Java™ 2, Enterprise Edition Reference Implementation

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Agenda

- What is the reference implementation?
- Technologies and Features
- Status



What is the Java 2 Platform, Enterprise Edition?

- Java 2 Enterprise Edition (J2EE) is a platform that enables solutions for developing, deploying and managing n-tier server-centric enterprise applications.

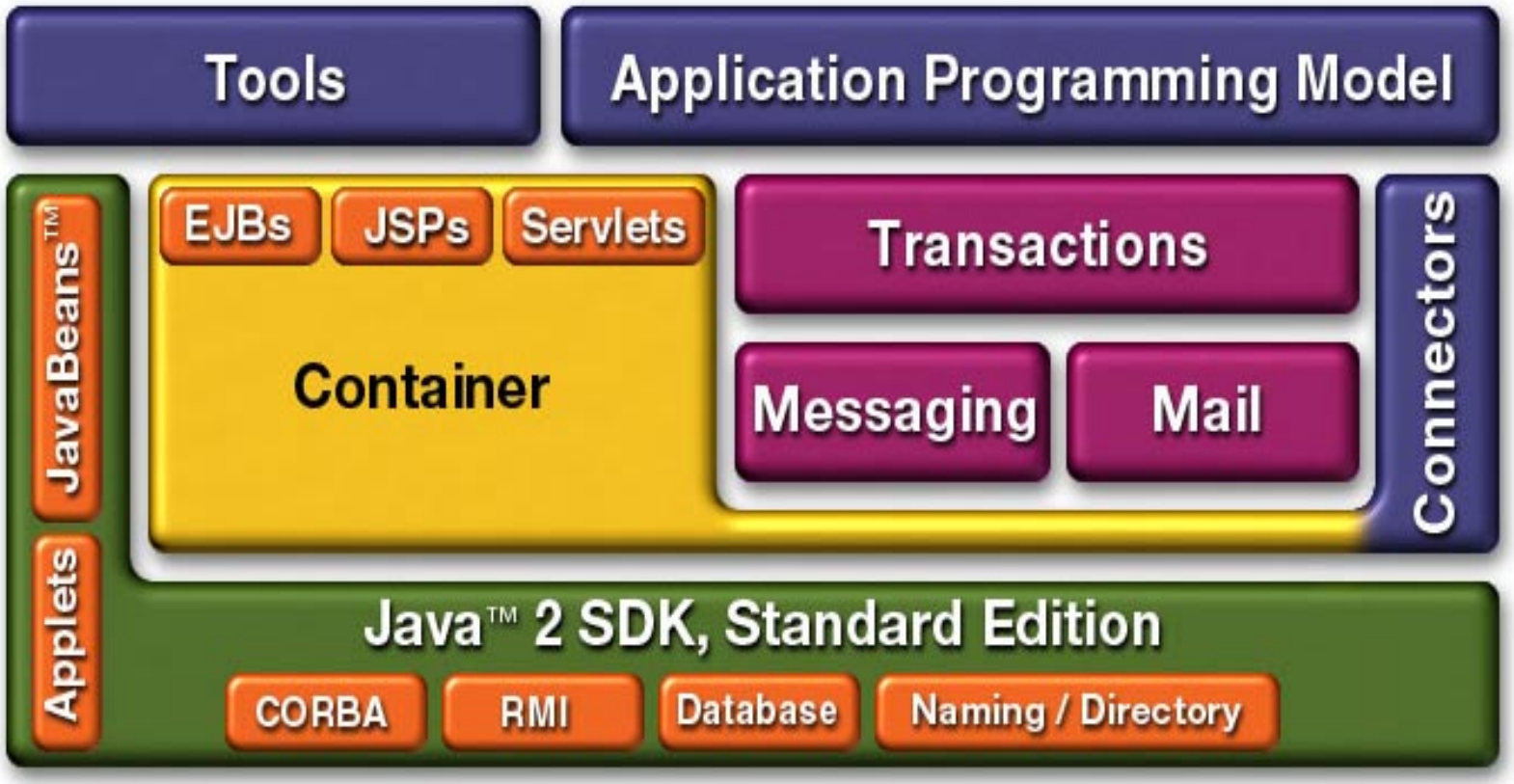


Java 2, Enterprise Edition

- **Application Model**
  - Describes how to build J2EE applications
- **Platform Specification**
  - Defines J2EE requirements
- **Compatibility Test Suite**
  - Validates J2EE platform conformance
- **Reference Implementation**
  - Operational J2EE platform



J2EE Architecture



Why Reference Implementation?

- Operational definition
- Compatibility and branding
- Promote Write Once, Run Anywhere
- Help developers prototype J2EE applications
- Help server platform and tool vendors build J2EE support in their products



What to Expect

- Fully functional J2EE platform
- Fully compatible with specs
- High quality
- Modular Design
- Supported Platforms
  - Solaris
  - Windows NT



What not to Expect

- Commercial product features
- Optimization
- High end functionality
- Not for production use



J2EE RI Technologies

- Component API's
  - EJB, JSP, Servlet
- Java API's
  - RMI, JavaIDL, JDBC, JTA, JNDI, JavaMail
- Web infrastructure
  - HTTP(S), XML, SSL
- CORBA infrastructure
  - IIOP, POA, JTS, CosNaming



Enterprise JavaBeans API

- EJB1.1 (Moscone) compliant container
- SessionBeans
  - Stateless
  - Stateful
- EntityBeans
  - Bean-Managed Persistence
  - Container-Managed Persistence
- XML-based deployment descriptors



Enterprise JavaBeans API

- Enterprise JavaBeans container
  - Implements EJB-container contract
  - State management, instance pooling
  - Concurrency management
  - Error handling
  - Transaction demarcation
  - Access control
  - Resource management



Web Components

- Servlets
  - Servlet 2.2 compliant engine
  - web deployment descriptor
- Java Server Pages API
  - JSP 1.1 compliant engine
  - Compiles JSPs to servlets
- HTTP 1.0, HTTPS



Naming/Directory

- JNDI 1.2 APIs
- Lookup objects
  - EJBHome object references
  - JTA UserTransaction
  - JDBC DataSource etc.
- CORBA CosNaming service provider
- CosNaming nameserver
- Service provider for Serializable objects



RMI over IIOP

- Communication infrastructure for remote invocations on EJBs
- Interoperable wire protocol: IIOP
- Allows EJBs to talk with CORBA objects
- Includes objects-by-value
- Portable Object Adapter integrated with RMI/IIOP



Transactions

- Java Transaction API 1.0
- Java Transaction Service
  - Java technology based implementation of CORBA Transaction Service APIs
  - 2-phase commit engine
  - distributed transactions (multi-process, multi-database with JDBC 2.0 APIs)
  - uses XA APIs to talk with resources
- Interoperable format for transaction context propagation



Database connectivity

- JDBC 2.0 (with standard extension) APIs
- JDBC 2.0 drivers can be plugged in
- Support for JDBC 1.0 drivers too
- Database connection pooling



Security

- Role based access control
  - permissions specified by deployer
  - client identity determined by authentication
  - before invoking EJB, security manager checks if client has one of the permitted roles
- client authentication
  - basic HTTP
  - form based
- principal mapping
  - map client principals to resource principals



Security

- Security context propagation in IIOP messages
- SSL v3, HTTPS for secure communication
- Auditing: security manager creates audit log entries for each invocation



XML

- Format for specifying deployment descriptor information
  - e.g. transaction attributes of EJB methods
- DTD specified in J2EE, EJB, servlet specs
- Developer provides structural information
- Assembler and deployer provide rest
- Validating XML parser included, with lots of semantic checks



JavaMail Technology

- JavaMail 1.1 APIs
- IMAP message store provider
- SMTP message transport provider
- JavaBeans Activation Framework 1.0 for MIME type support



Other Features

- Application client support
- GUI and command-line tools
- Dynamic installation of applications
- Single process vs. Multi-process mode



J2EE RI Tools

- Packaging tool
- Verification tool
- Assembly tool
- Deployment tool



Getting Started with RI

- Documentation
- Sample applications
- Sample database (Cloudscape)



Status

- Alpha released in Summer 1999
- Beta in Fall 1999
- FCS by early 2000

- http://java.sun.com/j2ee

