

CULTURE  
**SOA**

**IBM**



**RELEVEZ  
TOUS LES DÉFIS  
AVEC AGILITÉ**

**Mardi 7 juillet 2009**  
(4<sup>ème</sup> édition du SOA Summit)

IBM Forum - Paris La Défense

**La virtualisation d'applications pour tous  
environnements, avec IBM WebSphere  
Virtual Enterprise**



## Agenda

- Customer Challenges and Industry Trends
- WebSphere Application Server
- WebSphere Virtual Enterprise
- Customer Success Stories
- ROI
- Summary



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## ***Common symptoms of an inflexible infrastructure***

Recognizing the problems and addressing them early is key

### **Infrastructure Flexibility**

- *Performance issues with demand peaks*
- *Problems in tuning the application servers*
- *Issues seem to pop up whenever changes are made to the applications and application servers*

### **Middleware**

- *Concerns about scalability*
- *Unplanned outages*
- *Poor quality of service*
- *Response times increasing*

### **Service Management**

- *Performance impacts by adding new services*
- *Difficulty in rolling out new services*
- *Trouble meeting service level agreements (SLAs)*





## Customer Challenges



Role

Key Challenges

<b>CIO / CTO</b>	<ul style="list-style-type: none"> <li>– Fund new growth initiatives with no budget increases</li> <li>– Maintaining or improving application performance, availability and service levels</li> </ul>
<b>Operations Mgr.</b>	<ul style="list-style-type: none"> <li>– Pressure to reduce operational expense, while maintaining or improving application response times and service levels</li> <li>– Deploy new apps or services quickly to respond to business needs</li> <li>– Maintain response time as data volumes grow dramatically</li> </ul>
<b>WebSphere Administrator</b>	<ul style="list-style-type: none"> <li>– Maintaining application &amp; infrastructure availability</li> <li>– Ensuring applications are performing according to SLA's</li> <li>– Deploy new applications or services quickly</li> </ul>
	<ul style="list-style-type: none"> <li>– Maintain server availability</li> <li>– Quickly provision new server capacity according to business needs</li> </ul>
<b>Application Architect</b>	<ul style="list-style-type: none"> <li>– Reduce infrastructure overhead and improve application performance</li> <li>– Difficult to integrate new technologies or capabilities with existing systems</li> <li>– Provide solutions which result in consistent application performance as application data volumes grow</li> </ul>



## ***“I want to...***

- *ensure high availability & reliability to accommodate peaks in transaction volumes.”*
- *ensure consistent & predictable performance for business critical applications”*
- *have IT resources adjust on the fly to the demands of business critical applications.”*
- *have a real-time view of what’s going on in my entire application environment.”*
- *reduce the manual monitoring & managing of my IT environment.”*
- *scale easily to accommodate transaction volume growth.”*
- *protect the investments I’ve already made in my IT infrastructure & skills base and get the most out of it.*

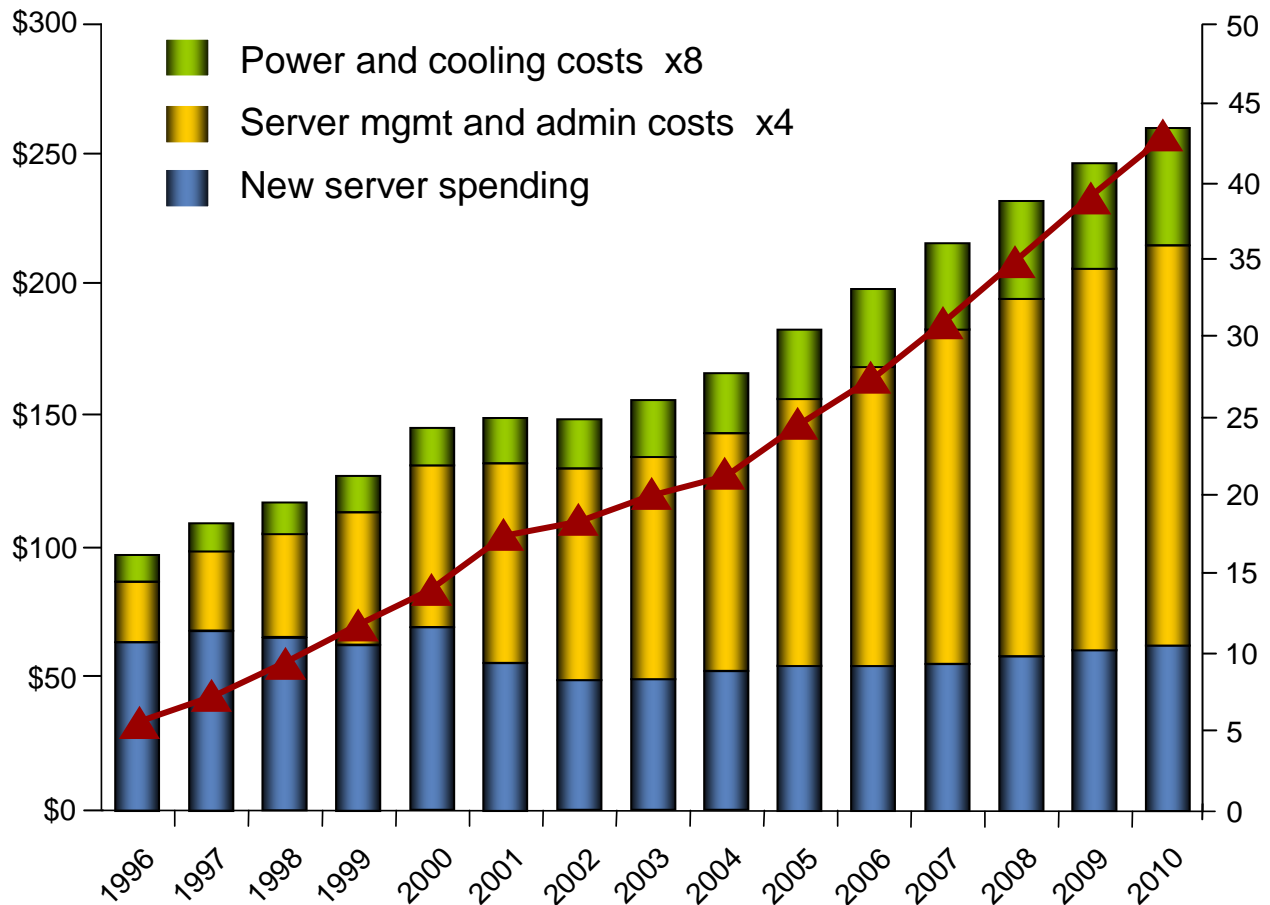


**Server total cost of ownership continues to grow . . .**  
*. . . so you have motivation to reduce the number of servers needed*

Spending (B\$) ▲ Installed Base (M Units)

**Worldwide IT spending on servers, power and cooling, and management/administration\***

*Many servers, much capacity, low utilization = US\$140B in unutilized server assets\**



Source: IDC Enterprise Server Research, 2007



## *Top trends for next 3 years*

### Green IT

*Companies should be mindful of potential regulations that could limit the building of data centers, and should be prepared with backup plans for handling growing data demands.*

### Virtualization 2.0

*Virtualization has improved server utilization, but with the addition of automation technologies—with service-level, policy-based active management—even greater improvements are possible. ‘Resource efficiency can improve dramatically, flexibility can become automatic based on requirements, and services can be managed holistically, ensuring high levels of resiliency,’ Gartner says.”*

[CIO Insight, October 15, 2007](#)

“The 10 Most Important Technology Areas for 2008, a Gartner View”





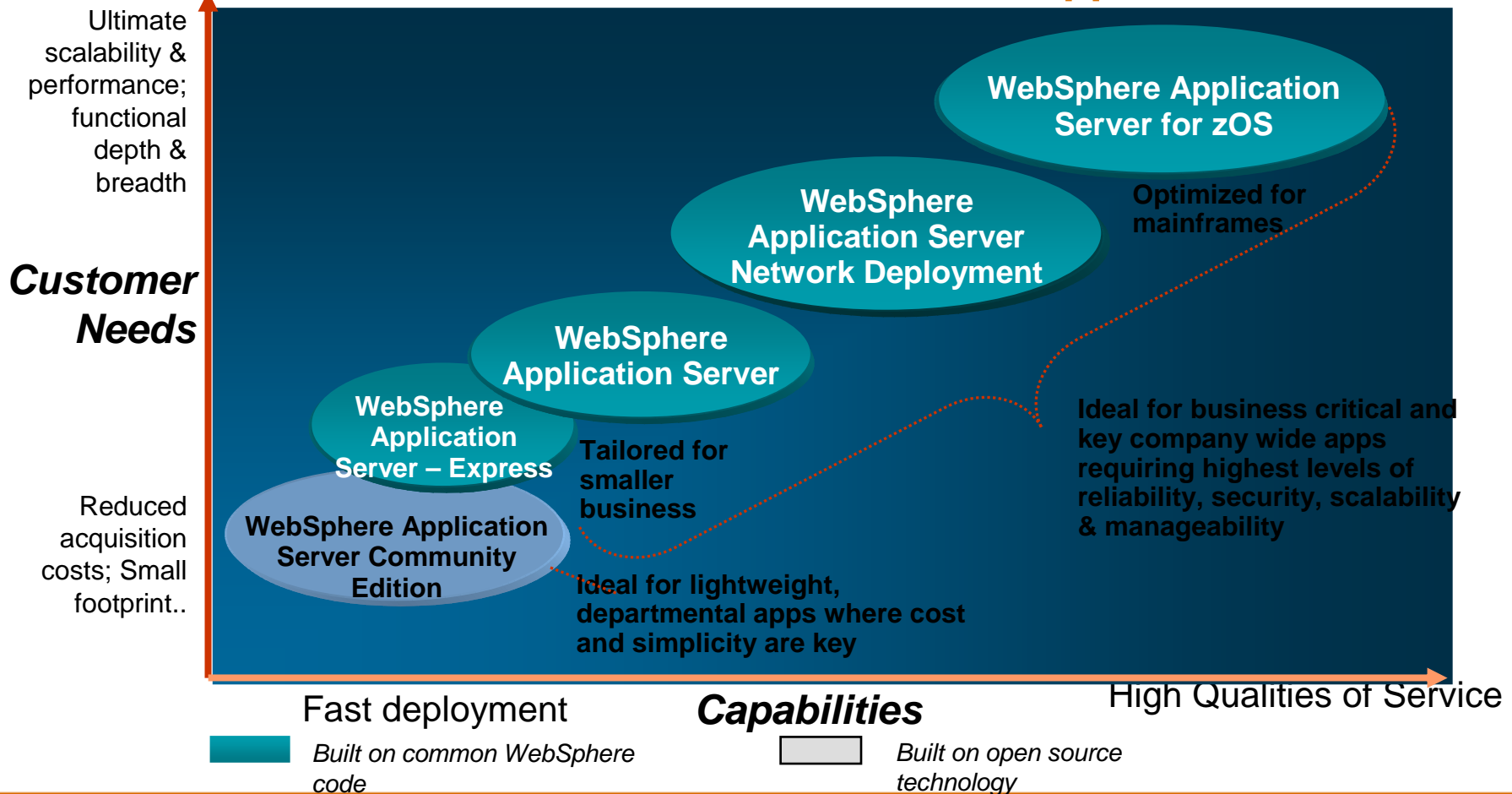
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# IBM WebSphere Application Server Family

## Your Choice of Innovative Performance Based Application Foundations

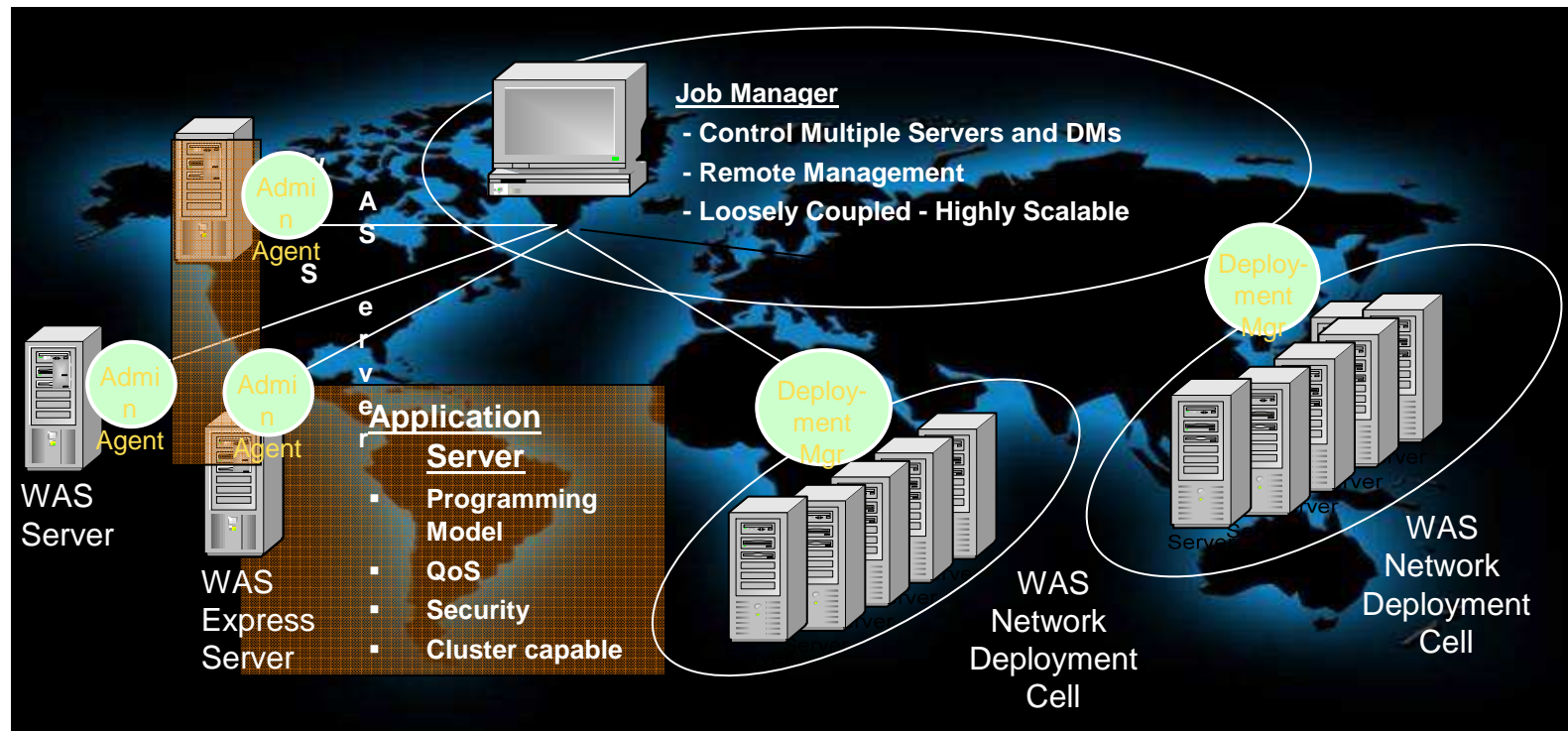




## WebSphere Application Server Flexible Management

For cost effective worldwide growth

- Job Manager for expanded central administration
- Central administration agent for WAS Express and Base

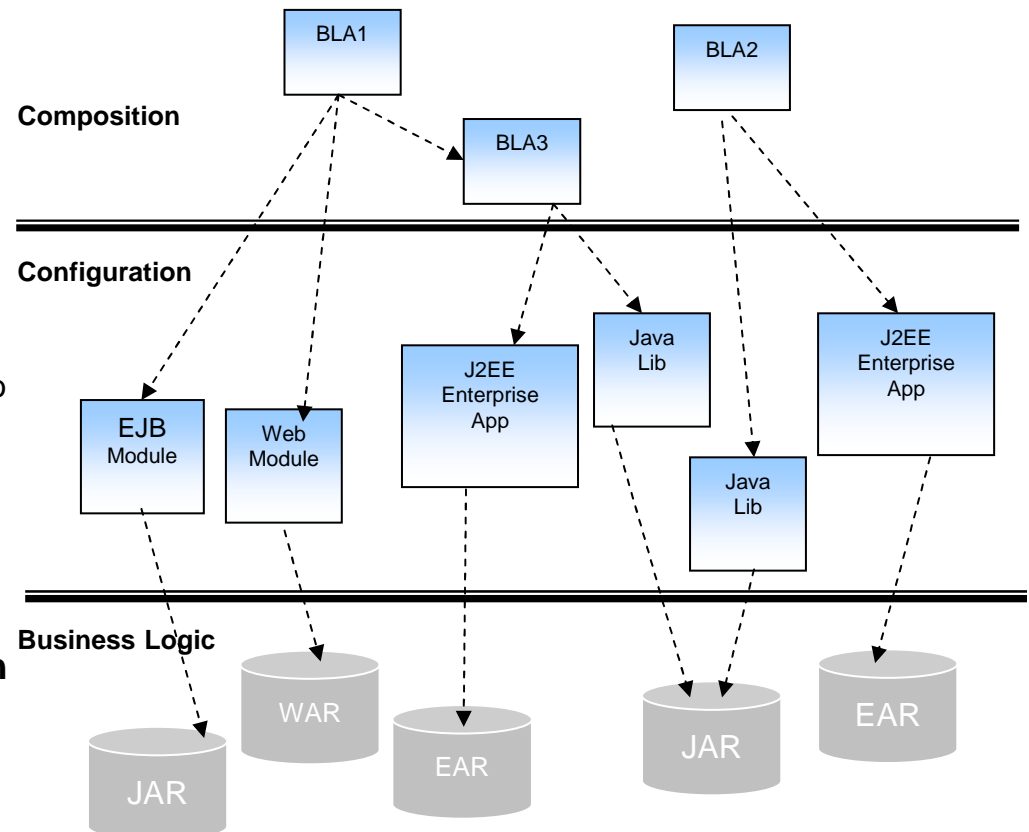




## WebSphere Business Level Applications

Significantly improves the management of multi-component applications, simplifying administrative tasks

- **A composition model that extends the notion of “Application”**
  - Manages JEE and non-JEE artifacts like SCA packages, libraries, proxy filters etc.
  - Performs dependency management by tracking relationships between application components
  - Supports Application Service Provider (ASP) scenarios by allowing single application binaries to be shared between multiple deployments
- **Supports full lifecycle management of applications**
  - Install, distribute, activate, update, remove
- **Aligns WebSphere Applications better with business as opposed to IT configuration**





## Agenda

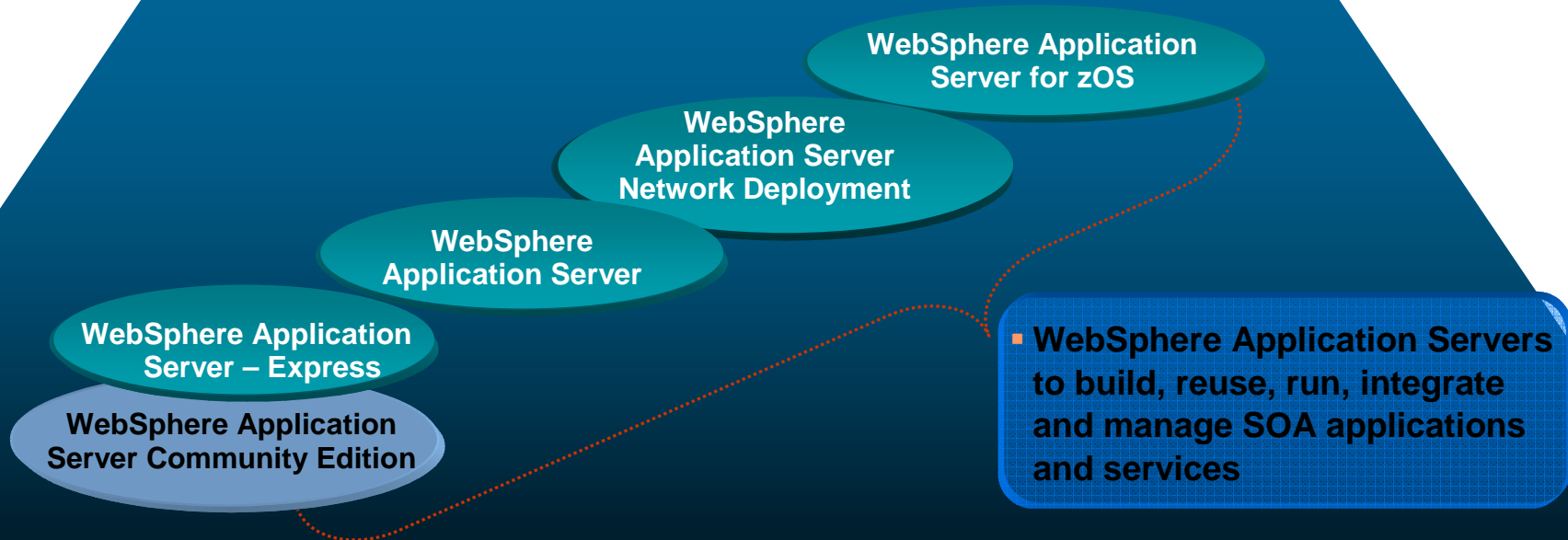
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## IBM WebSphere Virtual Enterprise Enhancing WebSphere Intelligent Management capabilities

### WebSphere Virtual Enterprise

Your control point for WebSphere application server environments





## WebSphere Virtual Enterprise

**Business Value: Lower costs for your enterprise applications and SOA environment while increasing flexibility and agility to ensure business process integrity, improve service and application performance, and better manage application health.**

### WebSphere Virtual Enterprise

#### Lower operational and energy costs

- Increase utilization of hardware and application servers
- Reduce energy requirements and optimize spending on physical assets.



#### Increase Flexibility and Agility

- Quickly provision new applications and services
- Traffic shaping and flow control
- Start / stop services and applications on demand
- Pause or stop low priority services and applications. Dynamically delivers resources where they are needed most.



#### Better Manage Health, Improve Service and Application Performance

- Ensure application availability
- Minimize application management and administration.
- High quality of service and proactively ensure the health of applications, services, & associated processes.





## WebSphere Virtual Enterprise Key Capabilities



**Title Search**



**Assess risk**



**Issue Title**



**Tax Records**



**Manage account**

**Applications**

### Application Health Management

- Application performance monitoring
- Prevent outages by taking corrective action for common server health problems

### Policy-Based Workload Management

- Pooled resources
- Prioritized workloads using service policies

### Application Edition Management

- Interruption-free deployment of new application versions
- Intelligent routing to application versions in production



**Application Resources**



**Information Resources**





## Benefits of Application Health Management

### What is Health Management?

- Proactively deal with application and application infrastructure issues *before* they become acute problems ... automatically
- Health conditions and associated corrective actions
- Requires application and infrastructure insight!



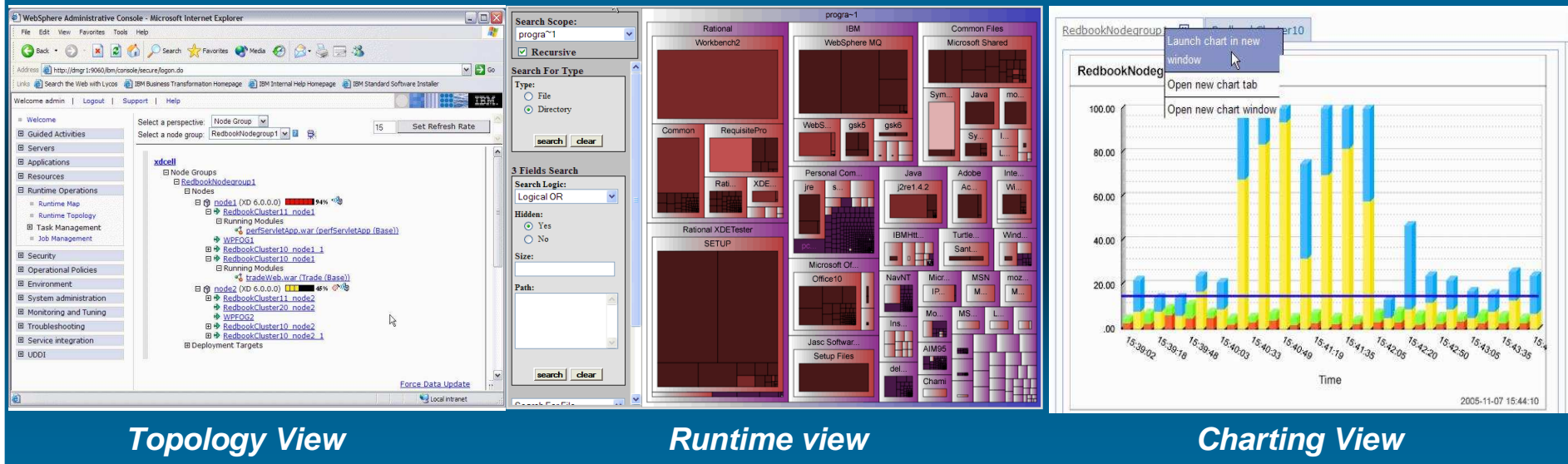
### Benefits

- Higher application availability
- Lower administration costs
- Satisfied end users





## Application Health Management



- Define health policies for common application server situations.
- Monitor & take corrective actions automatically.
- *Topology View*: shows current status of virtualized dynamic environment.
- *Runtime View*: enables operators to monitor activity and receive visual alerts.
- *Custom Charting*: shows how applications are performing relative to service policies.



## *Application Health Management*



### **Challenge:**

- ◇ Recognize health issues in my environment and automatically correct them
- ◇ Allow me to determine what I consider a health condition and the appropriate corrective action

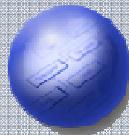
### **Solution**



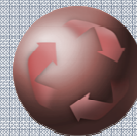
### **Health Management Framework**

*Out-of-the-box health policies and actions across all supported application environments and allows them to be customized*

**Comprehensive  
Health  
Policies**



**Custom  
Health  
Conditions**



**Custom  
Health  
Actions**





## Health Management – Pre-defined Health Policies

Helps mitigate common health problems before production outages occur

- Health policies can be defined for common server health conditions
- Health conditions are monitored and corrective actions taken automatically
  - Notify administrator
  - Capture diagnostics
  - Restart server
- Application server restarts are done in a way that prevent outages and service policy violations

Step 1: Define health policy general properties  
Step 2: Define health policy health condition properties  
Step 3: Specify members to be monitored  
Step 4: Confirm health policy creation

Define health policy general properties

Name

Description

Health condition

Age-based condition

Excessive request timeout condition

Excessive response time condition

Memory condition: excessive memory usage

Memory condition: memory leak

Storm drain condition

Workload condition

Next Cancel

### Health Conditions

- **Age-based:** amount of time server has been running
- **Excessive requests:** % of timed out requests
- **Excessive response time:** average response time
- **Excessive memory:** % of maximum JVM heap size
- **Memory leak:** JVM heap size after garbage collection
- **Storm drain:** significant drop in response time
- **Workload:** total number of requests



## Health Management – Custom Health Policies and Actions *Take Control!*

Provides flexibility by allowing the definition of custom policies and associated actions allowing administrators to define an action plan tailored for their environment to be carried out when unhealthy situations are detected.

**Health management monitor reaction**

Reaction mode  
Supervise

**Take the Following Actions When the Health Condition Breaches**

Add Step Delete Step Move Up Move Down

Select	Step	Action	Target Server	Target Node
<input type="checkbox"/>	1	Place Server Into Maintenance Mode	Sick Server	Node hosting Sick Server
<input type="checkbox"/>	2	<a href="#">Dump Application State</a>	Sick Server	Node hosting Sick Server
<input type="checkbox"/>	3	Restart Server	Sick Server	Node hosting Sick Server
<input type="checkbox"/>	4	Place Server out of Maintenance Mode	Sick Server	Node hosting Sick Server

**Health Policy Custom Health Actions**

Add, delete, and edit custom operations

Preferences

New Delete

Select	Name	Supported OS	Action	Description
<input type="checkbox"/>	<a href="#">Enable Application Trace</a>	windows	C:\myScripts\enableAppTrace.bat -serverName \${WAS_SERVER_NAME}	
<input type="checkbox"/>	<a href="#">Enable Application Trace</a>	linux, aix, hp-ux, solaris	/usr/local/bin/enableAppTrace.sh -serverName \${WAS_SERVER_NAME}	
<input type="checkbox"/>	<a href="#">Collect Logs</a>	windows	C:\myScripts\collectAllLogs.bat	
<input type="checkbox"/>	<a href="#">Collect Logs</a>	linux, aix, hp-ux, solaris	/usr/local/bin/collectAllLogs.sh	
<input type="checkbox"/>	<a href="#">Dump Application State</a>	all	java -jar DumpAppState.jar	

Total 5



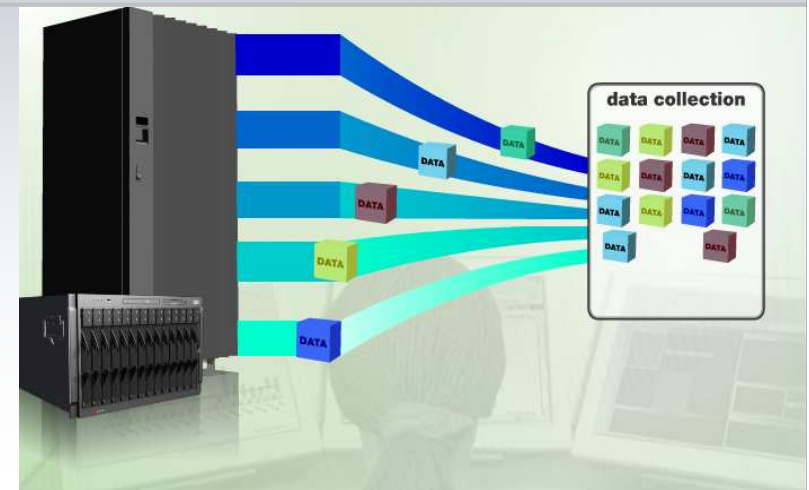
## Data Logging

### Challenge:

- ◇ A lot is going on in my environment. I need to be able to log information so I can do historical trend analysis of how my infrastructure is performing.
- ◇ My infrastructure resources are shared across multiple applications and users. I need an easy way to meter usage and appropriately chargeback to users and/or departments.

*Comprehensive data logging of applications, users and resources; content in logs is configurable and aggregated for easily integrating with accounting and chargeback products*

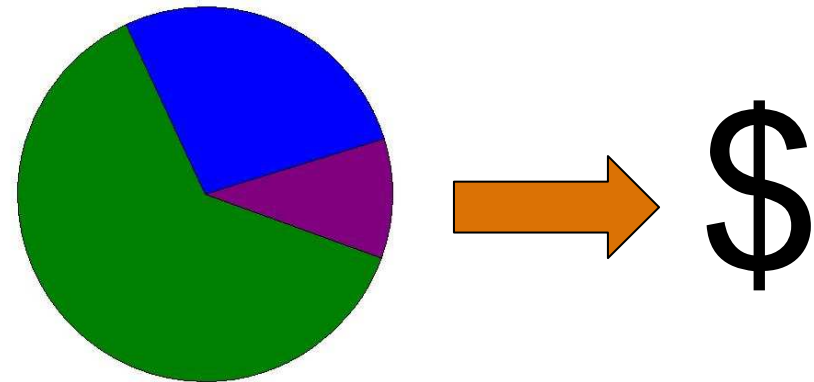
- **Comprehensive logging** of application, resource and workload information across WVE's autonomic systems
- **Historical trend analysis** using either pre-packaged or customized reports with innovative visualization techniques
- **Integration with accounting and chargeback systems** such as Tivoli Usage and Accounting Manager





## *Chargeback*

- Chargeback can be implemented to bill each department for application utilization of the application server pool
- WebSphere Virtual Enterprise can log machine utilization statistics over a period of time for each application
- CPU and memory utilization percentages can be converted to dollar amounts
- Feed data into Tivoli Usage and Accounting Manager and other reporting tools





## Benefits of Policy-based Workload Management

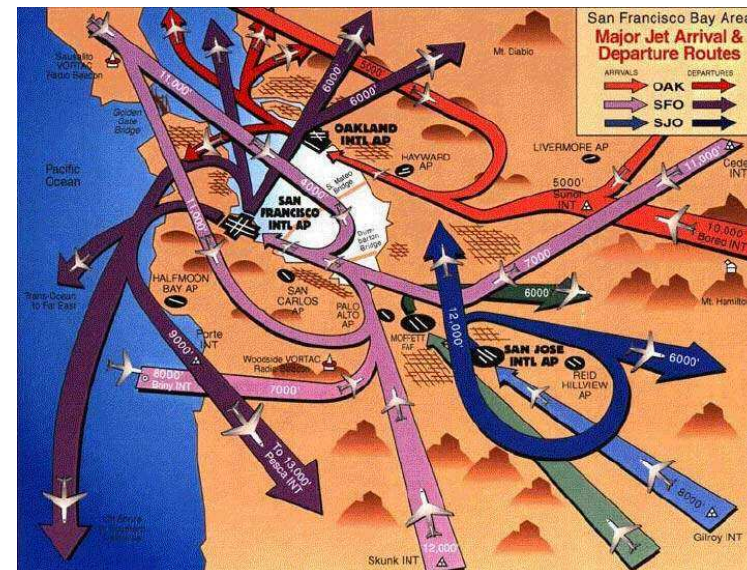


### What is Policy-based Workload Management?

- Manage in-bound transaction (workload) requests ... in real time
- Route work to the application server that can do it best
- Streamline processing through the system for higher priority requests (give them priority)
- Ensure that in-bound requests do not overwhelm backend application resources (moderate flow ... just like the airlines)
- Requires application knowledge!

### Benefits

- Better application performance
- Optimal throughput & responsiveness
- Satisfied end users







## Policy-Based Workload Management

- Define service level goals with service policies
- Classify, prioritize, & intelligently route workloads
- Enable application performance monitoring
- Consistently achieve service policies by adjusting resources when needed

Welcome administration | Logout | Support | Help

Service Policies

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

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

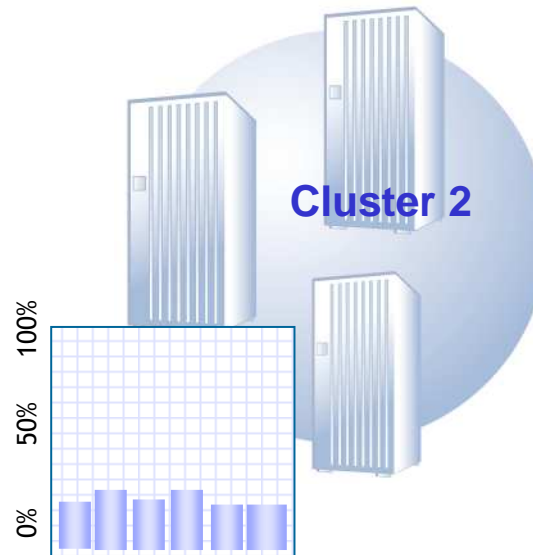
*Service Policies define the relative importance and response time goals of application services*



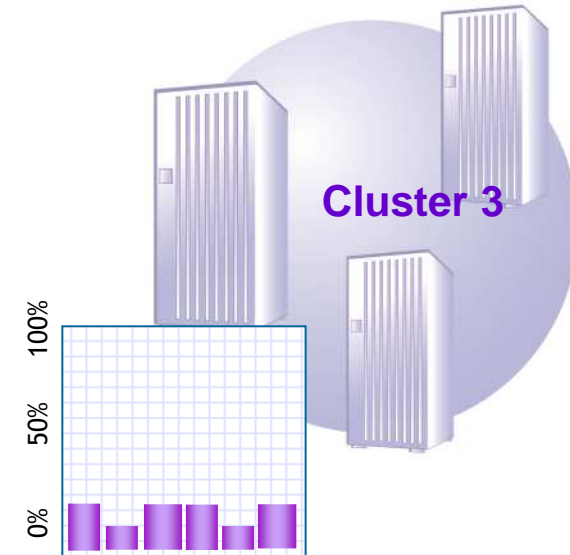
## A Normal Day at the financial services company



Home Equity Loans  
Processing



Credit Card Processing



Savings / Deposit  
Processing

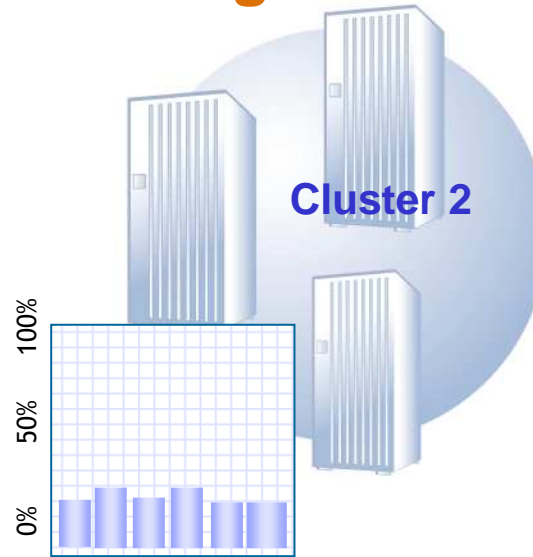


## A new promotion causes huge increase in loan applications

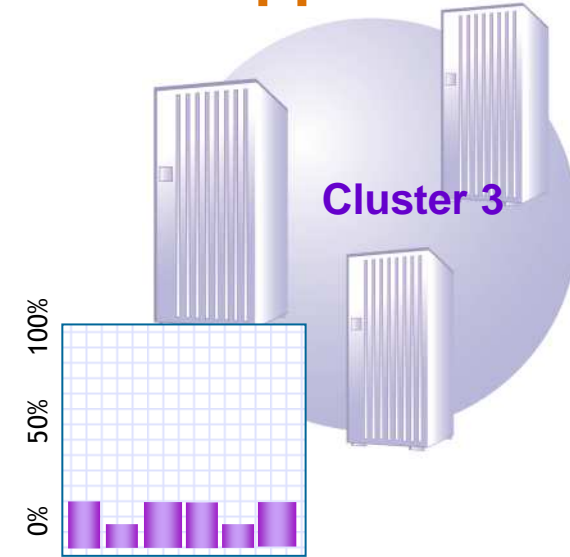


Promotion results in 100% Utilized Servers

Home Equity  
Loans Processing



Credit Card Processing



Savings / Deposit  
Processing

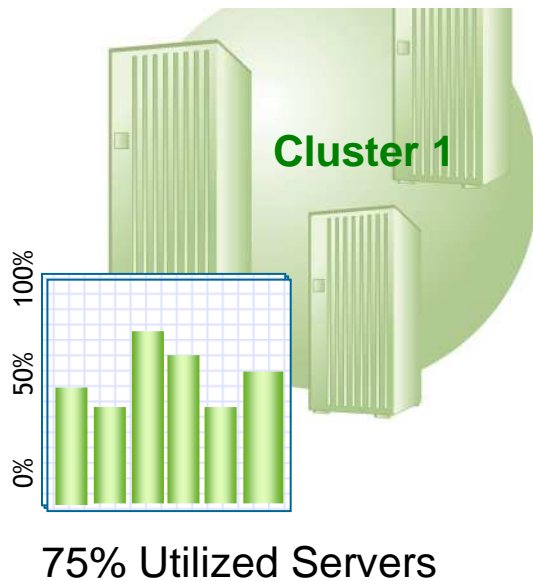


Loan Processing Time: 15% over target  
Customer Complaints: 25% over target  
CSR Efficiency: 30% below target

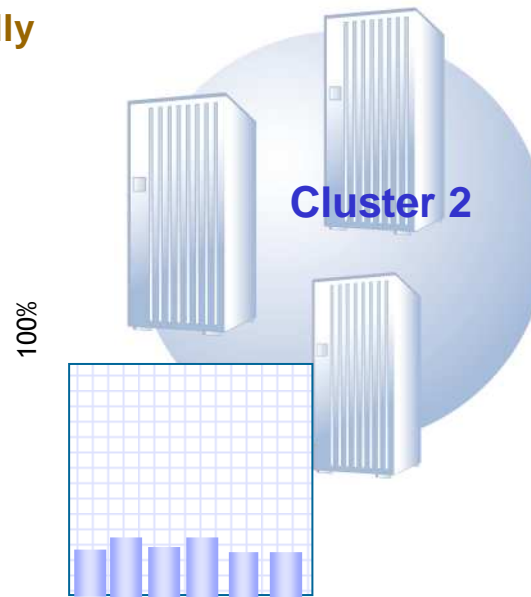


## With WebSphere Virtual Enterprise, home equity loan processing application is given the highest priority

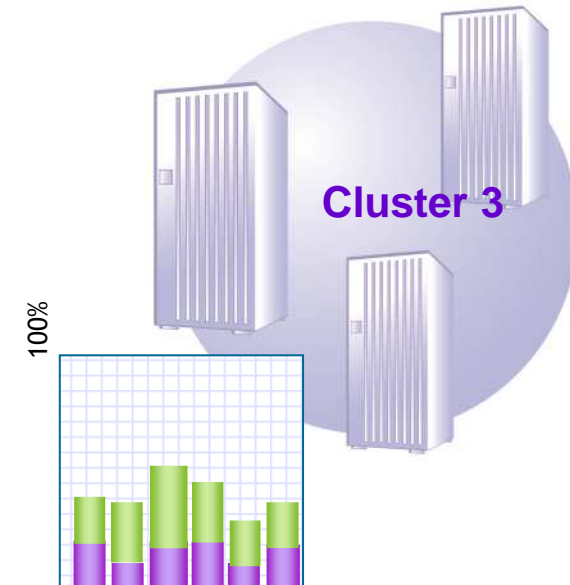
Promotion launched –  
Servers adjust dynamically



Loan Processing



Credit Card Processing



Savings / Deposit  
Processing



## All Applications Leverage a Single Resource Pool



Home Equity Loan  
Processing

Mortgage Processing

Credit Card Processing

Statement Processing

Savings / Deposit  
Processing

\* Hypothetical, for illustrative purposes only



## Benefits of Application Edition Management

### What is Application Edition Management?

- Upgrade applications without interruption
- Deploy new applications without jeopardizing application or service availability
- Coordinate activation of application versions & routing of requests to the application
- Test final pre-production level of an application version with a select group of users

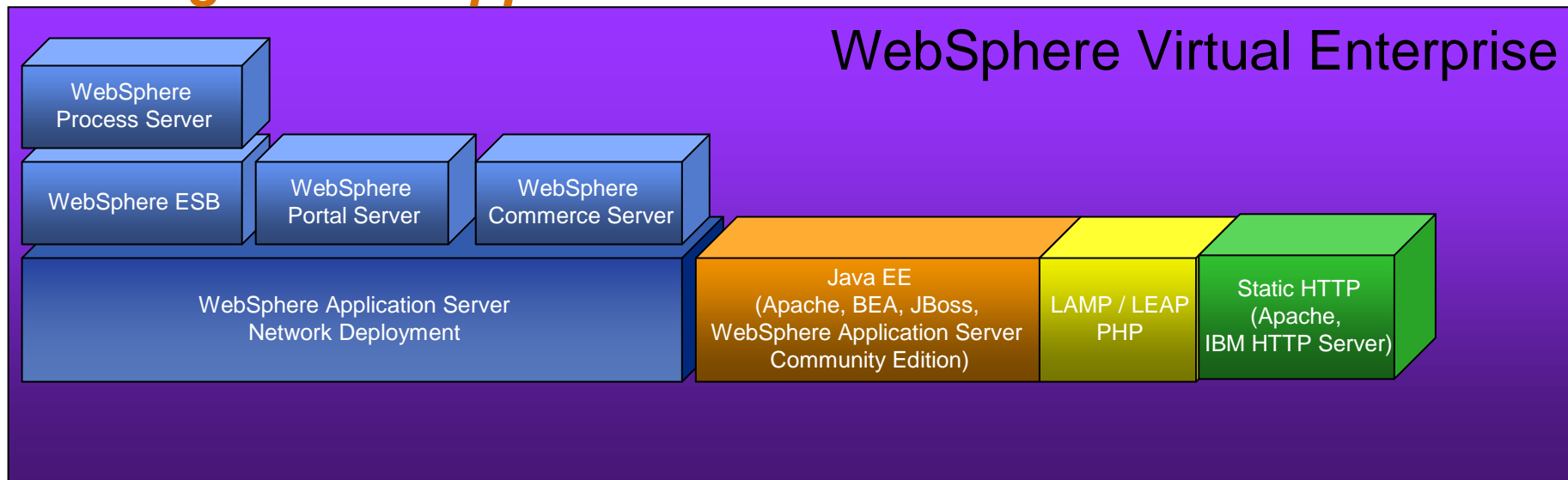
### Results In

- Easy validation of new versions of applications & services
- Support “rolling” upgrades
- More agile and flexible application & service deployment





## Support for WebSphere Applications and Your Heterogeneous Application Server Environment



- Manages WebSphere stack products
- Manages WebSphere and non-WebSphere application servers
- Works across leading platforms (Windows, UNIX, Linux, z/OS)
- Works across leading server virtualization environments (VMware, PowerVM, z/VM)

WebSphere  
Community Edition



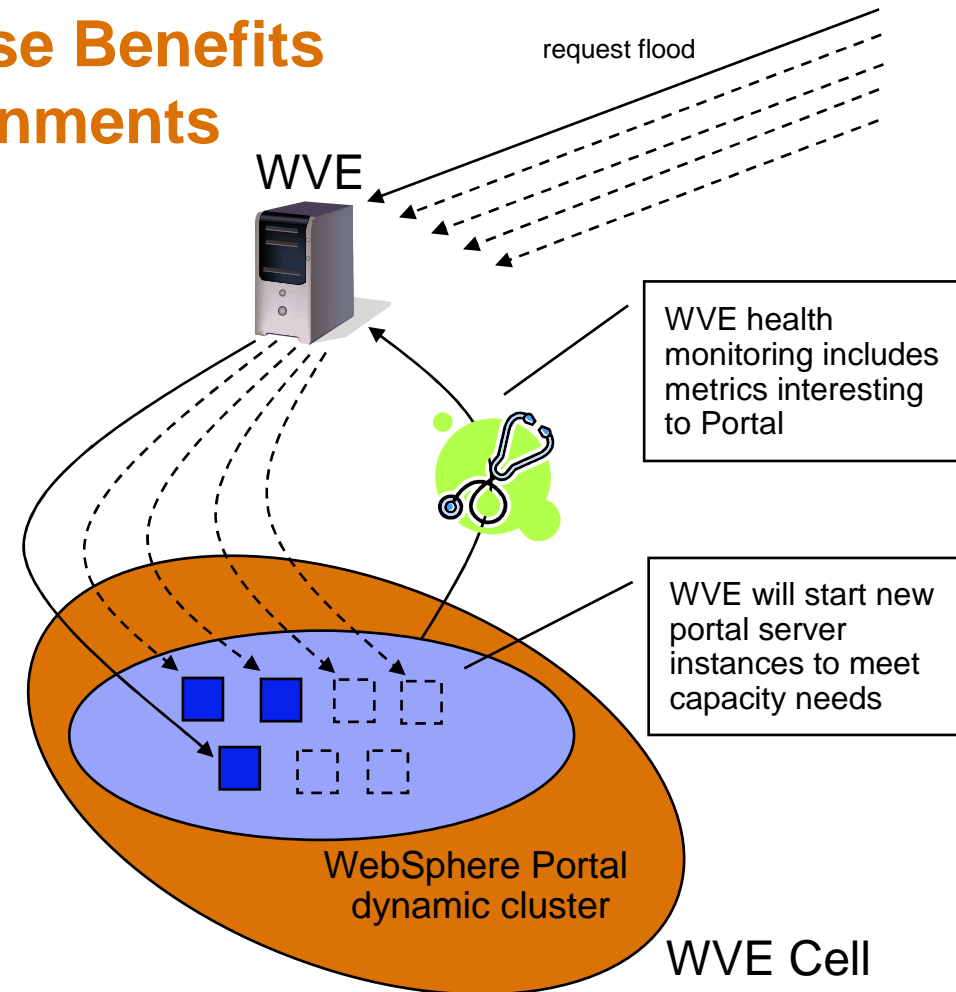
Tomcat





## WebSphere Virtual Enterprise Benefits in WebSphere Portal Environments

- WVE can be used to monitor not only physical server health, but also WebSphere Application Server resource utilization
  - Provide guidance on what resources and thresholds are particularly interesting for WebSphere Portal
- WebSphere Portal can participate in dynamic clusters
  - Start additional cluster instances to meet spikes in capacity needs or work around server failures
  - Automatically restart portal instances based on health issues
  - Prioritize certain user requests higher than others (ie. gold, silver, bronze)
    - E.g. stop routing lower priority requests when servers become congested.

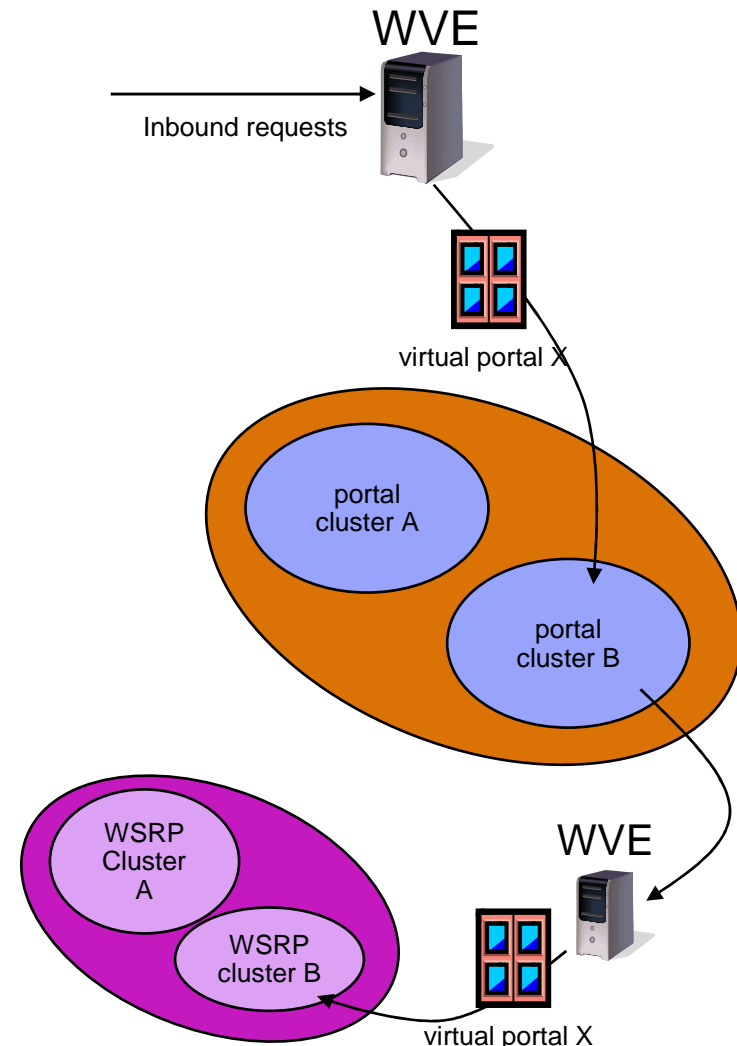






## WebSphere Virtual Enterprise Benefits in WebSphere Portal Environments

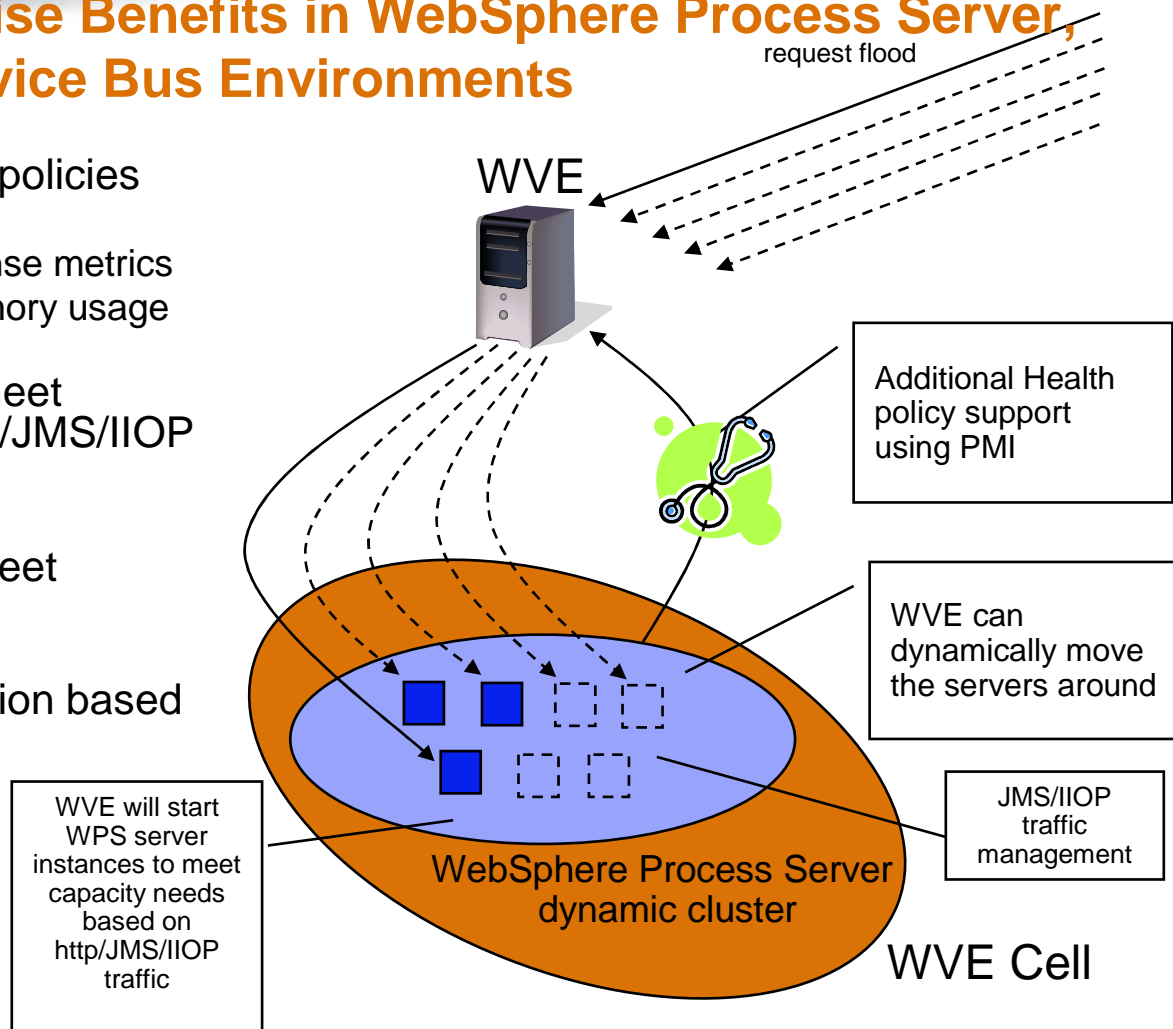
- WVE has visibility to the virtual portal ID and can route based on that
  - Create service policies for routing to virtual portals running on certain clusters
  - Create service policies for routing certain users/groups to certain clusters
  - “Asymmetric clusters” – clusters are identically configured by only certain parts are used based on user traffic routed to it
- Web Services for Remote Portlets (WSRP) producers can be configured as dynamic clusters
  - Apply quality of service based routing to WSRP requests
  - Routing can span clusters and cells





## WebSphere Virtual Enterprise Benefits in WebSphere Process Server, WebSphere Enterprise Service Bus Environments

- Pre-defined and custom health policies and actions
  - Policies based on request/response metrics
  - Memory leak and excessive memory usage
- Start new server instances to meet capacity needs based on HTTP/JMS/IIOP traffic
- Dynamically move servers to meet response times and SLAs
- WPS can participate in expression based dynamic clusters





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## **Rotech**

Experiences dramatic performance, efficiency and availability gains while lowering costs using IBM WebSphere Virtual Enterprise

### **Challenges**

- Providing 24x7 access to treatment programs and health information to patients
- Enhance efficiencies of business processes by eliminating server failures and providing high availability for applications

### **Solution**

- IBM WebSphere Virtual Enterprise
- IBM WebSphere Application Server Network Deployment
- IBM WebSphere MQ, IBM WebSphere Process Server
- IBM Rational® Software Architect
- IBM System p4, p5™ 510, p550

### **Benefits**

- ✓ Eliminated maintenance headaches and made IT staff available to develop needed components, which will allow for repositioning a number of employees from manual processes and improve automation
- ✓ Projected decreases in costs and increase in revenue
- ✓ Optimized application environment providing flexible, scalable infrastructure with high availability

***“The performance of our applications has been phenomenal. The speed of interactions has exceeded our expectations.”***

–Marlin Clark,  
Director of Information  
Systems - Technology,  
Rotech Healthcare Inc.



## OGIS Research Institutes Co., Ltd

Proactive health monitoring, improved quality of service

### Problem

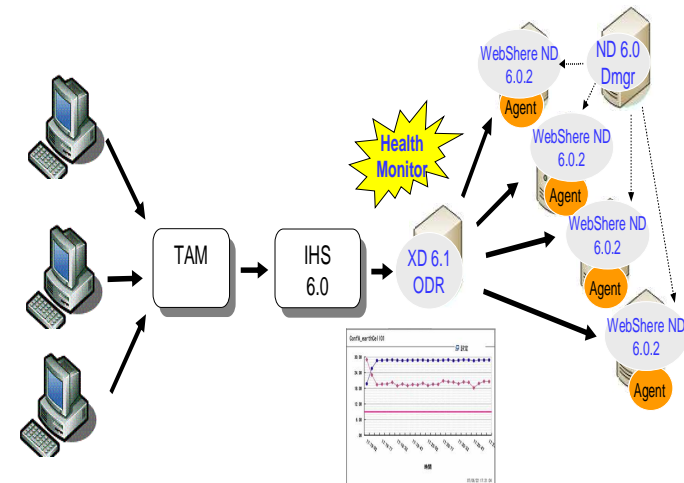
- Application resource shortages resulting in manual restarts, quality of service and end user satisfaction problems

### Solution

- WebSphere Virtual Enterprise
- WebSphere Application Server ND

### Key Features / Benefits

- ✓ Managing over 200 applications
- ✓ Automation of application health monitoring
- ✓ Email notification of problem resulting in early problem detection and resolution
- ✓ Ability to run multiple application versions at the same time
- ✓ No change to existing applications





## Westpac

### 24 hour availability for online banking platform



#### Problem

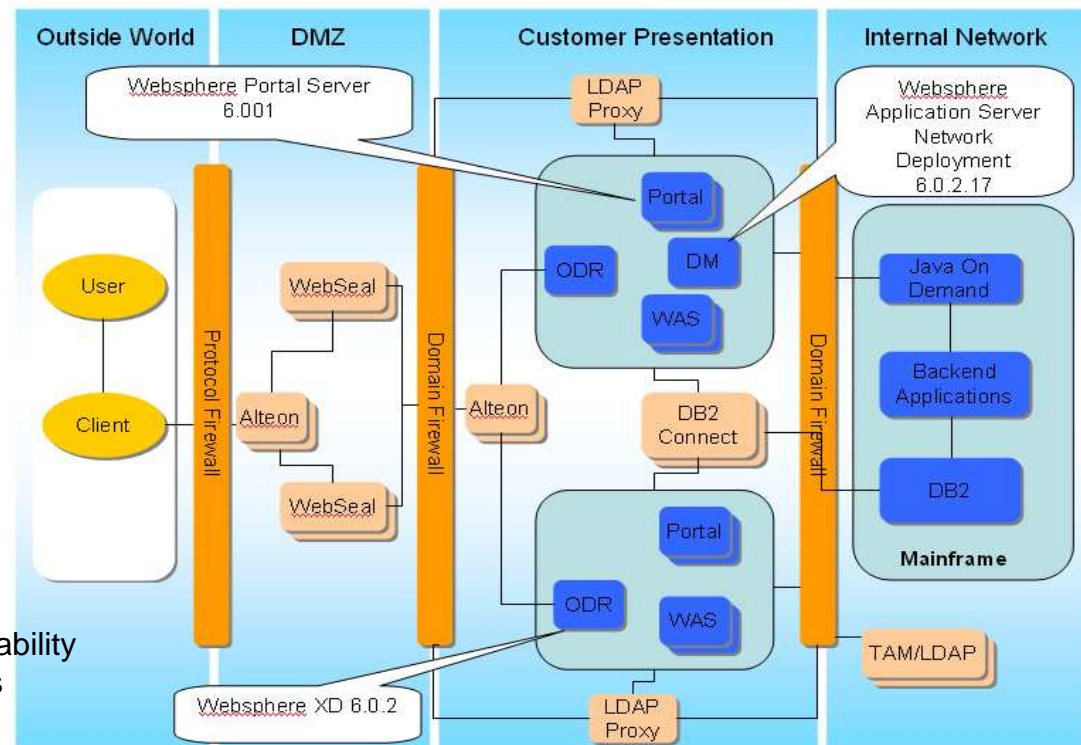
- A secure, scalable and reliable environment for online banking applications

#### Solution

- WebSphere Virtual Enterprise
- WebSphere Application Server ND
- WebSphere Portal
- IBM servers and storage
- Tivoli identity management

#### Key Features / Benefits

- ✓ Self-managing intelligent technologies ensure high performance and continuous availability
- ✓ Improved speed to market for new applications
- ✓ Much simpler to manage on a daily basis
- ✓ System can be upgraded while running
- ✓ Improved performance and scalability
- ✓ Resources dynamically allocated based on business goals



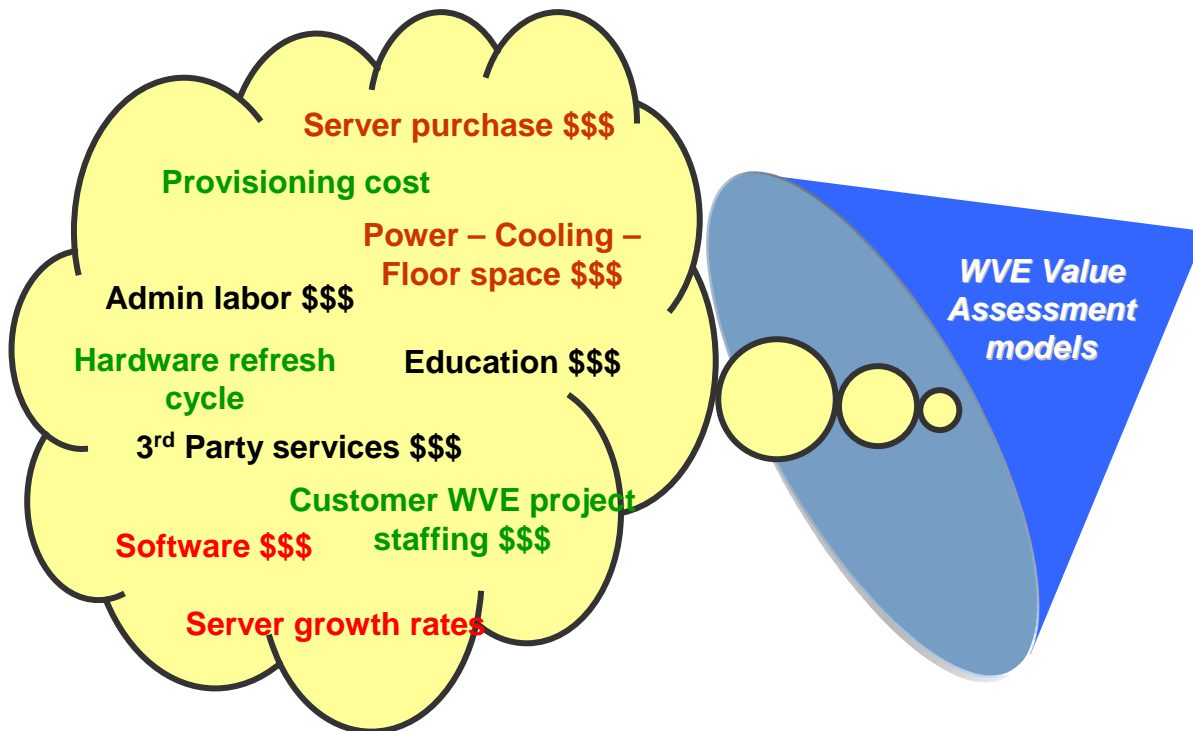


## Agenda

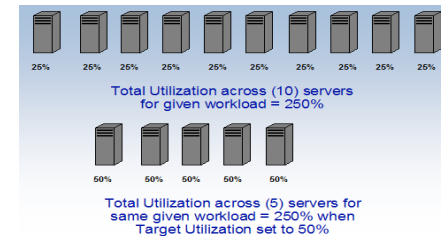
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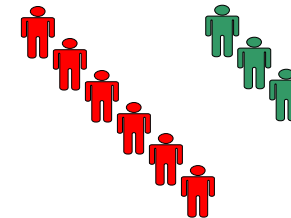
## Let IBM Show You the ROI WebSphere Virtual Enterprise Value Assessment



### Server optimization savings



### Administrative labor savings



### QoS related business benefits

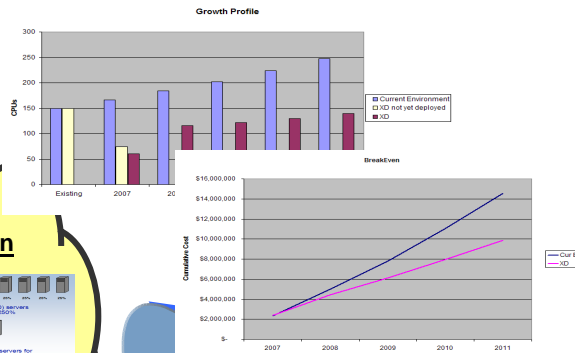




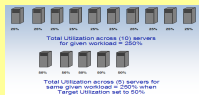


# Determine the Quantifiable Cost Savings

## Optimization profile & Breakeven



**Server consolidation savings**



**Administrative labor savings**



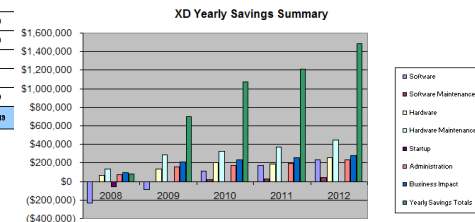
**QoS related business benefits**



**WVE Value Assessment models**

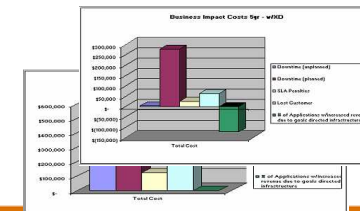
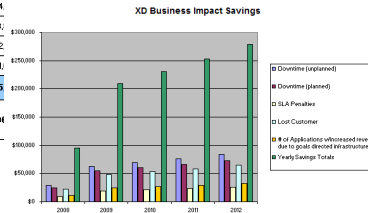
## WVE Yearly Savings

Customer XYZ - XD Yearly Savings Summary					
	2008	2009	2010	2011	2012
Software	(\$22,000)	(\$50,000)	\$116,000	\$163,000	\$21,000
Software Maintenance	\$0	(\$1,300)	\$13,000		
Hardware	\$55,240	\$105,450	\$104,720		
Hardware Maintenance	\$102,000	\$200,000	\$240,000		
Startup	(\$21,040)	\$0			
Administration	\$18,375	\$57,450	\$16,250		
Business Impact	\$5,563	\$205,372	\$200,310		
<b>Yearly Savings Totals</b>	<b>\$81,344</b>	<b>\$702,162</b>	<b>\$1,060,310</b>		
<b>5 Year Savings for WebSphere XD (at 0.66% NPV)</b>		<b>\$3,635,242</b>	<b>\$1.1B</b>		



## WVE Business Impact

Customer XYZ - XD Business Impact Savings Summary					
	2008	2009	2010	2011	2012
Downtime (unplanned)	\$28,619	\$62,962	\$63,258	\$76,814	\$67,802
Downtime (planned)	\$24				
SLA Penalties	\$8				
Lost Customer	\$22				
# of Applications whose revenue due to goals directed	\$11				
<b>Yearly Savings Totals</b>	<b>\$95</b>				
<b>5 Year Business Impact Savings for WebSphere XD</b>					<b>\$1.01</b>





## Executive Summary - Finance Customer "A"

### ➤ WebSphere Virtual Enterprise Value Assessment conducted by IBM

- Analyze the business case for improved virtualization & management of the customer "A" application server environment utilizing Virtual Enterprise.
- Purpose is to achieve higher levels of efficiency & cost savings related to server consolidation, reduction in administrative tasks, improvement of application deployment, increased application availability, etc...

### ➤ Key benefits associated with utilization of WebSphere Virtual Enterprise within customer "A" application server environment

- ✓ 40%+ server consolidation benefit = *less hardware/maintenance costs.*
- ✓ 52%+ reduction in administrative labor costs (*cost avoidance*).
- ✓ 38%+ reduction in hardware lease and hosting fees.
- ✓ Significant administrative time savings.
- ✓ Significant improvements in Qualities-of-Service (*i.e. availability, scalability, workload management, etc...*)

### ➤ Other Benefits

- Ability to scale (handle growth) cost effectively.
- Increase customer "A"s ability to change quickly.
- Provide consistent response time as customer volume increases.
- Make application changes outside the normal maintenance window.
- Reduce the risk of unexpected change results.
- Improve visibility and resiliency for the runtime.

**TCO Result (40% consolidation): Expected cost savings in excess of \$5.7M over 5 years**

**TCO Result (40% consolidation): Breakeven approx 12 months**



## Executive Summary - *Insurance Customer "A"*

### ➤ **WebSphere Virtual Enterprise Value Assessment conducted by IBM**

- Analyze the business case for improved application virtualization & management of the customer "A" application server environment utilizing Virtual Enterprise (WVE).
- Purpose is to achieve higher levels of efficiency & cost savings related to server consolidation, reduction in administrative tasks, improvement of application deployment, increased application availability, etc...

### ➤ **Key benefits associated with utilization of WebSphere Virtual Enterprise within customer "A" application server environment**

- 54%+ server consolidation benefit = less hardware/maintenance/provisioning costs.
- 28%+ reduction in hardware lease chargeback costs.
- Significant administrative time savings (future hire cost avoidance).
- Significant improvements in Qualities-of-Service (i.e. availability, scalability, workload management, etc...)

### ➤ **Other Benefits**

- Ability to scale (handle growth) cost effectively.
- Increase customer "A"'s ability to change quickly.
- Provide consistent response time as customer volume increases.
- Institute more effective chargeback mechanism.
- Make application changes outside the normal maintenance window.
- Reduce the risk of unexpected change results.
- Improve visibility and resiliency for the runtime.

**TCO Result (54% consolidation): Expected cost savings approx \$12.3M over 5 years**

**TCO Result (54% consolidation): Breakeven approx 17 months**



## Agenda

- Customer Challenges and Industry Trends
- WebSphere Application Server
- WebSphere Virtual Enterprise
- Customer Success Stories
- ROI
- Summary



## WebSphere Virtual Enterprise Business Benefits

### ..... Enhancing Intelligent Management for WebSphere Applications

- ✓ **Improved Application Availability**
  - Health management framework
- ✓ **Better Application Performance**
  - Work is distributed or scaled out across multiple application server resources
- ✓ **More responsive infrastructure**
  - Resources are used for the most important work
- ✓ **Better utilization = less assets = more green = more cost savings**
  - Value Assessment quantifies economic benefits
- **Ability to chargeback application infrastructure usage**
  - Integration with Tivoli Usage and Accounting Manager



## For More Information

- [WebSphere Virtual Enterprise home page on ibm.com](#)
- [Open Source Consolidation Package](#)
- **Conduct a Value Assessment today**

## Customer Success



Osaka Gas Video



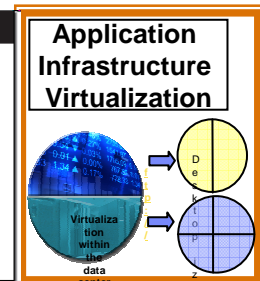
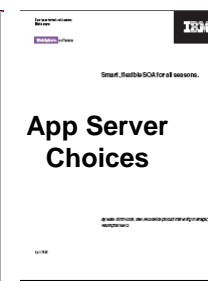
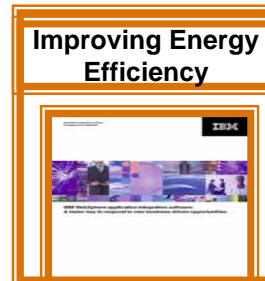
Rotech

## Demos



Flash demo Product in action demos

## White Papers



CULTURE  
**SOA**



RELEVEZ  
TOUS LES DÉFIS  
AVEC AGILITÉ



धन्यवाद

Hindi

多謝

Traditional Chinese

*Grazie*

Italian

ขอบพระคุณ

Thai

Gracias

Spanish

Thank You

多谢

Simplified Chinese

Спасибо

Russian

Obrigado

Brazilian Portuguese

شكراً

Arabic

Danke

German

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

감사합니다