines you added.

After line 59, insert this line.

```
wrapper.java.additional.13=-Djsse.enableSNIExtension=false
```

## Editing the prop files

Inside the FRACTALS project folder, open the pubsub.props (located in FractalsWeb/src/main/resources/config) and config.props (located in FractalsSamples/src/main/resources/config).

Change the flag for secureConnection to true for both files.

if client password is not FractalsClient, than you will have to use the BFCrypter.java main (located in FractalsWeb/src/main/java/com/solers/fractals/db/crypt) to encrypt your password. Change the passwords for the trustStore and keyStore to the encrypted password you generated for both files.

Change the path of the TrustStore and KeyStore.

The current directory is the eclipse folder (presumably under the tools folder). If you activemq folder is also under the tools folder, than the paths should look like this:

```
../activemq/conf/client.ts
```

```
../activemq/conf/client.ks
```

## Running activemq

Open a bash and cd into your activemq folder.

Enter in these commands.

```
$ export ACTIVEMQ_ENCRYPTION_PASSWORD=activemq
```

```
$ bin/activemq console xbean:examples/conf/activemq-security.xml
```

When closing out of activemq, make sure to unset the ACTIVEMQ\_ENCRYPTION\_PASSWORD environmental variable.

```
$ unset ACTIVEMQ_ENCRYPTION_PASSWORD
```