IBM Lotus® Expeditor Client for Desktop

Database

Lotus software

@ business on demand software

This presentation explains the database capabilities in the IBM Lotus Expeditor Client for Desktop.

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Goal

- Understand the database services provided by the IBM Lotus Expeditor Client for Desktop

Database

The goal of this presentation is to understand the database services provided by IBM Lotus Expeditor Client for Desktop.

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Agenda

- Key concepts

- Database support

- Database comparison

The agenda of this presentation is to explain key concepts, describe the database support available in the client platform, and to compare these database services so you can determine which service best meets your requirements.

Section

Key concepts

Database

Let's start with an overview of key database concepts.

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Database access
Database 101

JDBC™ 3.0 | Apache Derby™ | Apache Derby Isync Provider

DB2® Everyplace® | DB2 Everyplace Isync Provider

- JDBC 3.0 API (J2SE 1.4)
  - java.sql (access and process data in a data source)
  - javax.sql

- Structured Query Language (SQL)
  - Standard query language used with relational databases
    - Insert, modify, and retrieve data using standard statements and data types
  - SQL-92 standardized by ANSI/ISO in 1992
    - Entry-level SQL-92 is a subset and supported by nearly all databases
  - SQL-99 update in 1999
    - Adds support for user-defined data types (UDTs)

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Database application developers use JDBC, the application programming interface that makes it possible to access relational databases from Java™ programs. The JDBC API is part of the Java 2 Platform, Standard Edition (J2SE) and is not specific to any particular database implementation, such as Derby or DB2 Everyplace. It consists of the java.sql and javax.sql packages, which are sets of classes and interfaces that make it possible for a Java application to access databases (from a number of different vendors).

In addition to knowledge of the development of JDBC APIs, database application developers also need to have a detailed understanding of the Structured Query Language (or SQL). SQL is the standard query language used with relational databases and is not tied to a particular programming language. No matter how a particular relational database management system (or RDBMS) has been implemented, the user can design databases and insert, modify, and retrieve data using the standard SQL statements and well-defined data types. SQL-92 is the version of SQL standardized by ANSI and ISO in 1992. Entry-level SQL-92 is a subset of full SQL-92 specified by ANSI and ISO that is supported by nearly all major DBMSs today. In 1999, another update to the SQL standard was made available called SQL-1999 or SQL-99.

Section

Database support

Database

Next, let's explore the database support available with the client platform.

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Database access
Database support

| JDBC 3.0 | Apache Derby | Apache Derby Isync Provider |
| DB2 Everyplace | DB2 Everyplace Isync Provider |

- Supports two relational databases
  - ▸ Apache Derby
  - ▸ DB2 Everyplace

- Serves as a local data repository
  - ▸ Provides advanced data organization and access
  - ▸ Protects local data with encryption

- Synchronizes local databases with Enterprise databases
  - ▸ DB2 UDB, Informix® Dynamic Server, Lotus Domino® Server, Oracle, Microsoft® SQL Server™, Sybase Adaptive Server Enterprise

- No user administration required

Database

The client platform provides two relational databases that are accessible using JDBC interfaces, DB2 Everyplace and Derby.

DB2 Everyplace is an extremely small footprint relational database. It is especially suitable for embedded devices, where large databases and sophisticated queries are not normally required, but can also be used on larger devices such as desktops and laptops. DB2 Everyplace provides transaction support covering updates to multiple tables within a single transaction and encrypted tables.
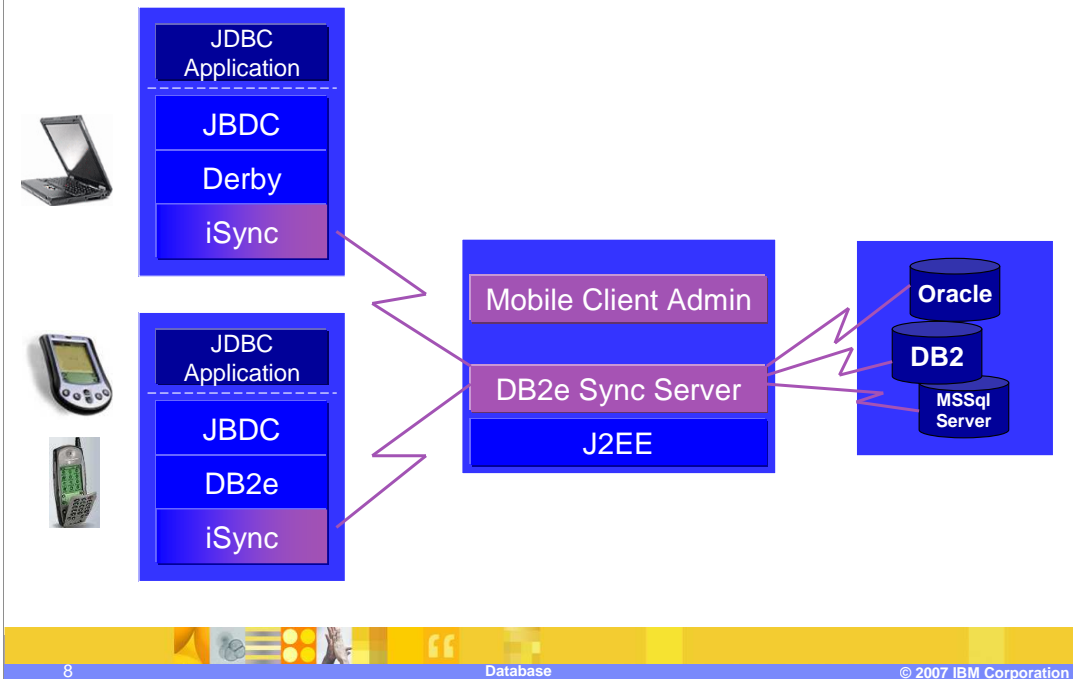
Derby is a 100% pure Java relational database, providing SQL-92, partial SQL-99, and Structured Query Language for Java (SQLJ) support, indexes, triggers, transactions, encryption, and the standard features that one expects of a relational database.

You can use DB2 Everyplace or Apache Derby as a local SQL database when more advanced data manipulations are required than can be supported by placing data in a local file store. These databases can also protect local data through data encryption.

In addition, these databases can periodically synchronize with Enterprise databases to capture data on the client for use by the client application when the user is offline. Enterprise databases supported include DB2 Universal Database (UDB), Informix Dynamic Server, Lotus Domino Server and others shown on this slide.

No user administration is required for the local databases.

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Relational data access end-to-end

| JDBC Application |
| JBDC |
| Derby |
| iSync |

| JDBC Application |
| JBDC |
| DB2e |
| iSync |

| Mobile Client Admin |
| DB2e Sync Server |
| J2EE |

Oracle

DB2

MSSql Server

Database

DB2 Everyplace and Derby are both capable of synchronizing with the DB2 Everyplace Sync Server, using IBM's ISync technology provided with Extension Services. The initial synchronization activity will create the local database schema, as well as populate the initial set of data. As data is updated on the node, synchronization will transfer that data to other nodes as configured to receive it. Updates made to the data on the remote nodes will be synchronized back to the local node. Database administrators set up the necessary subscriptions for synchronization, and can set up filtering of data to limit the amount of data distributed between nodes.

Database synchronization is based on row-level updates synchronized to and from the remote nodes. Database synchronization captures only the current state of data and synchronizes that data between nodes. If intermediate data updates or data ordering is required, application developers may need to develop their own history model, or use other technologies such as messaging to capture intermediate data.

Database application models

- Client uses ISync to "create" database on client
  - ▶ Application exchanges data with server on a periodic basis

- Client uses deployed (pre-created) database
  - ▶ Application uses database for lookup (catalog)

- Client creates database dynamically and data populated by application
  - ▶ Application manages its own data synchronization

Database

This slide covers a three database application models. The first model is an application which exchanges data with a server on a periodic basis.

The next is the client which uses a deployed database. For the third, the client creates a database dynamically, and data populated by the application.

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Section

Database comparison

Database

Finally, let's compare these database services to help you determine which service best meets your requirements.

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Database comparison

| JDBC 3.0 | Apache Derby | Apache Derby Isync Provider |
| DB2 Everyplace | DB2 Everyplace Isync Provider |

	DB2 Everyplace	Apache Derby
Implementation type	High performance native implementation (see DB2e documentation for a complete list of supported devices)	Java-based (platform independent) implementation
On-disk footprint	250 KB	2 MB
Number of connections supported	Allows multiple concurrent connections to a database from the same JVM	Allows multiple concurrent connections to a database
SQL support	Limited set of SQL data types	Full SQL-92 support, partial SQL-99 support
Schema support	No	Yes
Database creation requirements	Directory for database tables must be created before use	Derby creates directory
JDBC URL	jdbc:db2e:*location*	jdbc:derby:*location*

DB2 Everyplace and Derby are similar, but have features that might make one a better choice for client needs. Consult this table for more information. Refer to the product documentation for more complete information about these products. You can find reference information about the particulars of the SQL implementation in Derby in the *Apache Derby Reference Manual* and the implementation in DB2 Everyplace in the *IBM DB2 Everyplace Application Developer's Guide*.

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