



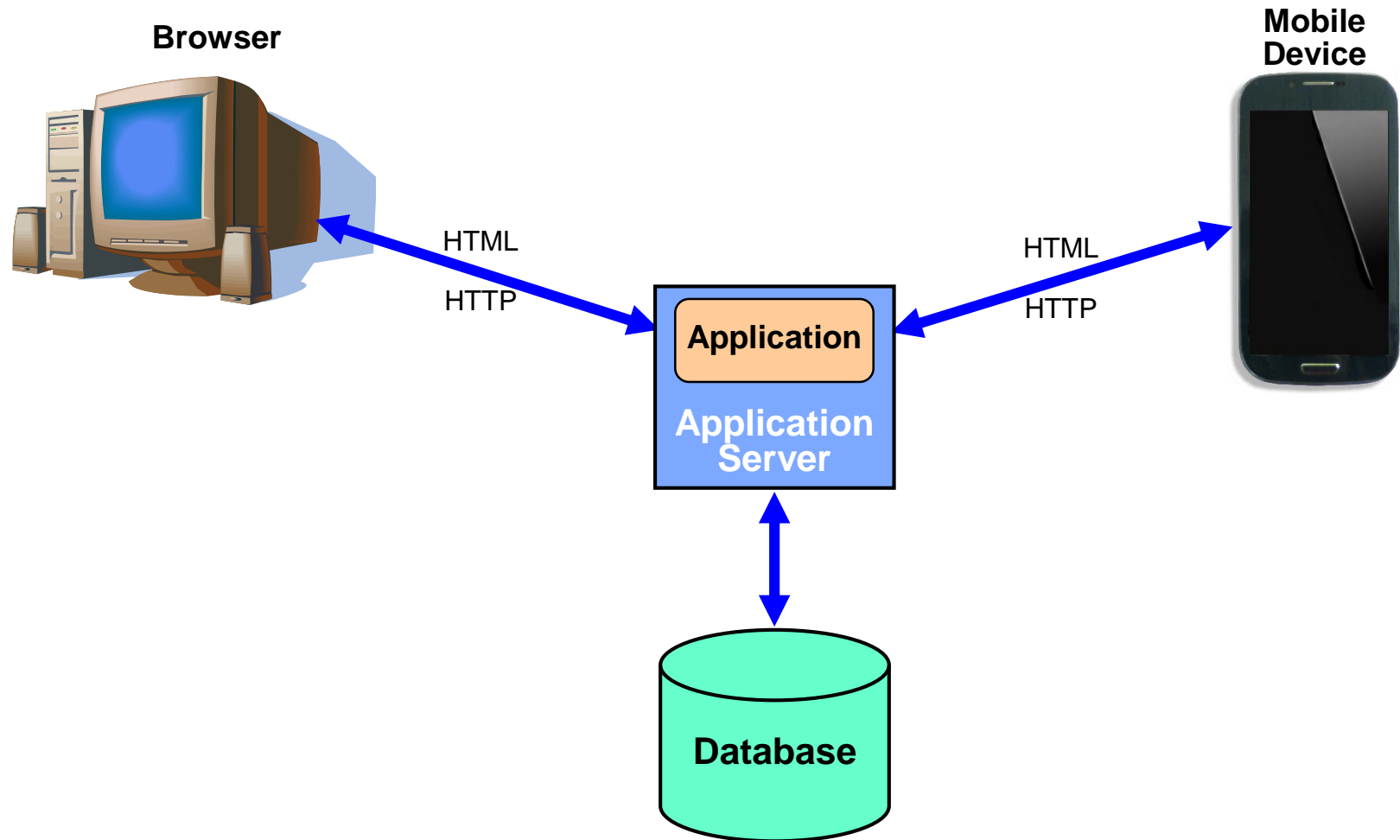
WebSphere Puts Business in Motion

**Race Past the Competition
with WebSphere**

Why was the Application Server Invented?

To support applications that can be accessed across the internet with a browser

An Application Server Creates the Infrastructure to Run Your Application

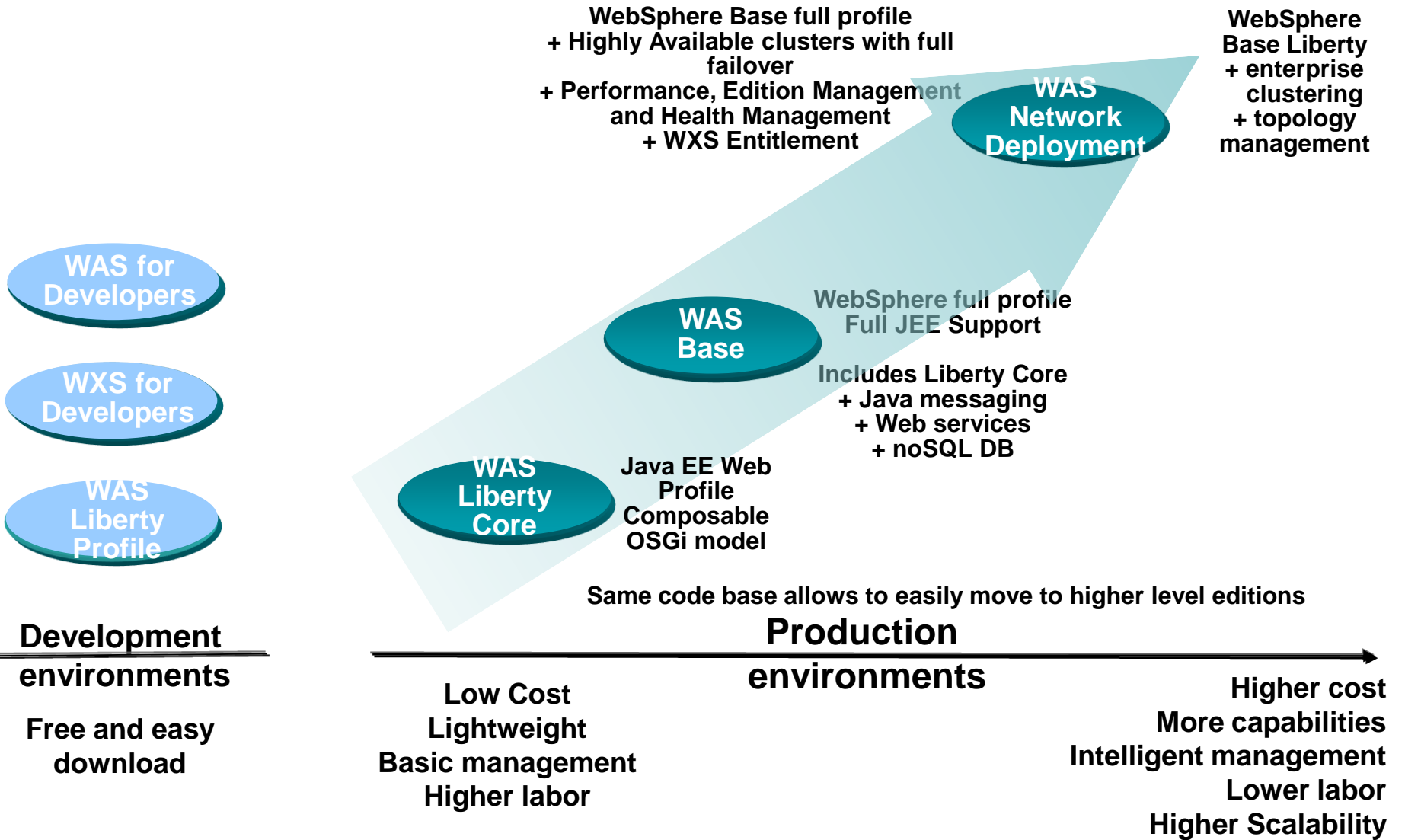


An Explosion of Commerce, Mobile, Social, and Cloud Applications is Driving **New** Demands on Middleware

- Developers need a server that is lightweight, quick, and easy to configure
- Transaction Integrity is as important as ever
- Customers expect high reliability and responsiveness for Web applications
- Solutions need to be cost effective

Only IBM WebSphere can do all of these!

The WebSphere Application Server (WAS) Family has Several Editions at Various Price Points



We need a application server that is lightweight, has fast startup, and is easy for our developers to use for testing.



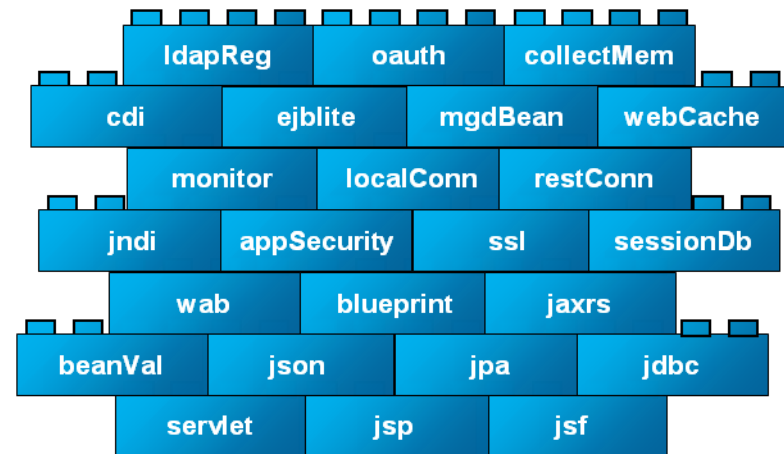
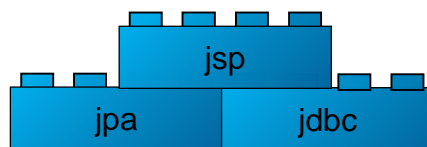
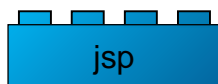
Development Manager

WebSphere Liberty Profile is fast, easy, and flexible!



IBM

Liberty Profile has a Highly Composable Runtime with Just the Features You Need



Out of the Box

- jsp only
- Add only the features you need!
- Features can be added dynamically

Custom Example

- jpa and jdbc added to jsp in this example

Complete Liberty Core Feature Set

- Java EE Web Profile
- Enterprise JavaBeans 3.1 Lite
- Interceptors 1.1
- Managed Beans 1.0
- Contexts and Dependency Injection

Tomcat only supports jsp's and servlets
JBoss supports fully JEE profile however it is not lightweight or composable

DEMO: Deploying WebSphere Liberty and an Application is Fast and Easy

Friendly Plants Plants by WebSphere
http://localhost:9080/FPlantsWeb/ IBM CPO

Flowers | Fruits & Vegetables | Trees | Accessories

HOME : S

Gardens of Summer

They all start with the right flowers...
and we've got them all



Tips	Specials	
Preserve extra grass seed by keeping it dry. Tape boxes and bags closed, or seal them into plastic bags. Be sure to remove extra air from the bags. Store all seed in a cool, dry area such as a garage or basement.	 Bonsai Tree \$30.00 each	 Red Delicious Strawberries \$3.50 (50 seeds)

Flowers : Fruits & Vegetables : Trees : Accessories
Home : Shopping Cart : My Account : Login : Help

Race Past the Competition with WebSphere

WebSphere Application Server v8.5.5 Includes Liberty Profile

What Liberty Means For Developers

Incredibly fast start time

Small download size

Lightweight runtime with small memory footprint

No license fee for development use

Same reliable containers and programming models as WAS

Liberty applications can be applied to full WAS with no changes

Popular Development Platforms:
Linux, Windows, OS X

Simplified server configuration: one XML file, or several, to make sharing and reuse easy

What Liberty Means For Production

Simple Configuration Model:
deploy using XML configuration from development environment

Simple Deployment Model: zip the server+application+configuration, then unzip to install and deploy

Adding features or updating the configuration does not require restarting the server

Elastic Caching is supported with WebSphere Extreme Scale

Liberty is shipping in IBM Products, included with Worklight, embedded in CICS Transaction Server 5.1, and all WebSphere Editions

High performance at low cost!

Aren't all application servers alike? Why not use an open-source server that's free?



**Service Oriented Finance
CIO**

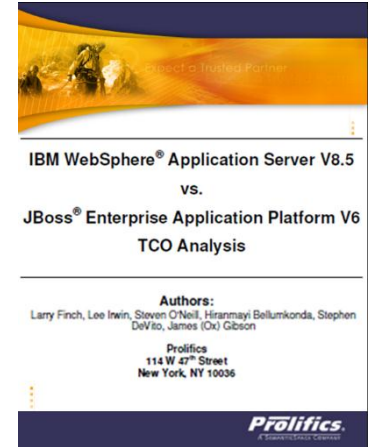
Open source has no license fee, but there are other costs and risks to consider.



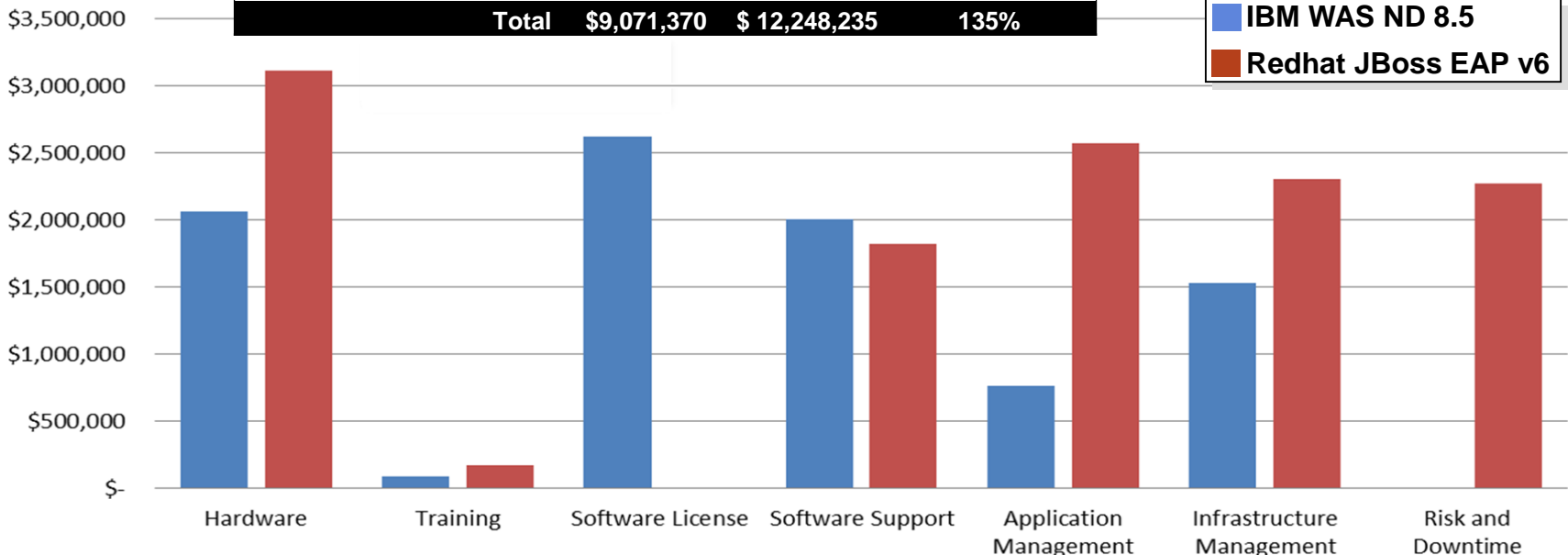
IBM

Prolifics Study Shows JBoss is 35% More Expensive than WAS ND for Five Year TCO

“While the easiest and most obvious costs to calculate are acquisition costs, often overlooked are the far-reaching effects that your choice of application server can have on other costs such as management, administration, training, hardware and opportunity costs due to unexpected downtime.” --Prolifics



TCO Category	IBM	Red Hat	RedHat as % of IBM
Hardware	\$2,060,934	\$ 3,114,308	151%
Training	\$ 84,375	\$ 171,998	204%
Software License	\$2,623,920	\$ -	0%
Software Support	\$2,008,815	\$ 1,821,316	91%
Application Management	\$ 759,492	\$ 2,570,500	338%
Infrastructure Management	\$1,533,834	\$ 2,301,566	150%
Risk and Downtime	\$ -	\$ 2,268,548	n/a
Total	\$9,071,370	\$ 12,248,235	135%



Race Past the Competition with WebSphere

IBM Offers Superior Support for Mission-Critical Applications

IBM Software Subscription and Support¹ delivers:

- Product [upgrades](#) — new releases and new versions
- Phone and online [Technical Support](#)

With IBM Software Subscription, you get:

- Access to new releases and versions of your licensed IBM software
- Optional alerts to tell you when new releases, versions, and new technical support information becomes available

With IBM Technical Support, you get:

- Responsive, cross-platform software technical support—around the clock and around the world
- 24x7 online technical support, including self-help and search
- Voice support for new deployments, migration, and code-related questions

Open Source solutions require paid support!

- VMware support covers core product only, not extensions

¹ IBM [Software Subscription and Support](#) site

WebSphere Application Server Liberty Core Edition Reduces Costs Even Further

- Simple, lightweight and **low-cost** WAS edition
 - ▶ Alternative to open-source with WebSphere qualities of service, including Transaction Integrity
- JEE Web profile with Liberty extensions only (not full-profile WAS)
 - ▶ Servlet, JSP, JSF, etc.
- Ideal for ISVs and enterprise customers wanting lightweight application servers for development and production deployment
 - ▶ Easily embeddable (zip and go)
 - ▶ Extensible via Liberty Extensions SPI
- Applications written for Liberty Core will run on full-profile WAS / Liberty with no changes
 - ▶ Clear migration path up the stack gaining programming models, management, resiliency, scalability



We had a power outage at one of our data centers. Our open-source servers did not recover transactions, so now we have to fix thousands of orders manually!

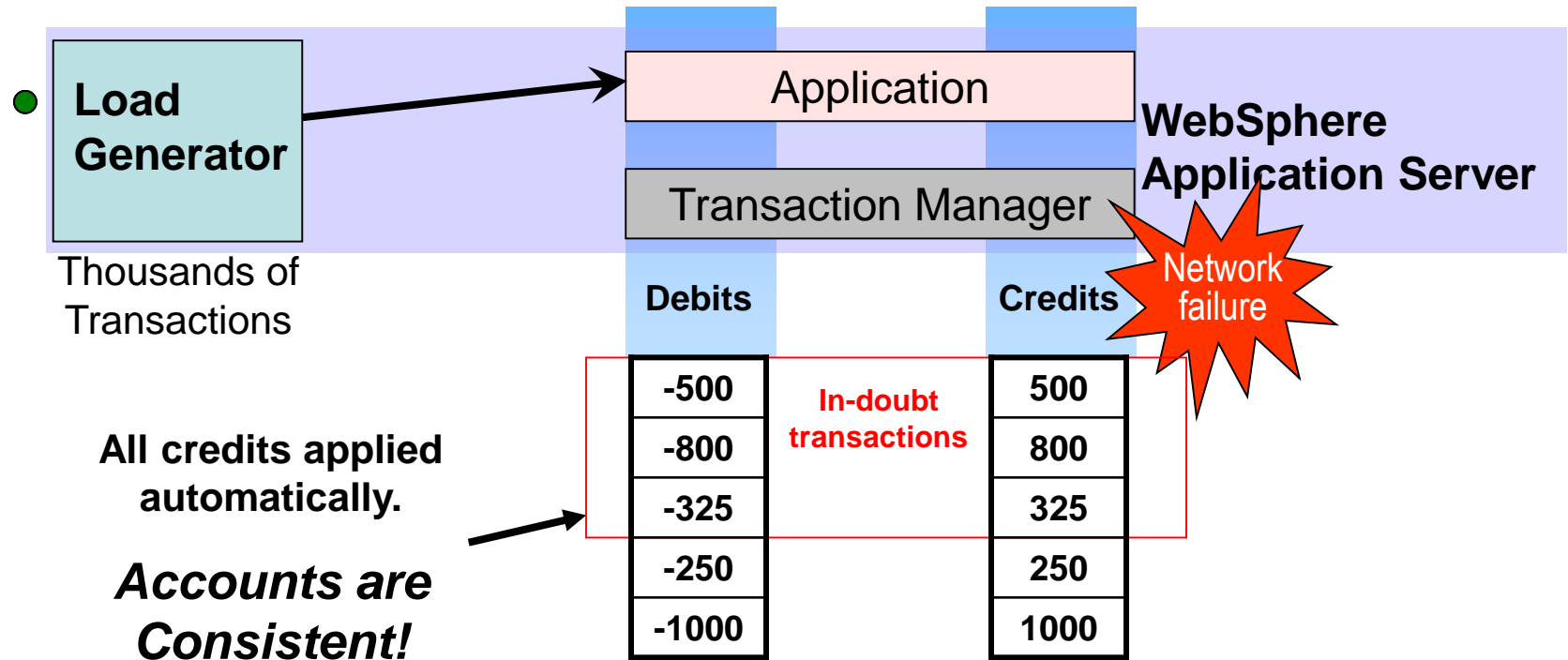
I guess I won't make it home for dinner tonight.

**Service Oriented Finance
Data Center Manager**

WebSphere Recovers Automatically from Network Failure

Enterprise requirements:

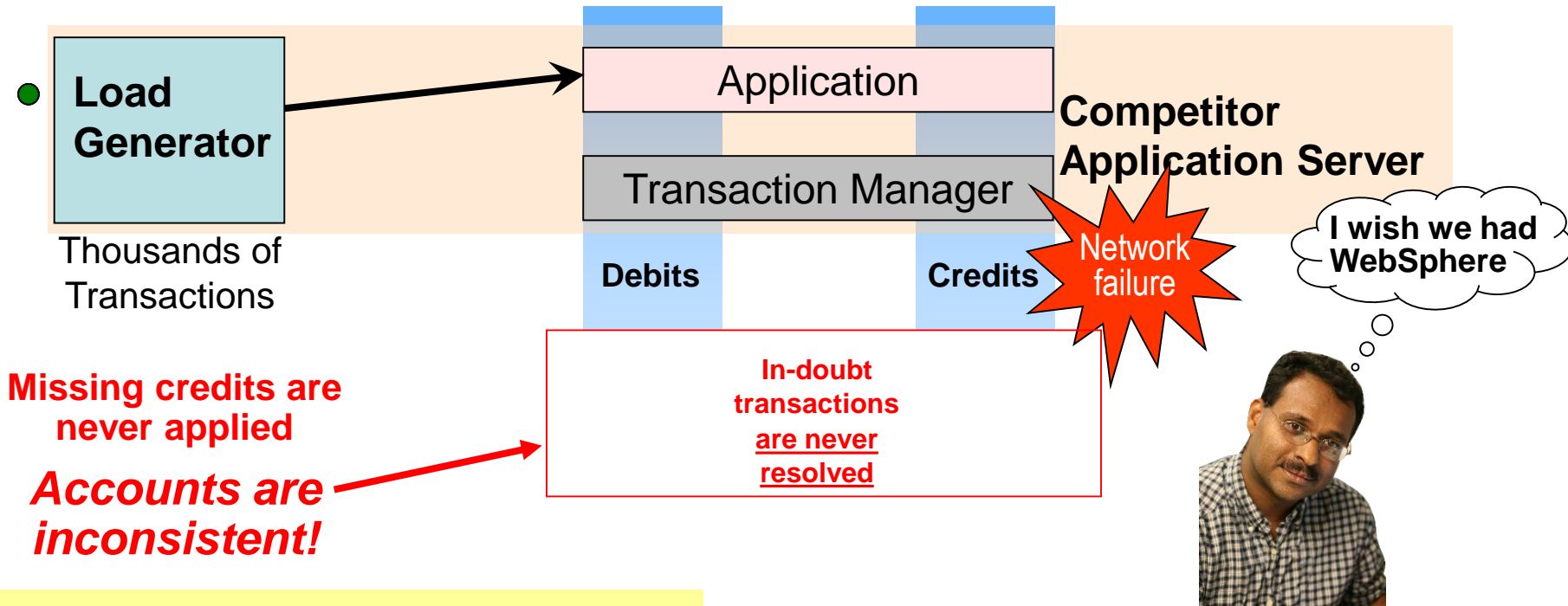
- ▶ Data is always consistent and visible to other instances
- ▶ Automatic data recovery in the event of a network failure
- ▶ Return exception after failure, application may retry



JBoss, Tomcat, and VMWare tc Server Cannot Recover from Network Failure

Enterprise requirements

- ▶ Data is always consistent and visible to other instances
- ▶ Automatic data recovery in the event of a network failure
- ▶ Return exception after failure, application may retry



Tomcat and tc Server only support transactions on a single database

Requires manual work to fix

Transaction Integrity can have an Incredible Impact on Your Business

- Can you afford to lose orders or money?
- Would you tolerate missing money or shipments with missing items?
- How are inventory levels managed if your inventory tracking is incorrect?
- How are key databases reconciled that get out of sync?



IBM has been doing this right for more than 45 years!

We need to improve the reliability of our mission-critical applications. We're also spending too much for system administration.



**Service Oriented Finance
Data Center Manager**

WebSphere ND has health management features to monitor and take action automatically to prevent problems.

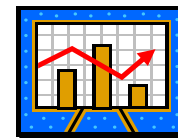


IBM

Intelligent Management Capabilities Provide Elastic Scalability and Greater Availability

PERFORMANCE MANAGEMENT

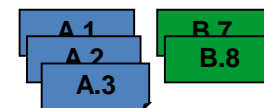
- ▶ Maintain response time objectives despite heavy demand or server failure
- ▶ Guarantee response time to selected classes of users or applications
- ▶ Elastic scalability adds resources as demand increases, reduces as demand subsides



*Self-Optimizing
Self-balancing*

APPLICATION EDITION MANAGEMENT

- ▶ Ensure uninterrupted service via rolling application updates



Self-Managing

HEALTH MANAGEMENT

- ▶ Create configurable “sense/respond” health conditions and actions that respond to problems before users experience an outage



*Self-Protecting
Self-Healing*

Performance Management Uses Service Policies to Ensure Reliable Service

- A **Service Policy** specifies the **response time goal** for one application service and its **importance** relative to the others
- The **Dynamic Cluster** capability **allocates processor capacity** to workloads to implement and enforce service policies
- You can maintain response time objectives despite constantly **varying workload demands**
- This scheme can also ensure **differentiated response time objectives** for various classes of customers and applications
- The On Demand Router **sequences incoming requests** based on response time objectives to classify, prioritize, and intelligently route requests, ensuring that service policy goals are met

Service Policy Definition

Service Policies

A Service Policy defines a business goal and an importance, and contains one or more Transaction Classes. The Service Policies define an Operational Policy which is used by a component in the Proxy Server to categorize and filter work in the queue.

Preferences

New Delete

Select	Name	Importance	Goal	Description
<input type="checkbox"/>	Default_SP		Discretionary	
<input type="checkbox"/>	Gold_SP	High	Avg response 15 Seconds	Gold Service Policy
<input type="checkbox"/>	Platinum_SP	Highest	Avg response 1500 Milliseconds	Highest SP

Total 3

Relative importance

Response time goal

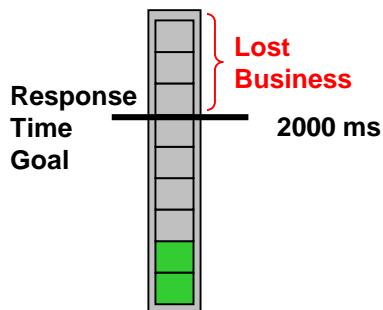
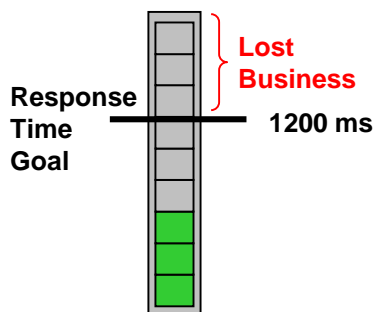
Oracle, Tomcat, tc Server and jBoss cannot do this!

WebSphere ND Maintains Response Time Objectives Despite Server Failure!

Service Policies

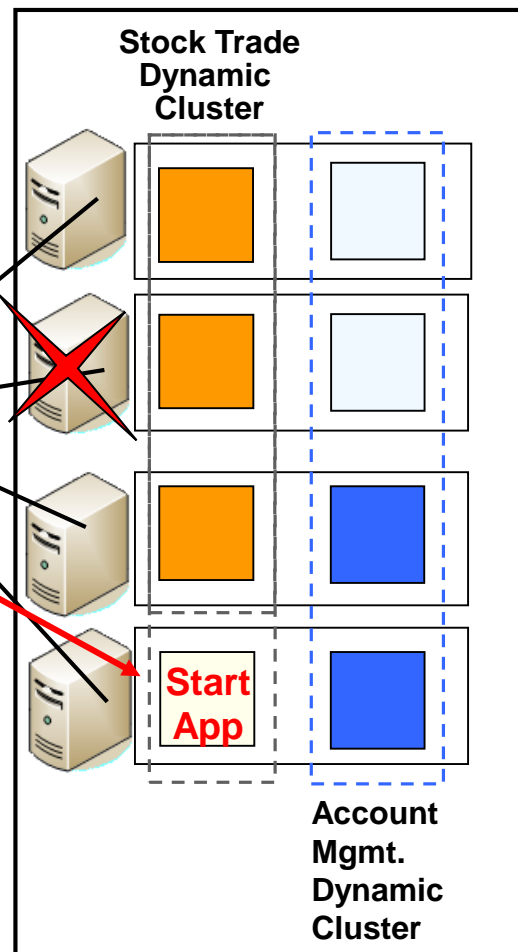
Client Requests

Shared Resource Pool

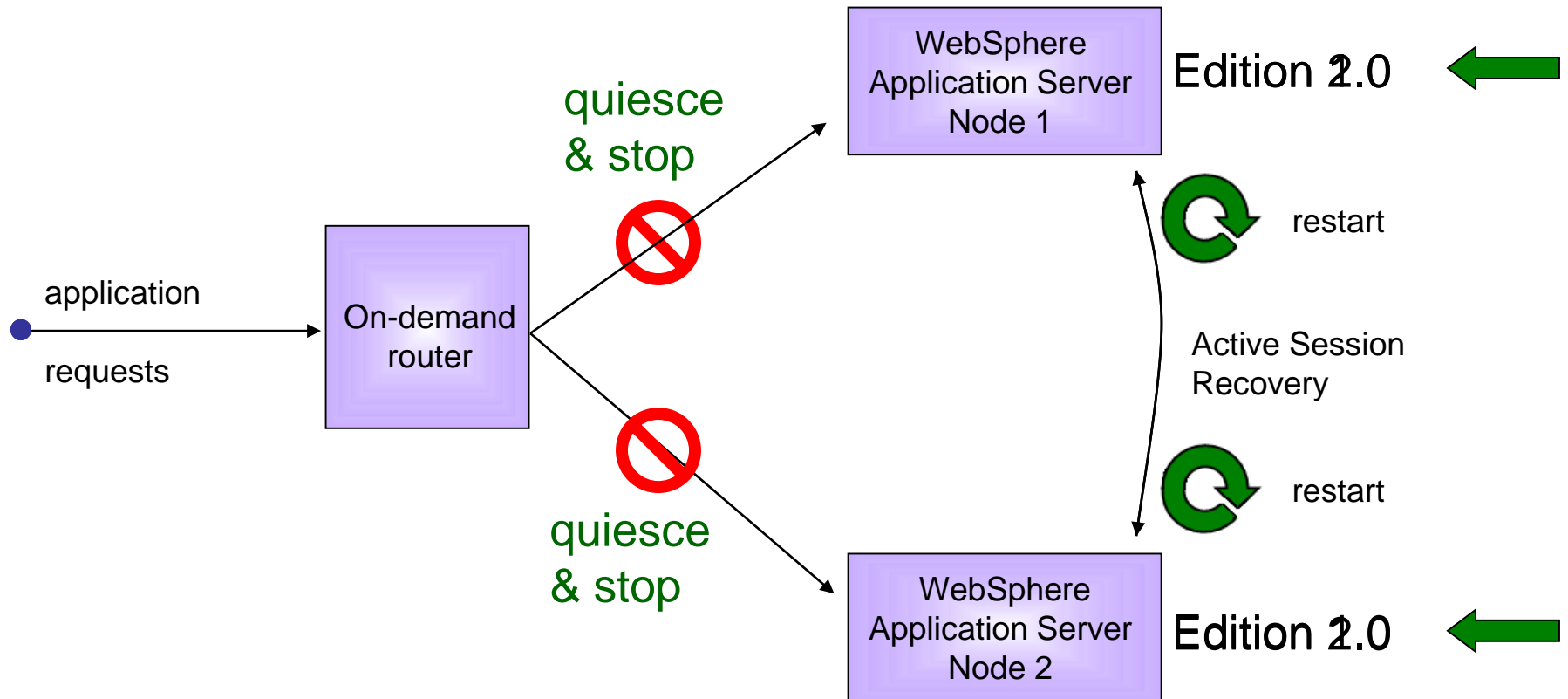


On Demand Router

- Classify
- Prioritize
- Dispatch



DEMO: Deploy a New Application Version with no Interruption to Customers



Tomcat, vFabric tc Server and JBoss Cannot Do This



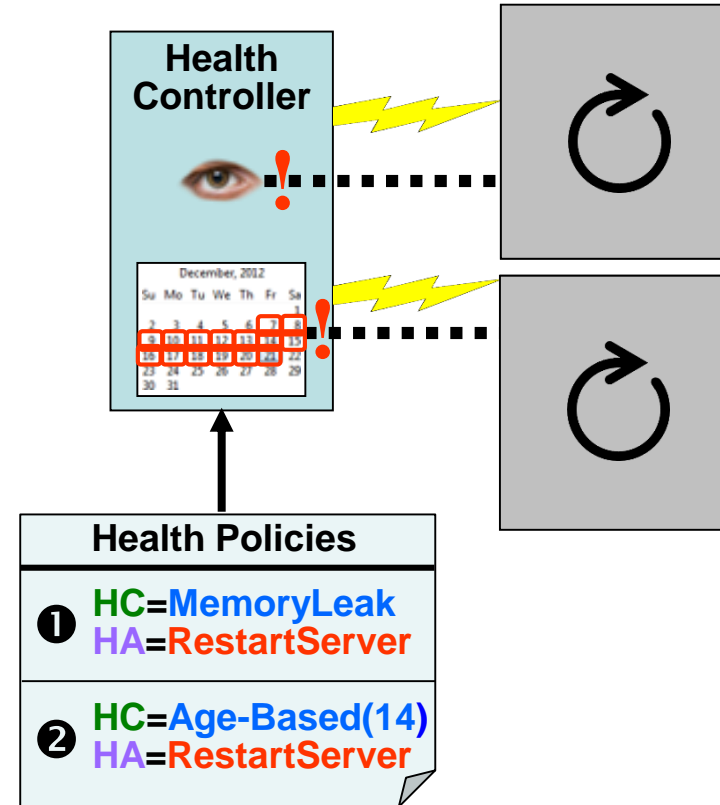
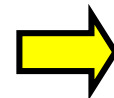
Improve Application Reliability with Health Management

- WebSphere ND v8.5 includes a policy-driven **Health Controller** to continuously monitor applications and take corrective measures
- **Health Policies** specify **Health Conditions (HC)**, and **Health Actions (HA)** to be taken when these conditions are detected
- In this example:

Policy 1 Restart Server when a **Memory Leak** causes the heap to exceed a threshold

Policy 2 Restart Server when it has reached a configured **Age** (e.g. 14 days)

- WS ND 8.5 can provide **35 flexible Health Management policies.**



Oracle's application server has **7 predefined health policies**

Administration and Configuration with WebSphere is Easier: Cluster Configuration

WAS ND 8.5 has a UI

WebSphere application server clusters

WebSphere application server clusters > cluster1

Use this page to change the configuration settings for a cluster. A server cluster consists of a group of application servers. If one of the application servers that is a member of the cluster fails, requests are routed to other members of the cluster.

Reports Operations Runtime Configuration Local Topology

General Properties

* Cluster name
cluster1

Bounding node group name
DefaultNodeGroup

Prefer local

Enable failover of transaction log recovery

Apply OK Reset Cancel

Cluster messaging

- Messaging engines

Communications

- Communications Enabled Applications (CEA)

Additional Properties

Cluster members

Cluster member	Weight	Details
cluster1member1	2	
cluster1member2	2	

- Backup cluster
- Dynamic workload management (DWLM)
- Endpoint listeners
- Security domain
- Web server plug-in cluster properties

Cluster Configuration

vFabric tc Server and Tomcat: Hand-edited XML

```
<?xml version="1.0" encoding="UTF-8" ?>
<Cluster className="org.apache.catalina.ha.tcp.SimpleTcpCluster"
  channelSendOptions="8">
  <Manager className="org.apache.catalina.session.DeltaManager"
    expireSessionsOnShutdown="false"
    notifyListenersOnReplication="true"/>
  <Channel className="org.apache.catalina.tribes.group.GroupChannel"
    <Membership className="org.apache.catalina.tribes.membership.MemImpl"
      address="228.0.0.4"
      port="45564"
      frequency="500"
      dropTime="3000"/>
    <Receiver className="org.apache.catalina.tribes.transport.nio.NioReceiver"
      address="auto"
      port="4000"
      autoBind="100"
      selectorTimeout="5000"
      maxThreads="6"/>
    <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter"
      <Transport className="org.apache.catalina.tribes.transport.nio.NioTransport"
      </Transport>
    </Sender>
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.TrafficControlInterceptor"
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.TrafficControlInterceptor"
  </Channel>

  <Valve className="org.apache.catalina.ha.tcp.ReplicationValve"
    filter=""/>
  <Valve className="org.apache.catalina.session.JvmRouteBinderValve"/>

  <Deployer className="org.apache.catalina.deploy.FarmWarDeployer"
    tempDir="/tmp/war-temp/"
    deployDir="/tmp/war-deploy/"
    watchDir="/tmp/war-listen/"
    watchEnabled="false"/>

  <ClusterListener className="org.apache.catalina.ha.session.JvmRouteBinder"
  <ClusterListener className="org.apache.catalina.ha.session.ClusterStatusListener"
</Cluster>
```

Hand-editing XML files is more error-prone, and leaves no audit trail for changes!

How Does WebSphere ND Compare to the Competition?

	IBM WebSphere ND 8.5.5	Oracle WebLogic Server	JBoss, Tomcat, tc Server
Transaction Integrity: automatic recovery of transactions after network failure	Yes	Yes	No
Performance Management: Priority routing and response time guarantee for business-critical applications	Yes	Pre-integrated HW/SW Unit Only	No
Performance Management: Automated elastic scaling provides additional resources as demand increases, or when a server fails	Yes	No	No
Edition Management: Deploy a new application version with no interruption to customers	Complete	No Active Rollout	No
Health Management: Flexible health policy definitions sense and respond to problems before outages occur	35 Flexible Policies	7 Predefined Policies	With separate product

**We need a fast
enterprise application
server at low cost.**



**Service Oriented Finance
CIO**

**WebSphere excels at
performance and price
performance.**

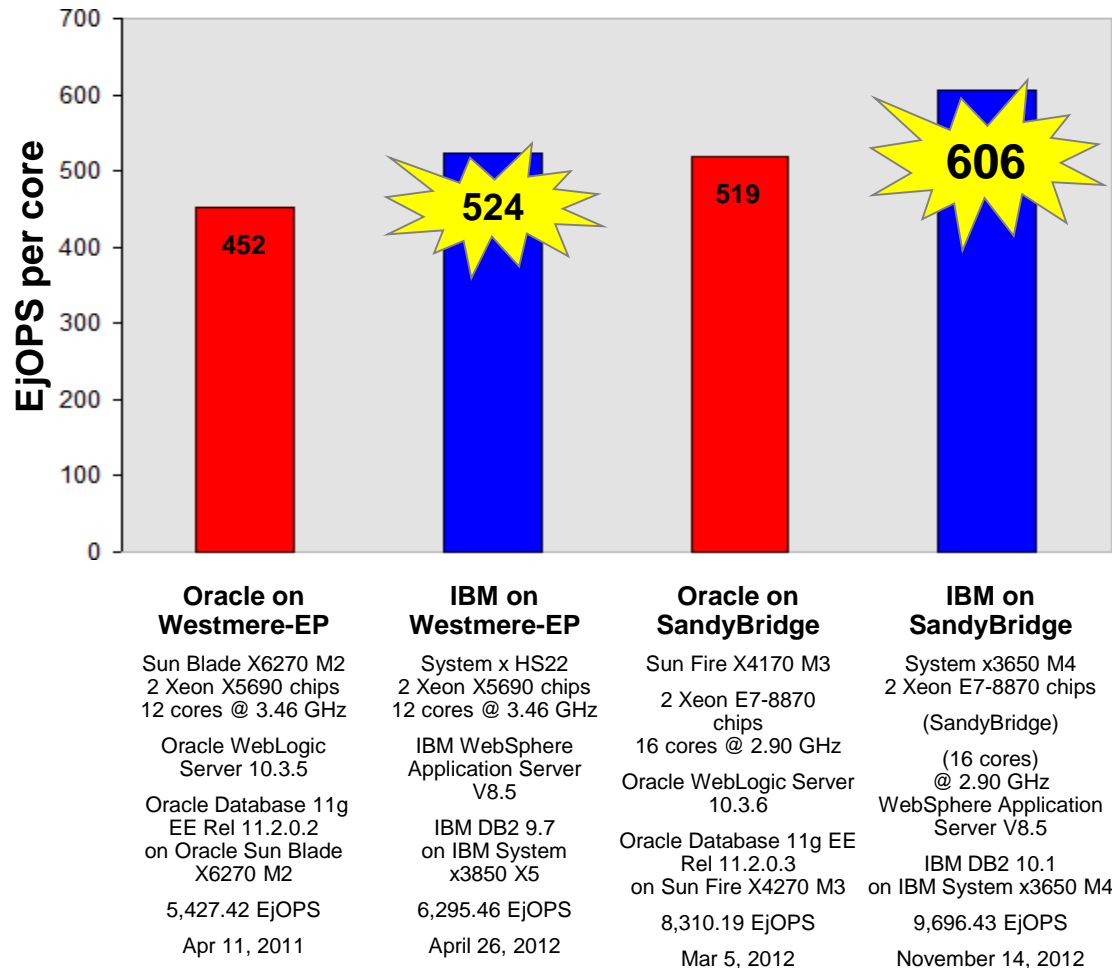


IBM

IBM Beats Oracle in Application Server Performance on Comparable Intel Platforms

IBM WebSphere Application Server V8.5 delivers a fast, efficient, and flexible Web server for Intel platforms

- ▶ [SPECjEnterprise2010 published results](#) show that IBM WebSphere Application Server runs **15% faster** than Oracle WebLogic using the same 12-core Intel Westmere-EP chip
- ▶ SPECjEnterprise2010 runs **16% faster** on WebSphere Application Server compared to WebLogic using the same Intel 16-core SandyBridge-EP chip



Performance is important, but what about price/performance?

Open-source software sounds good, but it just does not meet requirements for our enterprise applications. We will use WebSphere!



- Fastest, easiest, most flexible for development
- Lowest Total Cost of Ownership for deploying applications
- Automatic recovery from failures
- Monitors and manages itself to solve problems before they impact availability
- Automated roll-out of new versions of applications with no disruption
- Best Price/Performance