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Java Persistence Solution – JDX By Software Tree Inc.

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Product Mission

- Build an extremely useful, high-performance, secure and cost-effective solution for transactional and transparent persistence of Java objects
 - Provide a very natural object-oriented interface to store and retrieve Java objects using trusted relational databases



Java Persistence - Overview

- ❑ Technology trends
- ❑ Need for Java persistence
- ❑ Persistent storage options
- ❑ Importance of SQL RDBMS



Technology trends

- ❑ Internet/Intranet applications
- ❑ Java platform/language
- ❑ Multitier architecture
- ❑ Open industry standards (Java, CORBA, SQL)



Need for Java persistence

- ❑ Operational data in stable storage
(Applications come and go)
- ❑ Need of concurrent access to data from multiple applications
- ❑ Transactional integrity (ACID properties)



Persistent storage options

- ❑ File System
- ❑ Object Oriented DBMS
- ❑ Relational DBMS



Importance of SQL RDBMS

- ❑ Mature technology
- ❑ Lots of useful third-party tools
- ❑ High performance solutions for OLTP applications
- ❑ Dominant corporate data repository
- ❑ Trusted
- ❑ Legacy data



Market Need

- Continuing popularity of Java Platform
 - Versatile language
 - Support from all major computer vendors
 - Momentum
- Need for storing Java business objects in trusted RDBMS
 - ▼ Examples: Quotations, Purchase orders, Customer info, Invoices, Patient records, Drug info, Product info, Pricing info, Sales transactions ...
- Need for a quality tool which ...



Need for a quality tool which ...

- ❑ seamlessly bridges the gap between Java object model and SQL relational model
- ❑ increases programmer productivity tremendously by making the code simpler and yet efficient
- ❑ allows mapping of existing (legacy) relational data to Java objects leveraging customer's existing investment
- ❑ supports thin-client model



Need for a quality tool which ... (contd...)

- provides high-performance, secure, and scalable implementation
- Provides data independence
- employs an extensible architecture to allow integration with other transactional services
- uses open industry standard technologies



Approaches for accessing RDBMS from Java programs

- Use JDBC (a Java API to SQL databases)
 - library or client-server architecture
- Third-party application development tools which automatically generate JDBC calls (application semantics understood by the tool)
- Use third-party tools which provide a record-oriented interface to RDBMS
- Embedded SQL in Java programs



Approaches (contd...)

- Use object-oriented libraries for Java object persistence
- Use intuitive, object-oriented client/server interface for Java object persistence



Problems with some alternatives

- ❑ Paradigm-mismatch (Object vs. Relational)
 - Explicit generation of SQL statements
 - Object component parsing and reconstruction
- ❑ Bulky, hard-to-maintain applications
 - Thick-clients
 - Non-uniform object-mapping code
- ❑ Poor caching of reusable metadata and database connections
- ❑ Non-scaleable architecture



Product Architecture

□ Java Exchange (JX)

- An efficient and modular design of a server framework which can easily accommodate different transactional and non-transactional services

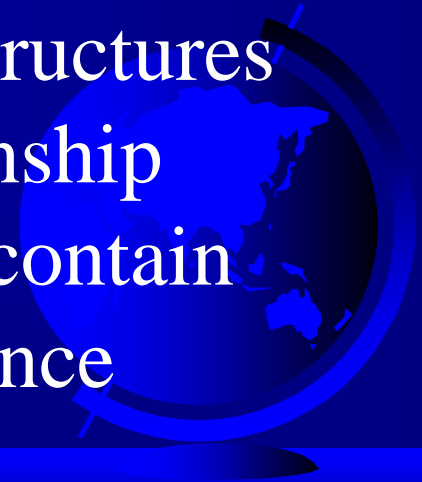
□ Java Database Exchange (JDX)

- A high-performance service for transactional and transparent persistence of Java objects in relational databases



Java Database Exchange (JDX)

- A service in the Java Exchange architecture
- Provides an intuitive, object-oriented interface to seamlessly bridge the gap between Java objects in memory and their persistent representation in RDBMS
- Can easily handle complex object structures - one-to-one or one-to-many relationship models supported. An object may contain other object(s) by value or by reference



Java Database Exchange (JDX) (contd...)

- ❑ Object modeling with class-hierarchy supported
- ❑ A database-neutral service on top of standard JDBC interface
- ❑ Client interface through standard technologies like Java RMI or CORBA



Java Database Exchange (JDX) (contd...)

- ❑ High-performance multithreaded implementation
- ❑ Efficient caching of metadata and database connections
- ❑ Optimal use of network bandwidth possible by co-locating JDX service on the same system where the RDBMS runs



Java Database Exchange (JDX) (contd...)

- ❑ Multiple invocations of JDX methods may be made part of a single transaction
- ❑ Can participate in a transaction with other potential Java Exchange services (e.g. payment, messaging, fax)



Java Database Exchange (JDX)

(contd...)

- Tool for relational schema-generation given Java class definitions and vice-versa
 - ▼ legacy relational data may easily be mapped to Java objects
- JDX is a development and deployment tool
- Cross-platform solution using 100% pure Java



Summary and Conclusions

- ❑ JDX provides a high-performance, cross-platform, scalable, object-oriented solution for transactional persistence of Java objects in trusted SQL RDBMS
- ❑ Ideal for Internet/Intranet applications
- ❑ Great booster of programmer productivity
- ❑ Based on open standard technologies

