

Oracle® Application Server InterConnect

Adapter for MQ Series Installation and User's Guide

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Oracle Application Server InterConnect Adapter for MQ Series Installation and User's Guide, 10g (9.0.4)

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Preface

This preface contains these topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Organization](#)
- [Related Documentation](#)
- [Conventions](#)

Audience

This book is intended for those who perform the following tasks:

- install applications
- maintain applications

Documentation Accessibility

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Organization

This document contains:

Chapter 1, "Introduction"

This chapter describes the Oracle Application Server InterConnect Adapter for MQ Series (MQ Series adapter) and the hardware and software requirements.

Chapter 2, "Installation and Configuration"

This chapter describes installation and configuration of the MQ Series adapter.

Chapter 3, "Design Time and Runtime Concepts"

This chapter describes the design time and runtime concepts for the MQ Series adapter.

Chapter 4, "Frequently Asked Questions"

This chapter provides answers to frequently asked questions about the MQ Series adapter.

Related Documentation

For more information, see these Oracle resources:

- *Oracle Application Server InterConnect User's Guide*
- *Oracle Application Server InterConnect Installation Guide*
- *Oracle Application Server InterConnect Adapter Configuration Editor User's Guide*

Printed documentation is available for sale in the Oracle Store at

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Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- [Conventions in Text](#)
- [Conventions in Code Examples](#)

- Conventions for Microsoft Windows Operating Systems

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an index-organized table .
<i>Italics</i>	Italic typeface indicates book titles or emphasis.	<i>Oracle9i Database Concepts</i> Ensure that the recovery catalog and target database do <i>not</i> reside on the same disk.
UPPERCASE monospace (fixed-width font)	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a NUMBER column. You can back up the database by using the BACKUP command. Query the TABLE_NAME column in the USER_TABLES data dictionary view. Use the DBMS_STATS.GENERATE_STATS procedure.
lowercase monospace (fixed-width font)	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter sqlplus to open SQL*Plus. The password is specified in the orapwd file. Back up the datafiles and control files in the /disk1/oracle/dbs directory. The department_id, department_name, and location_id columns are in the hr.departments table. Set the QUERY_REWRITE_ENABLED initialization parameter to true. Connect as oe user. The JRepUtil class implements these methods.
<i>lowercase monospace (fixed-width font) italic</i>	Lowercase monospace italic font represents placeholders or variables.	You can specify the <i>parallel_clause</i> . Run <i>Uold_release</i> .SQL where <i>old_release</i> refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
[]	Brackets enclose one or more optional items. Do not enter the brackets.	DECIMAL (<i>digits</i> [, <i>precision</i>])
{ }	Braces enclose two or more items, one of which is required. Do not enter the braces.	{ENABLE DISABLE}
	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	{ENABLE DISABLE} [COMPRESS NOCOMPRESS]
...	Horizontal ellipsis points indicate either: <ul style="list-style-type: none"> ■ That we have omitted parts of the code that are not directly related to the example ■ That you can repeat a portion of the code 	CREATE TABLE ... AS <i>subquery</i> ; SELECT <i>col1</i> , <i>col2</i> , ... , <i>coln</i> FROM employees;
.	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	acctbal NUMBER(11,2); acct CONSTANT NUMBER(4) := 3;
<i>Italics</i>	Italicized text indicates placeholders or variables for which you must supply particular values.	CONNECT SYSTEM/ <i>system_password</i> DB_NAME = <i>database_name</i>

Convention	Meaning	Example
UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	<pre>SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;</pre>
lowercase	<p>Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files.</p> <p>Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.</p>	<pre>SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;</pre>

Conventions for Microsoft Windows Operating Systems

The following table describes conventions for Microsoft Windows operating systems and provides examples of their use.

Convention	Meaning	Example
Choose Start >	How to start a program.	To start the Oracle Database Configuration Assistant, choose Start > Programs > Oracle - <i>HOME_NAME</i> > Configuration and Migration Tools > Database Configuration Assistant.
File and directory names	File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (<), right angle bracket (>), colon (:), double quotation marks ("), slash (/), pipe (), and dash (-). The special character backslash (\) is treated as an element separator, even when it appears in quotes. If the file name begins with \\, then Windows assumes it uses the Universal Naming Convention.	<code>c:\winnt "\ "system32</code> is the same as <code>C:\WINNT\SYSTEM32</code>
<code>C:\></code>	Represents the Windows command prompt of the current hard disk drive. The escape character in a command prompt is the caret (^). Your prompt reflects the subdirectory in which you are working. Referred to as the <i>command prompt</i> in this manual. The backslash (\) special character is sometimes required as an escape character for the double quotation mark (") special character at the Windows command prompt. Parentheses and the single quotation mark (') do not require an escape character. Refer to your Windows operating system documentation for more information on escape and special characters.	<code>C:\oracle\oradata></code> <code>C:\>exp scott/tiger TABLES=emp QUERY=\ "WHERE job='SALESMAN' and sal<1600\"</code> <code>C:\>imp SYSTEM/password FROMUSER=scott TABLES=(emp, dept)</code>
<i>HOME_NAME</i>	Represents the Oracle home name. The home name can be up to 16 alphanumeric characters. The only special character allowed in the home name is the underscore.	<code>C:\> net start OracleHOME_ NAMETNSListener</code>

Convention	Meaning	Example
<i>ORACLE_HOME</i> and <i>ORACLE_BASE</i>	<p>In releases prior to Oracle8i release 8.1.3, when you installed Oracle components, all subdirectories were located under a top level <i>ORACLE_HOME</i> directory that by default used one of the following names:</p> <ul style="list-style-type: none"> ■ C:\orant for Windows NT ■ C:\orawin95 for Windows 95 ■ C:\orawin98 for Windows 98 <p>This release complies with Optimal Flexible Architecture (OFA) guidelines. All subdirectories are not under a top level <i>ORACLE_HOME</i> directory. There is a top level directory called <i>ORACLE_BASE</i> that by default is C:\oracle. If you install Oracle9i release 1 (9.0.1) on a computer with no other Oracle software installed, then the default setting for the first Oracle home directory is C:\oracle\ora90. The Oracle home directory is located directly under <i>ORACLE_BASE</i>.</p> <p>All directory path examples in this guide follow OFA conventions.</p> <p>Refer to <i>Oracle9i Database Getting Starting for Windows</i> for additional information about OFA compliances and for information about installing Oracle products in non-OFA compliant directories.</p>	Go to the <i>ORACLE_BASE\ORACLE_HOME\rdms\admin</i> directory.

1

Introduction

This chapter provides an overview of the Oracle Application Server InterConnect Adapter for MQ Series (MQ Series adapter).

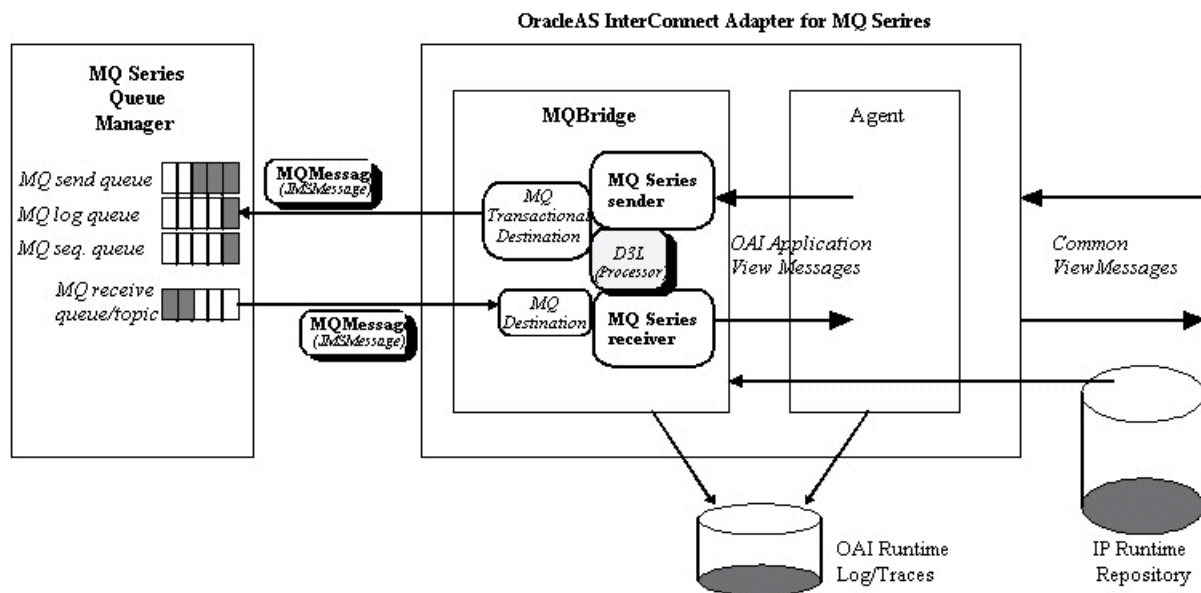
MQ Series Adapter Overview

The MQ Series adapter enables Oracle Application Server InterConnect (OracleAS InterConnect) to send messages to and receive messages from the MQ Series queues and topics. This allows an application that uses IBM's MQ Series as its messaging technology to be integrated with other applications using OracleAS InterConnect. Therefore, the MQ Series adapter is useful in all enterprise application integration scenarios involving MQ Series-based applications.

This guide explains all necessary design time and runtime concepts of the MQ Series adapter.

The following diagram describes how the MQ Series adapter interacts with an MQ Series queue manager and OracleAS InterConnect.

Figure 1-1 How the MQ Series Adapter Interacts with an MQ Series Queue Manager and OracleAS InterConnect



The MQ Series adapter uses four logical queues or destinations to support its interaction with the MQ Series messaging system:

- Three for inbound messages; from OracleAS InterConnect to MQ Series.
- One for outbound messages; from MQ Series to OracleAS InterConnect.

The need for three queues for inbound messages is mandated by a requirement to support the sending of messages from OracleAS InterConnect to MQ Series in a transactionally safe manner:

- One queue is the actual destination for inbound messages.
- One queue is used to keep a log of already received messages within a transaction.
- One queue is used to hold and generate incrementally unique transaction IDs.

The two latter logical queues, for the logs and transaction IDs, can be combined into one physical queue.

See Also: ["Inbound"](#) on page 1-7

Hardware Requirements

[Table 1-1](#) lists the hardware requirements for the computer on which the Oracle MQ Series adapter is installed.

Table 1-1 Hardware Requirements

Hardware	Windows	UNIX
Memory	128 MB	128 MB
Disk Space	500 MB	500 MB

Software Requirements

The following sections list software requirements for the MQ Series adapter:

- [Operating System Requirements](#)
- [JRE Requirements](#)
- [MQ Series Requirements](#)

Operating System Requirements

[Table 1–2](#) lists operating system requirements for the computer on which the MQ Series adapter is installed.

Table 1–2 *Operating System Requirements*

Operating System	Version
Windows NT	4.0 with service pack 6 or above
Windows 2000	with service pack 1 or above
IBM AIX 5L	5.1 and 5.2 (64 bit)
HP Tru64	5.1a and 5.1b (64 bit)
HP-UX	11.0 and 11.11 (64 bit)
RedHat Linux	Advanced Server 2.1
Sun SPARC Solaris	8 and 9 (32 bit)

JRE Requirements

OracleAS InterConnect uses JRE 1.4.1, which is installed with its components.

MQ Series Requirements

The following table lists the minimum software requirements for installing the MQ Series adapter.

Table 1–3 *MQ Series Requirements*

Software	Supported Versions
MQ Series Server	Version 5.2 or 5.3
MQ Series Client	Version 5.2 or 5.3

Table 1–3 MQ Series Requirements

Software	Supported Versions
MQ Series classes for Java and MQ Series classes for Java Message Service (JMS)	<p>Only required with MQ Series Version 5.2.x.</p> <p>Downloadable from http://www-4.ibm.com/software/ts/mqseries/txppacs/ma88.html</p> <p>MQ Series Version 5.3 Client includes Java/JMS.</p>
MQ Series - Publish/Subscribe	<p>Version 1.1 or latest supporting MQ Series 5.2 or 5.3</p> <p>Downloadable from http://www-4.ibm.com/software/ts/mqseries/txppacs/ma0c.html</p>

Knowledge Requirements

The installation of the MQ Series adapter software components mentioned in "[MQ Series Requirements](#)" on page 1-4 should be performed by a MQ Series system administrator.

Configuring and using the MQ Series adapter requires the following:

- Basic MQ Series administration skills, such as starting the listener and creating queues.
- Basic knowledge of MQ Series connectivity, for example channel and client concepts.
- Basic knowledge of MQ Series Java and JMS, for example, MQ Series JMS queue and topic URI syntax.

The MQ Series queues and topics referred to in this guide must be created and started by the user before starting the MQ Series adapter.

Typical Use

The MQ Series adapter is primarily used to provide messaging capabilities between OracleAS InterConnect and the MQ Series queueing systems, such as supporting the publish and subscribe paradigm for message exchanges, for example, sending or receiving orders, invoices, and product updates.

In addition to basic publish and subscribe messaging, the MQ Series adapter also supports the OracleAS InterConnect request and reply paradigm which maps directly onto MQ Series' own generic support for request and reply messages. This capability is based on the support for message correlation for OracleAS InterConnect as well as in MQ Series. Examples include inventory lookups, price calculations, and status requests.

Supported MQ Series Adapter Interfaces

The following sections describe the MQ Series adapter interfaces.

General

The MQ Series adapter uses the MQ Series JMS URI syntax for specifying which queues and topics constitute the endpoints for inbound and outbound messages.

This format is derived from uniform resource identifiers and allows the specification of remote queues (queues on a queue manager other than the one to which you have connected) as well as the setting of the other queue connection properties.

The URI for a queue starts with the sequence `queue://`, followed by the name of the queue manager on which the queue resides, a further `/`, then the name of the queue, and optionally, a list of name-value pairs to set the remaining queue properties as follows:

```
queue://[queue-manager]/queue[?property=value [&property=value ]*]
```

Queue URI Example:

```
queue:///SYSTEM.DEFAULT.LOCAL.QUEUE
```

Note: The name of the queue manager is omitted. This is interpreted to mean use the default queue manager as specified in the `adapter.ini` file.

Note: If the external application which is accessing the queue or topic URI is not a JMS application, the URI property `targetClient` can be used to prevent the JMS interface used by the MQ adapter from adding the standard JMS header. For example:

```
queue:///LEGACY.REMOTE.QUEUE?targetClient=1
```

The property setting `targetClient=0` means "queue is JMS compliant", whereas `targetClient=1` means "queue is MQ (not JMS) compliant".

If the `adapter.ini` parameter `mq.default.sender.mqfmt` is defined, it will override the `targetClient` setting.

The URI for a topic starts with the sequence `topic://` followed by the name of the topic, and optionally, a list of name-value pairs to set the remaining topic properties as follows:

```
topic://TopicName[?property=value [&property=value ]*]
```

Topic URI example:

```
topic://SAP/Events/HR/newCustomer?priority=1
```

Note: The topic URI syntax does not allow the specification of the queue manager. It must be specified in the `mq.default.queue_manager` property in the `adapter.ini` file.

Inbound

Inbound interfaces consist of MQ Series queues to which the MQ Series adapter sends messages. The MQ Series adapter only supports MQ Series queues, not topics, for *inbound* interfaces. The reason for this stems from the following combination of constraints:

- The MQ Series adapter must send messages to MQ Series in a transactionally safe manner as it implements the OracleAS InterConnect SDK `TransactionalMessageReceiver` interface.

- This requires the use of a queue for keeping log records.
- The destination queue or topic and log queue must be updated within the same JMS transaction, that is, the same JMS session.
- The MQ Series JMS implementation does not support the concept of Universal JMS sessions, which would allow queues and topics to be updated within the same transaction.
- Storing temporary log records in a topic is not practical.

Outbound

Outbound interfaces can consist of both queues and topics from which the MQ Series adapter will receive messages. Additional configuration parameters in the `adapter.ini` file allow for defining a JMS selector expression, which can be used to filter which messages should be received by MQ Series adapter. Another parameter controls whether the message consumption should be performed within a transactional or non-transactional JMS session.

Connection Types

MQ Series supports two connection types:

- Local (bind)
- Remote (client)

Local Connections

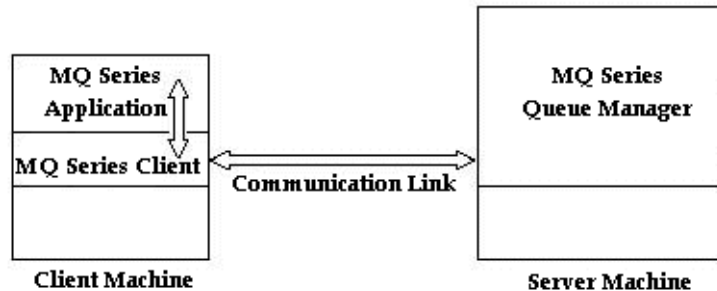
Local connections imply that the MQ Series queue manager is running on the same host as the MQ Series adapter. In this case, the MQ Series adapter only needs to know the name of the queue manager and queue name itself in order to establish a queue connection.

Remote Connections

For remote connections, the MQ Series queue manager can run on a different host. In this case, the MQ Series adapter needs access to MQ Series client libraries, which must be installed, in order to establish a queue connection. The MQ Series adapter also needs additional configuration information such as the name of the remote host, the port number where the MQ Series listener is listening, and the channel name (MQ Series concept).

Figure 1–2 displays a client connection:

Figure 1–2 Client Connection



MQ Series Adapter Limitations

The MQ Series adapter has the following limitations:

- All messages received are assumed to be unencrypted, as the MQ Bridge is not expected to do any decryption before handing messages to the D3L engine.
- All but the ObjectMessage JMS message types are supported: TextMessage, BytesMessage, MapMessage and StreamMessage.
- All MQ Series Report messages are used only to the extent MQ Series expects it but otherwise they are not utilized.
- MQ Series message grouping and segmentation are not supported.
- JMS Message properties of received messages from MQ Series are not passed on to OracleAS InterConnect. To some extent they can be used in selecting a relevant D3L transformation.
- MQ Series transactions are used to support the OracleAS InterConnect TransactionalMessageReceiver interface. The `mq.default.trans_id_expiry` configuration parameter determines how long a transaction started by the OracleAS InterConnect Agent, can stay idle before it expires. MQ Series does not expose the concept of a persistent transaction identifier, therefore, the transaction identifier is only valid for the lifespan of the MQ Series adapter instance and the underlying transactional JMS session. Consequently, a given transaction ID is rendered invalid immediately when the adapter process dies.

- An MQ Series adapter instance only supports one outgoing (sending) endpoint. For example, it can only communicate with one queue manager.

Installation and Configuration

This chapter discusses the following topic:

- [Installing the MQ Series Adapter](#)
- [Configuring the MQ Series Adapter](#)
- [Starting the MQ Series Adapter](#)
- [Stopping the MQ Series Adapter](#)

Installing the MQ Series Adapter

This section contains these topics:

- [Preinstallation Tasks](#)
- [Installation Tasks](#)

Preinstallation Tasks

The MQ Series adapter must be installed in one of the following Oracle homes:

- An existing OracleAS InterConnect Oracle home for this release
- A new Oracle home (the installer creates this for you)

Before installation, make sure that the MQ Series server and possibly the MQ Series client if the server is running on a remote host, are installed.

For IBM installation guides, see the following:

- MQSeries for Sun Solaris, V5R2 Quick Beginnings—<http://www-4.ibm.com/software/ts/mqseries/library/manualsa/amqdac03/amqdac03tfrm.htm>
- MQSeries for Windows 2000 V5R2 Quick Beginnings—<http://www-4.ibm.com/software/ts/mqseries/library/manualsa/amqtac01/amqtac01tfrm.htm>
- MQSeries for HP-UX V5.2 Quick Beginnings—<http://www-3.ibm.com/software/ts/mqseries/library/manualsa/amqcac03tfrm.htm>
- README for MQSeries for HP-UX V5.2—http://www-4.ibm.com/software/ts/mqseries/support/readme/hpx520_read.html
- MQSeries for AIX V5.2 Quick Beginnings GC33-1867-03—<http://www-3.ibm.com/software/ts/mqseries/library/manualsa/amqaac03/amqaac03tfrm.htm>
- README for MQSeries for AIX V5.2—http://www-4.ibm.com/software/ts/mqseries/support/readme/aix520_read.html
- MQSeries for Compaq Tru64 UNIX, V5.1 Quick Beginnings—<http://www-4.ibm.com/software/ts/mqseries/library/manualsa/amq2ac/amq2ac.htm>

- IBM MQSeries for Tru64 UNIX, Version 5.1
README—http://www-4.ibm.com/software/ts/mqseries/support/readme/tru64_read.html
- MQSeries for Linux V5.2 Quick Beginnings
GC34-5691-01—<http://www-3.ibm.com/software/ts/mqseries/library/manualsa/amqlac01/amqlac01tfrm.htm>
- README for MQSeries for Linux
V5.2—http://www-4.ibm.com/software/ts/mqseries/support/readme/linux520_read.html

Note: On Unix, the MQ Series software should always be installed as user `mqm`, whose primary group should be `mqm`.

Verify that the MQ Series installation is working before commencing the installation of the MQ Series adapter.

See Also: Verifying the Installation in all IBM guides.

Consult the following guides before proceeding with MQ Series adapter installation:

- *Oracle Application Server InterConnectInstallation Guide*, which includes information on:
 - CD-ROM mounting
 - Oracle Universal Installer startup
 - OracleAS InterConnect software, hardware, and system requirements
 - OracleAS InterConnect installation

Note: OracleAS InterConnect Hub is installable through the OracleAS InterConnect Hub installation type. You must install the OracleAS InterConnect Hub before proceeding with the MQ Series adapter installation.

Installation Tasks

To install the MQ Series adapter:

1. On the Available Product Components page of the OracleAS InterConnect installation, select MQ Series adapter, then select **Next**.

Consider the following scenarios:

- If installing the MQ Series adapter in an independent Oracle home, please make sure that the OracleAS InterConnect Hub has been installed, not necessarily in the same Oracle home. Continue to step 2.
- If installing the MQ Series adapter in an existing Oracle home, please make sure that it is a home directory to one of the OracleAS InterConnect component. Continue to step 3.

Note: The hub database information, such as the SID, host, port, and username/password from the Hub installation is needed for step 2.

2. If installing OracleAS InterConnect for the first time on this machine, complete the following steps to enter the hub database information:
 - a. On the Welcome page, select **Next**. The OracleAS InterConnect Hub Database Configuration page displays. Enter information in the following fields:
 - * Host Name—The host name of the machine where the hub database is installed.
 - * Port Number—The TNS listener port for the hub database.
 - * Database SID—The SID for the hub database.
 - b. Click **Next**. The Database User Configuration page displays. Enter information in the following fields:
 - * User Name—The hub database user name. Make sure the OracleAS InterConnect Hub is installed. If the Hub is not installed, complete the installation and note the user name and password.
 - * Password—The password for the hub database user.

3. Click **Next**. The Adapter Configuration page displays. Enter the application to be defined or already defined in iStudio in the Application Name field. White spaces or blank spaces are not permitted. The default value is `myMQseriesApp`.

4. Click **Next**.

The OracleAS InterConnect Adapter for MQ Series usage page displays.

5. Select one of the following options and go to the step specified to enable the sending and/or receiving of messages from an external data source, such as an MQ Series server. You can change your selections later by editing parameter settings in the `adapter.ini` file.

If You Select...	Then Click Next and Go to Step...
Configure for both sending and receiving messages	6
Configure for sending messages ONLY	6
Configure for receiving messages ONLY	8

6. Enter the following information in the OracleAS InterConnect MQ Series Adapter Configuration - Configure sending endpoint information page:
 - MQ Series inbound queue—The URI of the MQ Series queue to which messages are sent.
 - MQ Series inbound log queue—The URI of the MQ Series queue which temporarily stores log records during sending transactions. This queue and the next can refer to the same physical MQ Series queue.
 - MQ Series inbound id queue—The URI of the MQ Series queue which is used to store and generate unique (sequential) transaction identifiers for the inbound or sending transactions.

Note: The above URIs can only denote queues, not topics.

7. Click **Next**.

The installation page that displays next is based on the selection you made in Step 5:

If You Selected...	Then Go to Step...
Configure for both sending and receiving messages	8
Configure for sending messages ONLY	9

8. Enter the MQ Series outbound queue and topic information. This is a URI for the MQ Series queue or topic from which messages are receiving. It is used for listening to incoming messages from MQ Series or as JMS ReplyTo addresses when sending request messages to MQ Series.
9. Enter the following information on the OracleAS InterConnect MQ Series Adapter–Define MQ Series connection information page:
 - MQ Series Java installation path—This path specifies the root directory of the MQ Series Java (client) installation, which typically is `/opt/mqm/java`. During startup, the MQ Series Adapter will look in the `lib` subdirectory of this path to find the JAR files `jms.jar`, `com.ibm.mqjms.jar`, `com.ibm.mq.jar`, and `connector.jar`.
 - MQ Series Queue Manager—The name of the MQ Series queue manager to which to connect.
 - MQ Series Client Connection Type—From the drop down list, select the type of connection to make to the MQ Series queue manager. Select Remote to use a client connection (through an MQ Series channel), or select Local to bind to a queue manager running on the same machine as the adapter.
10. Click Next.

The installation page that displays next is based on the selection you made in Step 9:

If You Selected...	Then Go to Step...
Remote	11
Local	12

11. Enter the following information on the OracleAS InterConnect Adapter for MQ Series–Specify MQ Series client connection parameters page:
 - Host Name—The DNS name of the host where the MQ Series queue manger resides.

- Port Number—The port number to connect to on the MQ Server host. The default port number is 1414. This port is defined when starting the MQ Series listener via the command `runmqclsr` (for example, `runmqclsr -m <qmqr> -t tcp -p 1415`).
- MQ Series Channel Name—The name of the MQ Series channel to use for the client connection.

12. Click **Next**.

13. Complete any other fields for other components selected for installation, such as other adapters.

When finished, the Summary page displays.

14. Click **Install** to install the MQ Series adapter. The adapter is installed in the following directory:

Platform	Directory
Windows	<code>ORACLE_HOME\oai\9.0.4\adapters\Application</code>
UNIX	<code>ORACLE_HOME/oai/9.0.4/adapters/Application</code>

Application is the value you specified in Step 3 on page 2-5.

15. Click **Exit** at the end of Installation page to exit the MQ Series adapter installation.

Configuring the MQ Series Adapter

Table 2–2, Table 2–3, and Table 2–4 describe executable files, configuration files, and directories. These files and directories are accessible from the directory shown in Table 2–1:

Table 2–1 MQ Series Adapter Directory

Platform	Directory
UNIX	<code>ORACLE_HOME/oai/9.0.4/adapters/Application</code>
Windows	<code>ORACLE_HOME\oai\9.0.4\adapters\Application</code>

Table 2–2 Executable Files

File	Description
<code>start.bat</code> (Windows) <code>start</code> (UNIX)	Takes no parameters, starts the adapter.
<code>stop.bat</code> (Windows) <code>stop</code> (UNIX)	Takes no parameters; stops the adapter.
<code>ignoreErrors.bat</code> (Windows) <code>ignoreErrors</code> (UNIX)	If an argument is specified, then the given error code will be ignored. If no argument is specified, then all error codes specified in the <code>ErrorCodes.ini</code> will be ignored.

Table 2–3 Configuration Files

File	Description
<code>ErrorCodes.ini</code> (Windows and UNIX)	Should contain one error code per line.
<code>adapter.ini</code> (Windows and UNIX)	Consists of all the initialization parameters which the adapter reads at startup. Refer to Appendix A for a typical <code>adapter.ini</code> file.
<code>d3l-file.xml</code>	One or more D3L XML files that describe the mappings between MQ Series native/binary fixed-structure messages and OracleAS InterConnect Application View messages.

Table 2–4 Directories

File	Description
persistence	The messages are persisted in this directory. This directory or its contents should not be edited
logs	The logging of adapter activity is done in subdirectories of the log directory. Each new run of the adapter creates a new subdirectory in which logging is done in an <code>oailog.txt</code> file.

Using the Application Parameter

Adapters do not have integration logic. The MQ Series adapter has a generic transformation engine that processes metadata from the repository as runtime instructions to do transformations. The application defines for an adapter what its capabilities are. For example, it can define what messages it can publish, what messages it can subscribe to, and what are the transformations to perform. The application parameter allows the adapter to become smart in the context of the application to which it is connected. It allows the adapter to retrieve from the repository only that metadata that is relevant to the application. The application parameter must match the corresponding application that will be defined in iStudio under the Applications folder.

If you are using pre-packaged metadata, after importing the pre-packaged metadata into the repository, start up iStudio to find the corresponding application (under the Applications folder in iStudio) to use as the application for the adapter you are installing (unless the package you are using provides directions for what the application should be).

ini Files

Hub.ini Parameters

The MQ Series adapter connects to the hub database using parameters from the `hub.ini` file located in the hub directory. The following table lists the parameter name, a description for each parameter, the possible and default values, and an example.

Table 2–5 Hub.ini Parameters

Parameter	Description	Example
hub_username	The name of the hub database schema (or username). The default value is oaihub904.	hub_username=oaihub904
hub_password	The password for the hub database user. There is no default value. You input the hub_password value during installation.	hub_password=manager
hub_host	The name of the machine hosting the hub database. There is no default value. You input the hub_host value during installation.	hub_host=mpmipc
hub_instance	The system identification number (SID) of the hub database. There is no default value. You input the hub_instance value during installation.	hub_instance=orcl
hub_port	The transparent network services (TNS) listener port number for the HUB database instance. There is no default value. You input the hub_port value during installation.	hub_port=1521
repository_name	The valid name of the repository this adapter talks to. The default value is InterConnectRepository.	repository_name=InterConnectRepository

Real Application Clusters-specific Hub.ini Parameters

When a hub is installed on a Real Application Clusters (RAC) database, parameters listed in [Table 2–6](#) represent information on additional nodes used for connection and configuration. These parameters are added on top of the default parameters which represent the primary node. In [Table 2–6](#), *x* represent the node number, which varies between 2 and the number of nodes. For example, if the Real Application Clusters setup contains 4 nodes, *x* can take a value between 2 and 4.

Table 2–6 Real Application Cluster-specific hub.ini Parameters

Parameter	Description	Example
hub_num_nodes	Number of nodes in Real Application Clusters.	hub_num_nodes=4
hub_hostx	The host where the Real Application Clusters database is installed.	hub_host2=dsunram13
hub_instancex	The instance on the respective node.	hub_instance2=orcl2
hub_portx	The port on which the listener is listening.	hub_port2=1521

Adapter.ini Parameters

The MQ Series adapter connects to the spoke application using parameters from the `adapter.ini` file. [Table 2-7](#) lists the parameter name, description, the possible and default values, and example for each parameter.

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
<code>application</code>	The name of the application to which this adapter connects. This must match with the name specified in iStudio during creating of metadata. Any alphanumeric string can be used. There is no default value.	<code>application=mqapp</code>
<code>partition</code>	The partition this adapter handles as specified in iStudio. Any alphanumeric string can be used. There is no default value.	<code>partition=germany</code>
<code>instance_number</code>	To have multiple adapter instances for the given application with the given partition, each adapter should have a unique instance number. Possible values are any integer greater than 1. There is no default value.	<code>instance_number=1</code>
<code>agent_log_level</code>	Specifies the amount of logging necessary. Possible values are: 0=errors only 1=status and errors 2=trace, status, and errors The default value is 1.	<code>agent_log_level=2</code>
<code>agent_subscriber_name</code>	The subscriber name used when this adapter registers its subscription. The possible value is a valid Oracle Advanced Queueing subscriber name. There is no default value.	<code>agent_subscriber_name=mqapp</code>
<code>agent_message_selector</code>	Specifies conditions for message selection when registering its subscription with the hub. The possible value is a valid Oracle Advanced Queueing message selector string. There is no default value.	<code>agent_message_selector=recipient_list like '%mqapp,%'</code>

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
agent_reply_subscriber_name	The subscriber name is used when multiple adapter instances for the given application with the given partition are used. Optional if there is only one instance running. The possible value is application name (parameter: application) concatenated with instance number (parameter: instance_number). There is no default value.	If application=mqapp, instance_number=2, then, agent_reply_subscriber_name=mqapp2
agent_reply_message_selector	Used only if there are multiple adapter instances for the given application with the given partition. The possible value is a string built using concatenating application name (parameter: application) with instance number (parameter: instance_number). There is no default value.	If application=mqapp, instance_number=2, then agent_reply_message_selector=recipient_list like '%,mqapp2,%'
agent_tracking_enabled	Specifies if message tracking is enabled. Set to false to turn off all tracking of messages. Set to true to track messages with tracking fields set in iStudio. Possible values are true and false. The default value is true.	agent_tracking_enabled=true
agent_throughput_measurement_enabled	Specifies if throughput measurement is enabled. Set to true to turn on all throughput measurements. Possible values are true and false. The default value is true.	agent_throughput_measurement_enabled=true
agent_use_custom_hub_dtd	Specifies if a custom DTD should be used for the common view message when handing it to the hub. By default adapters use an OracleAS InterConnect-specific DTD for all messages sent to the hub as other OracleAS InterConnect adapters will be retrieving the messages from the hub and know how to interpret them. Set to true if for every message, the DTD imported for the message of the common view is to be used instead of the OracleAS InterConnect DTD. Only set to true if a OracleAS InterConnect adapter is not receiving the messages from the hub. Possible values are true and false. There is no default value.	agent_use_custom_hub_dtd=false

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
agent_metadata_caching	<p>Specifies the metadata caching algorithm. Possible values are:</p> <ul style="list-style-type: none"> ■ startup—Cache everything at startup. This may take a while if there are a lot of tables in the repository. ■ demand—Cache metadata as it is used. ■ none—No caching. This slows down performance. <p>The default value is demand.</p>	agent_metadata_caching=demand
agent_dvm_table_caching	<p>Specifies the DVM caching algorithm. Possible values are:</p> <ul style="list-style-type: none"> ■ startup—Cache all DVM tables at startup. This may take a while if there are a lot of tables in the repository. ■ demand—Cache tables as they are used. ■ none—No caching. This slows down performance. <p>The default value is demand.</p>	agent_dvm_table_caching=demand
agent_lookup_table_caching	<p>Specifies the lookup table caching algorithm. Possible values are:</p> <ul style="list-style-type: none"> ■ startup—Cache all lookup tables at startup. This may take a while if there are a lot of tables in the repository. ■ demand—Cache tables as they are used. ■ none—No caching. This slows down performance. <p>There default value demand.</p>	agent_lookup_table_caching=demand

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
agent_delete_file_cache_at_startup	<p>With any of the agent caching methods enabled, metadata from the repository is cached locally on the file system.</p> <p>Set this parameter to <code>true</code> to delete all cached metadata on startup.</p> <p>Note: After changing metadata or DVM tables for this adapter in iStudio, you must delete the cache to guarantee access to the new metadata or table information.</p> <p>Possible values are <code>true</code> and <code>false</code>. There default value is <code>false</code>.</p>	agent_delete_file_cache_at_startup=false
agent_max_ao_cache_size	Specifies the maximum number of application objects' metadata to cache. Possible values are any integer greater than 1. The default value 200.	agent_max_ao_cache_size=200
agent_max_co_cache_size	Specifies the maximum number of common objects' metadata to cache. Possible values are any integer greater than 1. The default value 100.	agent_max_co_cache_size=100
agent_max_message_metadata_cache_size	Specifies the maximum number of messages' metadata to cache (publish/subscribe and invoke/implement). Possible values are any integer greater than 1. The default value is 200.	agent_max_message_metadata_cache_size=200
agent_max_dvm_table_cache_size	Specifies the maximum number of DVM tables to cache. Possible values are any integer greater than 1. The default value is 200.	agent_max_dvm_table_cache_size=200
agent_max_lookup_table_cache_size	Specifies the maximum number of lookup tables to cache. Possible values are any integer greater than 1. The default value is 200.	agent_max_lookup_table_cache_size=200
agent_max_queue_size	Specifies the maximum size that internal OracleAS InterConnect message queues can grow. Possible values are any integer greater than 1. The default value is 1000.	agent_max_queue_size=1000
agent_persistence_queue_size	Specifies the maximum size that internal OracleAS InterConnect persistence queues can grow. Possible values are any integer greater than 1. The default value is 1000.	agent_persistence_queue_size=1000
agent_persistence_cleanup_interval	Specifies how often the persistence cleaner thread should run. Possible values are any integer greater than 30000 milliseconds. The default value is 60000.	agent_persistence_cleanup_interval=60000

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
agent_persistence_retry_interval	Specifies how often the persistence thread should retry when it fails to push a OracleAS InterConnect message. Possible values are any integer greater than 5000 milliseconds. There default value is 60000.	agent_persistence_retry_interval=60000
agent_pipeline_to_hub	Specifies how to turn on or off the pipeline for messages from the Bridge towards the hub. If you set the pipeline to <code>false</code> , the file persistence is not used in that direction.	agent_pipeline_to_hub=false
agent_pipeline_from_hub	Specifies how to turn on or off the pipeline for messages from the hub towards the Bridge. If you set the pipeline to <code>false</code> , the file persistence is not used in that direction.	agent_pipeline_from_hub=false
service_path	Windows only. The value that the environment variable PATH should be set to the specified value before forking the Java VM. Typically, all directories containing all necessary DLLs should be listed here. Possible values are the valid path environment variable setting. There is no default value.	service_path=%JREHOME%\bin;D:\oracle\ora904\bin
service_classpath	The classpath used by the adapter Java VM. If a custom adapter is developed and as a result, the adapter is to be used to pick up any additional jars, add the jars to the existing set of jars being picked up. Possible values are the valid classpath. There is no default value.	service_classpath=D:\oracle\ora904\oai\904\lib\oai.jar;%JREHOME%\lib\i18n.jar;D:\oracle\ora904\jdbc\classes12.zip
service_class	The entry class for the Windows service. Possible values are <code>oracle/oai/agent/service/AgentService</code> . There is no default value.	service_class=oracle/oai/agent/service/AgentService
service_max_java_stack_size	Windows only. The maximum size to which the Java VM's stack can grow. Possible values are the valid Java VM maximum native stack size. The default value is the default for the Java VM.	service_max_java_stack_size=409600
service_max_native_stack_size	Windows only. The maximum size to which the Java VM's native stack can grow. Possible values are the valid Java VM maximum native stack size. The default value is the default for the Java VM.	service_max_native_stack_size=131072

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
<code>service_min_heap_size</code>	Windows only. Specifies the minimum heap size for the adapter Java VM. Possible values are the valid Java VM heap sizes. The default value is the default Java VM heap size.	<code>service_min_heap_size=536870912</code>
<code>service_max_heap_size</code>	Windows only. Specifies the maximum heap size for the adapter Java VM. Possible values are any valid Java VM heap sizes. The default value is 536870912.	<code>service_max_heap_size=536870912</code>
<code>service_num_vm_args</code>	Windows only. The number of <code>service_vm_arg<number></code> parameters specified. Possible values are the number of <code>service_vm_arg<number></code> parameters. There is no default value.	<code>service_num_vm_args=1</code>
<code>service_vm_arg<number></code>	Windows only. Specifies any additional arguments to the Java VM. For example, to get line numbers in any of the stack traces, set <code>service_vm_arg1=java.compiler=NONE</code> . If there is a list of arguments to specify, use multiple parameters as shown in the example by incrementing the last digit starting with 1. Be sure to set the <code>service_num_vm_args</code> correctly. Possible values are any valid Java VM arguments. There is no default value.	<code>service_vm_arg1=java.compiler=NONE</code> <code>service_vm_arg2=oai.adapter=.mq</code>
<code>corba_port_number</code>	The CORBA port number on which the adapter CORBA service listens. Generally, this port is allocated dynamically. However, it can be configured to enable access across firewall.	<code>corba_port_number=14000</code>

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
nls_date_format	Format for date fields expressed as string. The following pattern letters are defined. All other characters from A to Z and from a to z are reserved.	Date format pattern dd/MMM/yyyy can represent 01/01/2003.
	Letter Date or Time Component	nls_date_ format=dd-MMM-yy
	Examples	Multiple date format can be specified as num_nls_ formats=2
G	Era designator	AD
y	Year	1996; 96
M	Month in year	July; Jul; 07
w	Week in year	27
W	Week in month	2
D	Day in year	189
d	Day in month	10
F	Day of week in month	Number 2
E	Day in week	Tuesday; Tue
a	A.M./P.M. marker	P.M.
H	Hour in day (0-23)	0
k	Hour in day (1-24)	24
K	Hour in A.M./P.M. (0-11)	0
h	Hour in A.M./P.M. (1-12)	12
m	Minute in hour	30
s	Second in minute	55
S	Millisecond	978
z	Time zone	Pacific
	The default date format is EEE MMM dd HH:mm:ss zzz yyyy.	
	Note: This parameter specifies date format. It is applicable for the date format only.	

Table 2-7 Adapter.ini Parameters

Parameter	Description	Example
nls_country	<p>This parameter is a valid ISO Country Code. These upper-case and two-letter codes are defined by ISO-3166. You can find a full list of these codes at a Web site, such as, http://www.chemie.fu-berlin.de/diverse/doc/ISO_3166.html</p> <p>The default Country code is US.</p> <p>Note: This parameter specifies date format. It is applicable for the date format only.</p>	US
nls_language	<p>This parameter is a valid ISO Language Code. These lower-case and two-letter codes are defined by ISO-639. You can find a full list of these codes at a Web site, such as, http://www.ics.uci.edu/pub/ietf/http/related/iso639.txt</p> <p>The default language code is en.</p> <p>Note: This parameter specifies date format. It is applicable for the date format only.</p>	nls_language=en
encoding	<p>Character encoding for published messages. The adapter uses this parameter to generate encoding information in encoding tag of transformed OracleAS InterConnect message. OracleAS InterConnect represents messages internally as an XML document. The default encoding of the XML document is UTF-8. However, this encoding can be configured using this parameter, which is typically used when the OracleAS InterConnect message consists of characters not supported by UTF-8 and when the XMLParser is unable to handle them.</p>	encoding=JA16SJIS

MQ Series Adapter Parameters

Table 2–8 lists the parameters specific to the MQ Series adapter.

Table 2–8 MQ Series Adapter-specific Parameters

Parameter	Description	Example
<code>bridge_class</code>	Indicates the entry class for the MQ Series adapter. Do not modify this value. The only possible value is <code>oracle.oai.agent.adapter.mqseries.MQBridge</code> . There is no default value.	<code>bridge_class=oracle.oai.agent.adapter.mq.MQBridge</code>
<code>ota.type</code>	This defines the message type that the MQ Series adapter will handle for both incoming and outgoing messages. Possible values are XML and D3L. The default value is XML.	<code>ota.type=D3L</code>
<code>mq.default.sender.destination.uri</code>	A URI for the MQ Series inbound queue to which messages will be sent from OracleAS InterConnect. The syntax for the URI is described in the MQ Series Using Java guide. Possible values are any valid JMS queue URIs. There is no default value.	<code>mq.default.sender.destination.uri=queue:///INBOUND.QUEUE?priority=1</code>
<code>mq.default.sender.log_queue.uri</code>	URI for the MQ Series log queue used during send transactions. Possible values are any valid JMS queue URIs. There is no default value.	<code>mq.default.sender.log_queue.uri=queue:///OAI.LOG.QUEUE</code>
<code>mq.default.sender.seq_queue.uri</code>	URI for the MQ Series transaction id (sequence generator) queue used during send transactions. It can refer to the same queue as <code>mq.default.sender.log_queue.uri</code> . Possible values are any valid JMS queue URIs. There is no default value.	<code>mq.default.sender.log_queue.uri=queue:///OIA.SEQ.QUEUE</code>

Table 2–8 MQ Series Adapter-specific Parameters

Parameter	Description	Example
<code>mq.default.sender.mqfmt</code>	The MQ Series adapter will normally read and write JMS messages from/to MQ Series queues, which include a JMS specific header section. To suppress this header when interacting with external non-JMS clients (C or non-JMS Java applications), this property can be defined. In addition to causing the JMS header suppression, it will also define the message MQMD Format field of each message being sent by the adapter. If the value is set to <code>MQFMT_STRING</code> , it will cause all messages to be sent as Text messages, no matter which mode the adapter is operating in (XML or D3L language). Normally, D3L mode will cause the adapter to send only Bytes messages. The default value is blank.	<code>mq.default.sender.mqfmt=MQFMT_STRING</code>
<code>mq.default.receiver.destination.uri</code>	A URI for the MQ Series outbound queue or topic from which messages will be received. Used for listening to incoming messages or as a ReplyTo address when sending request messages to MQ Series. Possible values are any valid JMS queue URIs. There is no default value.	<code>mq.default.receiver.destination.uri=topic://SAP/Events/HR/newEmployee</code>
<code>mq.default.receiver.exception.uri</code>	A URI for an MQ Series queue where faulty received native messages will be placed. This occurs if messages cannot be XML parsed or translated by D3L due to, typically, syntax errors. Other cases could be if OracleAS InterConnect is unable to accept a message from the MQ Series adapter. The default value is blank.	<code>mq.default.receiver.exception.uri=queue://EXCEPTION.QUEUE</code>
<code>mq.default.receiver.selector</code>	JMS selector expression applied while dequeuing from the receiver destination. Possible values are any valid JMS selector expressions. There is no default value.	<code>mq.default.receiver.selector=JMS_IBM_Format <> 'MQSTR' AND JMSXUserID = 'scott'</code>
<code>mq.default.receiver.transacted</code>	Specifies whether or not the JMS sessions for the receive URI should be transacted. The JMS session for the sender URI is always transacted. The possible value are Y and N. The default value is N.	<code>mq.default.receiver.transacted=Y</code>

Table 2–8 MQ Series Adapter-specific Parameters

Parameter	Description	Example
<code>mq.default.receiver.durable</code>	If the <code>receiver.destination.uri</code> parameter specifies a JMS topic, then this parameter defines whether or not a durable subscriber should be used to subscribe to the topic. The possible values are Y and N. The default value is N.	<code>mq.default.receiver.durable=Y</code>
<code>mq.default.queue_manager</code>	The name of the MQ Series queue manager to connect to. The possible value is any MQ Series queue manager name. There is no default value.	<code>mq.default.queue_manager=mars.queue.manager</code>
<code>mq.default.connection_type</code>	The type of connection to make to an MQ Series queue manager. The possible values are <code>bind</code> (local) or <code>client</code> (remote). There is no default value.	<code>mq.default.connection_type=client</code>
<code>mq.default.channel</code>	The name of the MQ Series channel to use for the client connection. The possible value is any valid MQ Series channel name. The default value is blank.	<code>mq.default.channel=SYSTEM.DEF.SVRCONN</code>
<code>mq.default.hostname</code>	The DNS name of the host where the queue manager resides. The possible value is a valid hostname that can be reached over the network from the MQ Series adapter. The default value is blank.	<code>mq.default.hostname=mqsvrhost1.acme.com</code>
<code>mq.default.port</code>	The port to connect to on the MQ Server host (IBM's default is 1414). The possible value is a valid port number for the MQ Series listener. The default value is blank.	<code>mq.default.port=1414</code>
<code>mq.default.user</code>	MQ Series user ID when connecting to the queue manager. Equivalent to the MQ Series environment variable <code>MQ_USER_ID</code> . The value may be used to verify the identity of the MQ Series adapter. The possible value is a valid MQ Series username. The default value is blank.	<code>mq.default.user=mqm</code>
<code>Encrypted_mq.default.password</code>	MQ Series (encrypted) password when connecting to the queue manager. Equivalent to the MQ Series environment variable <code>MQ_PASSWORD</code> . The value may be used to verify the identity of the MQ Series adapter.	<code>Encrypted_mq.default.password=112411071071106510801094108410731070107110811069</code>

Table 2–8 MQ Series Adapter-specific Parameters

Parameter	Description	Example
<code>mq.default.receive_exit</code>	Fully qualified class name of the receive exit being used. The possible value is the classname of a Java class that implements <code>com.ibm.mq.MQReveiveExit</code> . The default value is blank.	<code>mq.default.receive_exit=mypackage.myReceiveExit</code>
<code>mq.default.send_exit</code>	Fully qualified class name of the send exit being used. The possible value is the classname of a Java class that implements <code>com.ibm.mq.MQSendExit</code> . The default value is blank.	<code>mq.default.send_exit=mypackage.mySendExit</code>
<code>mq.default.security_exit</code>	Fully qualified class name of the security exit being used. The possible value is the classname of a Java class that implements <code>com.ibm.mq.MQSecurityExit</code> . The default value is blank.	<code>mq.default.security_exit=mypackage.MySecurityExit</code>
<code>mq.default.ccsid</code>	The coded-character-set-ID in use on connections instead of the default. For possible values, see table 16 in the MQ Series Using Java Guide. See Also: http://www-3.ibm.com/software/ts/mqseries/library/manuals/csqzak/CSQZAK20.HTM The default value is blank (~819).	<code>mq.default.ccsid=1208</code>
<code>mq.default.polling_interval</code>	The number of milliseconds between attempts to receive a message. Possible values are 0- <code>java.lang.Long.MAX_VALUE</code> . The default value is 5000.	<code>mq.default.polling_interval=5000</code>
<code>mq.default.trans_id_expiry</code>	The number of milliseconds before an idle transaction identifier will expire. Possible values are 0- <code>java.lang.Long.MAX_VALUE</code> . The default value is 60000.	<code>mq.default.trans_id_expiry=360000</code>
<code>mq.default.event.name</code>	Should be used if the bridge will only handle one single fixed event name for outbound messages (from MQ Series) and none of the other options below are feasible to use. This parameter requires only one D3L file defined below, with an event name exactly matching this hardcoded event name. The possible value is a valid OracleAS InterConnect event name. The default value is blank.	<code>mq.default.event.name=Price.update</code>

Table 2–8 MQ Series Adapter-specific Parameters

Parameter	Description	Example
<code>mq.default.event.use_ mq_fmt</code>	<p>If this parameter value is Y, the bridge uses the IBM MQ Series Message Format field as the name of the OracleAS InterConnect event. This message field or property is often referred to as:</p> <ul style="list-style-type: none"> ■ (C)—MQMD Format field (MQFMT) ■ (Java)—<code>com.ibm.mq.jms.JMSC.FORMAT_PROPERTY</code> <p>The possible values are Y and N. The default value is N.</p>	<code>mq.default.event.use_ mq_fmt=Y</code>
<code>mq.default.event. property</code>	<p>If the sending external application is able to specify the event name as a message property value, use this parameter to define the name of the message property that will carry the message event name. The possible value is a valid JMS message property name. The default value is blank.</p>	<code>mq.default.event.property=MyApp_ OAIEventProperty</code>
<code>mq.default.event.exit</code>	<p>Allows a custom Java class to be defined to determine which event name the native MQ Series message corresponds to. It is invoked by the bridge, which provides the received JMS message as input, expecting the event name in return (as a String). This Java class must implement the <code>oracle.oai.agent.adapter.mqseries.MQEventExit</code> interface. The possible value is the Java class name of a class that implements the <code>oracle.oai.agent.adapter.mqseries.MQEventExit</code> interface. The default value is blank.</p>	<code>mq.default.event.exit= mypackage.myMqEventExit</code>

Starting the MQ Series Adapter

On UNIX, start the MQ Series adapter using the `start` script in the following directory:

```
$ORACLE_HOME/oai/9.0.4/adapters/Application
```

Type **start**, then press **Enter**.

On Windows, start the adapter from the Services window available from the Start menu.

1. Access the Services window from the Start menu:

On...	Choose...
Windows NT	Start > Settings > Control Panel > Services
Windows 2000	Start > Settings > Control Panel > Administrative Tools > Services

The Services window displays.

2. Select the *OracleHomeOracleASInterConnectAdapter-Application* service.
3. Start the service based on your operating system:

On...	Choose...
Windows NT	Choose Start.
Windows 2000	Right click the service and choose Start from the menu that displays.

The MQ Series adapter, in turn, automatically starts the publishing engine, a tool for notifying foreign applications of additions, deletions, or updates to the native application (in this case, PeopleSoft objects and databases).

See Also: *Oracle Application Server InterConnect Adapter Publishing Engine User's Guide*

Sample Log File of Successfully Started MQ Series Adapter

The following file displays an MQ Series adapter that was started successfully:

```
D:\oracle\ora904\oai\9.0.4\adapters\mqapp>D:\oracle\ora904\oai\9.0.4\in\Java
Service.exe -debug "Oracle OAI Adapter 9.0.4 -mqapp"
```

```

D:\oracle\ora9041\oai\9.0.4\adapters\mqapp\adapter.ini
The Adapter service is starting..
Registering your application (MQAPP)..
Initializing the Bridge oracle.oai.agent.adapter.mqseries.MQBridge..
Starting the Bridge oracle.oai.agent.adapter.mqseries.MQBridge..
Service started successfully.

```

Stopping the MQ Series Adapter

On UNIX, stop the MQ Series adapter using the `stop` script in the following directory:

```
$ORACLE_HOME/oai/9.0.4/adapters/Application
```

Type **stop**, then press **Enter**.

On Windows, stop the adapter from the Services window available from the Start menu.

1. Access the Services window from the Start menu:

On...	Choose...
Windows NT	Start > Settings > Control Panel > Services
Windows 2000	Start > Settings > Control Panel > Administrative Tools > Services

The Services window displays.

2. Select the *OracleHomeOracleASInterConnectAdapter-Application* service.
3. Stop the service based on your operating system:

On...	Choose...
Windows NT	Choose Stop.
Windows 2000	Right click the service and choose Stop from the menu that displays.

You may verify the stop status by viewing the `oailog.txt` files in the appropriate time stamped subdirectory of the `log` directory within the adapter directory.

Design Time and Runtime Concepts

This chapter describes the design time and runtime concepts for the MQ Series adapter.

- [MQ Series Adapter Design Time Concepts](#)
- [MQ Series Adapter Runtime Concepts](#)

MQ Series Adapter Design Time Concepts

The MQ Series adapter can handle XML and D3L structured payload, for example:

- Pure XML data—String beginning with `<?xml . . .`
- Fixed lay-out—Typically binary data described by a D3L XML file.

XML Payload

A DTD can be imported using iStudio that governs how the MQ Series adapter parses a received XML document into an OracleAS InterConnect Application View event and back again, and how an inbound Application View message is converted into an XML document. Use the XML message type when defining a new integration point in the event wizards.

The `ota.type` parameter in the `adapter.ini` file must be set to XML and not D3L.

When the MQ Series adapter operates in the XML payload mode, no transformations between the native view and the application view are performed on the messages that are sent or received through the MQ Series adapter, apart from the implied straight ASCII `<->` Java object conversion or parsing. Any XSLT transformations take place before sending an XML document to OracleAS InterConnect, or after receiving one from OracleAS InterConnect.

D3L Payload

In addition to pure XML documents, the MQ Series adapter also handles messages that conform to D3L data type definitions, which describe data translations between application view messages and native format.

An application based on the MQ Series adapter can use the use the D3L message type and import D3L data types. When these are selected in the correct wizard, messages received or sent by the MQ Series adapter must adhere to the fixed byte level lay-out defined in an D3L XML file.

Importing D3L data types can also be used to define common view data types.

See Also: Appendix B, *Oracle Application Server InterConnect User's Guide*

MQ Series Adapter Runtime Concepts

This section describes the runtime concepts for the MQ Series adapter.

How the MQ Series Adapter Works

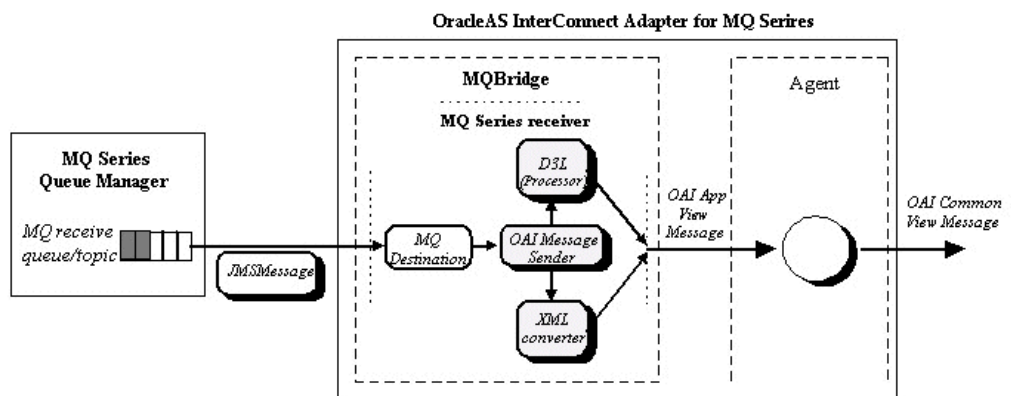
The MQ Series adapter is comprised of the MQ Series bridge and the agent. The following topics describe how the MQ Series adapter works.

Outbound

Outbound messages are processed using the following steps:

1. The bridge is periodically polling the configured MQ Series outbound queue chosen for receiving messages, as defined by the `mq.default.polling_interval` parameter. A new message in this queue indicates a new outbound message from MQ Series waiting to be received by the MQ Series adapter.
2. The adapter then picks up the message, converts it from XML or transforms it via the D3L processor, depending on the value of the `ota.type` parameter, builds the corresponding OracleAS InterConnect application view message, and hands it off the OracleAS InterConnect agent.
3. The OracleAS InterConnect agent then converts the application view event into a common view event and hands it off to the OracleAS InterConnect runtime for further routing and processing.

Figure 3–1 Outbound Message Routing



The relevant parameters in `adapter.ini` pertaining to the outbound MQ Series endpoint are `mq.default.receiver.*` and `mq.default.event.*`.

See Also: [Chapter 2, "Installation and Configuration"](#)

D3L Disambiguation

If the `ota.type` parameter is set to `D3L`, the MQ Series bridge uses the D3L processor to parse from native or byte format to an OracleAS InterConnect message object, which then is handed over to the agent as an application view event.

When the MQ Series adapter receives a message from the outbound MQ Series queue while operating in D3L mode, the message is construed as an opaque sequence of bytes. The challenge then becomes how to determine to which OracleAS InterConnect event, and ultimately to which D3L file this message corresponds.

The MQ Series adapter provides six methods to determine this through a combination of header values found in the configured D3L files and the value of one of the `mq.default.event.*` parameters in the `adapter.ini` file. These methods are described below.

Note: The term *event name* as used in this section implies a specification of the OracleAS InterConnect business object as part of the event name, prefixed followed by a dot, for example, `Order.getStatus`. The event name also synonymously includes OracleAS InterConnect procedure names.

Using the `mq.default.event.name` Parameter Using this parameter is the most primitive mode of operation. Using a hard coded event name for all outbound messages received from MQ Series is one example.

- Example: `mq.default.event.name=Employee.updateInfo`

This example requires that exactly one D3L file has the following header:

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message name="updateInfo" object="Employee" type="...
...
```


Using the `mq.default.event.property` Parameter Use this method if the sending MQ Series application is able to inform the MQ Series adapter about which event a message corresponds to by setting a specified message property to a given value.

To use this method, complete the following:

1. Set the `mq.default.event.property` parameter to the name of the message property which will contain the native event name.
2. Define one D3L XML for each possible value of this message property, binding the D3L file to a given value of the message property through the use of the D3L header attributes `name` and `object`.

- Example: `mq.default.event.property=SAP_EvNm`

This property will only assume the two distinct values `Order.evtPut` and `Order.evtGet`. Considering this, the following two D3L files should be defined:

- `sap_put.xml`

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message name="evtPut" object="Order" type="...">
...
```

- `sap_get.xml`

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message name="evtGet" object="Order" type="...">
...
```

Set the `ota.d3ls` parameter to `sap_put.xml`, `sap_get.xml`.

The `name` and `object` headers should correspond to the associated OracleAS InterConnect event and business object names.

Using a D3L Header and Value Pair The MQ Series adapter also supports D3L disambiguation using the header and value attributes. For the MQ Series adapter, transport message headers corresponds to the MQ Series message properties. Consequently, transport message header values means the MQ Series message property values.

See Also: *Oracle Application Server InterConnect User's Guide, Appendix B*

Using the `mq.default.event.use_mq_fmt` Parameter This mode allows the MQ Series message format property to be used to select the corresponding event name. This property is often referred to as the following:

- The MQMD Format field, MQFMT
- In Java, `com.ibm.mq.jms.JMSC.FORMAT_PROPERTY`
- Example

Assume the MQFMT field of a received message from MQ Series has the value `Cus.new`.

This requires the following `adapter.ini` setting:

- `mq.default.event.use_mq_fmt=Y`

and the following D3L file:

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message name="new" object="Cus" type="..."
...

```

Optionally, if the values in the MQFMT field do not easily map into the OracleAS InterConnect event names, the user can define a the `mqfmt2event.ini` mapping file in the same directory where `adapter.ini` is located. If present, it will be read and the specified event name mappings applied when a message is received. The format of the file is as follows:

```
<MQMFMT-field-value-1>=<OAI-business-object-name1>.<OAI-event-name1>
<MQMFMT-field-value-2>=<OAI-business-object-name2>.<OAI-event-name2>
...
<MQMFMT-field-value-n>=<OAI-business-object-namen>.<OAI-event-namen>

```

- Example

```
CustNew=Customer.createCustomer
CustUpd=Customer.updateCustomer

```

Note: More than one MQMFT field value can map to the same event name.

Note: The business object and event names on the right hand side of the equal sign in the `mqfmt2event.ini` file must be matched by corresponding name and object attribute values in the associated D3L files.

Using the `mq.default.event.exit` Parameter This event name resolution method allows a Java class call-out to be registered which is given a reference to the received JMS message. In return, the Java class call-out must tell the bridge which event name to which the message corresponds. The Java class must implement the `oracle.oai.agent.adapter.mqseries.MQEventExit` interface, which has the following signature:

```
public interface MQEventExit
{
    public String getEventName(javax.jms.Message jmsMessage)
        throws oracle.oai.agent.adapter.mqseries.MQBridgeException;
```

- **Example: `myEventExit.java`**

```
import oracle.oai.agent.adapter.mqseries.MQBridgeException;
public class myEventExit
    implements oracle.oai.agent.adapter.mqseries.MQEventExit
{
    public String getEventName(Message jmsMessage)
        throws MQBridgeException
    {
        try
        {
            if (jmsMessage instanceof TextMessage)
            {
                String body = ((TextMessage)jmsMessage).getText();
                String bizObj = body.substring(1,10);
                String event = body.substring(21,30);
                return bizObj + "." + event;
            }
            else
                throw new MQBridgeException("Wrong message type");
        }
        catch (Exception e) {
            throw new MQBridgeException("Error", e);
        }
    }
}
```

Using D3L Magic The D3L syntax allows a magic header attribute to be specified. If specified, the header corresponds to a sequence of bytes, specified in UTF-8 bytes, hexadecimal, or octal, that should occur at the very beginning of the native-format message. If the magic attribute in one of the registered D3L files (defined in the `ota.d3ls` parameter) matches the bytes at the beginning of the native message, that D3L header name and object attributes are chosen as the event name.

- Example: `prod_getprice.xml`

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message name="getPrice" object="Product" type="..."
        magic="SYSPR01GETPRC"
...

```

If the byte stream of a received message begins with the characters `SYSPR01GETPRC`, the event is resolved as `Product.getPrice` and the shown D3L file is subsequently used to transform the native byte message into an OracleAS InterConnect Message Object.

If the magic value does not reside at the very beginning of the message, it's starting position can be offset by using the D3L message element attribute `startsat`.

For example:

```
<message name = "getPrice" magic="SYSPR01GETPRC" startsat="18" ...>
```

Trying All D3Ls Until One Works If any of the above methods fail, the MQ Series adapter falls back to a trial-and-error resolution scheme where each registered D3L file is tried until one succeeds. This means applying all files in the order they are listed in the `ota.d3ls` parameter in the `adapter.ini` file. If none of the D3L files succeed, the entire D3L disambiguation process for a given message will terminate and an error message is logged. The failed message is saved in the directory where the `adapter.ini` file is located, under a name such as `MQ.FailedMsg.<message-id>`.

D3L Disambiguation Order The above disambiguation methods are tried in the following order:

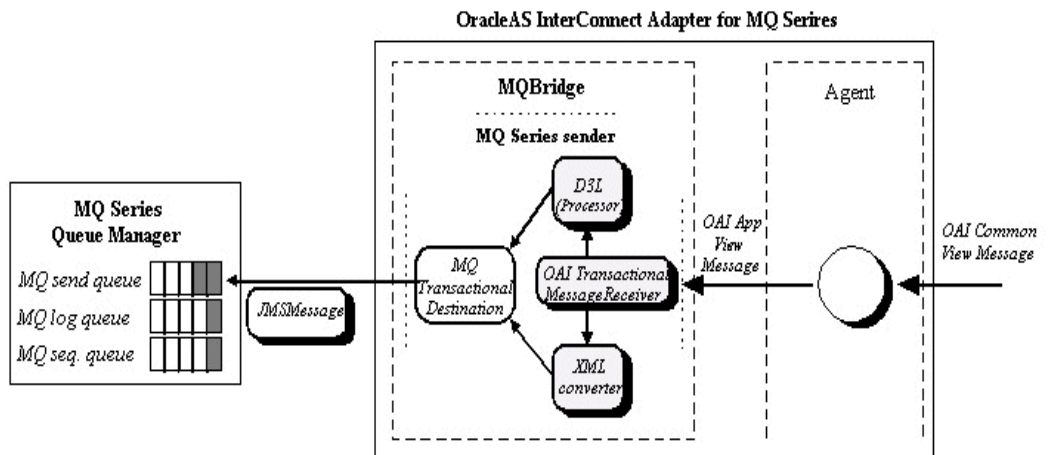
1. If only one D3L is specified in the `ota.d3ls` parameter, it is always used.
2. [Using a D3L Header and Value Pair](#)
3. [Using D3L Magic](#)
4. [Using the `mq.default.event.name` Parameter](#)

5. Using the `mq.default.event.use_mq_fmt` Parameter
6. Using the `mq.default.event.property` Parameter
7. Using the `mq.default.event.exit` Parameter
8. Trying All D3Ls Until One Works

Inbound

The MQ Series adapter only supports sending to a single MQ Series inbound endpoint, as shown in Figure 3–2. A future edition of the MQ Series adapter will support multiple inbound endpoints.

Figure 3–2 Inbound Message Routing



The `mq.default.sender.*` parameter in the `adapter.ini` file pertains to the default inbound MQ Series endpoint.

Support for Request-Reply in D3L Mode

The MQ Series adapter supports the OracleAS InterConnect PUBLISH, REQUEST, and REPLY message types. Expressed in iStudio terms, the MQ Series adapter can publish or subscribe any event and invoke or implement any procedure.

Note: The HTTP, FTP, and SMTP adapters only support publish and subscribe.

The support for invoke and implement messages, such as Procedure calls, is enabled by the native support for request and reply messages in MQ Series, including its message correlation capability. It is only available when the MQ Series adapter operates in D3L mode.

In order to take advantage of this capability, a few extra steps need to be performed during configuration, including modifying the D3L files and defining correlation fields in iStudio.

The following instructions are based on a small example:

- Business Object—Product
- Procedure—getPrice
- Input parameters—ProductID and CustomerID as integers.
- Output parameters—ProductID as an integer and Price and Discount as floats.

These data types must be defined in two separate D3L files, one defining the native input (request) data structure, and one defining the native output (reply) data structure. The following two D3L files could serve this purpose.

getPriceIn.xml

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">
<message type="getPriceInput" name="getPrice" object="Product">

  <!-- ID type -->
  <unsigned4 id="ID" endian="little" />

  <struct id="getPriceInput">

    <field name="ProductID">      <typeref type="ID" />
  </field>
    <field name="CustomerID">    <typeref type="ID" />
  </field>
  </struct>

</message>
```

getPriceOut.xml

```

<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE message SYSTEM "d3l.dtd">

<message type="getPriceOutput" name="getPrice" object="Product" reply="Y">

  <!-- ID type -->
  <unsigned4 id="ID" endian="little" />

  <!-- Float, as decimal number format enclosed by '$' -->
  <number id="Float"><limstring delimiter="$" /></number>

  <struct id="getPriceOutput">
    <field name="ProductID"> <typeref type="ID" /> </field>
    <field name="Price"> <typeref type="Float" /> </field>
    <field name="Discount"> <typeref type="Float" /> </field>
  </struct>

</message>

```

It is assumed that the 'partner' application will be based on the Database adapter.

The next paragraphs describe the two possible scenarios, and how to correctly setup OracleAS InterConnect to handle them:

- The MQ Series adapter in the role as the invoker.
- The MQ Series adapter in the role as the implementor.

Invoking the Product.getPrice Procedure Using the MQ Series Adapter

To invoke a procedure using the MQ Series adapter in iStudio:

1. Right-click on Invoked Procedures for the MQ Series application and select New.

The Invoke Wizard—Select a Procedure page displays.

2. Select getPrice as the Application.
3. Set the Message Type to D3L.
4. Click Next.

The Define Application View page displays.

5. Click Import and select D3L.

6. Select the `getPriceIn.xml` file and mark as it as IN.
7. Select the `getPriceOut.xml` file and mark as it as OUT.
8. Click OK, then click Finish.
9. Go to the following directory and copy the two XML files (`get*.xml`) to this directory.

Platform	Action
Windows	<code>ORACLE_HOME\oai\9.0.4\adapters\<mqapp></code>
UNIX	<code>ORACLE_HOME/oai/9.0.4/adapters/<mqapp></code>

10. List the two XML file names in the `ota.d3ls` parameter in the `adapter.ini` file, for example:

```
ota.d3ls=getPriceIn.xml,getPriceOut.xml
```

11. Mark the `getPriceOut.xml` D3L file as the REPLY. The MQ Series adapter does not allow two D3L files defining the same BusinessObject and EventName. Use the D3L message element attribute `reply` as follows:

```
<message type="getPriceOutput" name="getPrice" object="Product" reply="Y">
```

12. Decide and configure the D3L disambiguation scheme which enables the MQ Series adapter, to correctly select the `getPriceIn.xml` D3L file when it reads an outbound message from MQ Series, using header/value disambiguation. For example:

```
<message type="getPriceInput" name="getPrice" object="Product" header="D3Lselector" value="getprice">
```

In (native) Invoking Application (JMS example)

```
// This 3rd party application will send a REQUEST message to
// OAI (Invoke role), and then await a REPLY.
BytesMessage reqMessage = session.createBytesMessage();
byte[] getPriceMsg = new byte[] { 20, 0, 0, 0, 10, 0, 0, 0 };
reqMessage.writeBytes(nativeBytes, 0, nativeBytes.length);
reqMessage.setJMSReplyTo((Destination)replyQueue);
reqMessage.setStringProperty("D3Lselector", "getprice");
reqMessage.setIntProperty("JMS_IBM_MsgType", (int)1); //
```



```

REQUEST
    // Send REQUEST
    queueSender.send(reqMessage);
    session.commit();

    ...
    // Await REPLY
    Message replyMessage = queueReceiver.receive();
    if (replyMessage instanceof BytesMessage)
    {
        if (replyMessage.getJMSCorrelationID().
            equals(reqMessage.getJMSMessageID()))
            // Got my reply back!

```

In (PL/SQL) Implementing Application

```

PROCEDURE getprice(productID IN OUT INTEGER,
                  customerID IN      INTEGER,
                  price      OUT NUMBER,
                  discount   OUT NUMBER)

IS
BEGIN
    -- Just return something
    price := 1499.95;
    discount := 10.0;
END;

```

Which gets invoked from the stub generated by iStudio:

```

PACKAGE BODY Product AS
    PROCEDURE imp_getPrice_QA_V1(io_PRODUCTID IN OUT NUMBER,
                                i_CUSTOMERID IN      NUMBER,
                                o_PRICE      OUT NUMBER,
                                o_DISCOUNT OUT NUMBER)

AS
BEGIN
    getprice(io_PRODUCTID, i_CUSTOMERID, o_PRICE, o_DISCOUNT);
END imp_getPrice_QA_V1;

```

Implementing Product.getPrice Procedure Using the MQ Series Adapter

To implement a procedure using the MQ Series adapter in iStudio:

1. Right-click on Implemented Procedures for the MQ Series application and select New.

The Implement Wizard—Select a Procedure page displays.

2. Select `getPrice` as the Application.
3. Set the Message Type to D3L and click Next.
The Define Application View page displays.
4. Click Import and select D3L.
5. Select the `getPriceIn.xml` file and mark as it as IN.
6. Select the `getPriceOut.xml` file and mark as it as OUT.
7. Click OK.
The Define Correlation Fields page displays.
8. Select the two fields in the Input and Output data structures. These fields are used to correlate a response to its original request.
9. Click OK, then click Finish.
10. Go to the following directory and copy the two XML files (`get*.xml`) to this directory.

Platform	Action
Windows	<code>ORACLE_HOME\oai\9.0.4\adapters\<mqapp></code>
UNIX	<code>ORACLE_HOME/oai/9.0.4/adapters/<mqapp></code>

11. List the two XML file names in the `ota.d3ls` parameter in the `adapter.ini` file, for example:

```
ota.d3ls=getPriceIn.xml,getPriceOut.xml
```

12. Mark the `getPriceOut.xml` D3L file as the REPLY. The MQ Series adapter does not allow two D3Ls defining the same BusinessObject and EventName. Use the D3L message element attribute `reply`, as follows:

```
<message type="getPriceOutput" name="getPrice" object="Product" reply="Y">
```

13. Decide and configure the D3L disambiguation scheme which enables the MQ Series adapter, to correctly select the `getPriceOut.xml` D3L file when it reads an outbound message from MQ Series. The following example uses header/value disambiguation:

```
<message type="getPriceOutput" name="getPrice" object="Product" reply="Y"
```

```
header="D3Lselector" value="getpricereply">
```

In (Native) Implementing (or Invoked) Application (JMS Example)

```
// This 3rd party application will consume/read a REQUEST message from
// OAI (Implement role), and return a REPLY.

// Read REQUEST
Message reqMessage = queueReceiver.receive();

if (reqMessage instanceof BytesMessage)
{
    // Extract ProductID from request
    byte[] productID = new byte[4];
    ((BytesMessage)reqMessage).readBytes(productID);

    // Construct reply (binary lay-out message)
    byte[] getPriceReply = new byte[] {
        0, 0, 0, 0, // Product ID
        '$', '2', '0', '0', '.', '7', '5', '$', // Price
        '$', '1', '5', '.', '1', '0', '$' // Discount
    };

    // Copy the Product ID received in Request into the Reply
    // so OAI can correlate the reply to the original request.
    for (int i = 0; i < 4; i++)
        getPriceReply[i] = productID[i];
    ....

    BytesMessage replyMessage = session.createBytesMessage();
    replyMessage.writeBytes(getPriceReply, 0, getPriceReply.length);

    replyMessage.setJMSCorrelationID(reqMessage.getJMSMessageID());
    replyMessage.setIntProperty("JMS_IBM_MsgType", (int)2); // REPLY
    replyMessage.setStringProperty("D3Lselector", "getpricereply");

    // Send REPLY
    queueSender.send(replyMessage);
    session.commit();
}
```

In (PL/SQL) Invoking Application (Asynchronously)

```
-- Invoking procedure
PROCEDURE INVGETPRICE(prodID IN NUMBER, custID IN NUMBER)
AS
    moid NUMBER;
    aoid NUMBER;
    naoid NUMBER;
BEGIN
    Product.crMsg_getPrice_QA_V1(moid, aoid);
    naoid := Product.cr_getPriceInput_getPriceInput(prodID, custID, moid, aoid);
    Product.inv_getPrice_QA_V1(moid, 'DBAPP');
END;
```

When OracleAS InterConnect receives back a reply back from the MQ Series application, it invokes a procedure, for example:

```
PROCEDURE sub_getPrice_QA_V1(getPriceOutput IN dbapp_getPriceOutput_QA_V1)
AS
BEGIN
    -- Save Reply
    INSERT INTO price_reply (prodid, price, discount)
    VALUES (getPriceOutput.ProductID,
            getPriceOutput.Price,
            getPriceOutput.Discount);
END sub_getPrice_QA_V1;
```

Frequently Asked Questions

This chapter provides answers to frequently asked questions about the MQ Series adapter. This chapter discusses the following topics:

- [Installation and General Questions](#)
- [Design Time Questions](#)

Installation and General Questions

The following questions address installation and other concepts of the MQ Series adapter.

How do I know the MQ Series adapter has started properly?

View the `oai.txt` file located in the appropriate timestamped subdirectory of the MQ Series adapter log directory:

Platform	Directory
UNIX	<code>ORACLE_HOME/oai/9.0.4/adapters/Application/log/timestamp_in_milliseconds</code>
Windows	<code>ORACLE_HOME\oai\9.0.4\adapters\Application\log\timestamp_in_milliseconds</code>

The MQ Series adapter did not start properly - what went wrong?

Inspect the exceptions in the `oai.log.txt` file. The exceptions provide information about what went wrong. One reason is that the MQ Series adapter cannot connect to the repository. Make sure the repository is started properly and the MQ Series adapter connects to the repository once it is started properly. You do not need to restart the MQ Series adapter.

See Also: *Oracle Application Server InterConnect User's Guide* for instructions on starting the repository on UNIX and Windows

Design Time Questions

The following are design time questions for the MQ Series adapter.

When I change an element in iStudio, such as mappings, it seems like the MQ Series adapter is using old information - what is happening?

The MQ Series adapter caches the information from iStudio that is stored in the repository locally for better performance. If you change something in iStudio and want to see the change in the runtime, you need to stop the MQ Series adapter, delete the MQ Series adapter cache files, and restart the MQ Series adapter.

The MQ Series adapter has a persistence directory located in the MQ Series adapter directory. Deleting this directory when the MQ Series adapter has been stopped should make it obtain the new metadata from the repository when started.

How do I secure any of the inifile parameters?

In order to encrypt any values specified in an `.ini` file, complete the following steps:

1. Locate the value to be encrypted.
2. Run the `encrypt` utility in `OAI_HOME/bin` directory to encrypt the above value.
3. Prefix the name of the parameter in the `.ini` file with `encrypted_`.
4. Replace the value with the new encrypted value from step 2.

Example: To encrypt the password for the `mq.default.password` parameter, replace `mq.default.password=mqm` with the following:

```
encrypted_mq.default.password=112411071071106510801094108410731070107110811069
```

I am getting a JMS-nnnn error when the MQ Series adapter is starting up - what is wrong?

Look up the error code in the IBM MQ Series for Java guide Messages Appendix and correct any spelling mistakes for the MQ Series connection information in `adapter.ini`. The following lists some common error codes:

- 2009 MQRC_CONNECTION_BROKEN—The connection to the queue manager has been lost. This can occur because the queue manager has ended. All previous handles are now invalid, so the MQ Series adapter should be restarted.

- 2030 MQRC_MSG_TOO_BIG_FOR_Q—The message length is greater than the maximum for the queue. Increase `MaxMsgLength` for the queue (MQ Series Administrator).
- 2031 MQRC_MSG_TOO_BIG_FOR_Q_MGR—The message length is greater than the maximum allowed by the remote queue manager. This reason also occurs if a channel, through which the message is to pass, has restricted the maximum message length to a value that is actually less than that supported by the queue manager and the message length is greater than this value.
- 2035 MQRC_NOT_AUTHORIZED—The user is not authorized to perform the operation attempted. Make sure the `mq.default.user` and `mq.default.password` parameters in `adapter.ini` are correct.

More error codes can be found at the following url:

<http://www-4.ibm.com/software/ts/mqseries/library/manuals/csqaoc/CSQFA01P.HTM>.

I am sending files with names such as `MQ.FailedMsg.<message-id>` in the directory where the `adapter.ini` file is located. What does this mean?

The means that some outbound messages received from MQ Series did not parse successfully with any of the registered D3L files. Either one or more D3L files should be corrected or the MQ Series sending agent, which enqueued the message on the outbound queue, should correct the messages so they conform to one of the D3L files. If you configure the `mq.default.receiver.exception.uri` parameter in the `adapter.ini` file, the 'failed' messages will be enqueued on the configured exception queue.

Why am I getting the following error in the log file?

```
"MQMessageSender_run: The following exception occurred while invoking oracle.oai.agent.adapter.sdk.Agent.createMessageObject(xml). If the Published Message Type in iStudio was XML, try instead to use the Message Type Generic, setting the Object name to be the root element of the XML document."
```

The error message essentially also provides the solution to this problem.

Why do I get the "Unable to load message catalog — mqji" error message when starting the MQ Series adapter?

This is a benign warning message from the MQ Series Java layer which can be avoided by adding the `/opt/mqm/java/lib` directory to the Java CLASSPATH before starting the MQ Series adapter (modifying the `start` script).

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