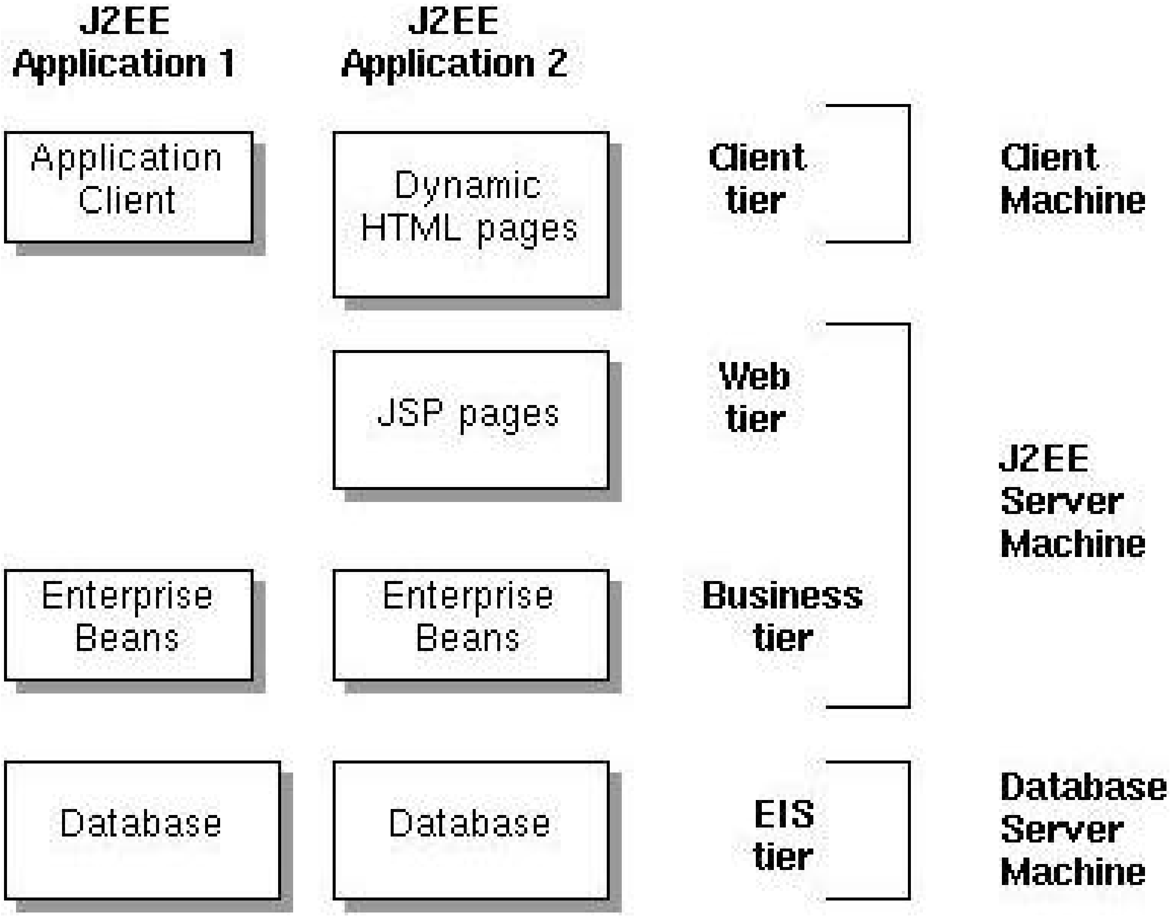
Lecture Notes 8

J2EE

J2EE Specification and Benefits

- Java 2 Enterprise Edition
  - Portable application-server platform
- J2EE specification
  - API support
  - Security
  - Transaction management
  - Deployment processes

Overview of J2EE Architecture



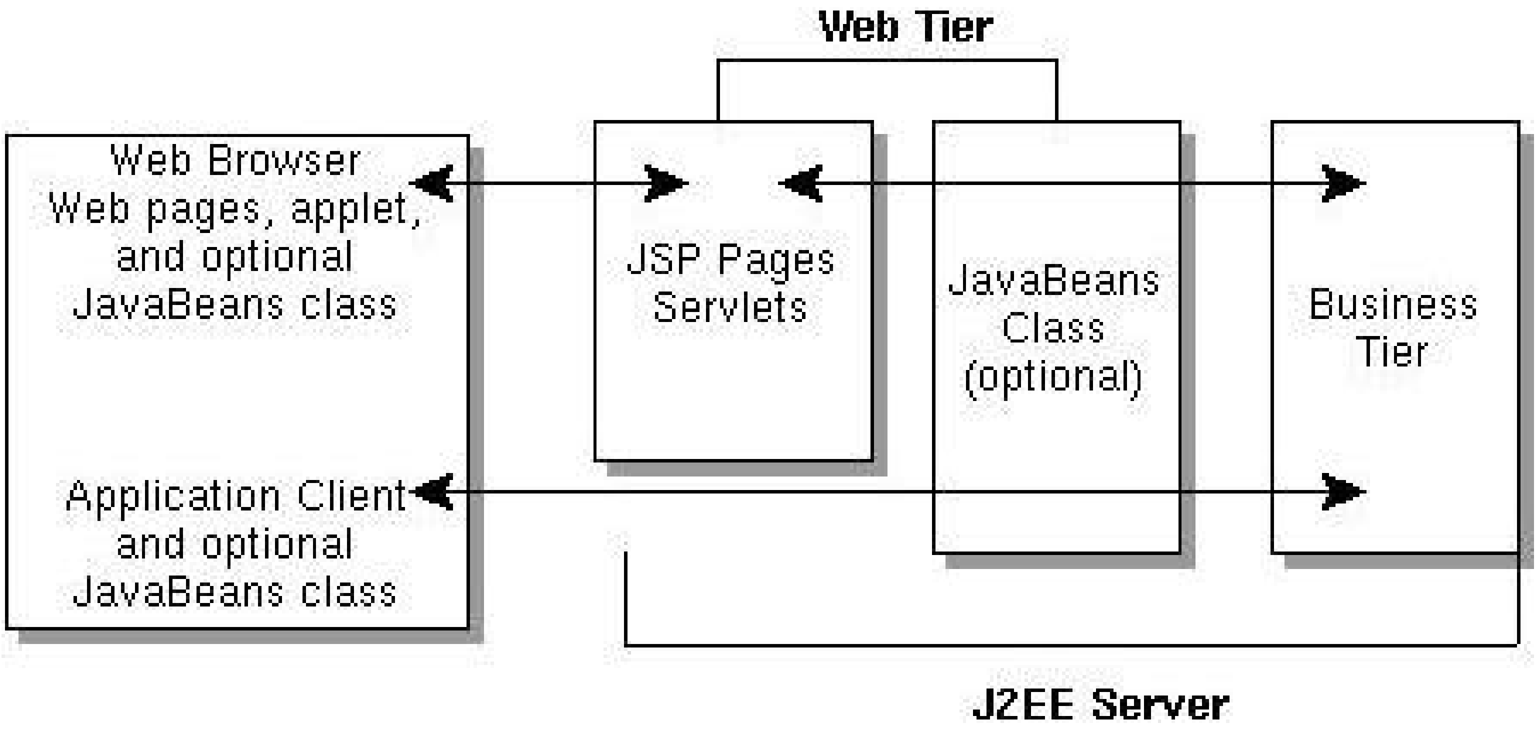
J2EE Specification and Benefits

Required APIs	Web Containers	EJBs
Java Data Base Connectivity(JDBC) 2.0 Extension	required	required
Remote Method Invocation-Internet Inter-ORB Protocol(RMI-IIOP) 1.0	required	required
Enterprise Java Beans(EJB) 1.1	required	required
Servlets 2.2	required	N/A
Java Server Pages(JSP) 1.1	required	N/A
Java Messaging System(JMS) 1.0	required	required
Java Naming and Directory Interface(JNDI) 1.2	required	required
Java Transaction API (JTA) 1.0	required	required
JavaMail 1.1	required	required
Java Activation Framework(JAF) 1.0	required	required

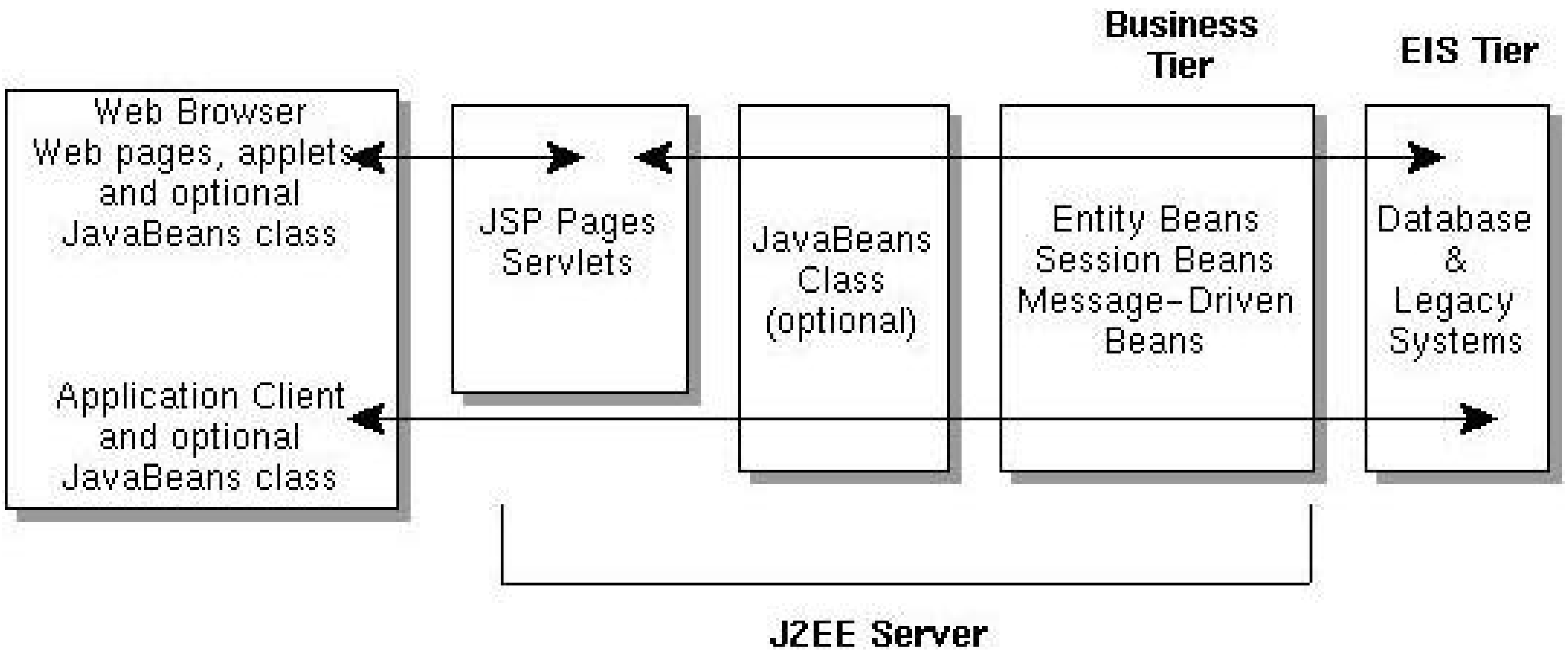
Commercial Application Servers

- BEA WebLogic
- iPlanet Application Server
- IBM WebSphere
- JBoss

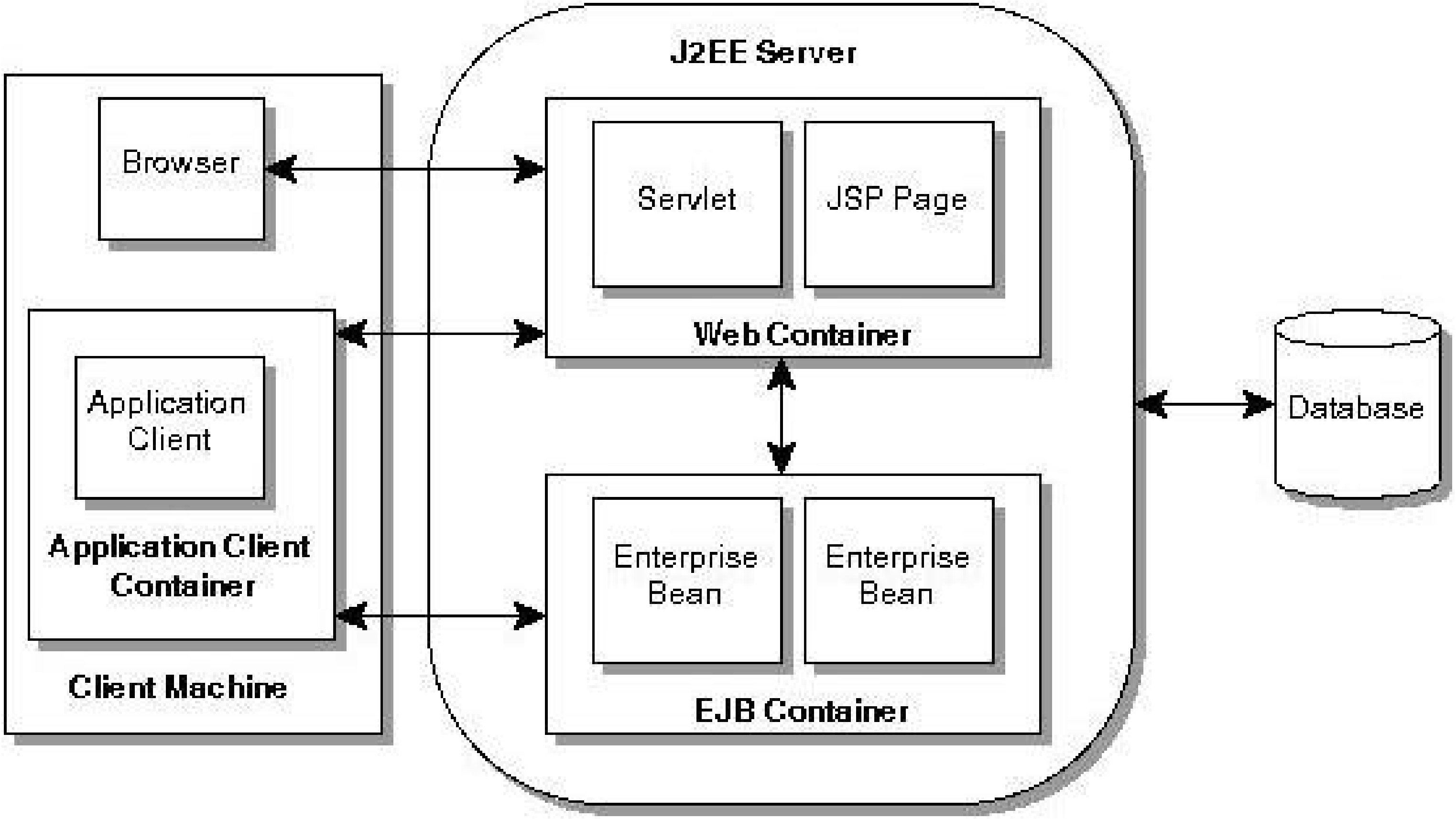
Web and Business Tiers



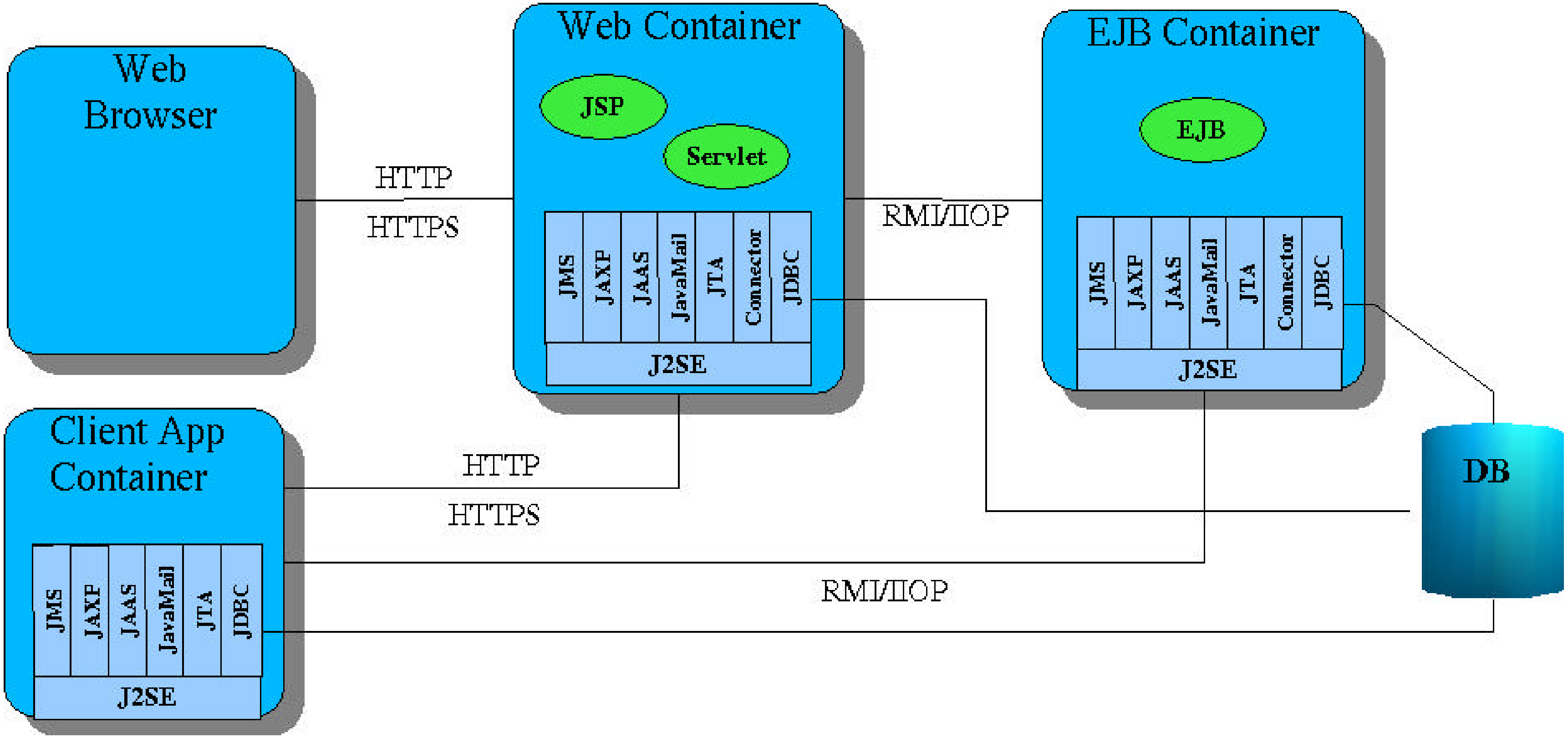
Business and EIS Tiers



J2EE Multitier Architecture



J2EE Multitier Architecture



Installation Notes

- Install J2EE 1.2.1 (to c:\j2sdkee)
- Setup J2EE_HOME and CLASSPATH
  - CLASSPATH=.;C:\j2sdkee\lib\j2ee.jar
  - J2EE_HOME=C:\j2sdkee
- Install Cloudscape (we will use book's version 3.6.4)
  - Copy to C:\j2sdkee\lib\cloudscape
    - C:\cloudscape\frameworks\RmiJdbc\classes\RmiJdbc.jar
    - C:\cloudscape\lib\client.jar
    - C:\cloudscape\lib\cloudscape.jar
    - C:\cloudscape\lib\tools.jar
  - Clients must have tools.jar, client.jar, and RmiJdbc.jar in CLASSPATH (e.g. copy these files to c:\jdk1.3.1\jre\lib\ext or run batch file C:\cloudscape\frameworks\RmiJdbc\bin\setClientCloudscapeCP.bat for every client.

Running J2EE & Cloudscape

- Start DBMS:
  - Cd C:\cloudscape\frameworks\RmiJdbc\bin
  - setServerCloudscapeCP
  - startCS
- Start J2EE
  - Cd c:\j2sdkee\bin
  - Setenv
  - Je22 -verbose

Notes on Examples 3&4 (Transactions)

- Define databases BankABC and BankXYZ:
  - Edit c:/j2sdkee/config/default.properties:

```
jdbc.datasources=jdbc/Cloudscape|jdbc:cloudscape:rmi:CloudscapeDB;create=true|
    jdbc/BankABC|jdbc:cloudscape:rmi:BankABC;create=true|jdbc/BankXYZ|jdbc:clo
    udscape:rmi:BankXYZ;create=true
```

- Create both databases:

```
java -Dij.protocol=jdbc:rmi:jdbc:cloudscape: COM.cloudscape.tools.ij
    transactions.sql
```

- Note: transactions.sql is a batch file with all SQL statements required to setup the desired databases

Notes on Examples 3&4 (Transactions)

- When deploying the example, add these Resource References:
  - Jdbc/BankABC
  - Jdbc/BankXYZ

Notes on Entity EJB Examples

- Define and create database Employees:
  - jdbc.datasources=jdbc/Cloudscape|jdbc:cloudscape:rmi:CloudscapeDB;create=true|jdbc/BankABC|jdbc:cloudscape:rmi:BankABC;create=true|jdbc/BankXYZ|jdbc:cloudscape:rmi:BankXYZ;create=true|jdbc/Employee|jdbc:cloudscape:rmi:Employee;create=true
  - Create DB with employee.sql

Entity EJB – Bean Managed Persistency

- Under **General**:
  - select **Entity** radio button in the **Bean Type** field
- Under **Entity Settings**:
  - Select **Bean-Managed Persistency**
  - Enter the class name for the primary key in the **Primary Key Class** text field:

    java.lang.Integer
- Under **Resource References**, add a reference to the **Employee** database:

  Jdbc/Employee
- Under **Transaction Management**
  - Select **Required** for all desired methods

Entity EJB – Container Managed Persistency

- Under **General**:
  - select **Entity** radio button in the **Bean Type** field
- Under **Entity Settings**:
  - Select **Container-Managed Persistency** and check the boxes of objects that you wish to include
  - Enter the class name for the primary key in the **Primary Key Class** text field:

    java.lang.Integer
  - Select the **Primary Key Field Name**:

    employeeID
- Under **Resource References**, add a reference to the **Employee** database:

  Jdbc/Employee
- Go to main deployment tool screen and select the newly created EJB. Click on the **Entity** tab and then **Deployment Settings**:
  - Enter **Database JNDI Name**: jdbc/Employee
  - Then, **Generate SQL Now**