January 2006

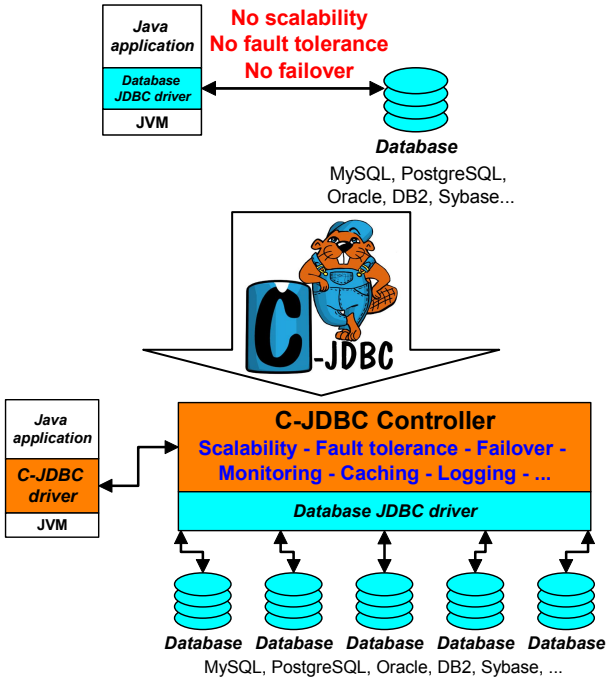
Scalability and High Availability for your Database

Overview

C-JDBC (Clustered Java™ DataBase Connectivity) is an open source database clustering middleware that allows any application to **transparently access a cluster of databases** through JDBC.
The database is distributed and replicated among several nodes and C-JDBC balances the queries among these nodes. C-JDBC handles node failures and provides support for check pointing and hot recovery.

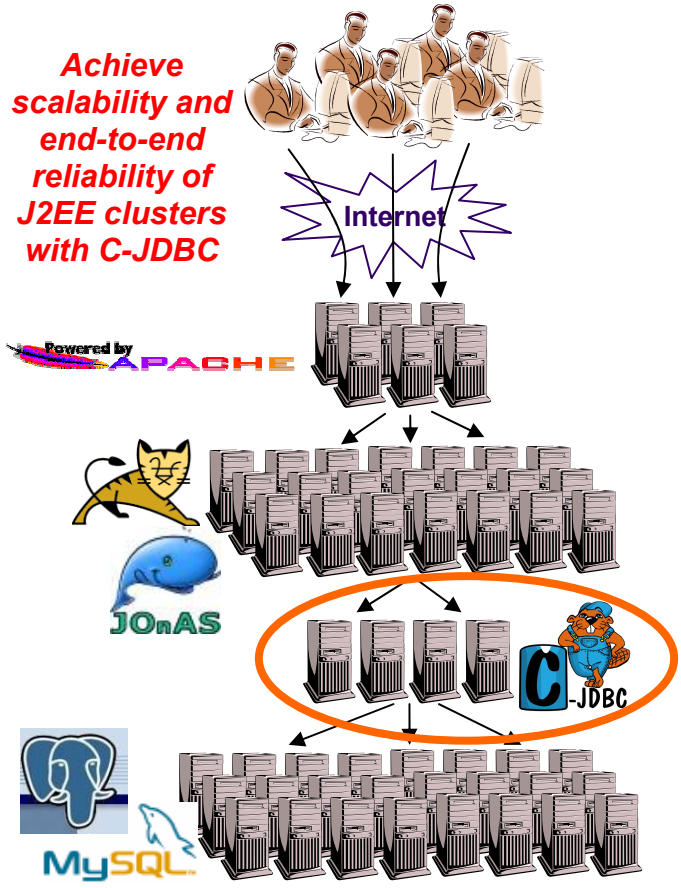
How does it work?

Existing Java applications use a database specific JDBC driver to access the database. C-JDBC provides a generic JDBC driver replacing the application's driver. The C-JDBC driver forwards SQL statements to one or several C-JDBC controllers that distribute reads and broadcast writes providing strong consistency. The controller reuses the database native JDBC driver to execute the queries on the backends.



Quick facts

- ***No modification*** of existing applications or databases,
- ***High availability*** provided by advanced RAIDb technology (see inset on reverse side),
- ***Performance scalability*** with unique load balancing and query result caching features,
- Integrated JMX™-based ***administration*** and ***monitoring***,
- **100% Java** portable code released under **LGPL**.



C-JDBC features

High availability

C-JDBC controllers can be replicated to prevent any single point of failure in the system. C-JDBC provides transparent failover hiding any cluster

failure to applications, and it offers support for database checkpointing and hot recovery.

Performance scalability

C-JDBC provides various concurrency control and load balancing implementations. It offers transparent connection pooling and query result caching with fine grain invalidations or relaxed consistencies. C-JDBC lowers response time and improve throughput of eCommerce applications.

Administration and monitoring

C-JDBC features JMX-based administration and monitoring that can be easily integrated in existing management infrastructures. C-JDBC comes with a graphical administration console for database management in cluster and grid environments.

Heterogeneity support

C-JDBC supports clusters composed of any database engine providing a JDBC driver. C-JDBC provides on-the-fly query rewriting to accommodate variation in SQL dialects among databases.

Open infrastructure

Every C-JDBC component can be replaced by a user-defined implementation to suit architecture or application specific needs.

About INRIA

INRIA is the French National Institute for Research in Computer Science and Control. The Sardes project at INRIA Rhône-Alpes leads the C-JDBC project developments. For more information, visit http://sardes.inrialpes.fr.

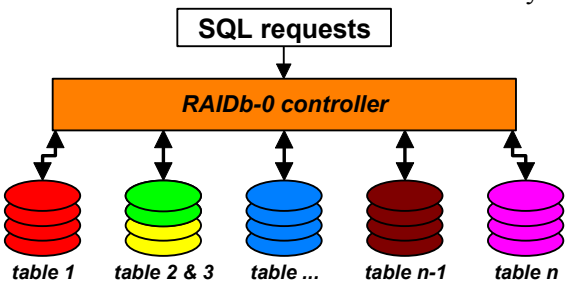
About ObjectWeb

ObjectWeb is an international consortium of leading companies and research organizations who have joined forces to produce the next generation of open source middleware based on open standards. Founded in 2002 by Bull, France Telecom and INRIA, ObjectWeb is hosted by INRIA, and is sponsored by Together Teamlösungen GmbH. For more information, visit ObjectWeb web site at http://www.objectweb.org.

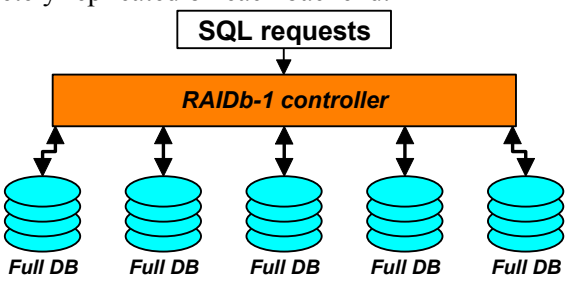
RAIDb: Redundant Array of Inexpensive Databases

RAIDb is to databases what RAID (Redundant Array of Inexpensive Disks) is to disks. RAIDb aims at providing better performance and fault tolerance than a single database, at a low cost, by combining multiple database instances into an array of databases. Several RAIDb levels are defined to achieve various degree of performance and fault tolerance.

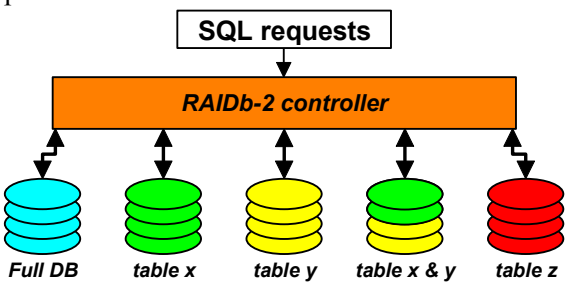
RAIDb-0 (full partitioning): database tables are distributed on the backends without redundancy.



RAIDb-1 (full replication): the database is completely replicated on each backend.



RAIDb-2 (partial replication): each database table is present on at least two backends.



C-JDBC provides software implementations for all RAIDb levels and supports any replication or combination of RAIDb controllers.

Download C-JDBC at http://c-jdbc.objectweb.org

Join us: c-jdbc@objectweb.org