



**Build Your Business Process On A
Solid Foundation –
WebSphere Application Server**

WebSphere Application Server Is The Undisputed Market Leader For The **Last 12 Years**

■ Largest Customer Base!

- ▶ 90% of the World's largest Fortune Global's 100 corporations run their businesses on WebSphere Application Server
- ▶ Over 18,000 Customers in Production



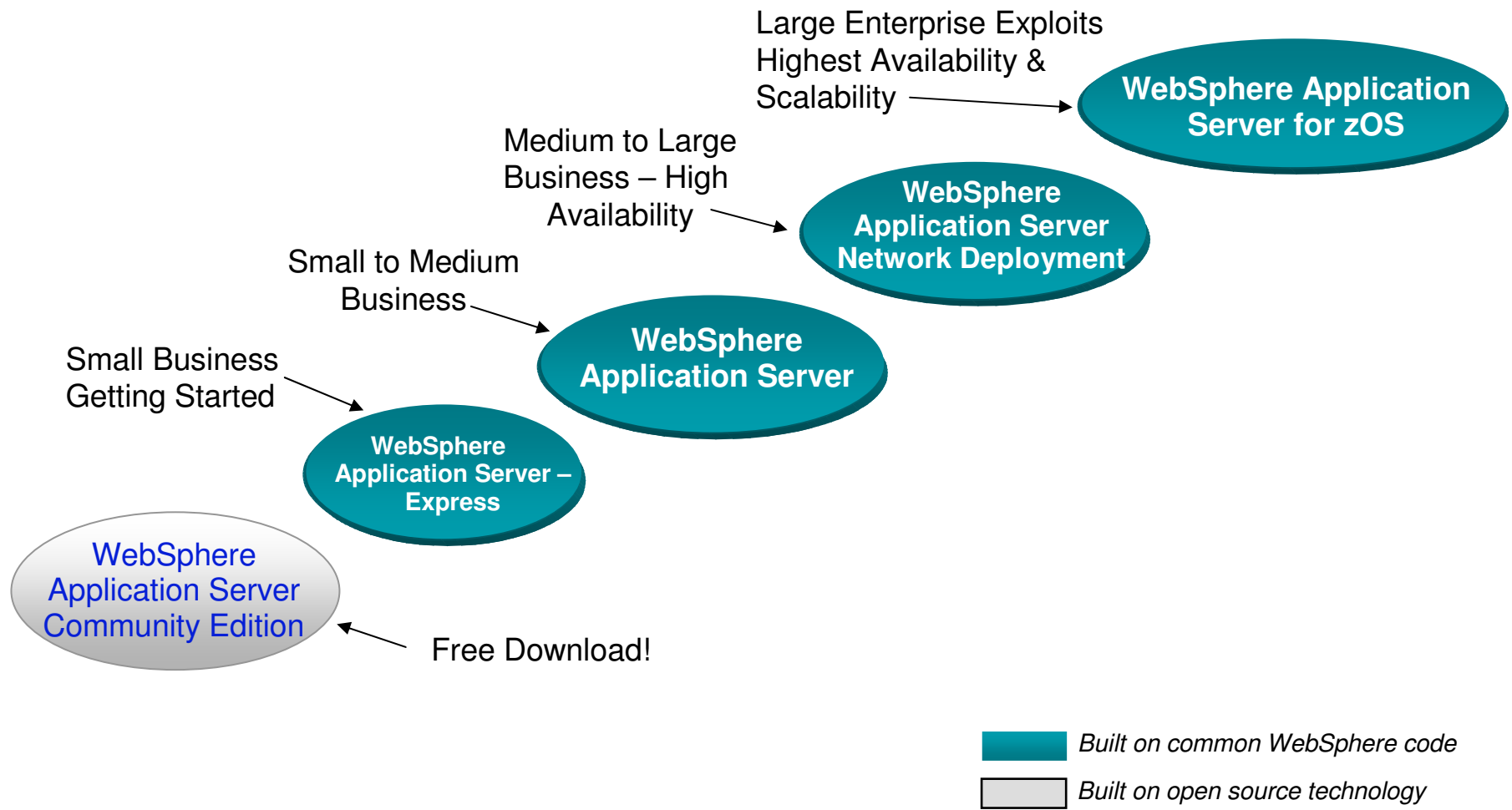
■ Unparalleled expertise, and level of investment

- ▶ Broadest, Deepest portfolio of offerings
- ▶ 13,000+ assets in the SOA business catalog (90% from business partners)
- ▶ IBM investing over \$1B a year in WebSphere
- ▶ More than 700 WebSphere patents and over 6,700 IBM developers
- ▶ Trained IBM SOA community over 100K
- ▶ IBM uses WAS in over 300 IBM Solutions!

■ Strongest Ecosystem

- ▶ 7,420 SOA community business partners

The WebSphere Application Server Family – Tailored To Customer Needs



The WebSphere Application Server Family – Special Purpose Capabilities

**WebSphere
Application Server
Hypervisor Edition**

World's first Application Server private cloud

**WebSphere
Virtual Enterprise**

Manage performance, health, and editions of applications for non-stop operation

**WebSphere
eXtreme Scale**

In-memory data grid for extreme transaction processing

**WebSphere
Compute Grid**

Execute and manage Java batch processes

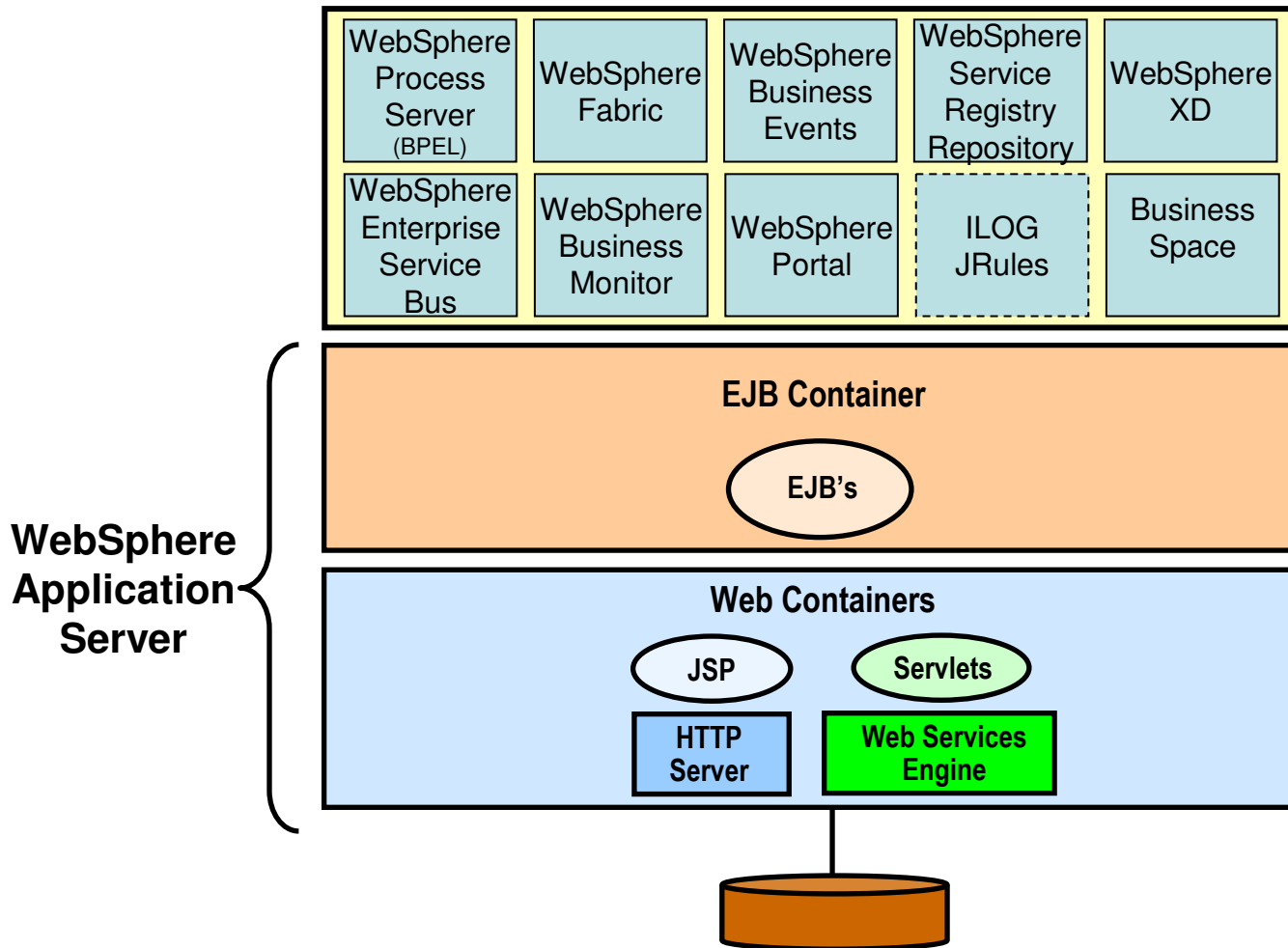
WebSphere Application Server Beats The Competition

- Stable architecture to protect investments
- Best performance and Total Cost of Ownership
- Best transaction integrity



WebSphere Application Server Is The Foundation For IBM's Smart Work Framework

Stable Architecture to Protect Your Investments



- One integrated framework for smart work solutions
- Based on open standards
- Built on WebSphere Application Server

Oracle Fusion Confusion – Not An Integrated Solution! Which Choices Are Strategic?

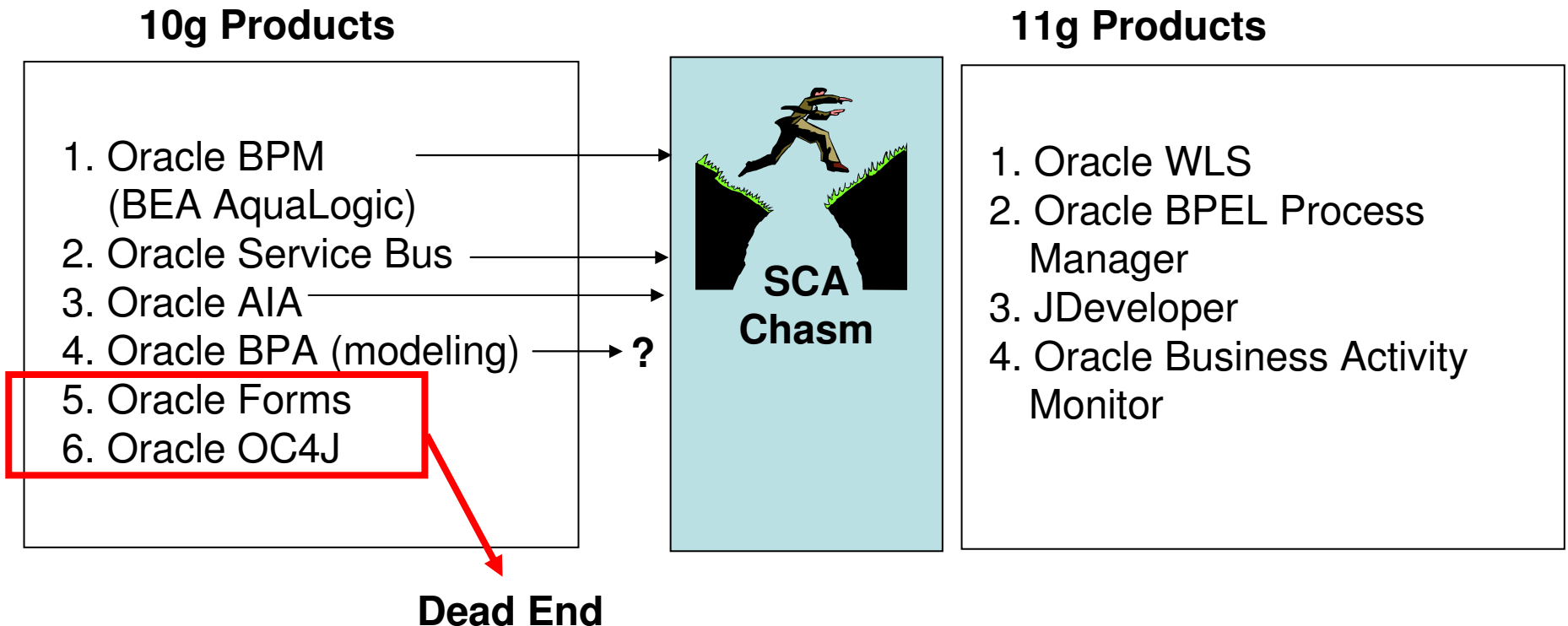
Function Area	Oracle Products	BEA Products	Sun Products
Application Server	<ul style="list-style-type: none"> • Oracle Application Server 	<ul style="list-style-type: none"> • WebLogic Server 	<ul style="list-style-type: none"> ■ Glassfish Enterprise Server
J2EE Development	<ul style="list-style-type: none"> • JDeveloper • (not Eclipse) 	<ul style="list-style-type: none"> • WebLogic Workshop (Eclipse) 	<ul style="list-style-type: none"> ■ NetBeans IDE (not Eclipse)
Portal/Web 2.0	<ul style="list-style-type: none"> • Oracle Portal • WebCenter 	<ul style="list-style-type: none"> • AquaLogic User Interaction • WebLogic Portal 	<ul style="list-style-type: none"> ■ Sun Java System Portal Server ■ Glassfish Web Space Server
Modeling	<ul style="list-style-type: none"> • BPA Suite (OEM'd IDS Sheer's Aris) 	<ul style="list-style-type: none"> • AquaLogic BPM 	
BPM	<ul style="list-style-type: none"> • BPEL Process Manager 	<ul style="list-style-type: none"> • AquaLogic BPM • WebLogic Integration 	<ul style="list-style-type: none"> ■ Sun Business Process Manager
BAM	<ul style="list-style-type: none"> • Oracle BAM 	<ul style="list-style-type: none"> • AquaLogic Monitoring • ProActivity BAM (OEM) 	
ESB	<ul style="list-style-type: none"> • Oracle ESB • Oracle AQ 	<ul style="list-style-type: none"> • AquaLogic Service Bus 	<ul style="list-style-type: none"> ■ Sun ESB Suite ■ Glassfish ESB
Registry	<ul style="list-style-type: none"> • Systinet (OEM) 	<ul style="list-style-type: none"> • Systinet (OEM) • Flashline 	
Server Virtualization	<ul style="list-style-type: none"> • Oracle VM 		<ul style="list-style-type: none"> ■ Logical Domains ■ Dynamic System Domains ■ Sun Solaris Containers

 = Oracle has said this one is "strategic"

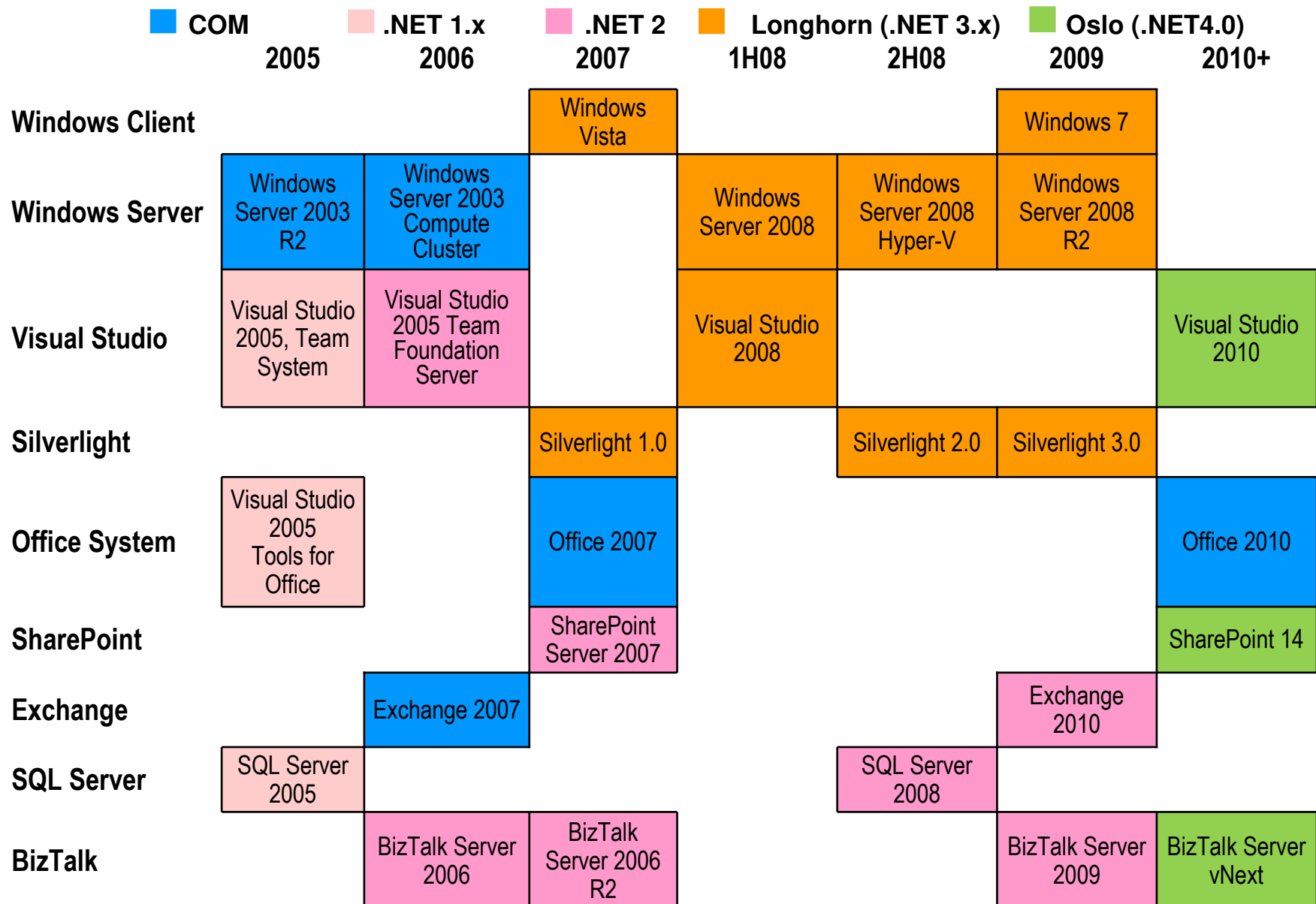
Years Of Migration Misery!

And Oracle 10g To 11g CHASM Is Another Nightmare For Customers

1. 11g is SCA based (finally), customers will have to migrate their 10g solutions to an entirely NEW SCA environment!
2. All Oracle AIA connections will have to be re-written
3. And the Glue that holds it all together (Oracle Service Bus) is still 10g



Microsoft Middleware Roadmap Also Creates Migration Misery



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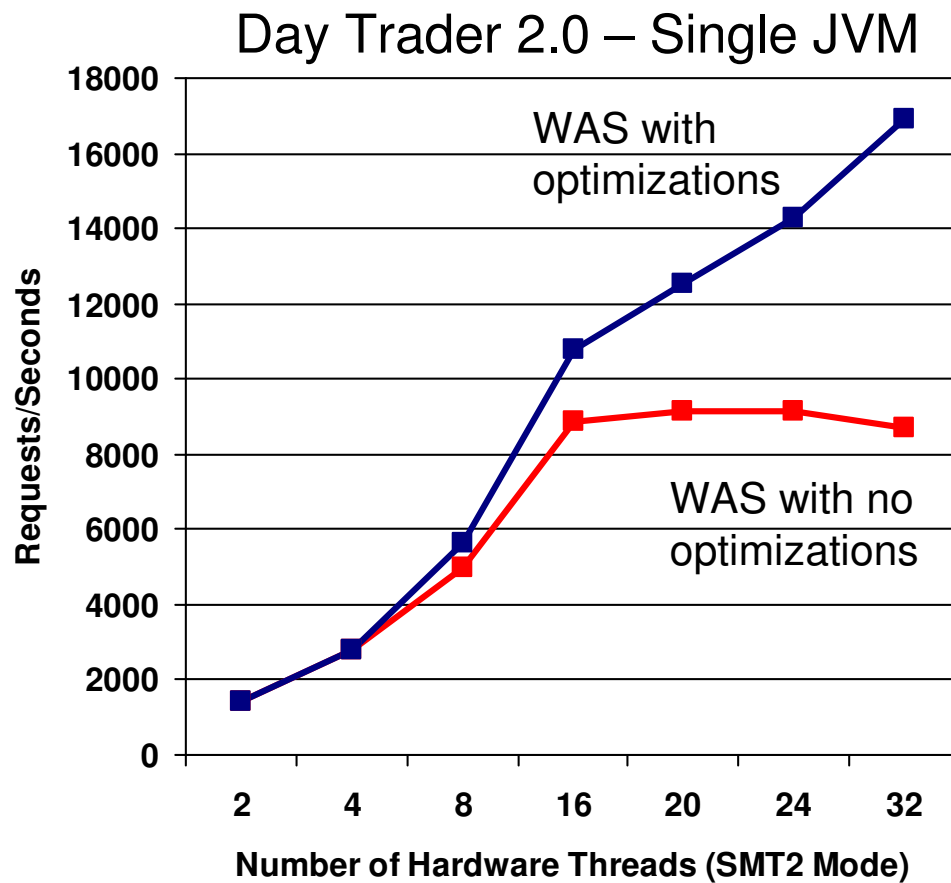


Accomplishments To Date: WebSphere Optimizations On POWER7

- Doubled the single-instance peak scaling of WebSphere Application Server from 16 to 32 hardware threads
 - ▶ Met target of POWER7 socket scalability (8 cores, 4 threads per core)
 - ▶ Single-instance peak performance improved by 85%
- Two-instance peak performance improved by 50%
- Total of 47 changes prototyped in core classes, resolving locking bottlenecks, reducing path length, and exploiting Power Architecture

Expect further POWER7 Performance Enhancements

Optimizations Result In Amazing WebSphere Application Server Scalability



- Near linear scaling on Power up to **32** threads
- Optimizations improve performance by **85%** over non-optimized single instance

Simplifies deployment configurations since fewer instances are needed to leverage POWER7 threads

Summary Of Optimizations On The WebSphere Application Server Stack

WebSphere Application Server

Reduced code path length when running on Power
Optimized to reduce the amount of lock contention on Power
Access to AIX environment parameters

Java Virtual Machine

Uses 64K pages by default on AIX
Elimination of unneeded exit tests in the Just-In-Time (JIT) compiler

Operating System

Caching optimizations in AIX to improve performance when lock contention is occurring in WebSphere

Power Hardware

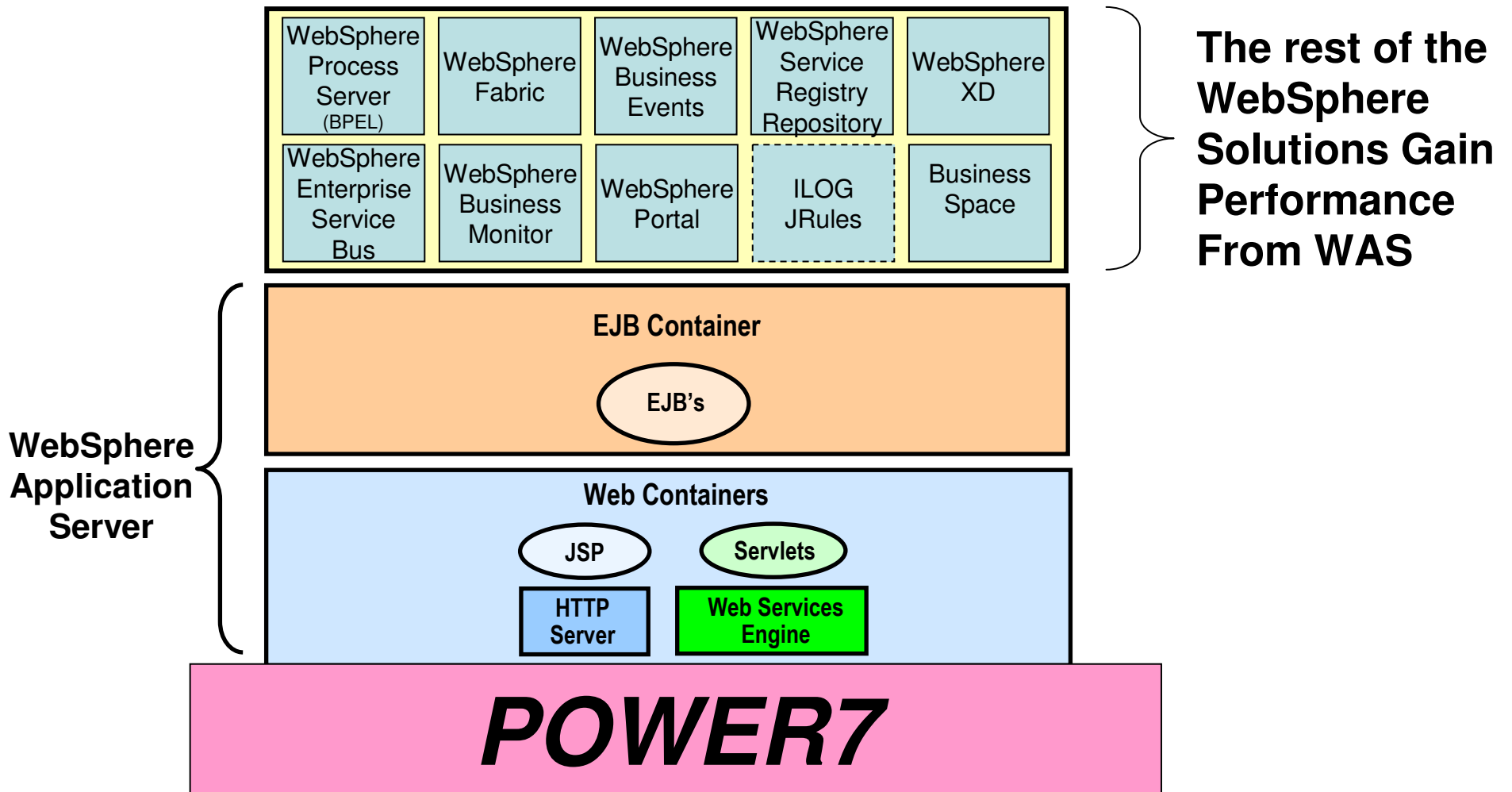
WebSphere takes advantage of the increased number of hardware threads available in POWER7 systems

Notes:

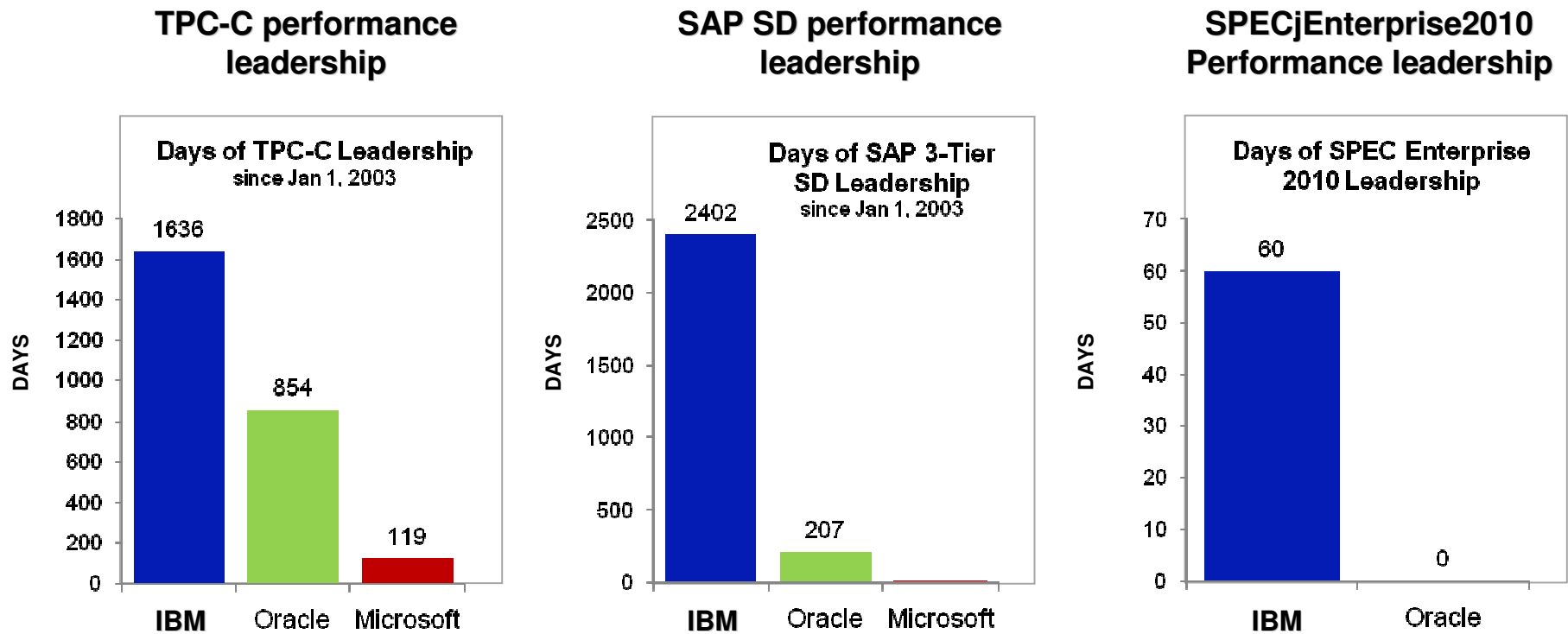
- **WebSphere Application Server optimizations in Fix Pack 9 (7.0.0.9) – to be available soon**
- **JVM optimizations to be available with WAS Fix Pack 9 as a separate download**
- **AIX V6.1 optimizations coming in April (Technology Level 5)**

WAS Takes Advantage of POWER7 Threading

85% WAS Performance Improvement on POWER7 !



Trusted Performance Is Measured By The Speed To Handle The World's Most Demanding Business Transactions



Source: IBM-maintained records of performance benchmark leadership. TPC-C and SAP 3-Tier SD leadership days are up to and including 22 Feb 2010. SPECjEnterprise2010 up to 05 Mar 2010.

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Transaction Integrity - A Common Business Challenge

We transfer money between banks all the time. We need to ensure that the transfer of data will be 100% accurate; even under adverse conditions!



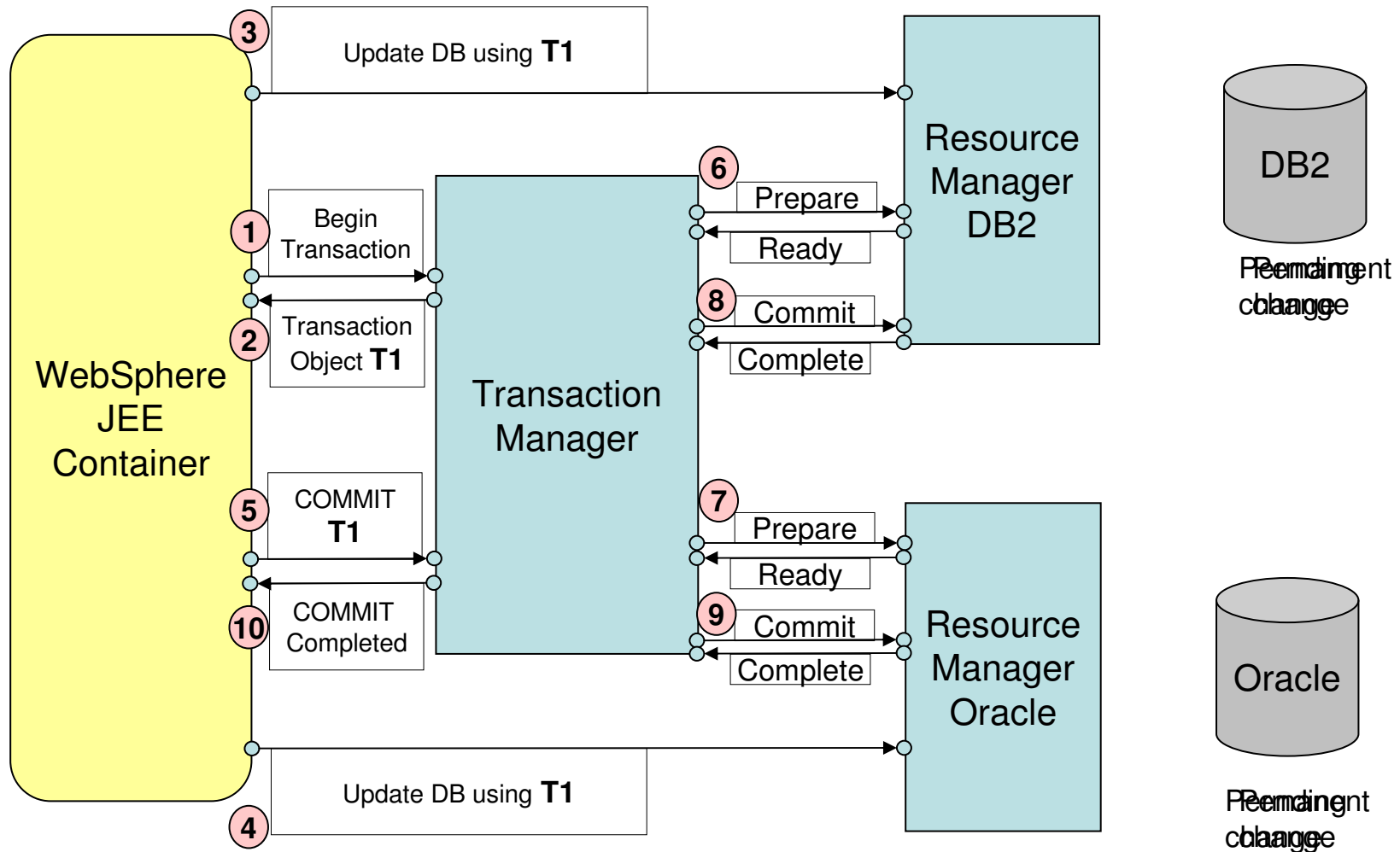
**Service Oriented Finance
CIO**

WebSphere will maintain data integrity and recover from adverse conditions such as power and network outages and application failures.

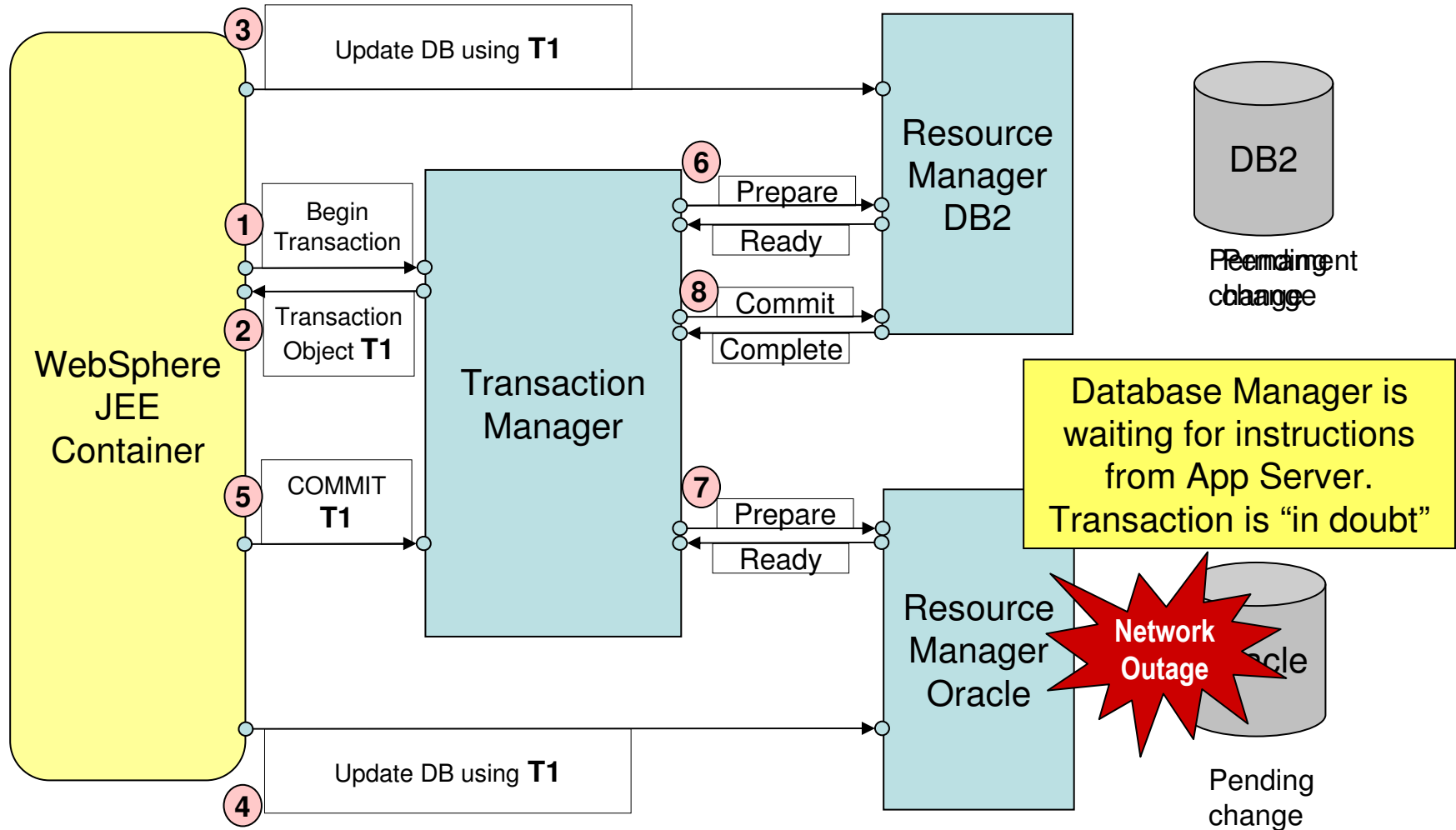


IBM

Application Server Test – Two Phase Commit

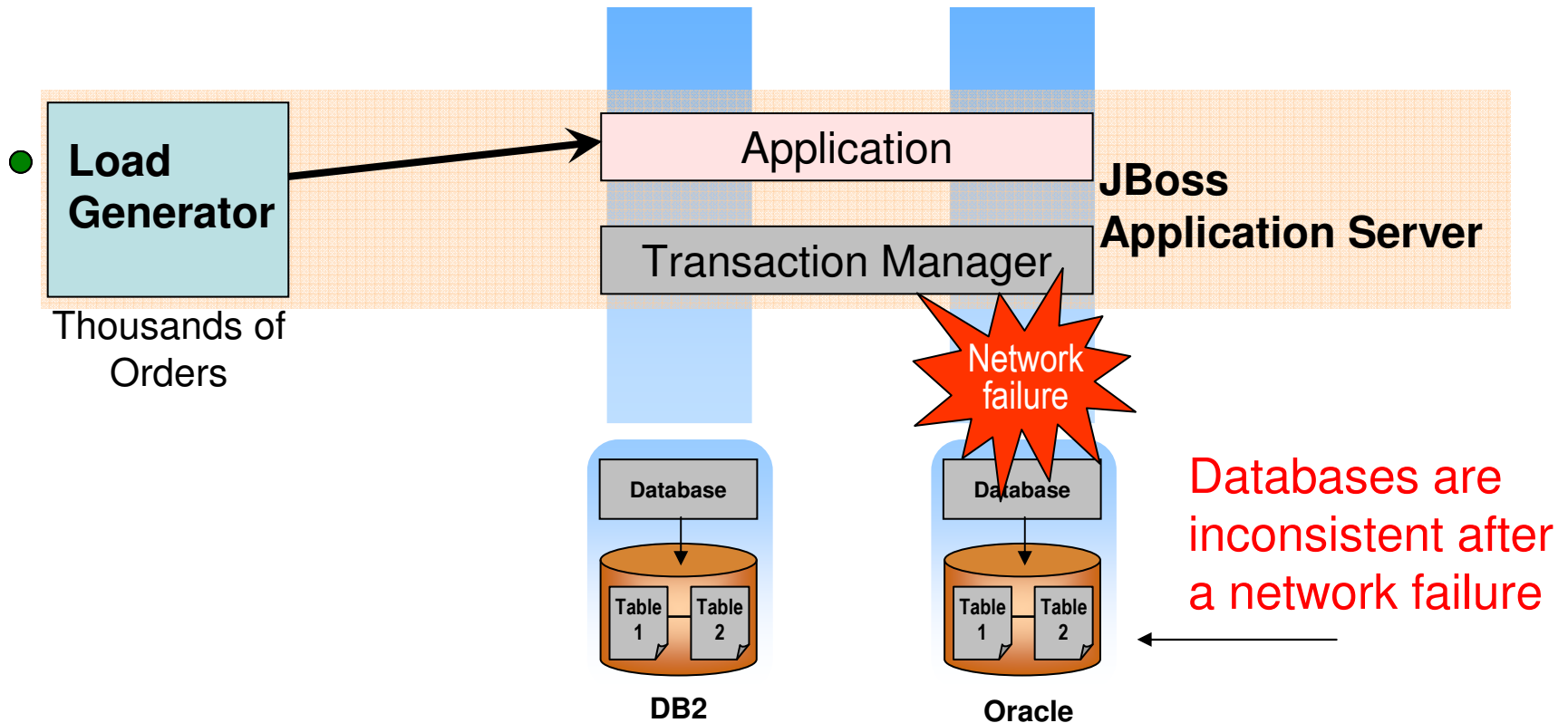


Application Server Test – Two Phase Commit “In Doubt Transaction”



DEMO: JBoss Synchronous Application Server Under Load With Network Outage

- 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



Network Or Power Failure Between Database Commits

- **What happens if there is a failure after the first data base commit and before the second database commit?**
 - ▶ One database has been changed and the changes committed, locks have been released
 - ▶ The other database has rows locked and is not committed
 - ▶ The transaction is “in doubt”

- **Failure to recover properly has serious consequences**
 - ▶ Data is corrupted – inconsistent between the databases
 - ▶ Held locks impact all applications using the database
 - ▶ Systems will have to be taken down while DBA’s manually “fix the problem”
 - And they have to re-construct what happened (time consuming)

Think About The Business Implications



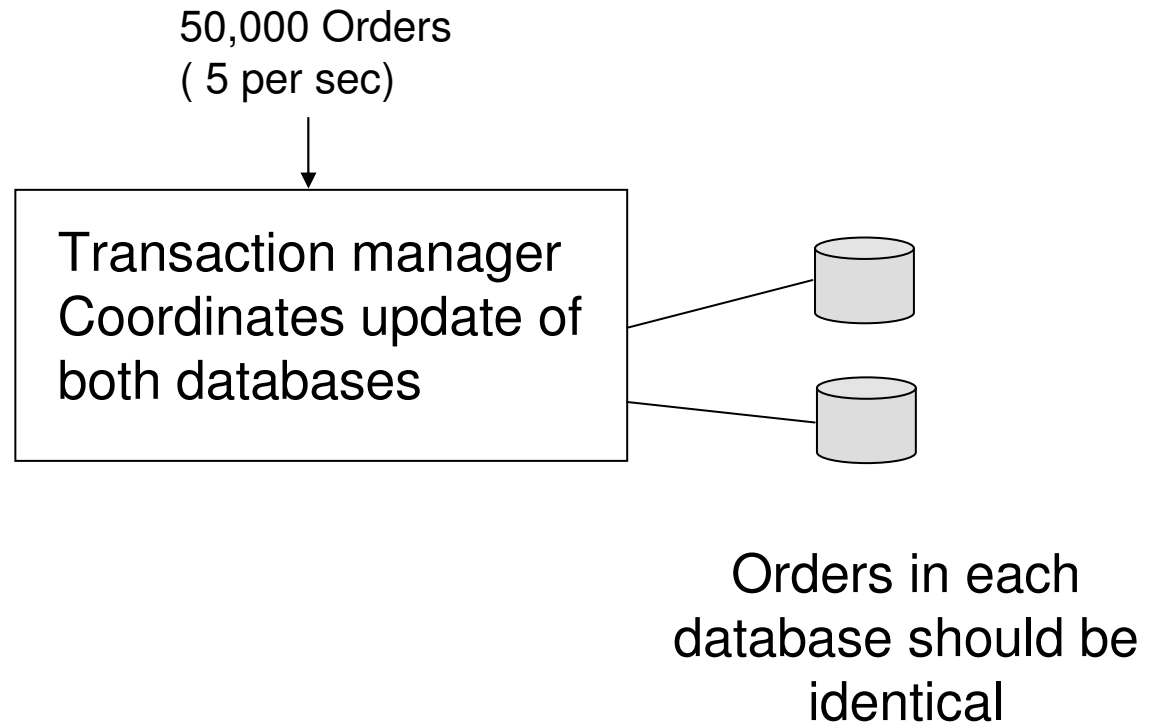
- Can any business afford to lose orders or money?
- Would customers tolerate missing money or shipments with missing items?
- How are inventory levels managed if your inventory tracking is incorrect?
- How are key databases reconciled that get out of sync?

$$2+2=4$$

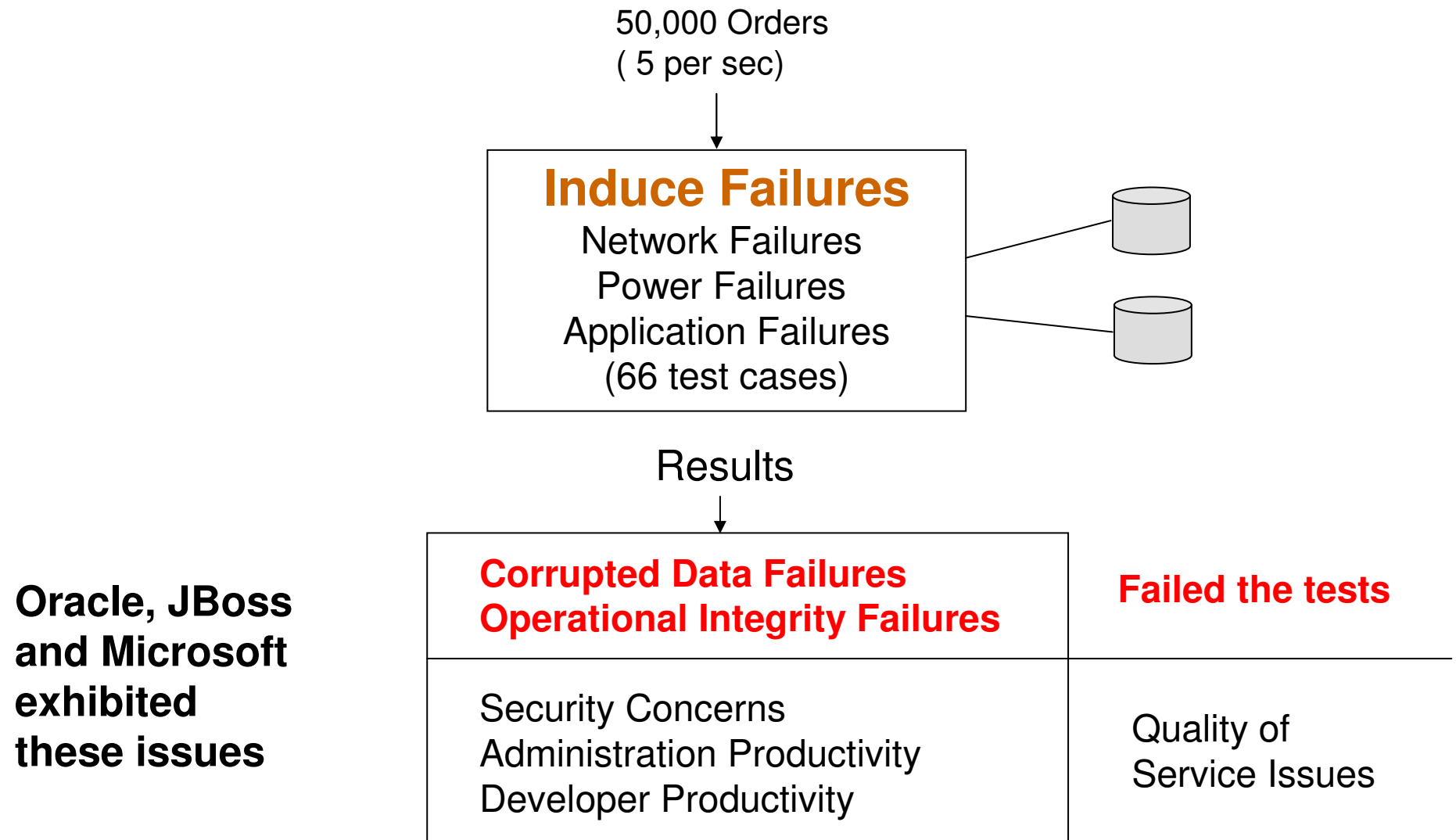


IBM

Overview – The IBM Transaction Integrity Study



Overview – The IBM Transaction Integrity Study



Transaction Integrity – Test Results

IBM WAS

- Passed all the failure tests including network failures, power outages and application exceptions.
- Does not corrupt data or degrade performance

JBoss AS

- Fails to handle a network / power outage causing a corrupted data problem

Oracle OC4J

- Performance degradation following power outage
- Frequent reboots of OS due to Application Server hangs

Oracle WebLogic Server

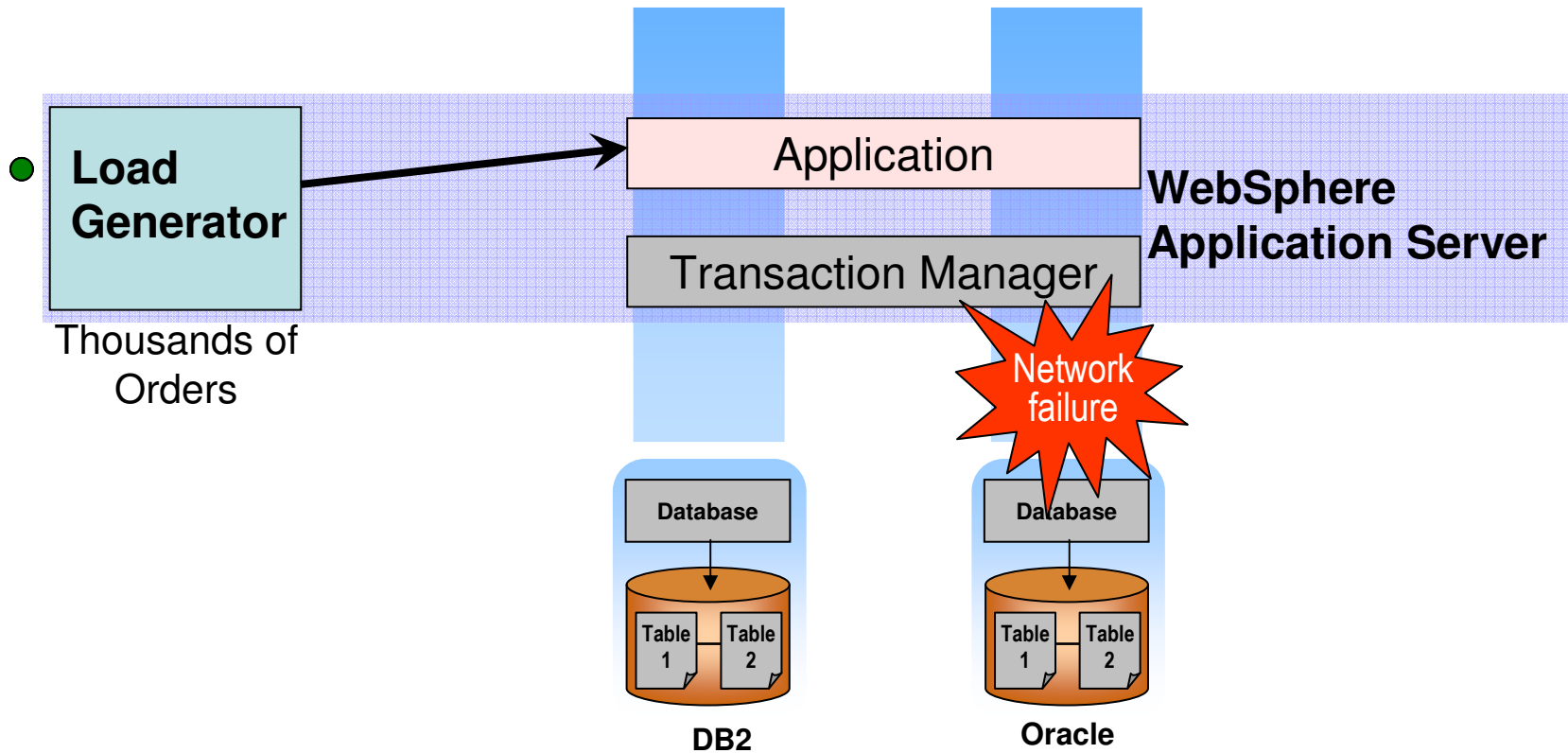
- Fails to reject incorrect data (duplicate key)
- Poor recovery from network outages led to corrupted data problems 25% of the time

Microsoft .NET

- Enabling transaction support exposes serious security risks, such as malicious DLLs being loaded in the kernel

DEMO: IBM Synchronous Application Server Under Load With Network Outage

- Enterprise requirements
 - ▶ Data is always consistent and visible to other instances
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Think About It

Can you afford to corrupt the data in your systems?
Can you afford to lose customers because of slow response times?
Do you want to build your enterprise on a solid foundation?



IBM

Now I see the value of a strong foundation –
WebSphere Application Server.



**Service Oriented Finance
CIO**