The Apache DB Project
http://db.apache.org/

Apache Derby Status Update
OSCON 2005

"DIRBY" or "DAHRBY" ?

It depends...
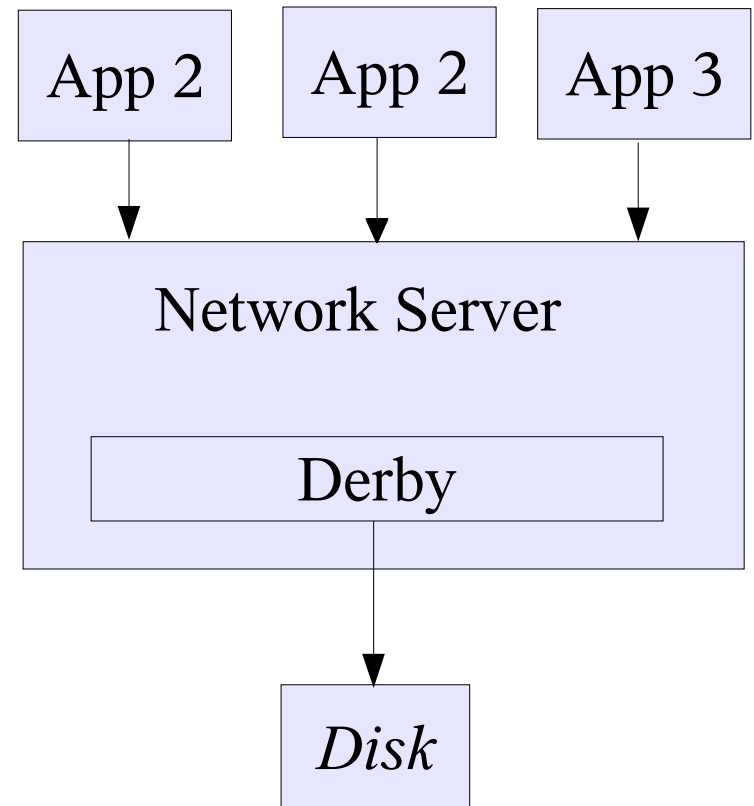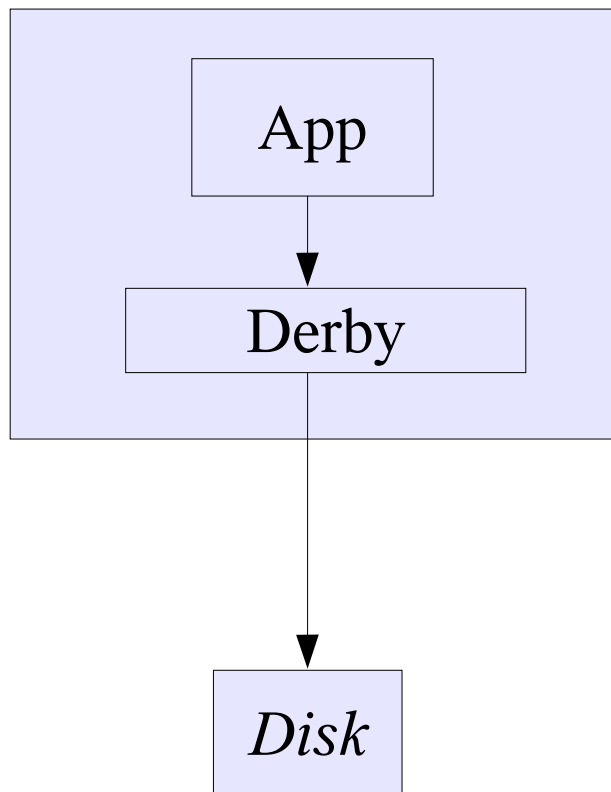
Introductions

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?

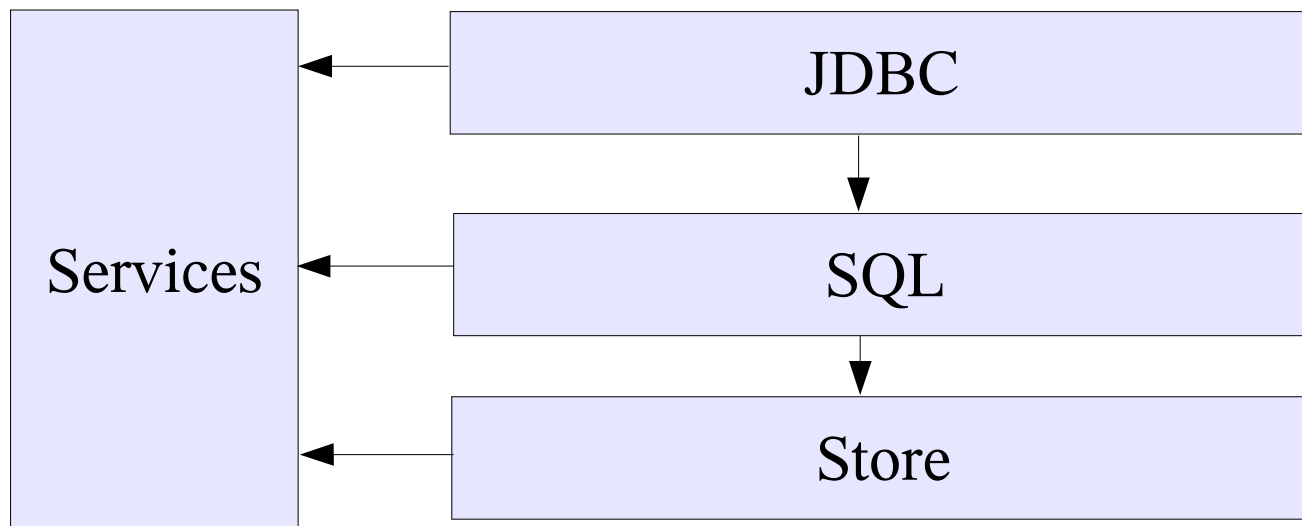- High-end features (replication, clustering)?

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