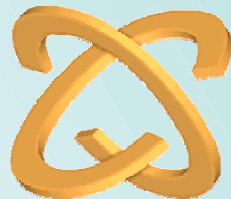


Managing Enterprise Business Information with Web and Java Technology



Connection Concepts Inc.

Business Uses of Information

Effective AND Efficient Management of Information Drives Business Success

Internal
Local Office

- ◆ Sales
- ◆ Manufacturing
- ◆ Shipping
- ◆ Accounting
- ◆ Financial Anal.
(OLAP)

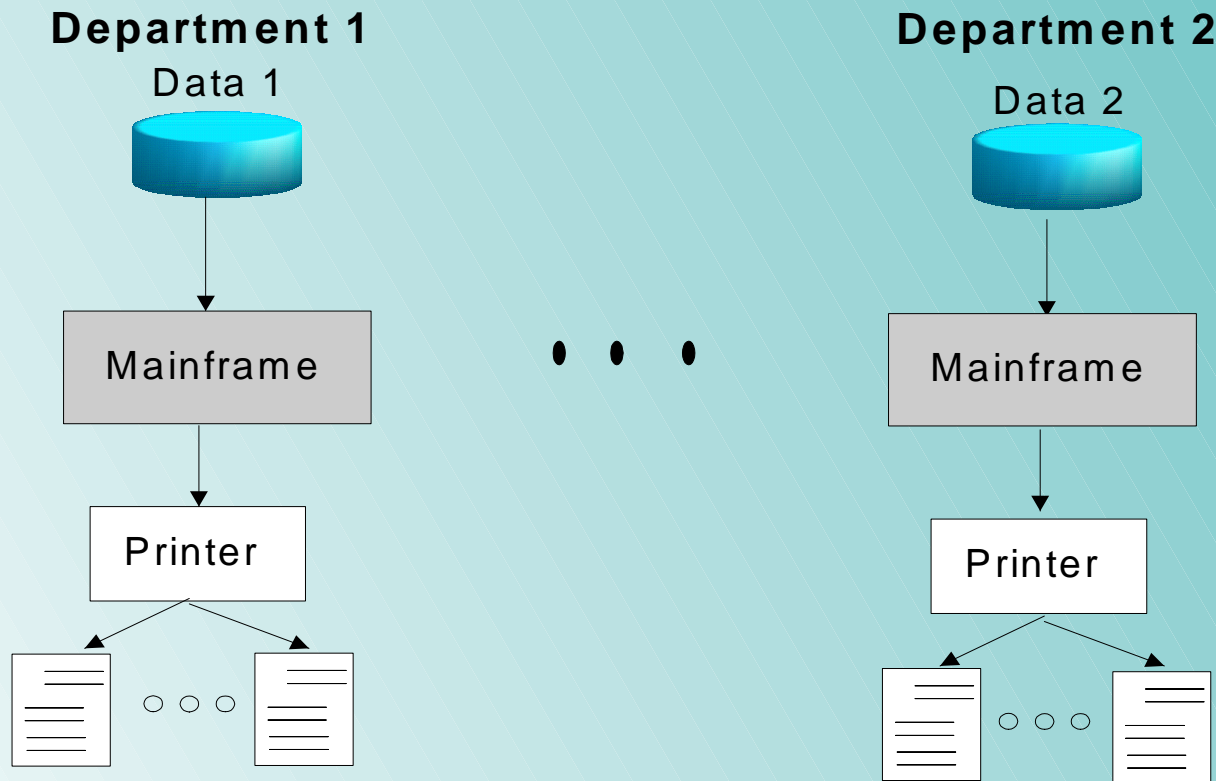
Bus. To Bus.
Remote Office

- ◆ Supplier Support
- ◆ Ordering Supplies
- ◆ Distribution Support

Bus. to Consumer
General Public

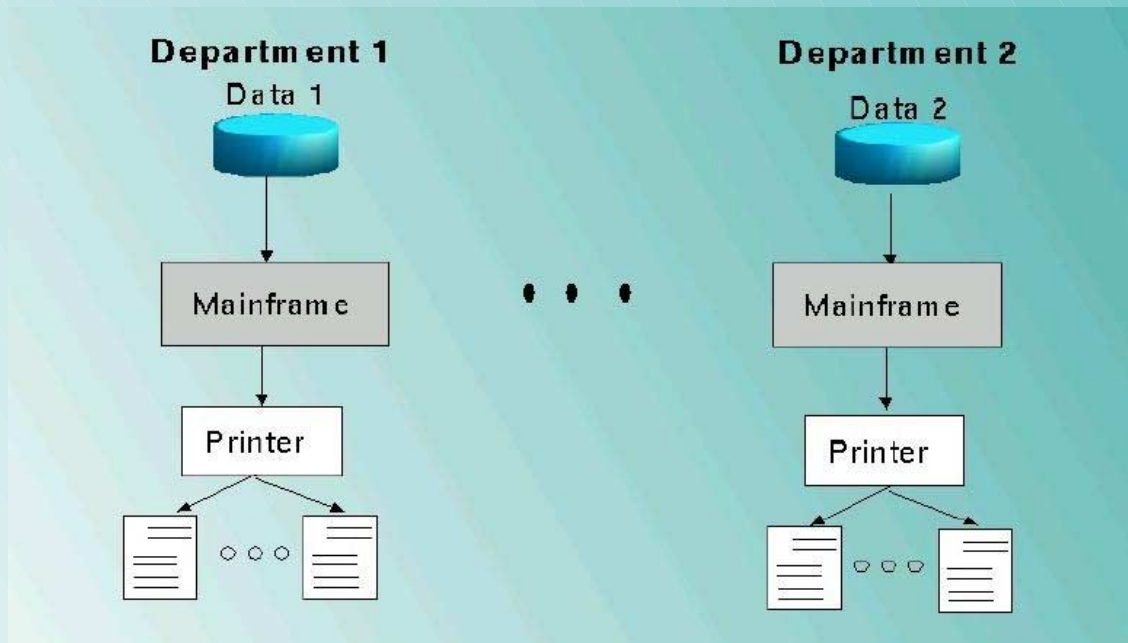
- ◆ Ordering
- ◆ Service
- ◆ Payment

Past Information Management Paper Distribution



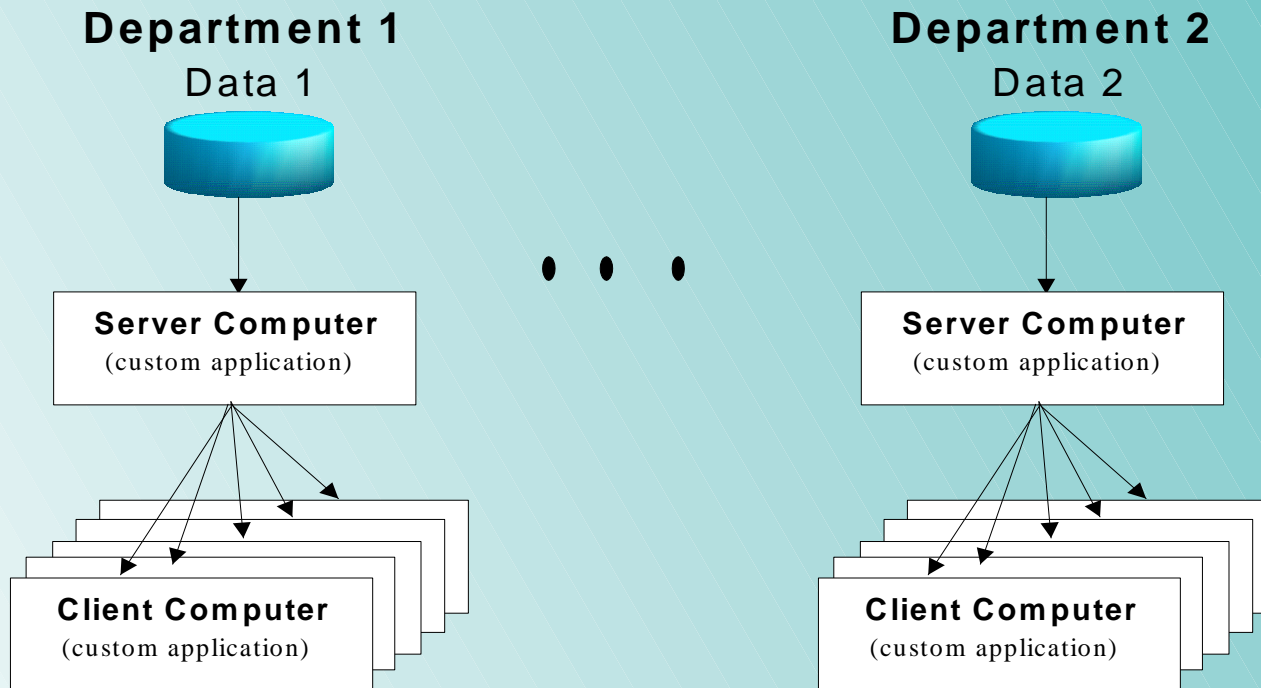
Past Information Management

Paper Distribution: features

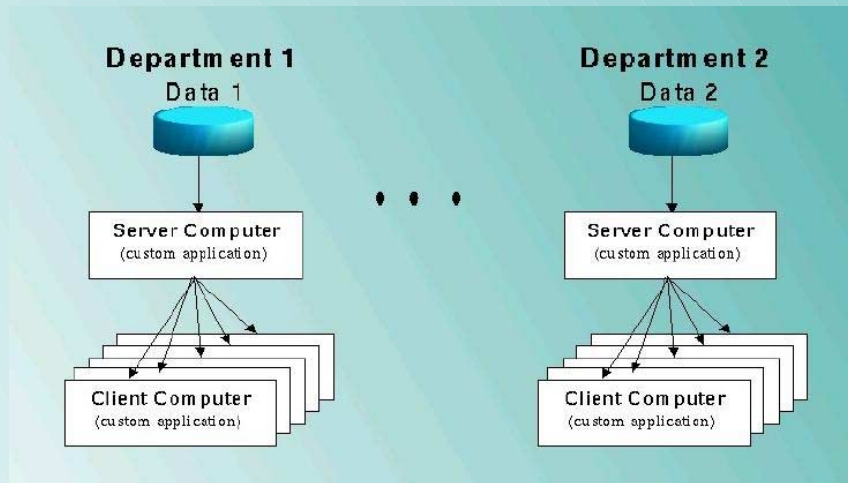


- ◆ Slow
- ◆ expensive
- ◆ data not current
- ◆ Read only
- ◆ Data NOT available to all who need it

Recent Information Management Client - Server



Recent Information Management Client - Server: features

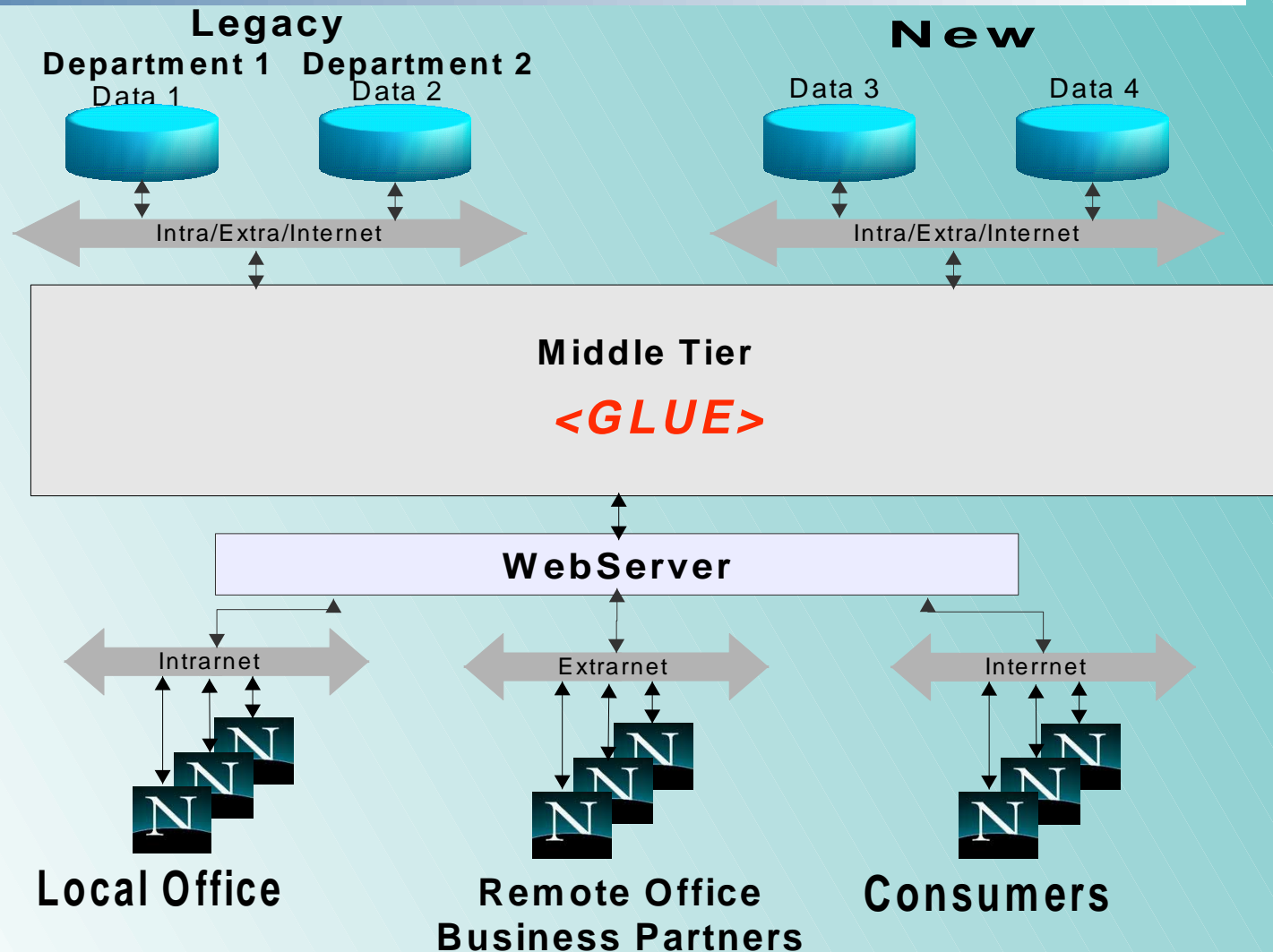


Better than paper distribution, but:

- ◆ Requires special client software
- ◆ Requires special client - server connection
- ◆ Data processing and presentation software tightly coupled
- ◆ Developed for specific platforms

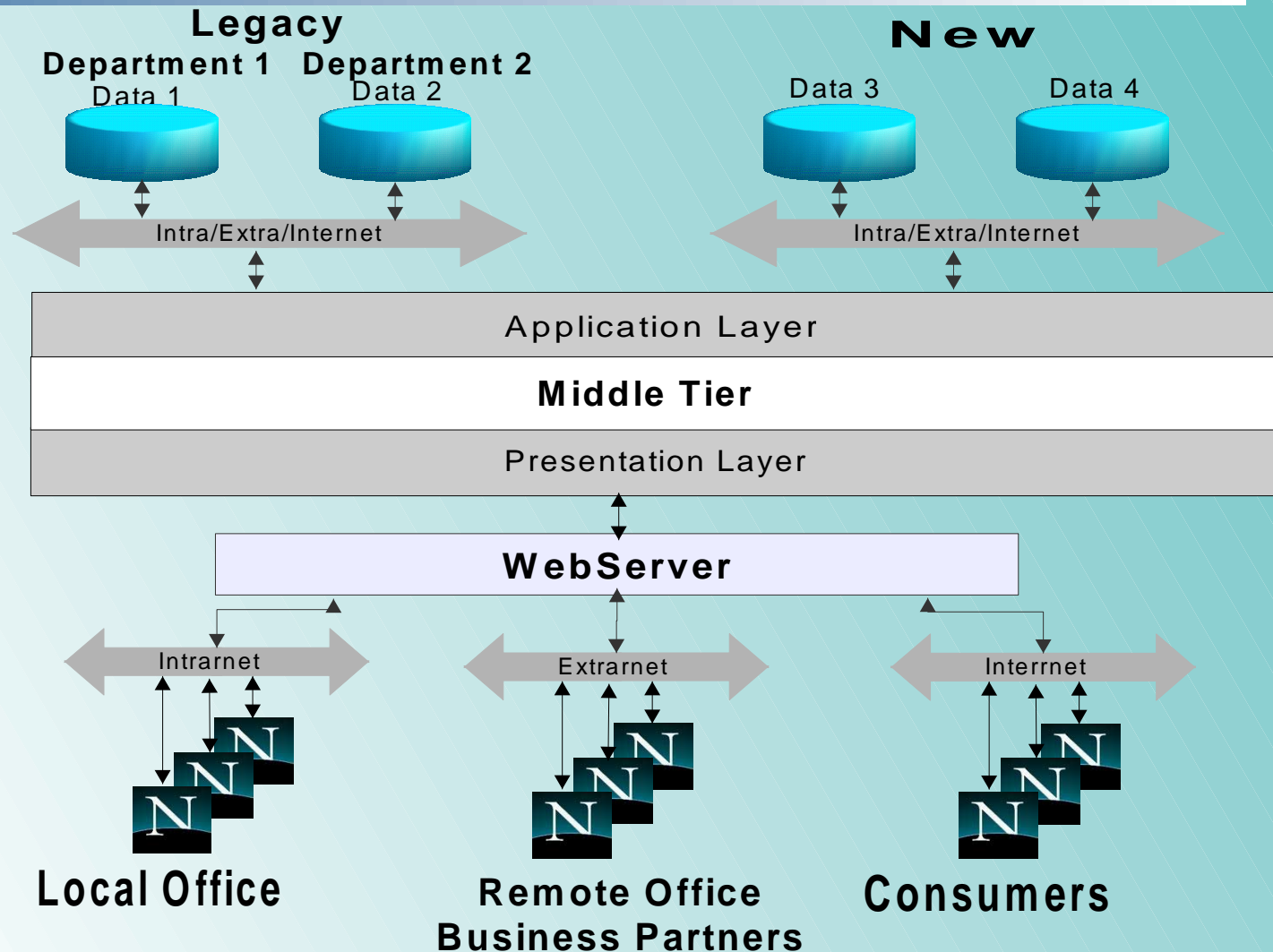
Information Management Today

Web-Based



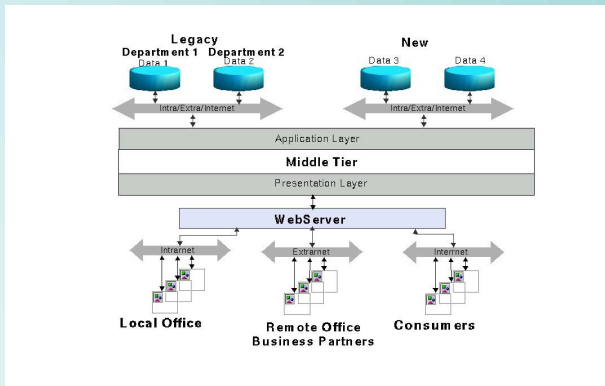
Information Management Today

Web-Based



Information Management Today

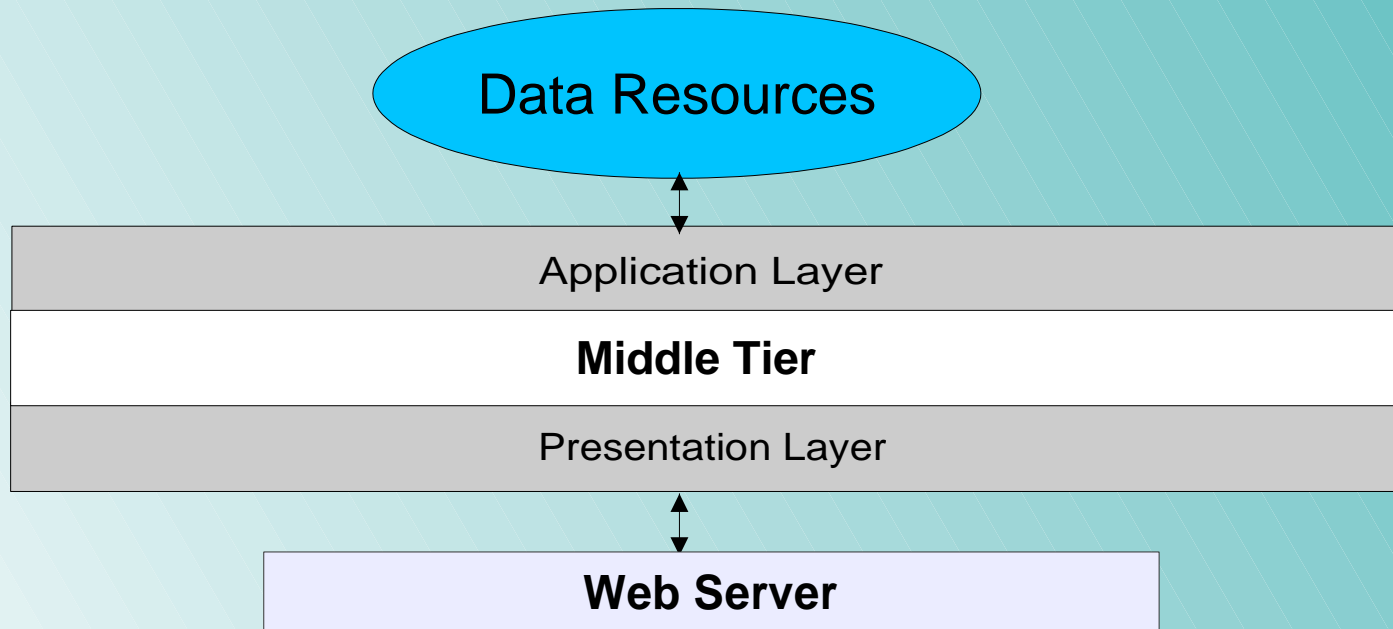
Web-Based: Features



Web becomes standard communication channel available to all with computer, browser and network access

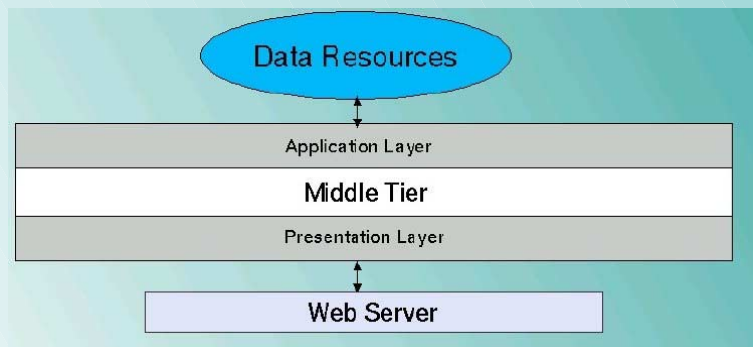
- ◆ Fast
- ◆ Data is Current
- ◆ Cost Effective
- ◆ No Special Connection
- ◆ Access Controlled
- ◆ Interactive
- ◆ Easy to Reach All Users
- ◆ No Special Client Software

"Glue" - Middle Tier



Middle Tier Provides the "Glue" that Connects
the Data to the Web Server

"Glue" - Middle Tier Requirements



Middle Tier should be built using the optimum computer language

- ◆ Modern, Object Oriented (OO) Language
Modular Design
- ◆ Standards Based
- ◆ Platform Neutral (Hardware, Operating System)
- ◆ Built In Web Support

"Glue" - Middle Tier Requirements (continued)

- ◆ Built in Support for Database Connectivity
- ◆ Built in Support for Common Operations
 - ◆ Internet/Networking
 - ◆ Parallel Processing (threads)
 - ◆ Memory Management (garbage collection)
- ◆ Ability to Connect to Pre-existing (Legacy) Systems, probably *not* written in Java
- ◆ Security

"Glue" - Middle Tier Requirements (continued)

Enterprise Support

- ◆ Scalability
 - ◆ resource pooling
 - ◆ load balancing
 - ◆ cacheing
- ◆ Reliability
 - ◆ Failover
 - ◆ Transaction Processing
- ◆ *Distributable* over multiple hosts in different locations
- ◆ *Communication* over multiple hosts in different locations

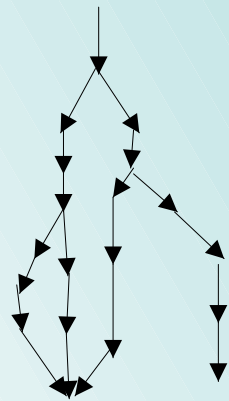
The Winner: Java Modern

- ◆ Modern ✓
 - ◆ *Modern* - Java was based on previous Object Oriented languages, C++, Smalltalk...
 - ◆ Hindsight is 20/20 - Java was able to improve previous shortcomings (inherently object oriented, no multi-inheritance, auto. Memory management..)

The Winner: Java Object Oriented

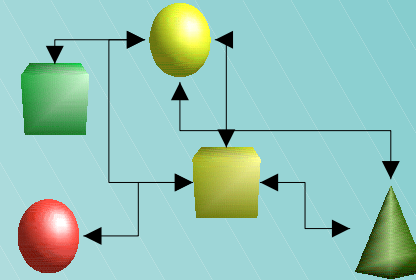
- ◆ Object Oriented (OO) Language ✓
*What is an Object Oriented language and
Why should you care?*

Procedural



C, Cobol, Fortran...
a set of operations are
performed in sequence

Object-Oriented



C++, Smalltalk

Objects are software components that have
properties and perform operations. Sets of
objects interact to execute a program.

The Winner: Java Object Oriented

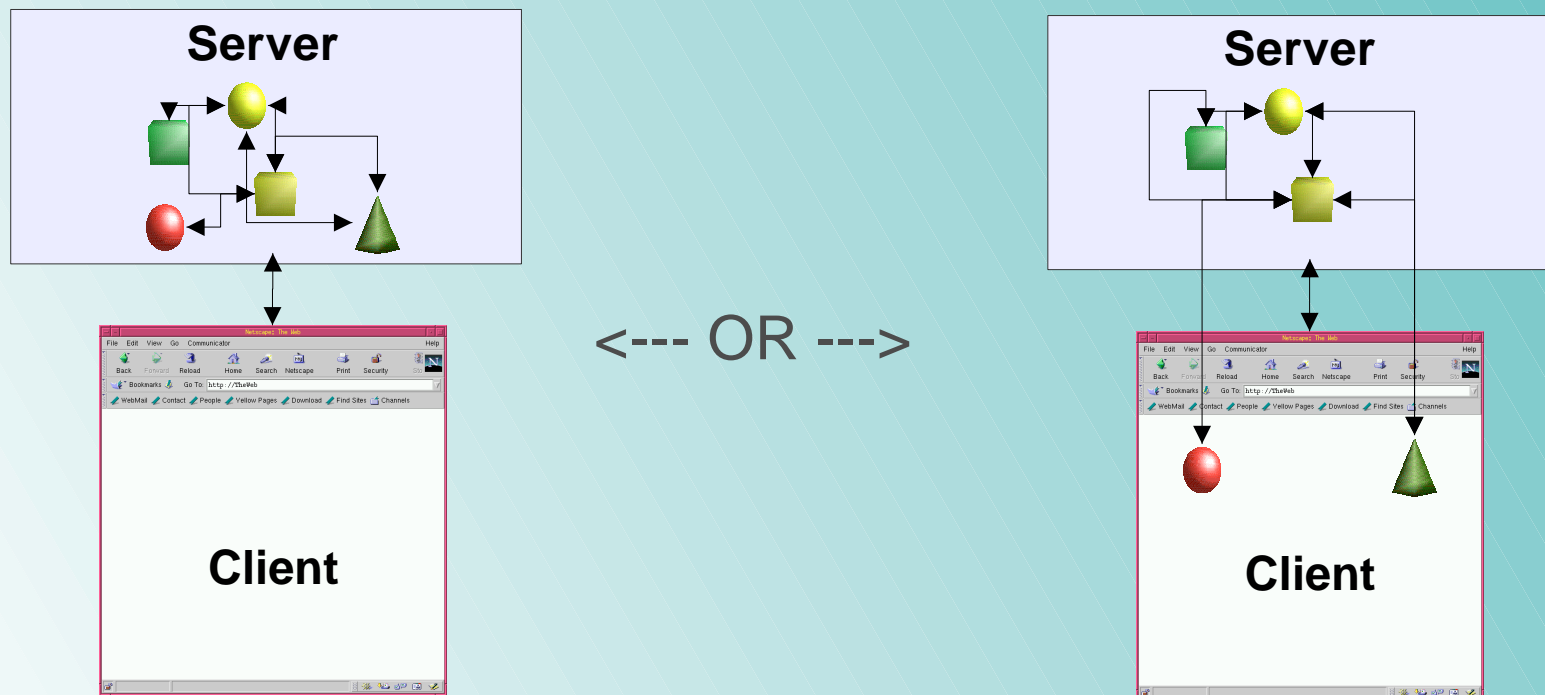
Object Oriented (OO) Software Advantages

- ◆ Easier (Faster - Cheaper) Development especially for more complex designs
 - ◆ Inherently Modular - conceptually and organizationally easier to deal with
- ◆ More Powerful and Flexible Designs
- ◆ Easier to Maintain and Modify
- ◆ Software Components (Objects) can be Re-Used
- ◆ Objects can be Redistributed

The Winner: Java Object Oriented

Object Oriented (OO) Software Advantages

- ◆ Objects can be Redistributed - flexibility, scalability



The Winner: Java

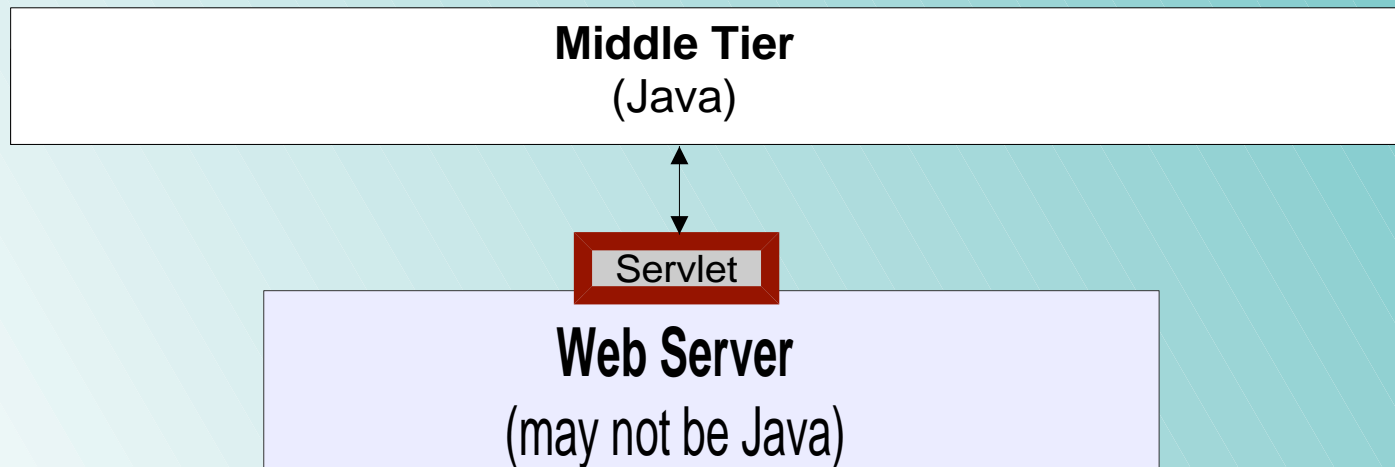
Standards Based, Platform Neutral

- ◆ Standards Based ✓
- ◆ Platform Neutral (Hardware, Operating System) ✓
 - ➔ Java has emerged as one of the premier languages for new software development
 - ➔ Heavily supported by IBM, Oracle, Sun, HP, Software Tool makers
 - ➔ Runs well on all major platforms, Unix, Windows and Mac

Businesses are Free to Choose

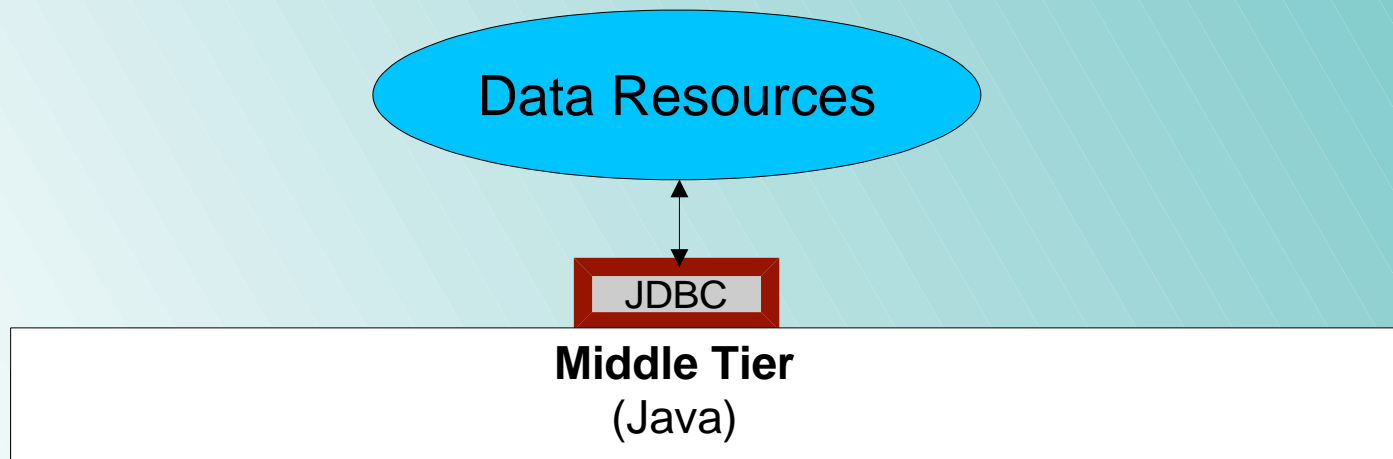
The Winner: Java Web Based

- ◆ Web Based ✓
 - ◆ Servlets - Layer that connects generic (non-Java) Web Servers to Java Middle Tier
 - ◆ Java Server Pages (JSP) - Integrates Java Software with standard HTML layouts



The Winner: Java Database Connectivity

- ◆ Built in Support for Database Connectivity ✓
- ◆ JDBC - Java Database Connectivity
 - ◆ Drivers available for all major databases
 - ◆ Database Vendor can be changed by changing one line of Java code that specifies the DB Driver



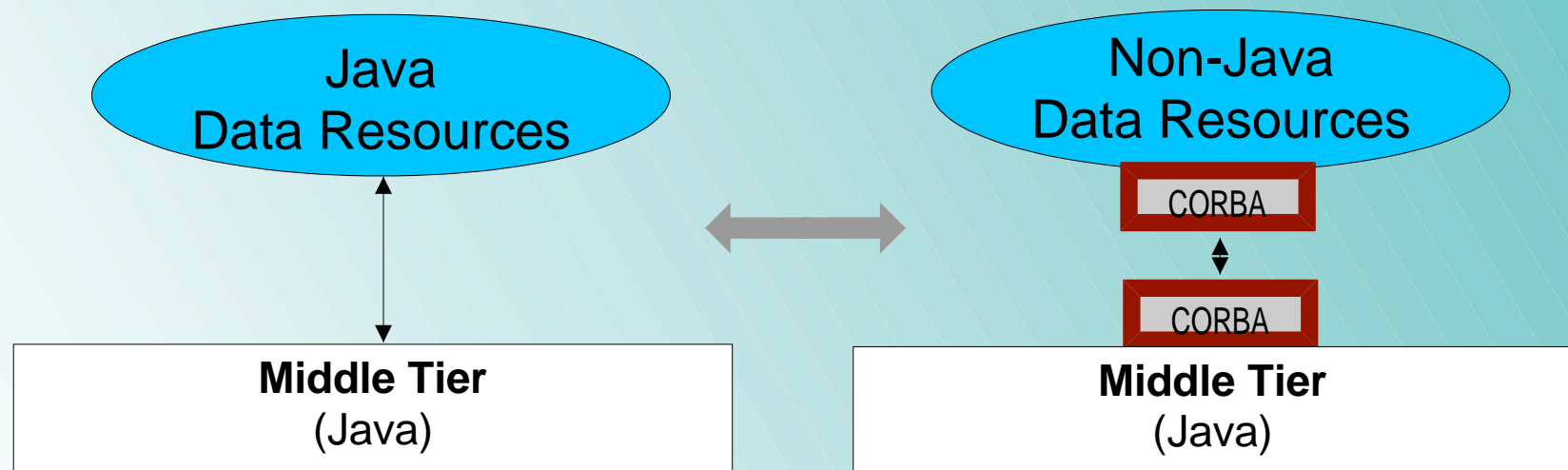
The Winner: Java

Support for Common Operations

- ◆ Built in Support for Common Operations ✓
 - ◆ Internet/Networking
 - ◆ HTTP (Web Protocol)
 - ◆ Email
 - ◆ Sockets
 - ◆ Distributed Objects (CORBA, RMI)
 - ◆ Parallel Processing (threads)
 - ◆ Memory Management (garbage collection)
 - ◆ automatic garbage collection
 - ◆ no pointers - improves simplicity, code management

The Winner: Java Non-Java Connectivity

- ◆ Built in Support for Legacy (Non-Java) Connectivity ✓
 - ◆ Explicit Support:
CORBA (Common Object Request Broker Architecture)
 - ◆ Implicit Support
EJB (Enterprise Java Beans) - built on top of CORBA



The Winner: Java Security

- ◆ Security ✓
 - ◆ Server Side: SSL (Secure Socket Layer) Support
 - ◆ Client Side: Applet Sandbox
 - Applet can only interact with an isolated part of client machine

Enterprise Support Application Servers

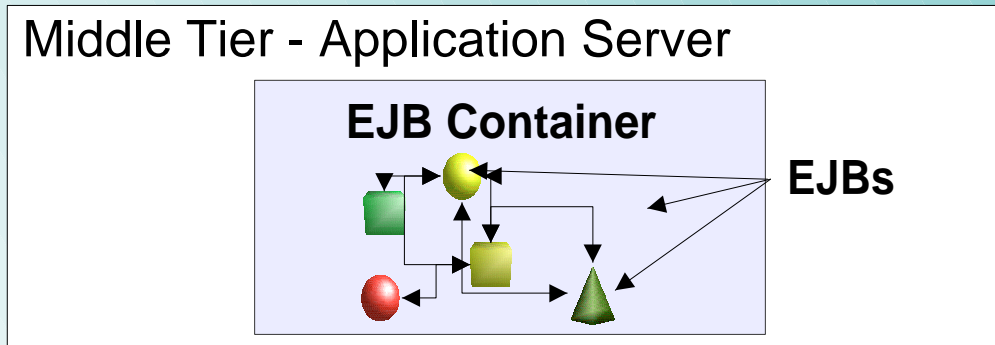
Commercially available *Application Servers*

- ◆ Implement the *Application Layer* of the Middle Tier
- ◆ Handle standard Enterprise requirements
 - ◆ Scalability
 - ◆ Reliability

Enterprise Support

Enterprise Java Beans (EJB)

- ◆ *Enterprise Java Beans* (EJB) provide a Standard Framework for Implementing Enterprise Java Applications
- ◆ Commercial EJB compliant Application Servers provide a Container to Manage Custom Components (objects) written to be EJB compliant:
Enterprise Java Beans



Enterprise Support

Enterprise Java Beans (EJB)

Enterprise Java Beans - Scalability

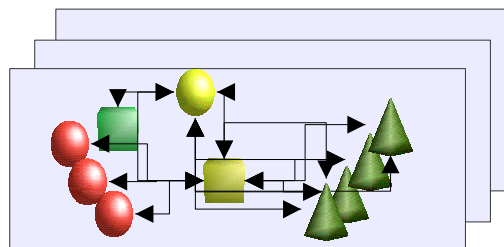
- ◆ Resource Pooling/Cacheing
(e.g. DB Connections, Heavily Used Objects)
- ◆ Load Balancing/Clustering over
 - ◆ Machines
 - ◆ Processes

Distributable:

Communication thru

- ◆ CORBA
- ◆ JNDI
(Naming and Directory Service)

Middle Tier Application Server



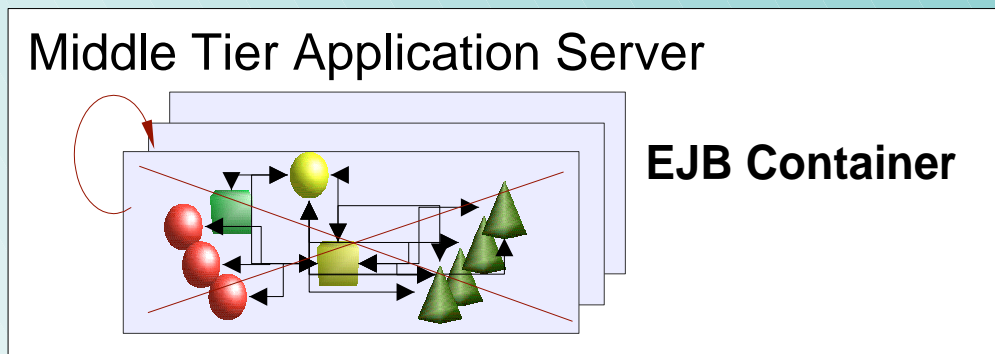
EJB Container

Enterprise Support

Enterprise Java Beans (EJB)

Enterprise Java Beans - Reliability

- ◆ Failover - If one Machine Fails, Others will be Used Automatically



- ◆ Transaction Processing - "All or Nothing"
Transfer Example: Money is not taken out of Savings Account if it can't be put into Checking Account

Managing Enterprise Information Summary

- ◆ Effective and Efficient Use of Enterprise Information is Critical to Business Success
- ◆ The Web can be used for (nearly) Universal, Timely, Interactive Information Distribution
- ◆ Enterprise Java Technology Provides the "Glue" to Connect Enterprise Data Resources with The Web