INTRODUCTION TO JAVA EE (J2EE)

Enterprise Computing

Challenges

- Portability
- Diverse Environments
- Time-to-market
- Core Competence
- Assembly
- Integration

Key Technologies

- J2SE™
- J2EE™
  - JMS
  - Servlet
  - JSP
  - Connector
- XML
  - Data Binding
  - XSLT

Products

- App Servers
- Web Servers
- Components
- Databases
- Object to DB tools

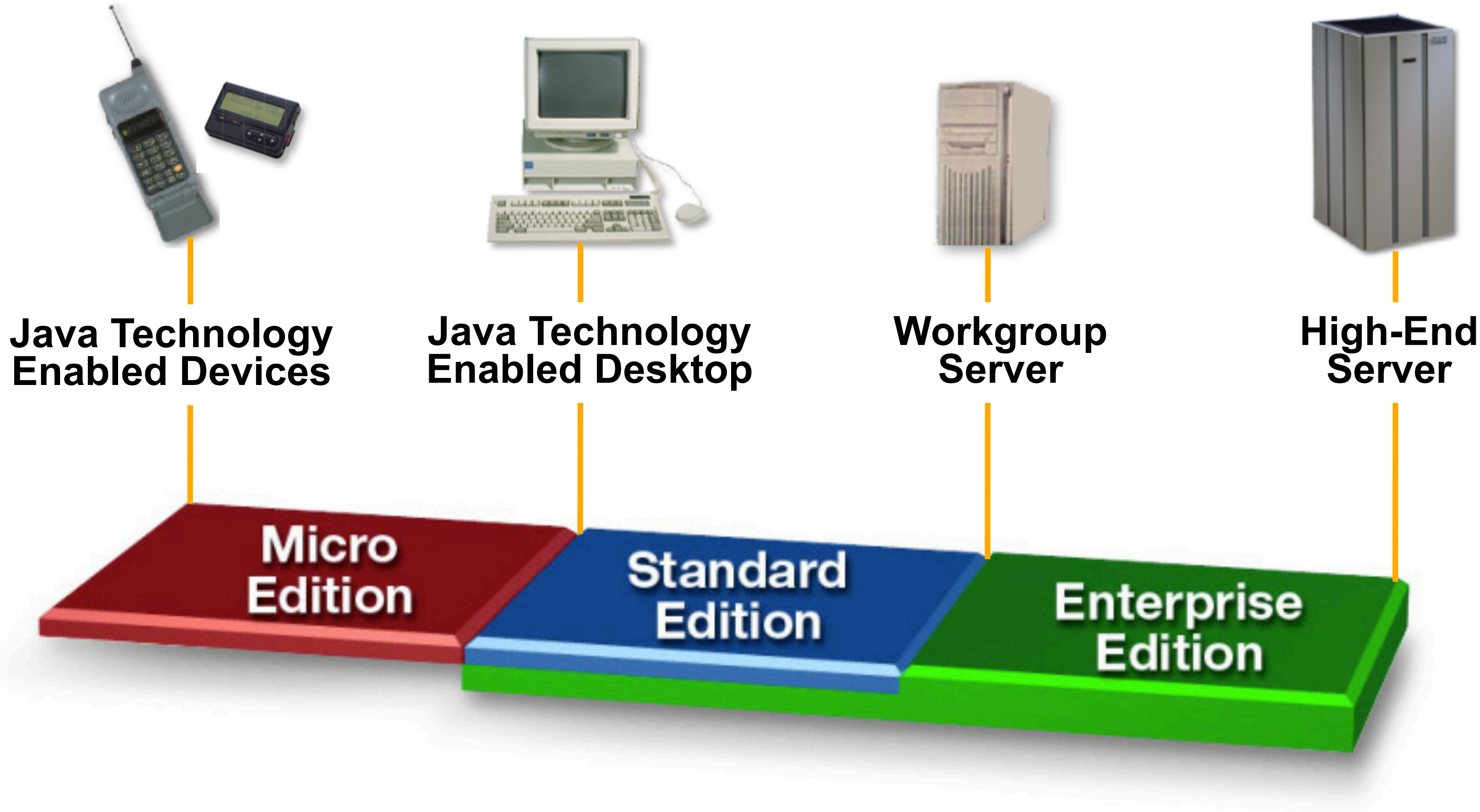
Legacy Systems

- Databases
- TP Monitors
- EIS Systems

What Is the J2EE?

- Open and standard based platform for
  - developing, deploying and managing
  - n-tier, Web-enabled, server-centric, and component-based enterprise applications

The Java™ Platform



Java Technology Enabled Devices

Java Technology Enabled Desktop

Workgroup Server

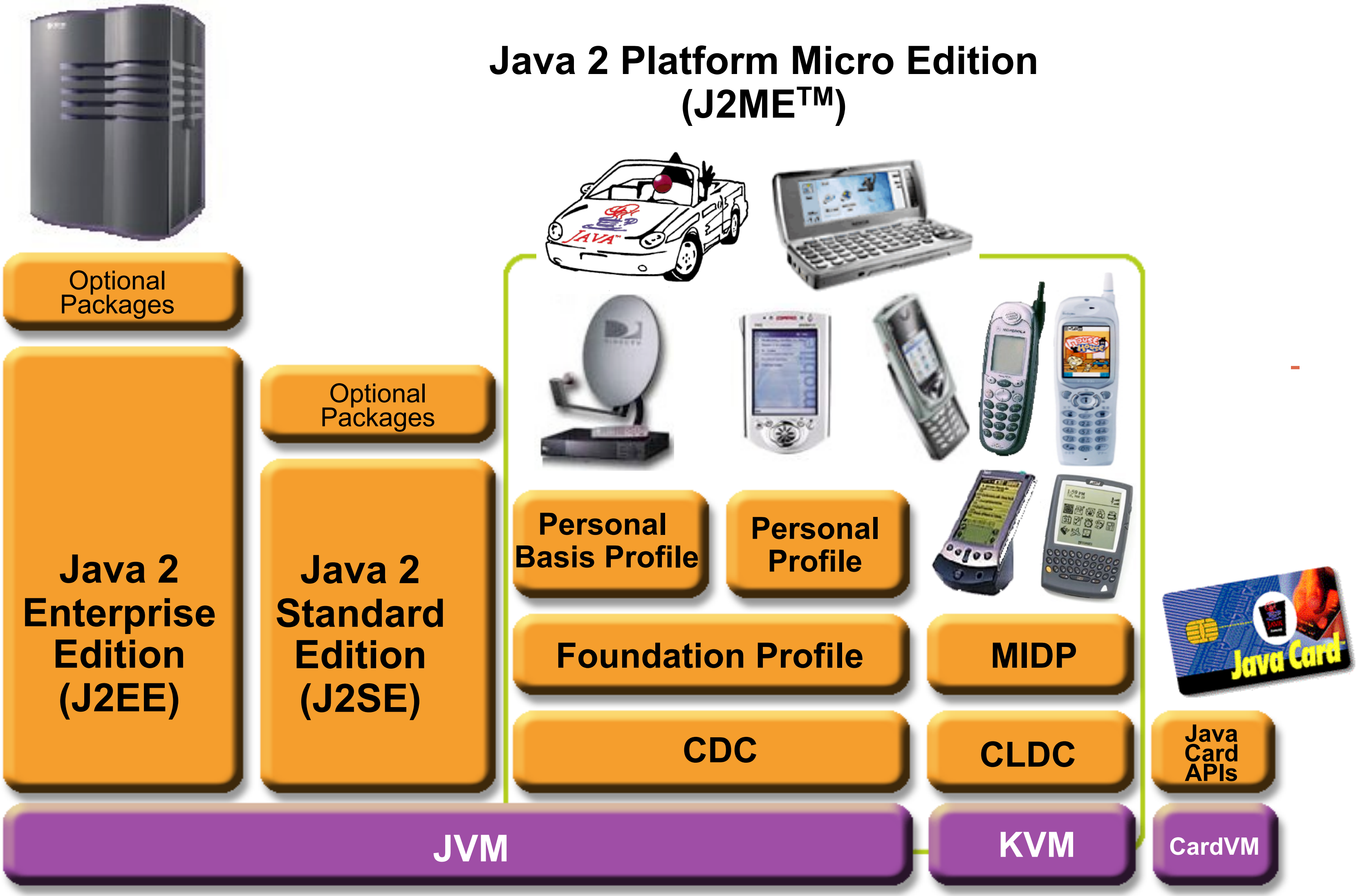
High-End Server

Micro Edition

Standard Edition

Enterprise Edition

THE JAVA™ PLATFORM



Open and Standard Solution

- Use "component and container" model in which container provides system services in a well-defined and as industry standard

- J2EE is that standard that also provides portability of code because it is based on Java technology and standard-based Java programming APIs

J2EE TECHNOLOGIES

J2EE 1.4 APIs and Technologies

- J2SE 1.4 (improved)
- JAX-RPC (new)
- Web Service for J2EE
- J2EE Management
- J2EE Deployment
- JMX 1.1
- JMS 1.1
- JTA 1.0
- Servlet 2.4
- JSP 2.0
- EJB 2.1
- JAXR
- Connector 1.5
- JACC
- JAXP 1.2
- JavaMail 1.3
- JAF 1.0

Java EE 5

- JAX-WS 2.0 & JSR 181
- Java Persistence
- EJB 3.0
- JAXB 2.0
- JavaSever Faces 1.2 – new to Platform
- JSP 2.1 – Unification w/ JSF 1.2
- StAX – Pull Parser – new to Platform

What is a Servlet?

- Java™ objects which extend the functionality of a HTTP server
- Dynamic contents generation
- Better alternative to CGI, NSAPI, ISAPI, etc.
  - Efficient
  - Platform and server independent
  - Session management
  - Java-based

What is JSP Technology?

- Enables separation of business logic from presentation
  - Presentation is in the form of HTML or XML/XSLT
  - Business logic is implemented as Java Beans or custom tags
  - Better maintainability, reusability
- Extensible via custom tags
- Builds on Servlet technology

EJB

Enterprise Java Beans

What is EJB Technology?

- A server-side component technology
- Easy development and deployment of Java technology-based application that are:
  - Transactional, distributed, multi-tier, portable, scalable, secure, …

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- Provides framework for portable components
  - Over different J2EE-compliant servers
  - Over different operational environments

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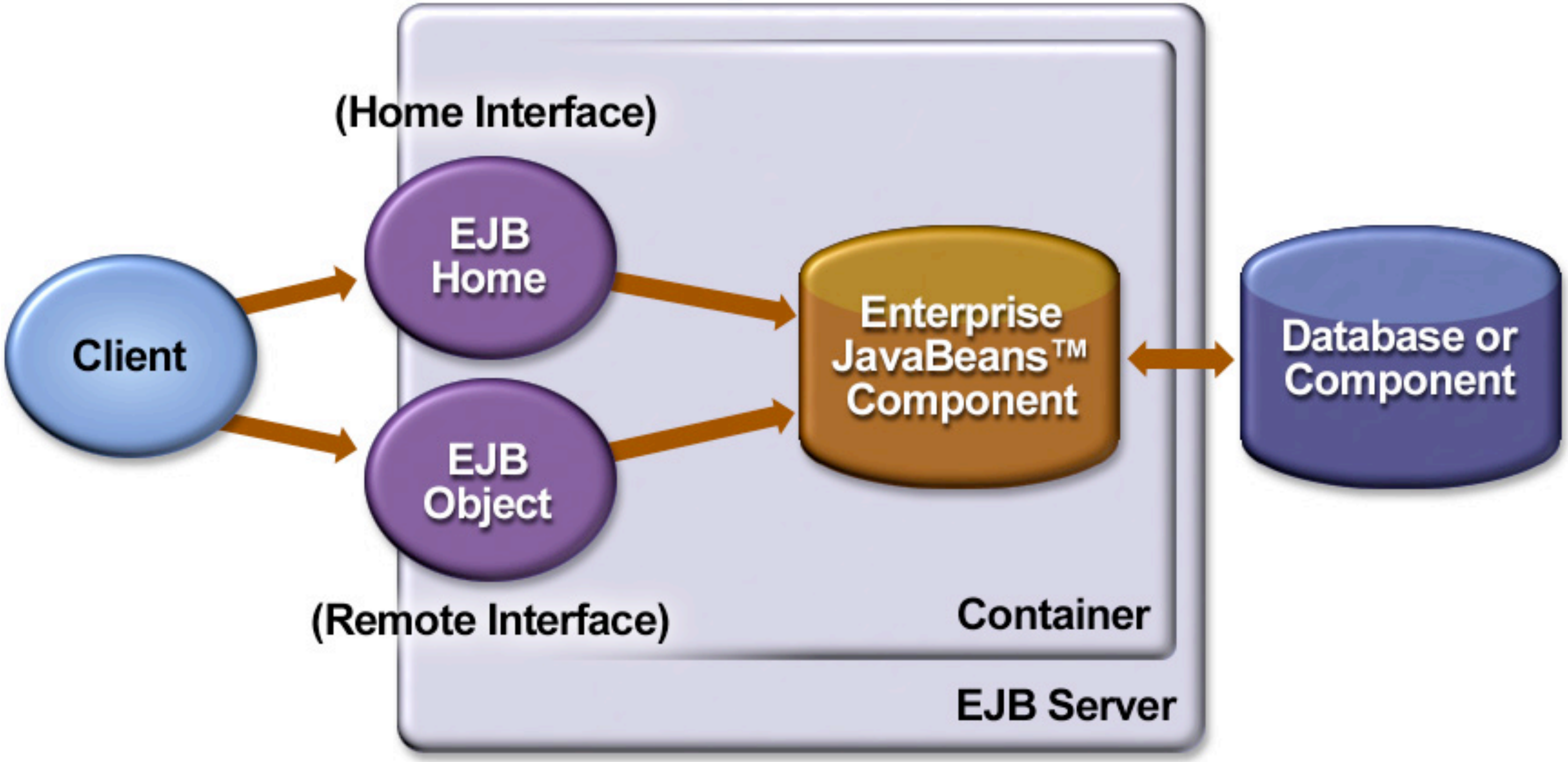
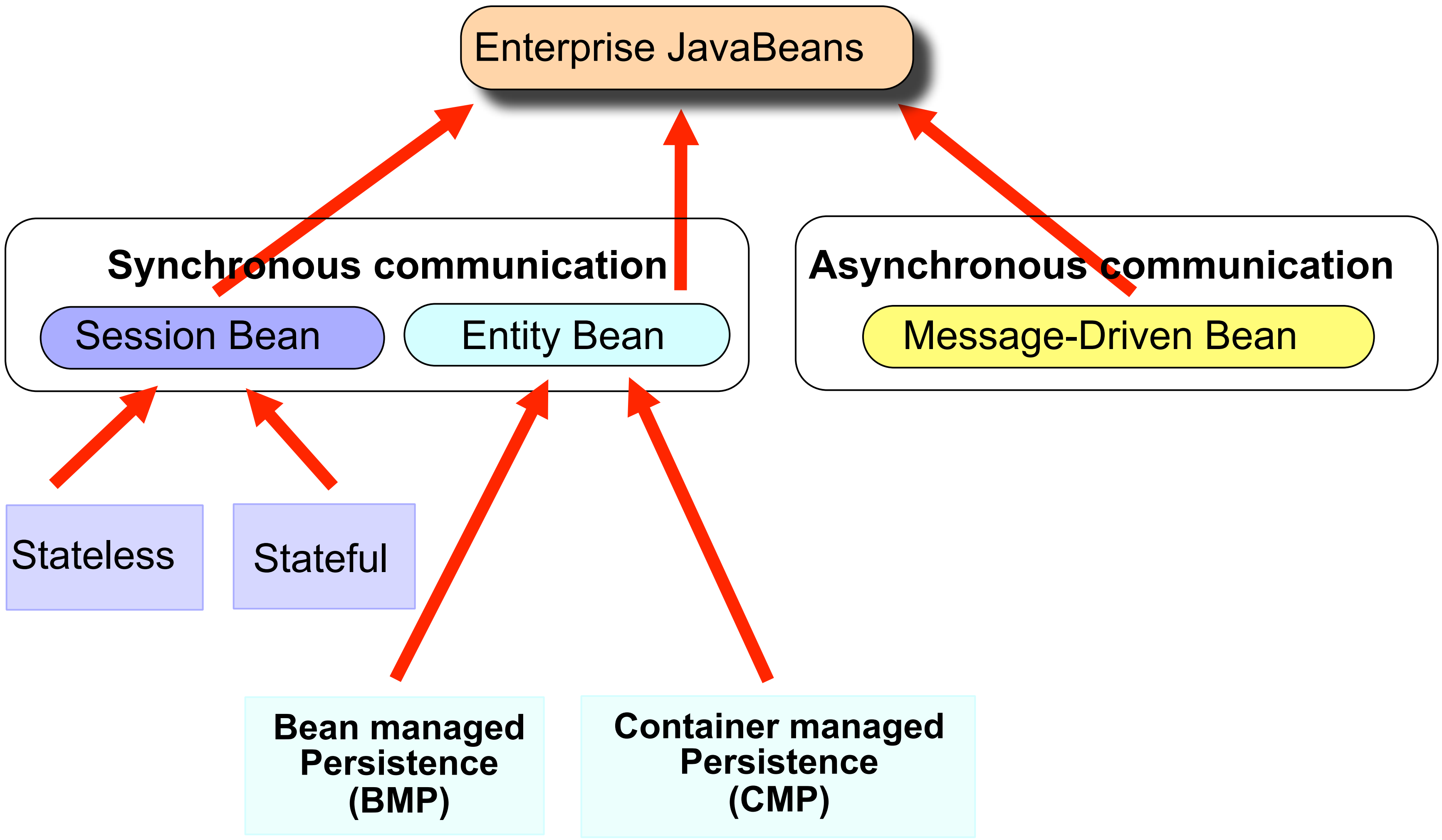
- Enables deployment-time configuration
  - Deployment descriptor

EJB Architecture



Enterprise JavaBeans



Enterprise JavaBeans

Synchronous communication

Session Bean

Entity Bean

Asynchronous communication

Message-Driven Bean

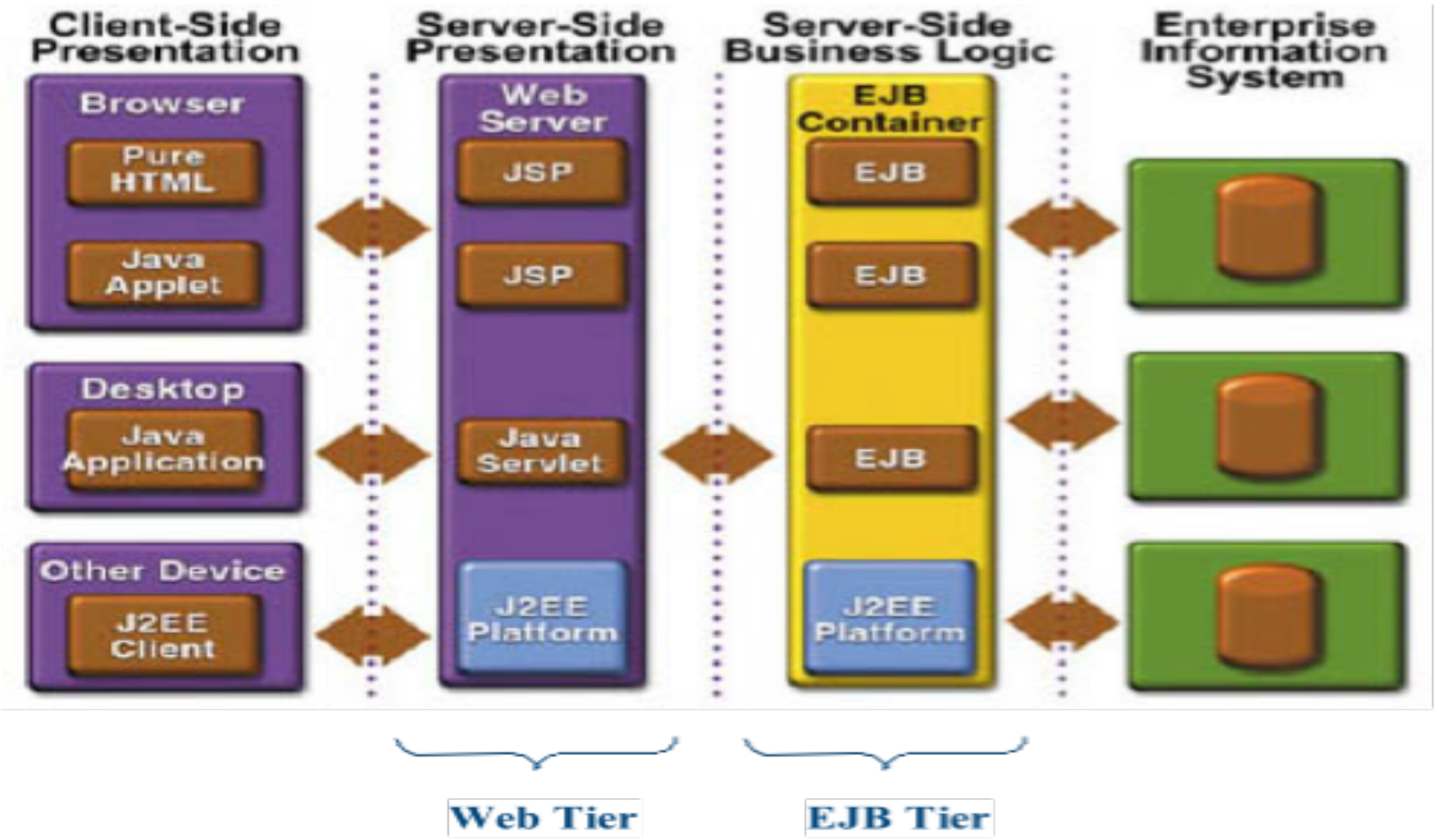
Stateless

Stateful

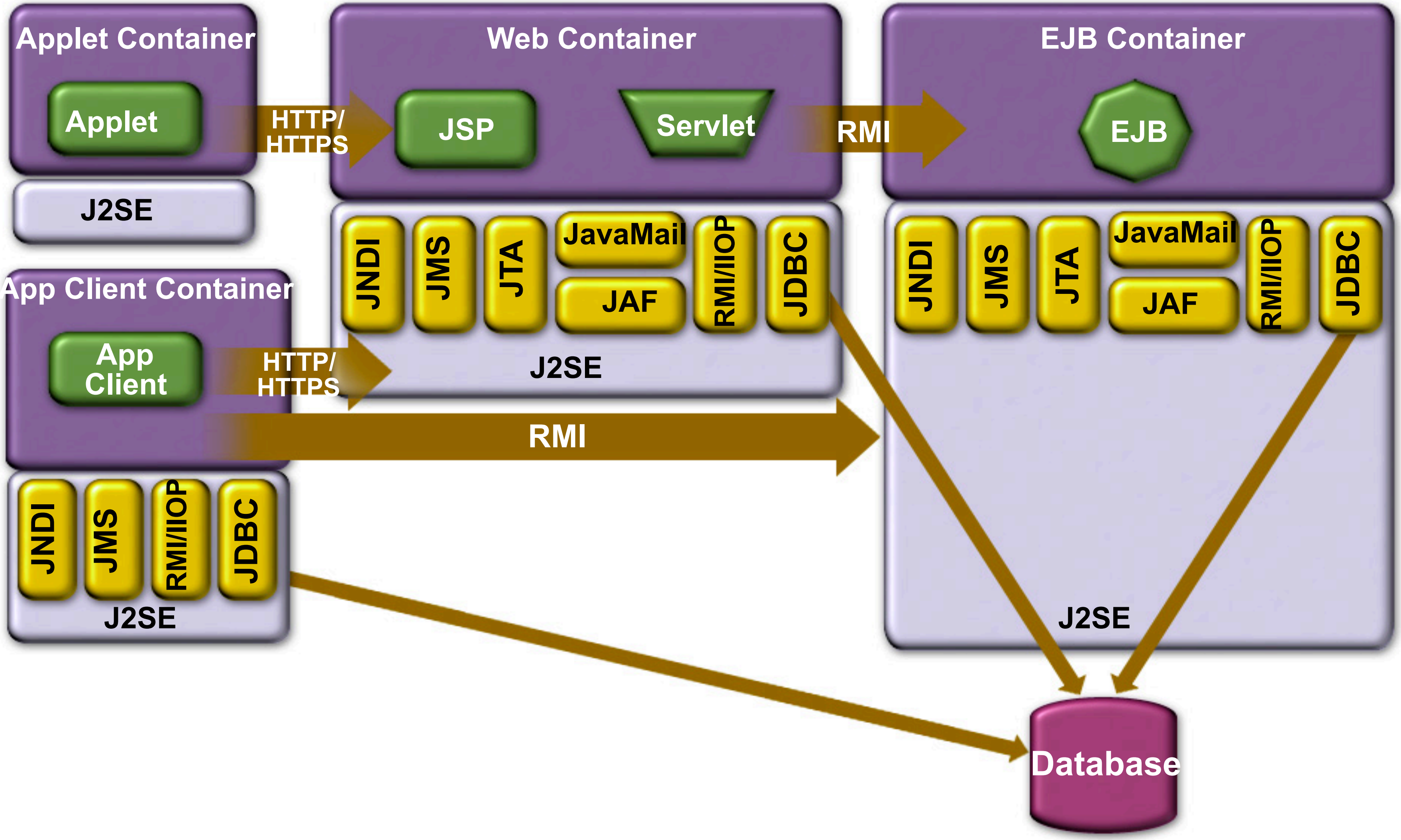
Bean managed Persistence (BMP)

Container managed Persistence (CMP)

N-tier J2EE Architecture



J2EE Containers & Components



Containers Handle

- Concurrency
- Security
- Availability
- Scalability
- Persistence
- Transaction
- Life-cycle management
- Management

Components Handle

- Presentation
- Business Logic

Containers & Components

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- Containers do their work invisibly
  - No complicated APIs
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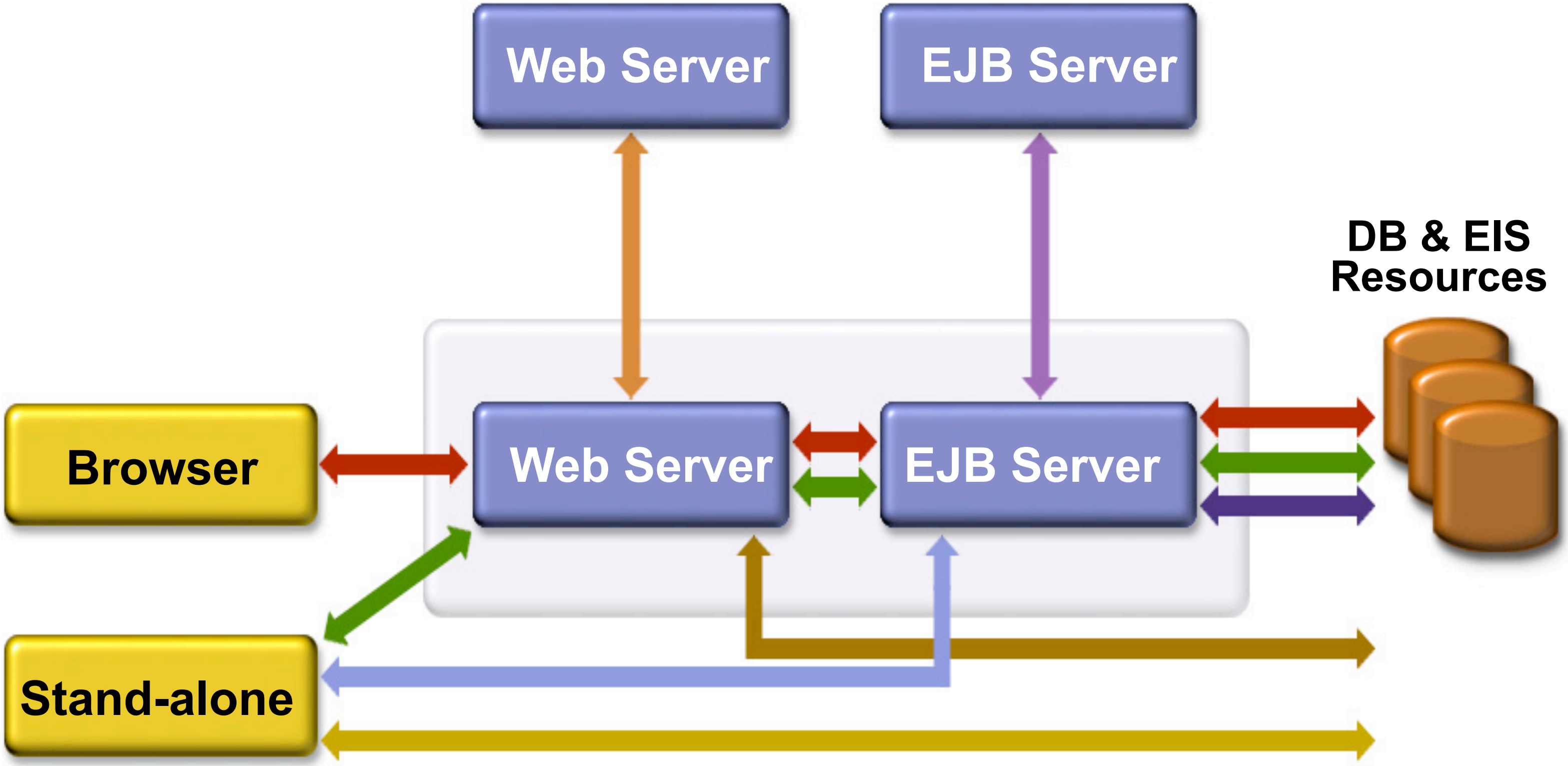
- Containers do their work invisibly
  - No complicated APIs
  - They control by interposition
- Containers implement J2EE
  - Look the same to components
  - Vendors making the containers have great freedom to innovate

Typical J2EE applications



J2EE Application Architectures

- 4-tier J2EE applications
  - HTML client, JSP/Servlets, EJB, JDBC/Connector
- 3-tier J2EE applications
  - HTML client, JSP/Servlets, JDBC
- 3-tier J2EE applications
  - EJB standalone applications, EJB, JDBC/Connector
- B2B Enterprise applications
  - J2EE platform to J2EE platform through the exchange of JMS or XML-based messages

Which One to Use?

- Depends on several factors
  - Requirements of applications
  - Availability of EJB tier
  - Availability of developer resource