Connect to AMQP 1.0 Broker using Generic JMS Provider

This topic describes how to configure the CA API Gateway to connect to an AMQP 1.0 Broker as a Generic JMS provider. For example, Apache ActiveMQ.

Prerequisites

- Download Apache Qpid JMS (AMQP 1.0) client tarball files from https://qpid.apache.org/download.html. At the time of writing, the latest download is apache-qpid-jms-0.9.0-bin.tar.gz.
  geronimo-jms_1.1_spec-1.1.1.jar
  netty-buffer-4.0.17.Final.jar
  netty-codec-4.0.17.Final.jar
  netty-common-4.0.17.Final.jar
  netty-handler-4.0.17.Final.jar
  netty-transport-4.0.17.Final.jar
  proton-j-0.12.1.jar
  qpid-jms-client-0.9.0.jar
  qpid-jms-discovery-0.9.0.jar
  slf4j-api-1.7.21.jar

Step 1: Set Up the Gateway for AMQP 1.0 Broker

To set up the Gateway for AMQP 1.0 Broker:

1. Stop the Gateway.

   ```
   service ssg stop
   ```

2. Copy all files under "Prerequisites" to the following location on the Gateway.

   ```
   /opt/SecureSpan/Gateway/runtime/lib/ext
   ```

3. Set permission and ownership.

   ```
   chmod 444 geronimo-jms_1.1_spec-1.1.1.jar netty-*.jar proton-j-0.12.1.jar
   qpid-jms-client-0.9.0.jar qpid-jms-discovery-0.9.0.jar slf4j-api-1.7.21.jar
   chown layer7:layer7 geronimo-jms_1.1_spec-1.1.1.jar netty-*.jar
   proton-j-0.12.1.jar qpid-jms-client-0.9.0.jar qpid-jms-discovery-0.9.0.jar
   slf4j-api-1.7.21.jar
   ```

4. Start the Gateway

   ```
   service ssg start
   ```

Step 2: Configure Mutual Authentication on the Gateway

To configure mutual authentication on the Gateway:

1. Create the following directory on the Gateway.

```
/opt/SecureSpan/Gateway/runtime/modules/conf/qpid
```

2. Set permission and ownership.

```
chown layer7:layer7 /opt/SecureSpan/Gateway/runtime/modules/conf/qpid
chmod 755 /opt/SecureSpan/Gateway/runtime/modules/conf/qpid
```

3. Copy the keystore and truststore files (*.jks) to the newly created directory on the Gateway.
   - The keystore should contain the client private key.
   - The truststore should contain the broker server certificate.

   > For more details, please see Keystore and Truststore section below.

4. Set permission and ownership.

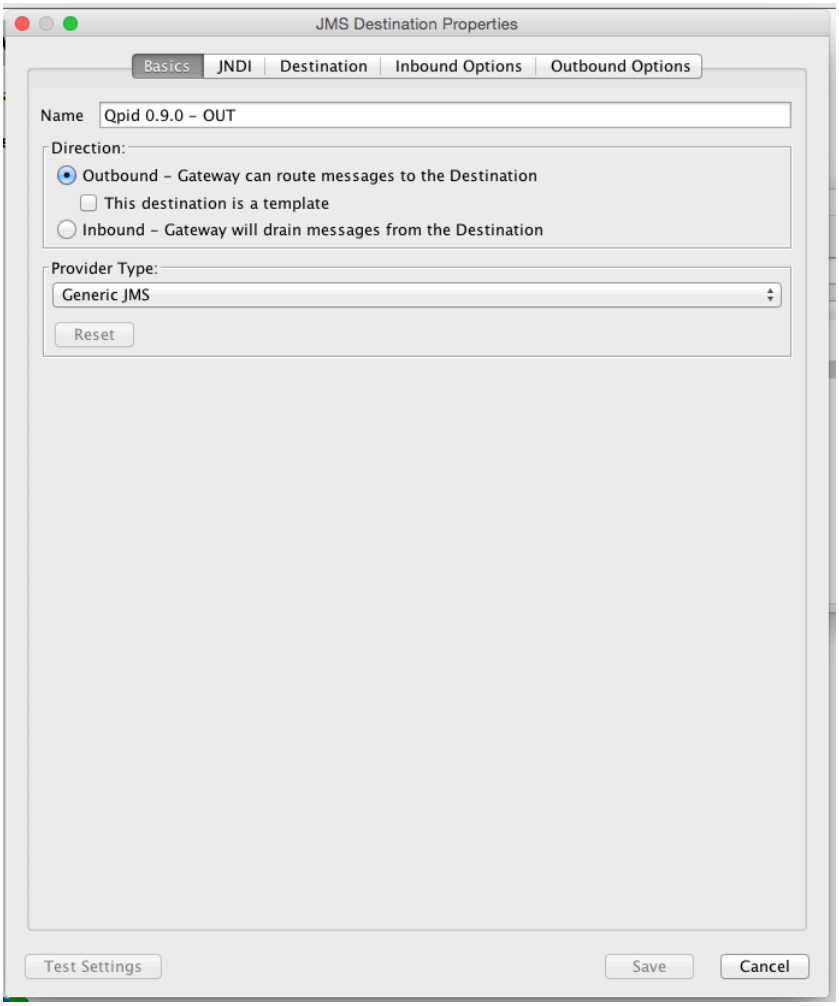
```
chown layer7:layer7 /opt/SecureSpan/Gateway/runtime/modules/conf/qpid/*.jks
chmod 644 /opt/SecureSpan/Gateway/runtime/modules/conf/qpid/*.jks
```

Step 3: Register the JMS Destinations

This last step involves using the Policy Manager to register the JMS destinations.

To register a JMS destination:

1. In the Policy Manager, run the *Manage JMS Destinations* task.
2. Click [**Add**] to create a new JMS Destination.
3. Complete the fields as follows:
   a. In the [Basic] tab:
      - **Name**: Enter a name for the new JMS destination.
      - **Direction**: Select a direction.
      - **Provider Type**: Generic JMS



b. In the [JNDI] tab:

- **Initial Context Factory class name:** Enter *org.apache.qpid.jms.jndi.JmsInitialContextFactory*
- **JNDI URI:** Enter a space. This field is not used but is a **required** field to save or test the connection.
- **Credentials are required to connect to JNDI:** Set as appropriate.
- **Additional Properties**:
  - To define a ConnectionFactory, use format: connectionfactory.<lookupName> = URI.
    - Non SSL example:

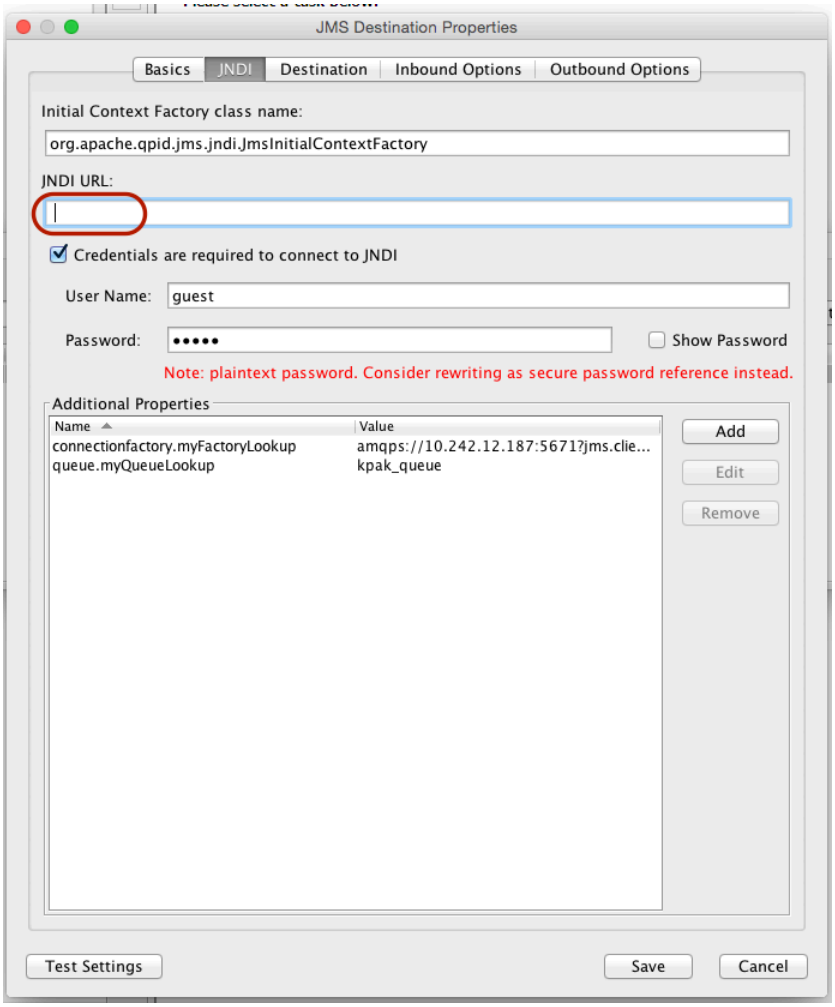
```
amqp://<message_broker>:5672?jms.clientID=client1
```

    - SSL mutual example:

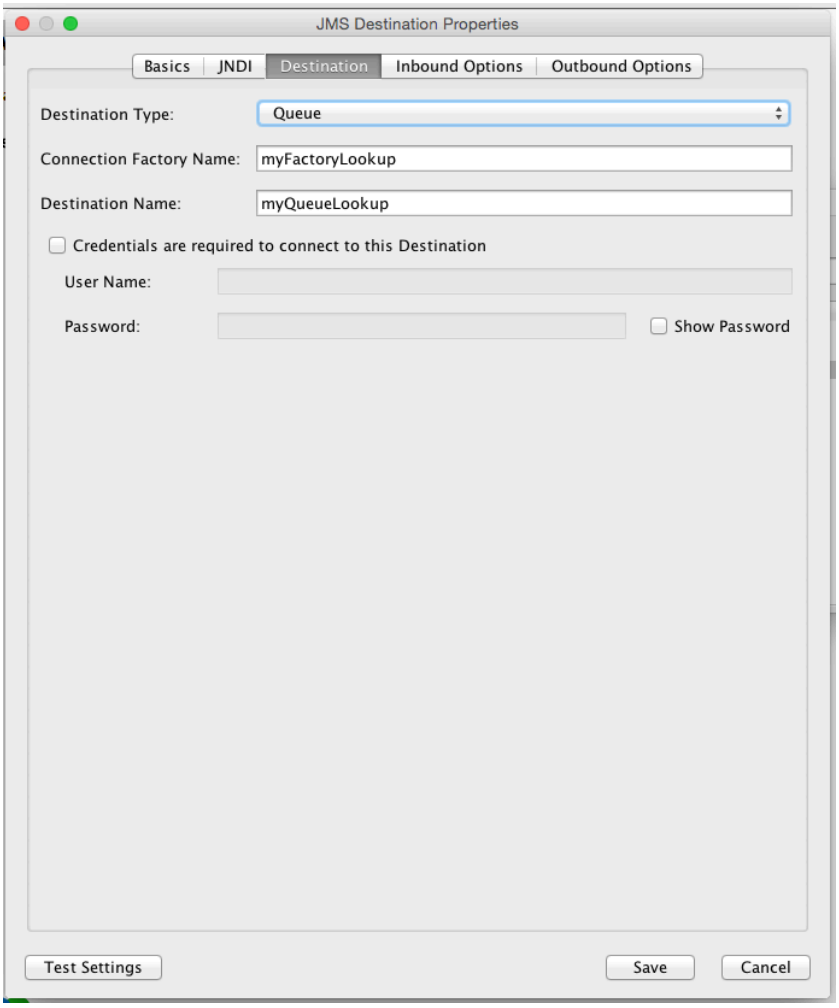
```
amqps://<message_broker>:5671?jms.clientID=client2&transport
.keyStoreLocation=/opt/SecureSpan/Gateway/runtime/modules/co
nf/qpid/qpidclient-keystore.jks&transport.keyStorePassword=*
***&transport.trustStoreLocation=/opt/SecureSpan/Gateway/run
time/modules/conf/qpid/qpidclient-truststore.jks&transport.t
rustStorePassword=****
```

    > *jms.clientID* must be unique. The message broker may reject multiple connections from the same client ID.

  - To define a Queue, use format: queue.<lookupName> = queueName.



c. In the [Destination] tab:
   - **Destination Type:** Queue
   - **Connection Factory Name:** Enter the lookupName that is used to create a connection with the JMS provider. This name **must** match what is entered in the JNDI tab Additional Properties table. For example, if you entered "*myFactoryLookup*", the property name in the JNDI tab must be "*connectionfactory.myFactoryLookup*".
   - **Destination Name:** Enter the lookupName of the queue to use in the AMQP broker. This name **must** match what is entered in the JNDI tab Additional Properties table. For example, if you entered "*myQueueLookup*", the property name in the JNDI tab must be "*queue.myQueueLookup*".
   - **Credentials are required to connect to this destination:** Set as appropriate.



4. Click [**Test Settings**] to validate your settings. The Gateway attempts to connect to the JMS destination and then displays the results.
5. After a successful test, click [**Save**] to register the JMS destination on the Gateway.

Keystore and Truststore

- Import broker certificate to the truststore.

```
keytool -import -trustcacerts -alias "broker" -file broker.cer -keystore
qpidclient-truststore.jks -deststoretype JKS
```

- Import client private key to the keystore.

```
keytool -v -importkeystore -srckeystore client.p12 -srcstoretype PKCS12
-destkeystore qpidclient-keystore.jks -deststoretype JKS
```

References

- https://qpid.apache.org/releases/qpid-jms-0.9.0/docs/index.html