



Apache Derby Status Update

OSCON 2005

“DIRBY” or “DAHRBY” ?

It depends...

Introductions

What Is Derby?

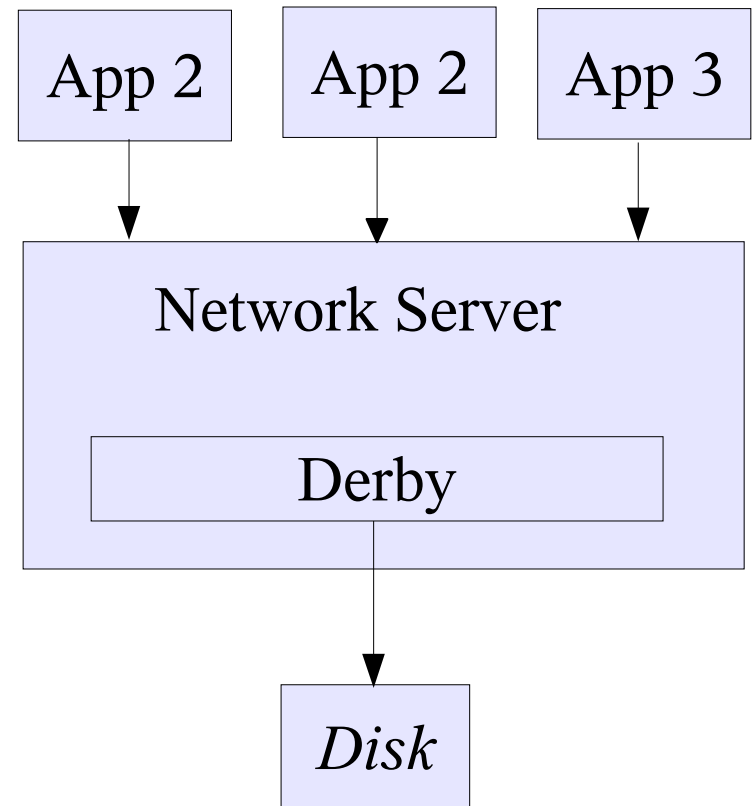
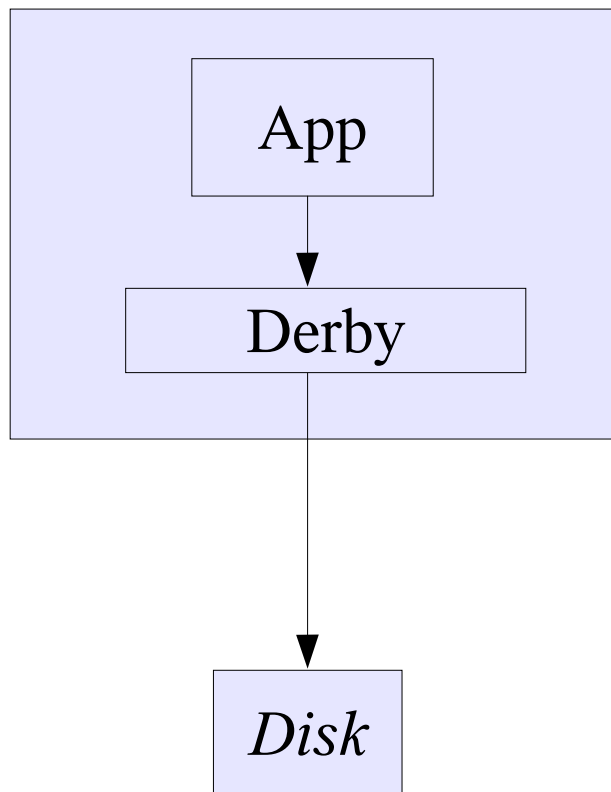
- Apache's Open Source Database
- 100% Java Relational Database
- Easy to use
- Can run in same VM or as separate server
- Standards-based
 - SQL-92, JDBC 3.0, J2EE, J2ME JSR169
 - No Derby-specific extensions
- Secure

What Is Derby Good For?

- Great Java Developer Database
 - Simple, easy-to-use, standards-compliant
- Great embedded database
 - Can be made “invisible” to end users, no administrative overhead
 - Higher performance when embedded
- Good departmental database
 - Migration to Big Iron DBs easier because of standards compliance

Derby Configurations

- Can be embedded in same VM or client/server
- Depends on which JDBC driver you use



High-End SQL Features

- Java Stored Procedures
- Triggers
- Two-phase commit (XA support)
- Updatable SQL Views
- Full Transaction Isolation Support

Brief History of Derby

- Founded in 1996 as JBMS, then Cloudscape
- Inspiration of some of the best database engineers from Sybase
- Intention was to take advantage of strengths of Java (portability, robustness, security) and apply them to database architecture
- Acquired by Informix in 1999, which was then acquired by IBM in 2001

More History

- IBM contributed Cloudscape to Apache in August 2004, renamed to Derby
 - Part of Apache DB project
- Community is growing
 - 30 active developers
 - Added four more committers last month
- Graduated from Apache incubation last week
 - Apache recognizes Derby as a viable project
- 10.1 released *today* as first release out of incubation

Why Sun Likes Derby

- Enables productive Java development with a good solid, easy-to-use Java database
- Great for use in our own products
 - Embeddable, solid Java product, free to redistribute under Apache license
- It has a strong architecture
 - Already is a very good developer and embedded database
 - Committed to working with community to make even better
- A good alternative for users who need a lightweight, free, easy-to-use 100% Java DB

How Can You Get Involved?

- Download Derby, see what you think
 - Let us know what's missing
 - Join derby-user@db.apache.org
- Get involved as a developer
 - Lots to do
 - You can actually get stuff committed
 - Easy to build, test
 - Strong community support
- <http://db.apache.org/derby>

What Next?

- Just finished the 10.1 release, what should we do next?
- Focus on embedded or client/server or J2ME?
- Application server/web server support?
- Disconnected support?
- High-end features (replication, clustering)?

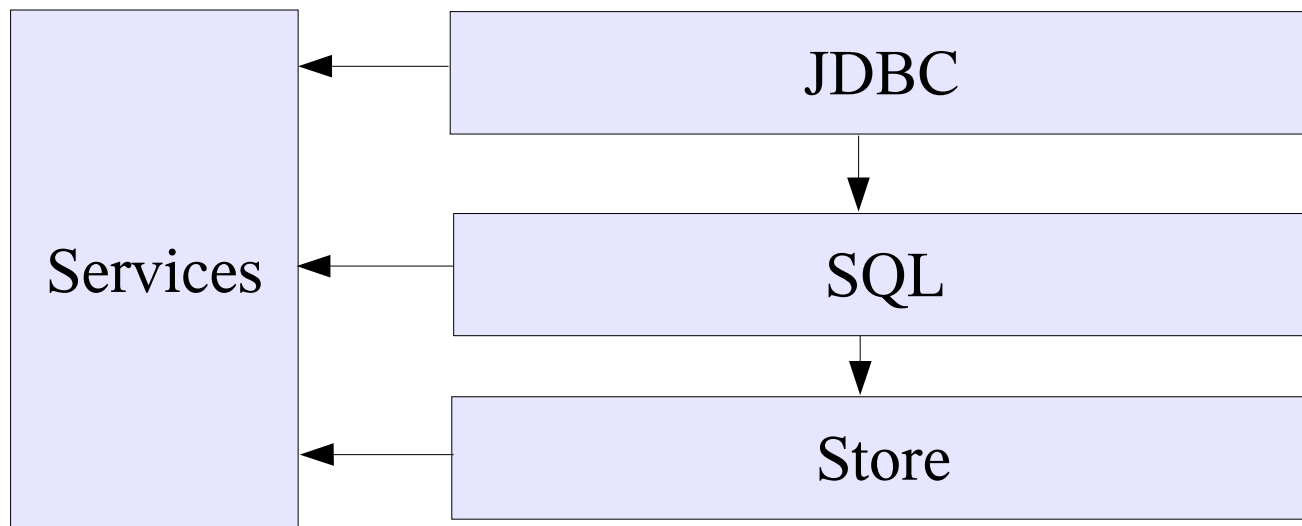
Derby Architecture

Derby Architecture

- Module-based architecture
- A module is a discrete set of functionality (lock manager, indexing method, etc.)
- Module interface defined by a set of Java interfaces
- Which modules are loaded is defined at runtime
 - Allows for a very flexible architecture and control of what is loaded for a given configuration

Derby Architecture

- Four key areas : JDBC, SQL, Store and Services



JDBC

- This *is* the Derby API for applications
 - No Derby-specific API (ala Oracle OCI)
- JDBC 2.1, JDBC 3.0, JSR-169 (J2ME)
- JDBC 4 work in progress

SQL

- Parses, compiles, executes SQL statements
- SQL statements compiled into Java bytecode
 - Executed by running the Java interpreter
- Accesses data through the Store

Store

- Two main areas: *access* and *raw*
- Access layer provides table/row view of data
 - Handles table scans, index scans, index lookups, transactions, etc.
- Raw layer provides interfaces for raw access to data
 - Can provide different implementations, e.g. on disk, in memory, etc.

Services

- General services for other components
- Lock management, cache management, error logging, internationalization, daemon threads, etc.

Network Server

- Server engine that embeds Derby
- Allows client/server access via Derby's network client JDBC driver
- Communicates via DRDA protocol

Tools

- Very basic tool support
 - Interactive SQL
 - Backup/Restore
 - Import/Export
- Intend most tool support to come from third-party tools