

To make data source connections manageable by the CM, the WebSphere Application Server provides a resource adapter (the WebSphere Relational Resource Adapter) that enables JDBC data sources to be managed by the same CM that manages JCA connections. From the CM point of view, JDBC data sources and JCA connection factories look the same. Users of data sources do not experience any programmatic or behavioral differences in their applications because of the underlying JCA architecture. JDBC users still configure and use data sources according to the JDBC programming model.

Applications migrating from previous versions of WebSphere Application Server might experience some behavioral differences because of the specification changes from various J2EE requirements levels. These differences are not related to the adoption of the JCA architecture.

If you have J2EE 1.2 applications using the JDBC API that you wish to run in WebSphere Application Server 6.0, the JDBC CM from Application Server version 4.0 is still provided as a configuration option. Using this configuration option enables J2EE 1.2 applications to run unaltered. If you migrate a Version 4.0 application to Version 6.0, using the Version 6.0 migration tools, the application automatically uses the Version 4.0 connection manager after migration. However, EJB 2.x modules in J2EE 1.3 (or later versions) applications cannot use the JDBC CM from WebSphere Application Server Version 4.0.

Connection pooling:

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When accessing any database, establishing connections is an expensive operation. *Connection pooling* enables administrators to establish a pool of database connections that applications can share on an application server. When connection pooling capabilities are used, performance improvements up to 20 times the normal results are realized.

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Each time a resource attempts to access a backend store (such as a database), the resource must connect to that data store. A connection requires resources to create, maintain, and then release the connection when it is no longer required.

The total data store overhead for an application is particularly high for Web-based applications because Web users connect and disconnect more frequently. In addition, user interactions are typically shorter. Often, more effort is spent connecting and disconnecting than is spent during the interactions. Also, because Internet requests can arrive from virtually anywhere, you can find usage volumes large and difficult to predict.

To help lessen these overhead problems, the WebSphere Application Server enables administrators to establish a pool of backend connections that applications can share on an application server. Connection pooling spreads the connection overhead across several user requests, thereby conserving resources for future requests.

WebSphere Application Server supports JDBC 3.0 APIs to provide support for connection pooling and connection reuse. The connection pool is used to direct JDBC calls within the application, as well as for enterprise beans using the database.

Each entity bean transaction requires an additional connection to the database specifically to handle the transaction. Take this into account when calculating the number of data source connections.

On UNIX platforms, a separate DB2 process is created for each connection and these processes quickly affect performance on systems with low memory and cause errors.

If clones are used, one data pool exists for each clone. This is important when configuring the database maximum connections.

Benefits of connection pooling: Connection pooling can improve the response time of any application that requires connections, especially Web-based applications. When a user makes a request over the Web to a resource, the resource accesses a data source. With connection pooling, most user requests do not incur