

DataDirect Connect[®] for JDBC[™], Release 4.0

Overview

[DataDirect Connect for JDBC](#) is the industry's leading suite of JDBC drivers because of their proven performance, reliability and security. DataDirect Technologies is constantly pushing the market forward by introducing support for the latest features and database versions. In Release 4.0, DataDirect Connect for JDBC supports the following features:

- Support for the [JDBC 4.0 specification](#) allows developers to leverage important new features and developer productivity capabilities.
- Flexible [application failover](#) offers several alternatives for responding to system failures that will improve application up-time.
- New database feature support for [IBM DB2 v9.5](#) and [Oracle 11g](#) significantly increases application capability and developer productivity.

A detailed list of what's new is included below, along with a summary of what's included for each database.

What's New in Release 4.0

JDBC 4.0 Specification Support

All DataDirect Connect for JDBC drivers fully comply with the JDBC 4.0 specification, supporting features that greatly increase developer productivity and make for better functioning, more robust applications.

The JDBC 4.0 API specification is a significant advance in the standard, containing many important new features such as robust support for the SQL 2003 XML data type, more control over connection and statement pooling for high-end application performance and scalability, and many features that make it easier for developers to write JDBC applications, including far more efficient debugging of SQLExceptions.

DataDirect Technologies provides full support for the specification, including support for optional 4.0 capabilities. This support is described in more detail below.

[Learn more about the important new features in JDBC 4.0.](#)

The following JDBC 4.0 features are supported:

- A Wrapper Pattern interface provides a mechanism for accessing an instance of a resource, which may have been wrapped for architectural reasons. This provides a standard means of interfacing with proprietary or vendor-specific implementations, eliminating the need to write complex code and object casting.
- LOB creation has been simplified with the introduction of a connection interface that makes it easier to support the creation of BLOB, CLOB and

NCLOB objects. LOB enhancements have also been added that provide the ability to free memory related to LOB types without having to wait for the JVM garbage collection process.

- Statement pooling control has been enhanced to provide control over whether or not individual statements are pooled. This leads to better performance since an application can only pool statements that are likely to be re-used, minimizing the potential for a frequently used statement to be removed from the pool.
- Connection isValid – DataDirect supports the ability to determine whether a connection is valid using a JDBC standard API. This functionality previously available as an optional proprietary method is a common operation performed by connection pool managers.
- Connection Client Info – DataDirect supports the ability to get and set client information using standard JDBC 4.0 APIs. This functionality previously available as proprietary APIs can be used to distinguish between connections in a pool that are typically created using the same user id and password. This information is necessary to determine which application is using a connection; it also provides the ability to identify the source of a run-away query, as well as usage statistics that can be used to adjust the priority of work. DataDirect provides the ability to set the client information through easily configurable connect options.
- Auto Load Driver – DataDirect drivers can be automatically loaded by the Java SE 6 VM. This important ease of development feature of the JDBC 4.0 specification eliminates the need to register the JDBC driver in the application.

The following 4.0 Optional Features are supported:

- JDBC 4.0 now supports the SQLXML data type and provides Java XML bindings. This eliminates the need to use either JDBC driver extensions to transfer data to or from the database or use the CLOB interface, which is limited in nature to a string representation of the XML. Since the SQLXML data type is now a “first-class citizen” to JDBC, developers can use standard DOM, SAX, StAX results and streams in order to process the data.
- The SQLException capability has been enhanced to provide finer grained control for managing SQL exceptions. The exceptions returned by the driver are now more specific, eliminating code that was necessary to determine the higher-level reason for the error. The SQLException can now be checked vs. checking numerous different SQLStates. The exception handling now distinguishes between transient (might succeed if retried) or not transient (won't succeed if retried), so that errors that are “expected” or not can be processed more efficiently.
- Along with SQLXML support, DataDirect now supports several data types and standard bindings for nationalized character sets, including NCHAR, NVARCHAR, NLONGVARCHAR and NCLOB. Native support for these data types allows the driver and the developer to work with the explicit data type, which results in better efficiency at run-time between driver and the server.
- All new JDBC 4.0 Types are able to be set and retrieved from all objects in a standards-based manner and are fully supported across all statement and resultSet object types.

- New JDBC 4.0 methods were added to make coding easier by making the interfaces support more type conversions in the driver, removing the complexity of these conversions from the application.
- Support for the JDBC 4.0 Statement Event Listener.

Application Failover Support

To ensure continuous, uninterrupted access to data, DataDirect Connect *for* JDBC provides the following three levels of failover protection, listed from basic to more comprehensive:

- *Connection failover* provides failover protection for new connections only. The driver fails over new connections to an alternate, or backup, database server if the primary database server is unavailable, for example, because of a hardware failure or traffic overload. If a connection to the database is lost, or dropped, the driver does not fail over the connection. This failover method is the default.
- *Extended connection failover* provides failover protection for new connections and lost database connections. If a connection to the database is lost, the driver fails over the connection to an alternate server, preserving the state of the connection at the time it was lost, but not any work in progress.
- *Select failover* provides failover protection for new connections and lost database connections. In addition, it provides protection for Select statements that have work in progress. If a connection to the database is lost, the driver fails over the connection to an alternate server, preserving the state of the connection at the time it was lost and preserving the state of any work being performed by Select statements.

See the [DataDirect Connect *for* JDBC User's Guide and Reference](#) for more detailed information on each failover method, which method to use, and how to use it.

DB2-Specific Features

- Support for DB2 v9.5.
- Support for the IBM Workload Manager (WLM) has been enhanced so that developers can specify performance goals and assign business importance to JDBC processing. For instance, if you want to ensure that 70% of the transactions using the DataDirect Connect *for* JDBC driver complete within one second, you would use WLM to configure a rule to do so. WLM keeps track of the work running on the system and configures system resources in order to satisfy this goal. DataDirect's support for this feature has been implemented using connection options so that this capability can be leveraged without making code changes.
- SSL support (introduced for other databases in version 3.7) has been expanded to include support for DB2, including DB2 v9.1 support for Linux, Windows and UNIX, DB2 v9 for z/OS, and AS/400 v5r3, v5r4 and v6r1.
- XMLSchema support allows validation of XML data that is inserted into the database by leveraging the XMLSchema defined in the database.
- XQuery Update Expressions support the new syntax for updating XML documents via XQuery expressions.

- Database Compression support allows the compression capability supported by the database engine to be leveraged with DataDirect Connect *for* JDBC. The compression capability saves space on the database server and provides optimal performance.

Oracle-Specific Features

- Support for Oracle 11g.
- Table and Tablespace Compression support allows the compression capability supported by the database engine to be leveraged with DataDirect Connect *for* JDBC. The compression capability saves space on the database server and provides optimal performance.
- Transparent Data Encryption / Tablespace Encryption support allows developers to leverage the encryption capability provided by Oracle. Any interaction that takes place with data that is encrypted on the Oracle server by the DataDirect Connect *for* JDBC driver will work seamlessly.
- Server side result set caching support allows applications that use DataDirect Connect *for* JDBC to leverage caching capability provided by Oracle, which provides superior performance and scalability. If you use other drivers, each SQL statement needs to be modified in order to leverage the caching capability. DataDirect automatically inserts the hint syntax necessary to enable caching, thereby eliminating the need to make code changes. Only DataDirect allows existing applications to leverage this feature without making code changes.

SQL Server-Specific Features

[Click here for information on SQL Server-specific features added in Release 3.7.](#)

Sybase-Specific Features

[Click here for information on Sybase-specific features added in Release 3.7.](#)

For information on releases prior to 4.0, visit the [Release History](#) page

We welcome your feedback! Please send any comments concerning documentation, including suggestions for other topics that you would like to see, to:

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