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# **DataXstream - SAP Exchange Infrastructure JMS Configuration For Oracle AQ Instructions**

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**DATA XSTREAM**  
Systems Integration & Architecture

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## **Abstract**

This document gives step-by-step instructions on how to install, setup, and configure the JMS adapter to communicate with Oracle AQ Messaging. Oracle AQ and the SAP XI adapter are not compatible as delivered by SAP and Oracle. DataXstream adapter software was developed to bridge the incompatibilities between the SAP JMS adapter and Oracle AQ.

The following limitations exist when integrating Oracle AQ via the SAP JMS Adapter:

1. The SAP JMS adapter only support queues. It DOES NOT support topics.
2. The SAP JMA adapter only supports the following queue message type:
  - a. SYS.AQ\$\_JMS\_TEXT\_MESSAGE
  - b. SYS.AQ\$\_JMS\_BYTES\_MESSAGE

## **Prerequisites**

- SAP Exchange Infrastructure 3.0 or 7.0.
- Oracle AQ 9i or higher.
- DataXstream Oracle AQ adapter software for SAP XI.

## **Overview**

The installation, setup and configuration of the JMS Adapter for Oracle AQ can be broken down into the following high level steps each of which are described in detail in the step-by-step instructions:

1. Collect and deploy the necessary JAR files from Oracle JMS Provider Server
2. Configure Oracle AQ
3. Configure the Integration Directory Communication Channel
4. Appendix
  - a. SAP J2EE JMS Logging and SAP XI Communication Channel Monitoring
  - b. Java Objects
    - i. Oracle AQ Java Objects
    - ii. SAP JMS Java Objects
  - c. References
    - i. Reference Documents, SAP OSS Notes, Reference Links
  - d. Errors

## **Step-By-Step Instructions**

1. Collect and deploy the necessary JAR files from Oracle JMS Provider Server
  - a. The following JAR's must be collected from the JMS provider:
    - i. aqapi.jar, classes12.zip, nls\_charset12.zip, oc4jclient.jar, ojdbc14.jar, DXSaqapi.jar
    - ii. **IMPORTANT:** These files must be the same version as the JMS Service Provider server.
      1. If more than one version of the same type of JMS Service Provider is required use the files from the server with the highest version / patch level.
        - a. You may still have issues with connections and queue operations to JMS Service Provider with the lower version / patch level.
  - b. Please locate the following JARs in the following directories:

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- i. \$ORA\_HOME\$\<SID>\rdbms\jlib – apapi.jar
  - ii. \$ORA\_HOME\$\<SID>\jdbc\lib – classes12.zip
  - iii. \$ORA\_HOME\$\<SID>\jdbc\lib – nls\_charset12.zip
  - iv. \$ORA\_HOME\$\<SID>\oc4j2ee\home - oc4jclient.jar
  - v. \$ORA\_HOME\$\<SID>\jdbc\lib – ojdbc14.jar
  - vi. Contact DataXstream – DXSaqapi.jar
- c. The following SDA file must be collected from the SAP Exchange Infrastructure server:
- i. aii\_af\_jmsproviderlib.sda
- d. Please locate the following SDA in the following directory:
- i. /usr/sap/<SID>/DVEBMGS<SYSNO>/SDM/root/origin/sap.com/com.sap.aii.af.jmsproviderlib/SAP AG/././
- e. Compile and deploy the prior outlined JARs in to aii\_af\_jmsproviderlib.sda. Please follow the referenced SAP document to correctly modify and deploy the aii\_af\_jmsproviderlib.sda file.
- i. SAP Document: HowToInstallExternalDrivers.pdf
  - ii. When you deploy the aii\_af\_jmsproviderlib.sda archive to the SAP J2EE engine using the SAP Deployment Manager (SDM).
  - iii. **The J2EE server WILL BE AUTOMACTICALLY RESTARTED after the deployment of the archive**

## 2. Configure Oracle AQ

### a. Create Administrative user and Authorized user

#### As system/manager:

```
CREATE USER sciatl_adm IDENTIFIED BY "12qwasZX" DEFAULT TABLESPACE USERS;
GRANT DBA, CREATE ANY TYPE TO sciatl_adm;
GRANT EXECUTE ON DBMS_AQADM TO sciatl_adm;
GRANT aq_administrator_role TO sciatl_adm;
BEGIN
  DBMS_AQADM.GRANT_SYSTEM_PRIVILEGE(
    privilege      => 'MANAGE_ANY',
    grantee        => 'sciatl_adm',
    admin_option   => FALSE);
END;
/
CREATE USER sciatl_aq IDENTIFIED BY sciatl_aq;
GRANT DBA TO sciatl_aq;
GRANT EXECUTE ON dbms_aq TO sciatl_aq;
```

### b. Create Text Queue Table

#### As sciatl\_aq:

```
BEGIN
  DBMS_AQADM.CREATE_QUEUE_TABLE(
    QUEUE_TABLE      => 'sciatl_aq.SCIATL_QUEUE_TABLE',
    QUEUE_PAYLOAD_TYPE => 'SYS.AQ$_JMS_TEXT_MESSAGE',
    COMPATIBLE       => '8.1.3'
    STORAGE_CLAUSE   => 'TABLESPACE USERS
```

```

PCTUSED 0
PCTFREE 10
INITTRANS 1
MAXTRANS 255
STORAGE (
    INITIAL 64K
    MINEXTENTS 1
    MAXEXTENTS 2147483645
    PCTINCREASE 0
    BUFFER_POOL DEFAULT),
SORT_LIST => 'ENQ_TIME',
MULTIPLE_CONSUMERS => FALSE,
MESSAGE_GROUPING => 0);
END;
```

### c. Create Text Queue

**As sciatl\_aq:**

```

BEGIN
SYS.DBMS_AQADM.CREATE_QUEUE(
    QUEUE_NAME => 'SCIATL_AQ.SCIATL_TEXT_QUEUE',
    QUEUE_TABLE => 'SCIATL_AQ.SCIATL_QUEUE_TABLE',
    QUEUE_TYPE => SYS.DBMS_AQADM.NORMAL_QUEUE,
    MAX_RETRIES => 0,
    RETRY_DELAY => 0,
    RETENTION_TIME => 0);
END;
/
BEGIN
SYS.DBMS_AQADM.START_QUEUE(
    QUEUE_NAME => 'SCIATL_AQ.SCIATL_TEXT_QUEUE',
    ENQUEUE => TRUE,
    DEQUEUE => TRUE);
END;
```

### d. Grant AQ System Privileges to User

**As sciatl\_adm:**

```

BEGIN
DBMS_AQADM.GRANT_SYSTEM_PRIVILEGE(
    privilege => 'ENQUEUE_ANY',
    grantee => 'test',
    admin_option => FALSE);
DBMS_AQADM.GRANT_SYSTEM_PRIVILEGE(
    privilege => 'DEQUEUE_ANY',
    grantee => 'test',
    admin_option => FALSE);
END;
/
```

### e. Grant Queue Privileges to User

**As sciatl\_aq:**

```

BEGIN
  DBMS_AQADM.GRANT_QUEUE_PRIVILEGE (
    privilege      => 'ALL',
    queue_name     => 'SCIATL_AQ.SCIATL_TEXT_QUEUE',
    grantee        => 'SCIATL_AQ',
    grant_option   => TRUE);
END;
/

```

3. Configure the Integration Directory Communication Channels

- a. Please see SAP standard JMS configuration documentation for a list of all possible configuration options regarding the SAP JMS Adapter.
- b. The following configuration setting must be maintained for the SAP JMS adapter to successfully connect to Oracle AQ.

i. Receiver Channel Configuration

- 1. Adapter Type: JMS
- 2. Direction: Receiver
- 3. Transport Protocol: Access JMS Provider Generically
- 4. Message Protocol: JMS 1.x
- 5. Manual Settings Required:

|  |  |
|--|--|
| JMS.QueueConnectionFactoryImpl.classname   | oracle.jms.DXSjmsQueueConnectionFactory  |
| JMS.QueueConnectionFactoryImpl.constructor | java.lang.String <host or IP>, java.lang.String <oracle sid>, java.lang.Integer <AQ port>, java.lang.String thin   |
| JMS.QueueImpl.classname                    | oracle.jms.DXSjmsDestination   |
| JMS.QueueImpl.constructor                  | java.lang.String <queue owner>, java.lang.String <queue name>, java.lang.Integer 10, java.lang.Integer 3, java.lang.String <queue type>, java.lang.String <queue table><br><br>Supported Queue Types:<br>SYS.AQ\$_JMS_TEXT_MESSAGE<br>SYS.AQ\$_JMS_BYTES_MESSAGE |

6. Configuration

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**Display Communication Channel**

Communication Channel: AQ\_JMS\_DXS\_Receiver

Party: \_\_\_\_\_

Service: JMS

Description: Test.

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**Parameters** | Identifiers | Module

Adapter Type \* JMS  SAP BASIS 7.00

Sender  Receiver

Transport Protocol \* Access JMS Provider Generically

Message Protocol \* JMS 1.x

Adapter Engine \* Integration Server

| Name                                       | Value   |
|--|---|
| JMS.QueueConnectionFactoryImpl.classname   | oracle.jms.DXSjmsQueueConnectionFactory                 |
| JMS.QueueConnectionFactoryImpl.constructor | java.lang.String 192.133.217.6, java.lang.String btt... |
| JMS.QueueImpl.classname                    | oracle.jms.DXSjmsDestination                            |
| JMS.QueueImpl.constructor                  | java.lang.String AQADM, java.lang.String TEXT_J...      |

ii. Sender Channel Configuration

1. Adapter Type: JMS
2. Direction: Sender
3. Transport Protocol: Access JMS Provider Generically
4. Message Protocol: JMS 1.x
5. Manual Settings Required:

|  |  |
|--|--|
| JMS.QueueConnectionFactoryImpl.classname   | oracle.jms.DXSjmsQueueConnectionFactory  |
| JMS.QueueConnectionFactoryImpl.constructor | java.lang.String <host or IP>, java.lang.String <oracle sid>, java.lang.Integer <AQ port>, java.lang.String thin   |
| JMS.QueueImpl.classname                    | oracle.jms.DXSjmsDestination   |
| JMS.QueueImpl.constructor                  | java.lang.String <queue owner>, java.lang.String <queue name>, java.lang.Integer 10, java.lang.Integer 3, java.lang.String SYS.ANYDATA, java.lang.String <queue table> |

6. Configuration

**Edit Communication Channel**

Communication Channel: AQ\_JMS\_DXS\_Sender  
 Party:   
 Service: JMS  
 Description: Test

Parameters Identifiers Module

Adapter Type \* JMS <http://sap.com/xi/XI/System> SAP BASIS 7.00

Sender  Receiver

Transport Protocol \* Access JMS Provider Generically

Message Protocol \* JMS 1.x

Adapter Engine \* Integration Server

| Name                                       | Value   |
|--|---|
| JMS.QueueConnectionFactoryImpl.classname   | oracle.jms.DXSjmsQueueConnectionFactory                 |
| JMS.QueueConnectionFactoryImpl.constructor | java.lang.String 192.133.217.6, java.lang.String btt... |
| JMS.QueueImpl.classname                    | oracle.jms.DXSjmsDestination                            |
| JMS.QueueImpl.constructor                  | java.lang.String AQADM, java.lang.String XI_IN_Q...     |

## Appendix

### 1. SAP J2EE JMS Logging and SAP XI Communication Channel Monitoring

#### a. Activating Logging For JMS on SAP J2EE

##### i. Open the SAP J2EE Visual Administrator

##### 1. To open the SAP J2EE Visual Administrator:

a. \usr\sap\ERP\DVEBMGS10\j2ee\admin

##### 2. Execute the following :

a. go (UNIX) or go.bat (Windows)

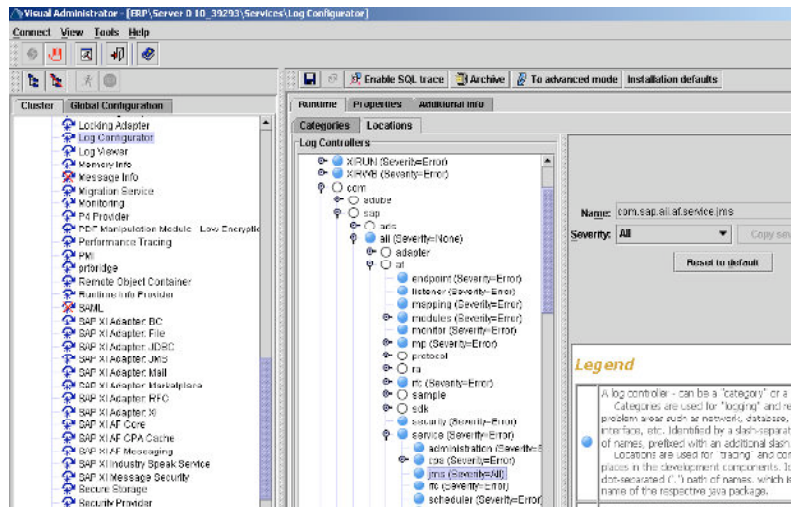
##### ii. Modify the following settings:

##### 1. Navigate To: Server > Services > Log Configurator

##### 2. Select the locations tab.

##### 3. Navigate To: com > sap > aii > af > services > jms

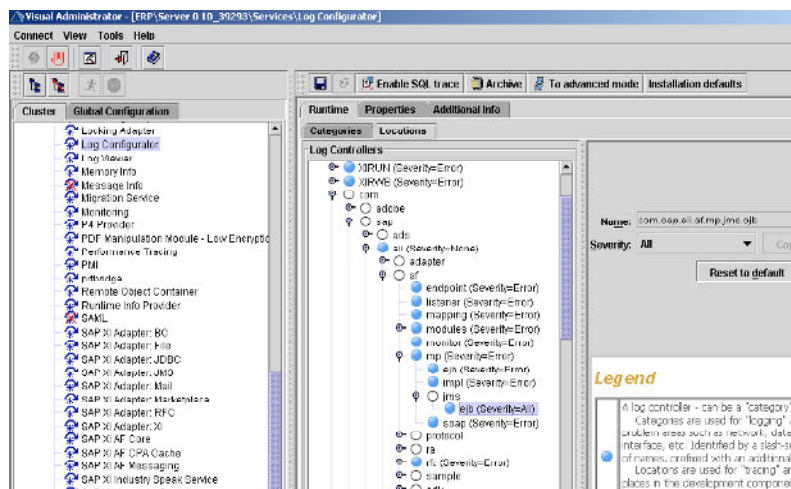
##### a. Set Severity To: All



b.

##### 4. Navigate To com > sap > aii > af > mp > jms > ejb

##### a. Set Severity To: All



b.



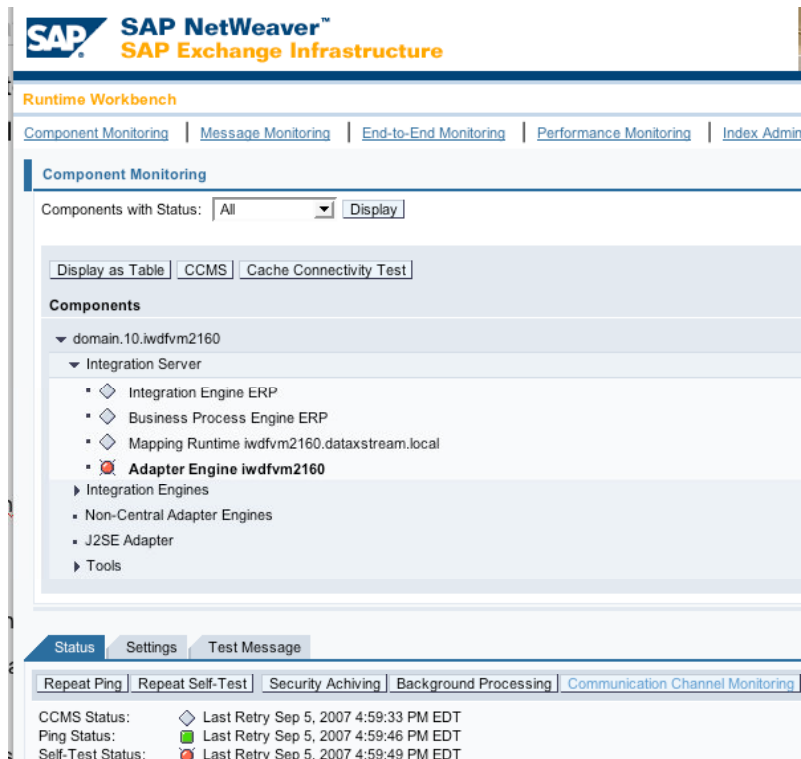
iii. Review log file.

1. The log file is located in the following directory:
  - a. \usr\sap\ERP\DVEBMGS10\j2ee\cluster\server0\log\
  - b. File Name: defaultTrace.\*.trc

b. Communication Channel Monitoring

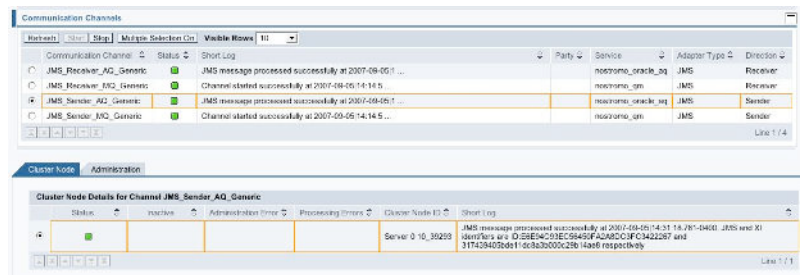
i. To check the status of the communication channel:

1. Launch and Log into the RWB.
2. Select Component Monitoring > Adapter Engine > Communication Channel Monitoring



a.

3. Select Adapter Type: JMS and click Use Filter.



a.

2. Java Objects

a. Oracle AQ Java Objects

i. oracle.jms.AQjmsQueueConnectionFactory (java.lang.String, java.lang.String, java.lang.Integer, java.lang.String)

1. java.lang.String <host or IP>
  - a. Configure the host name or IP address of the JMS service provider server.

- b. Example "192.168.168.168" or "deathstar.dataxstream.com"
      2. java.lang.String <oracle sid>
        - a. Configure the oracle sid. The Oracle SID is three characters.
        - b. Example "DXS".
      3. java.lang.Integer <AQ port>
        - a. Configure the port of the JMS service provider.
        - b. Example "1521".
      4. java.lang.String thin
        - a. Configure the JMS adapter type.
        - b. Values: thin, OCI, OCI8
        - c. Example "thin"
    - ii. oracle.jms.DXSjmsDestination (java.lang.String <queue owner>, java.lang.String <queue name>, java.lang.Integer 10, java.lang.Integer 3, java.lang.String SYS.ANYDATA, java.lang.String <queue table>)
      1. java.lang.String <queue owner>
        - a. Configure the oracle queue owner name.
        - b. Example "AQADM"
      2. java.lang.String <queue name>
        - a. Configure the name of the oracle queue to connected.
        - b. Example "XI\_QUEUE"
      3. java.lang.Integer <queue type>
        - a. Configure the type of queue to be connected.
        - b. Values: 10 (queue), 20 (topic – Not Supported)
        - c. Example "10"
      4. java.lang.Integer <message payload qualifier>
        - a. Configure the type of queue message payload.
        - b. Values:
          - i. SYS.AQ\$\_JMS\_MESSAGE (Not Support In SAP XI JMS Adapter)
          - ii. SYS.AQ\$\_JMS\_TEXT\_MESSAGE
          - iii. SYS.AQ\$\_JMS\_BYTES\_MESSAGE
          - iv. SYS.AQ\$\_JMS\_MAP\_MESSAGE (Not Support In SAP XI JMS Adapter)
          - v. SYS.AQ\$\_JMS\_OBJECT\_MESSAGE (Not Support In SAP XI JMS Adapter)
          - vi. SYS.AQ\$\_JMS\_STREAM\_MESSAGE (Not Support In SAP XI JMS Adapter)
          - vii. SYS.ANYDATA (Use This Value For AQ Sender Communication Channels)
      5. java.lang.String <message payload type>
        - a. Configure
      6. java.lang.String <queue table>
        - a. Configure the queue table name of the queue to be connected .
        - b. Example: "XIQTAB"

### b. SAP JMS Java Objects

### 3. References

#### a. Reference Documents

#### b. SAP OSS Notes

- i. [Note 856346 - J2EE JMS Adapter: Frequently Asked Questions \(FAQ\)](#)
- ii. [Note 802754 - J2EE JMSAdapter: JNDI access to JMS providers](#)
- iii. [Note 791655 - Documentation of the XI Messaging System Service Properties](#)
- iv. [Note 719778 - DataSource fails to return connection](#)
- v. [Note 877994 - J2EE JMSAdapter: SAP J2EE JMS provider: Startup fails](#)
- vi. [Note 925422 - JMS Adapter providerurl,message priority,expiration handling](#)

#### c. Reference Links

##### i. SAP Exchange Infrastructure JMS Links

1. [SAP Online JMS Adapter Documentation](#)

##### ii. Oracle AQ Links

1. [Oracle9i Application Developer's Guide - Advanced Queuing Release 2 \(9.2\)](#)
2. [Oracle10g Java Message Service \(JMS\)](#)
3. [JMS and AQ XML Servlet Error Messages](#)
4. [Creating Applications Using JMS](#)
5. [Package oracle.jms](#)
6. [Package oracle.aq](#)
7. [Other Oracle Advanced Queueing Documentation](#)

##### 8. Downloads

- a. [Oracle9i JDBC Drivers](#)

##### iii. Java Links

1. [Sun Java JMS Documentation](#)