**Clustering AMQ7 brokers**

A-MQ 7 has the ability intelligently store & forward messages around a cluster of brokers in order to load-balance and prevent "starvation". In addition to that, however, a clustered setup is required in order to do any type of master/slave (whether shared store, or replicated).

There are a few different options for configuring a clustered setup:

* Multicast
* JGroups
* Static

For the purposes of this lab, we will use the static option.

**Prerequisites**

Download and install the A-MQ 7 broker package.

**Creating the brokers**

$ $AMQ\_HOME/bin/artemis create brokers/node1 --name node1 --user admin --password admin --allow-anonymous

$ $AMQ\_HOME/bin/artemis create brokers/node2 --name node2 --user admin --password admin --allow-anonymous --port-offset 1

*Note: We could have passed in some extra arguments to configure our cluster with some defaults, but instead we're going to manually configure the cluster via the broker.xml file so we can become familiar with the available options.*

**Editing the configuration**

**Node 1**

1. Open up the brokers/node1/etc/broker.xml file in your favorite text editor.
2. Add the following elements anywhere under the <core> element:

<connectors>

<connector name="node1-connector">tcp://localhost:61616</connector>

<connector name="node2-connector">tcp://localhost:61617</connector>

</connectors>

<cluster-user>admin</cluster-user>

<cluster-password>admin</cluster-password>

<cluster-connections>

<cluster-connection name="static-cluster">

<connector-ref>node1-connector</connector-ref>

<message-load-balancing>ON\_DEMAND</message-load-balancing>

<static-connectors>

<connector-ref>node2-connector</connector-ref>

</static-connectors>

</cluster-connection>

</cluster-connections>

1. Add the following elements anywhere under the <address-setting> element whose match attribute is equal to "#" (meaning it matches all addresses):

<redistribution-delay>0</redistribution-delay>

1. Start the broker:

$ ./brokers/node1/bin/artemis run

**Node 2**

1. Open up the brokers/node2/etc/broker.xml file in your favorite text editor.
2. Add the following elements anywhere under the <core> element:

<connectors>

<connector name="node1-connector">tcp://localhost:61616</connector>

<connector name="node2-connector">tcp://localhost:61617</connector>

</connectors>

<cluster-user>admin</cluster-user>

<cluster-password>admin</cluster-password>

<cluster-connections>

<cluster-connection name="static-cluster">

<connector-ref>node2-connector</connector-ref>

<message-load-balancing>ON\_DEMAND</message-load-balancing>

<static-connectors>

<connector-ref>node1-connector</connector-ref>

</static-connectors>

</cluster-connection>

</cluster-connections>

1. Add the following elements anywhere under the <address-setting> element whose match attribute is equal to "#" (meaning it matches all addresses):

<redistribution-delay>0</redistribution-delay>

1. Start the broker:

$ ./brokers/node2/bin/artemis run

**Testing**

Open up two terminal windows and run the following commands:

**Terminal 1**

$ $AMQ\_HOME/bin/artemis producer --verbose --user admin --password admin --sleep 1000 --message-count 100 --url 'tcp://localhost:61616'

**Terminal 2**

$ $AMQ\_HOME/bin/artemis consumer --verbose --user admin --password admin --message-count 100 --url 'tcp://localhost:61617'

You should see that the messages are produced to node1, but consumed from node2.