

OJB - Connection Handling

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1. Introduction

In this section the connection handling within OJB will be described. OJB use two classes which share the connection management:

- `org.apache.ojb.broker.accesslayer.ConnectionFactory`
- `org.apache.ojb.broker.accesslayer.ConnectionManagerIF`

2. ConnectionFactory

The `org.apache.ojb.broker.accesslayer.ConnectionFactory` interface implementation is a pluggable component (via the [OJB.properties](#) (`../OJB.properties.txt`) file - more about [the OJB.properties file here](#) (`../docu/guides/ojb-properties.html`)) responsible for creation/lookup and release of connections.

```
public interface ConnectionFactory
{
    Connection lookupConnection(JdbcConnectionDescriptor jcd) throws
    LookupException;

    void releaseConnection(JdbcConnectionDescriptor jcd, Connection con);

    void releaseAllResources();
}
```

To enable a specific *ConnectionFactory* implementation class in *OJB.properties* file, set property *ConnectionFactoryClass*:

```
ConnectionFactoryClass=org.apache.ojb.broker.accesslayer.ConnectionFactoryPooledImpl
```

OJB was shipped with a bunch of different implementation classes which can be used in different situations, e.g. creation of connection instances is costly, so pooling of connection will increase performance.

To make it more easier to implement own *ConnectionFactory* classes an abstract base class called

`org.apache.ojb.broker.accesslayer.ConnectionFactoryAbstractImpl` exists, most shipped implementation classes inherited from this class.

Note:

All shipped implementation with support for connection pooling only pool direct obtained connections, *DataSources* will **never** be pooled.

2.1. ConnectionFactoryPooledImpl

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An *ConnectionFactory* implementation using [commons-pool](http://jakarta.apache.org/commons/pool/) (<http://jakarta.apache.org/commons/pool/>) to pool the requested connections. On lookup call a connection was borrowed from pool and returned on the release call. This implementation was used as *default* setting in [OJB.properties](#) ([../OJB.properties.txt](#)) file.

This implementation allows a wide range off different settings, more info about the configuration properties [can be found in metadata repository connection-pool section](#) ([../docu/guides/repository.html#connection-pool](#)) .

2.2. ConnectionFactoryNotPooledImpl

The name is programm, this implementation creates a new connection on each request and close it on release call. All [connection-pool](#) ([../docu/guides/repository.html#connection-pool](#)) settings are ignored by this implementation.

2.3. ConnectionFactoryManagedImpl

This is a specific implementation for use in *managed environments* like J2EE conform application server. In managed environments it is **mandatory** to use *DataSource* provided by the application server.

All [connection-pool](#) ([../docu/guides/repository.html#connection-pool](#)) settings are ignored by this implementation.

2.4. ConnectionFactoryDBCPImpl

An implementation using [commons-dbc](http://jakarta.apache.org/commons/dbcp/) (<http://jakarta.apache.org/commons/dbcp/>) to pool the connections.

This implementation allows a wide range off different settings, more info about the configuration properties [can be found in metadata repository connection-pool section](#) ([../docu/guides/repository.html#connection-pool](#)) .

3. ConnectionManager

The `org.apache.ojb.broker.accesslayer.ConnectionManagerInterface` interface implementation is a pluggable component (via the [OJB.properties](#) ([../OJB.properties.txt](#)) file - more about [the OJB.properties file here](#) ([../docu/guides/ojb-properties.html](#))) responsible for managing the connection usage lifecycle and connection status (commit/rollback of connections).

```
public interface ConnectionManagerInterface
{
    JdbcConnectionDescriptor getConnectionDescriptor();

    Platform getSupportedPlatform();

    boolean isAlive(Connection conn);

    Connection getConnection() throws LookupException;

    boolean isInLocalTransaction();

    void localBegin();

    void localCommit();

    void localRollback();

    void releaseConnection();

    void setBatchMode(boolean mode);

    boolean isBatchMode();

    void executeBatch();

    void executeBatchIfNecessary();

    void clearBatch();
}
```

The *ConnectionManager* was used by the *PersistenceBroker* to handle connection usage lifecycle.

4. Questions and Answers

4.1. How does OJB handle connection pooling?

OJB does connection pooling per default, except for datasources. Datasources never will be pooled.

Responsible for managing the connections in OJB are implementations of the `org.apache.ojb.broker.accesslayer.ConnectionFactory.java` interface. There are several implementations shipped with OJB called `org.apache.ojb.broker.accesslayer.ConnectionFactoryXXXImpl.java`. You can find among other things a none pooling implementation and a implementation using jakarta-DBCP api.

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To manage the connection pooling define in your [jdbc-connection-descriptor](#) ([../docu/guides/repository.html#jdbc-connection-descriptor](#)) a [connection-pool](#) ([../docu/guides/repository.html#connection-pool](#)) element. Here you can specify the properties for the used *ConnectionFactory* implementation. More common info see [repository section](#) ([../docu/guides/repository.html](#)) or in [repository.dtd](#) ([../repository.dtd.txt](#)) .

4.2. Can I directly obtain a java.sql.Connection within OJB?

The PB-api enabled the possibility to obtain a connection from the current used PersistenceBroker instance:

```
PersistenceBroker broker =
PersistenceBrokerFactory.createPersistenceBroker(myKey);
broker.beginTransaction();
// do something

Connection con = broker.serviceConnectionManager().getConnection();
// perform your connection action and do more
// close the created statement and result set

broker.commitTransaction();
broker.close();
```

After obtain the connection with

`broker.serviceConnectionManager().getConnection()`, the connection can be used in a 'normal' way. The user is responsible for cleanup of created statements and result sets, so close statements and result sets after use.

For read-only operations there is no need to start a PB-tx.

Note:

Do not commit the connection instance, this will be done by OJB when PersistenceBroker commit-/abortTransaction was called.
Never do a `Connection.close()` call on the obtained connection instance by hand!!
This will be handled by the [ConnectionFactory](#).

If **no** transaction is running, it is possible to release a connection after use by hand with call:

```
pBroker.serviceConnectionManager().releaseConnection();
```

This call cleanup the used connection and pass the instance to release method of [ConnectionFactory](#) (this will e.g. return connection it to pool or close it).

If you don't do any connection cleanup at the latest the connection will be released on `PB.close()` call.

Users who interested in this section also interested in ['Is it possible to perform my own sql-queries in OJB?'](#) ([../docu/faq.html#performSQL](#)) .

4.3. When does OJB open/close a connection

This is dependent on the used OJB api. Generally OJB try to obtain a connection as late as possible and close the connection as soon as possible.

Using the [PB-api](#) ([../docu/guides/pb-guide.html](#)) the connection is obtained when [PersistenceBroker.beginTransaction\(\)](#) ([../api/org/apache/ojb/broker/PersistenceBroker.html](#)) was called or a query is executed. On `PersistenceBroker.commitTransaction()` or `PersistenceBroker.abortTransaction()` call the connection was released. If no PB-tx is running, the connection will be released on `PersistenceBroker.close()` call.

Using the [ODMG-api](#) ([../docu/guides/odmg-guide.html](#)) the connection is obtained when a query is executed or when the transaction commit. On leaving the commit method, the connection will be released.

All other top-level API should behave similar.