

**IBM Boston Technical Exploration Center  
404 Wyman Street, Boston MA**

# WebSphere Lab Jam



# Overview

- WebSphere Application Server V8
- IBM Workload Deployer
- WebSphere Virtual Enterprise
- WebSphere eXtreme Scale
- WebSphere Compute Grid
- Getting Started - Labs

# WebSphere Application Server V8

# WebSphere Application Server Family

<p><b>WebSphere Application Server for Developers</b></p> <p>Enables efficient development of innovative applications that will eventually run on WAS in production</p> <p>Also available as a no-charge edition for the developer desktop</p>	<p><b>WebSphere Application Server Hypervisor Edition</b></p> <p>Optimized to instantly run in VMware and other server virtualization environments</p>	<p><b>WebSphere Application Server Network Deployment</b></p> <p>Delivers near-continuous availability, with advanced performance and management capabilities, for mission-critical applications</p>	<p><b>WebSphere Application Server for z/OS</b></p> <p>Takes full advantage of the z/OS Sysplex to deliver a highly secure, reliable, and resource efficient server experience</p>
	<p><b>WebSphere Application Server</b></p> <p>Provides secure, high performance transaction engine for moderately sized configurations with simple load balancing (web tier) and failover across up to five application server profiles</p>		
	<p><b>WebSphere Application Server - Express</b></p> <p>A lower-cost, ready-to-go solution to build dynamic Web sites and applications</p>	<p><b>WebSphere Application Server Community Edition</b></p> <p>An open source-based, small footprint foundation with no up-front acquisition costs</p>	



Built on a common code base WebSphere Lab Jam

## WASV8 support for Java EE 6

Simplify standards-based enterprise Java development for dept. to core business apps

### Enhanced developer productivity, user experiences, performance & integration:

- **Enterprise JavaBeans (EJB) 3.1:** Enhanced developer productivity through simplification including testing outside of the application server, new timer support & asynch enhancements
- **Contexts and Dependency Injection for Java (CDI) 1.0:** Faster time to value through tighter and simpler integration between Web & business logic tiers
- **Java Persistence API (JPA) 2.0:** Enhanced developer ease of use & app performance through improved locking, mapping support & dynamic query construction
- **Java Servlet 3.0:** Enhanced time to value through annotations and ease of integrating third party presentation frameworks
- **Java API for RESTful Web Services (JAX-RS) 1.1:** Deliver better user experiences faster through integrated Web 2.0 programming model support
- **JavaServer Faces (JSF) 2.0:** Enhanced developer productivity & end user experience through annotations & Facelets support
- **Bean Validation 1.0:** Improved developer productivity through declarative means for describing validation constraints for data
- **Java Architecture for XML Binding (JAXB) 2.2:** Improved performance via new default marshalling optimizations
- **Enterprise Web Services 1.3:** Improved integration and reuse support
- **Java API for XML-Based Web Services (JAX-WS) 2.2:** Developer productivity and security enhancements

# WAS V8 Performance Enhancements

Reduce TCO through higher performance application foundations

## ▪ Java 6

- JVM runtime enhancements
- JIT optimizations

## ▪ Application Performance Improvements vs. WAS v7

- DayTrader: Up to 23%
- OSGi Applications: Up to 26%

## ▪ End-to-end performance improvements vs. WAS v7 including

- Up to 15% faster server startup time for developers
- Up to 92% faster application server creation in a large topology
- Up to 58% faster application server cluster creation in a large topology
- Up to 34% faster application deployments in a large topology
- Up to 10% better vertical scaling on larger multi-core systems
- JPA 2.0 optimizations with DynaCache and JPA Level 2 cache



Performance data is based on WebSphere Application Server in a distributed environment



# Lowering Barriers to Developer Adoption

- No charge WebSphere Application Server for Developers
  - For use on developer desktop at no charge



Download at:



– <http://www.ibm.com/developerworks/downloads/ws/wasdevelopers/index.html>

The screenshot shows the developerWorks website interface. At the top is a navigation bar with 'developerWorks' and links for 'Technical topics', 'Evaluation software', 'Community', and 'Events'. A search box is on the right. A left sidebar contains a 'WebSphere' menu with options like 'New to WebSphere', 'Products', 'Downloads', 'Technical library', 'Community & forums', and 'Events'. Below the menu are 'Related links' for IBM software downloads and product finder. The main content area features the title 'Free: WebSphere Application Server for Developers' and a detailed description of the no-charge offering. It includes a list of links for features, system requirements, product library, product support, demonstrations, quick start guide, sample applications, and forum. A 'Download' tab is active, showing a table with columns for Operating system, Version, Size, Method, and Download. The table lists the product for V8 on various operating systems (AIX, HP-UX, Linux, Solaris, Windows) with a size of 54MB to 130MB and a download button. A right sidebar contains promotional elements like 'Update My dW interests', 'We're here to help', 'Request a quote', 'E-mail IBM', and 'Ready to buy?'.

# IBM Workload Deployer



# IBM Workload Deployer

## Multiple Deployment Models

Next Generation Appliance  
Replaces existing WebSphere CloudBurst Appliance offering

Supports direct migration from previous offering

### Virtual System Patterns

Deployment of optimized product configurations (Hypervisor Edition products + base patterns) using IBM best practices. Enables rapid assembly and deployment of custom solutions using pre-configured product patterns with intelligent placement and mobility.

### Appliance form factor

Product Patterns

Hypervisor Edition Images

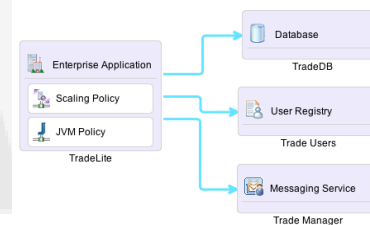
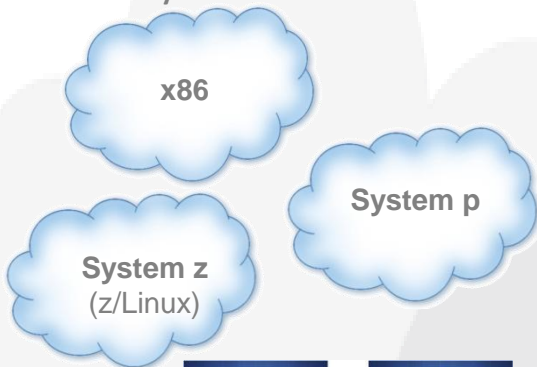
Workload Patterns

### Virtual Application Patterns

Deployment of workload patterns as integrated solutions delivered with integrated management and monitoring. Deployments include full life-cycle management including failure recovery, intelligent placement and elasticity.

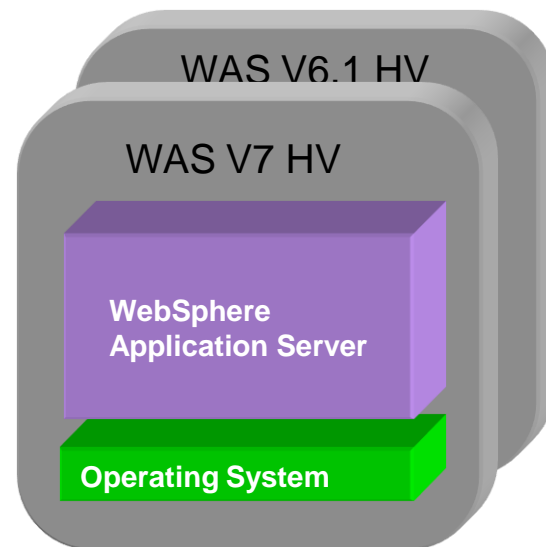


Bring your own hardware



## Hypervisor Edition Images

- IBM Middleware shipped as an .OVF virtual image, ready to run on a hypervisor
- The following products offered
  - WebSphere Application Server
  - WebSphere Process Server
  - WebSphere Portal Server
  - DB2
  - WebSphere Message Broker
  - WebSphere Business Monitor
  - WebSphere Message Queue (announced)
- Products support various combinations of:
  - VMware ESX, z/VM and/or PowerVM hypervisors
  - Red Hat Enterprise Linux, SUSE Linux, AIX
- Maintenance, support, and fixes through IBM for both middleware and operating system
  - New images include most recent GA components of IBM middleware, as well as OS patches



# Speed the Development & Test Lifecycle Through Self Service Access to Repeatable Environments

IBM Workload Deployer & WAS Hypervisor Edition



# WebSphere Virtual Enterprise

# The Value of WebSphere Virtual Enterprise

*Infrastructure optimization, flexibility, and new business opportunities*

## Server Consolidation

- ✓ \$4M+ saving over 5 yrs
- ✓ 40% reduction in TCO

## Insurance Company

- ✓ Reduce TCO 25%
- ✓ Manage peaks & growth within existing servers

## Large Manufacturer

- ✓ Projected 20% - 30% reduction in server, software and admin costs

## Company Intranet

- ✓ Improved application resilience
- ✓ Cost savings of 25%
- ✓ Manage peak load situations



# Dynamic Operations

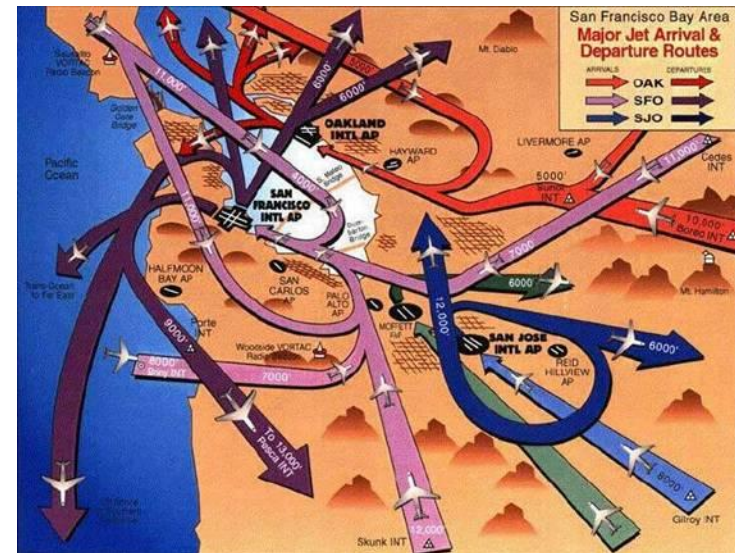
## What is Dynamic Operations ?

- Manages in-bound transaction (workload) requests
- Routes work to the application server that can do it best
- Streamlines processing through the system for higher priority requests
- Ensure that in-bound requests do not overwhelm backend application resources (moderate flow ... just like the airlines)
- Adjusts Application Capacity
- Requires no application changes!



## Results in:

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





# 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
- Provides application and infrastructure insight!

## Results In

- Better availability
- Less administration required
- Satisfied end users



# 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



# WebSphere Extreme Scale

# What is WebSphere eXtreme Scale?

*A flexible framework for realizing high performance, scalable and data-intensive applications*



New York



San Francisco



London



Shanghai

## 3 Use Cases

### Very powerful cache

- Scales from simple in-process topologies to powerful distributed topologies.

### Form of in-memory database

- Manage application state
- Scales to 1000's of servers
- Sometimes referred to as Distributed Application State Management.

Platform for building powerful XTP/Data Grid applications

# Scale with Simplicity

**Web Server Tier**



**Application Server Tier**



**Elastic Data Grid**



**Database Tier**



WebSphere  
eXtreme Scale

## IBM WebSphere eXtreme Scale

- Proven mature product:
  - Fourth major release of product with V7.1
  - Public References
  - Private References
  - Used at some of the largest web sites in the world
- Lightweight runtime footprint (15MB jar)
- Integrates with all versions of WebSphere Application Server and almost any Java-based application container or Java Virtual Machine (1.4.2 and higher)
- Proven multi-data center capabilities
- Proven low-latency access to data

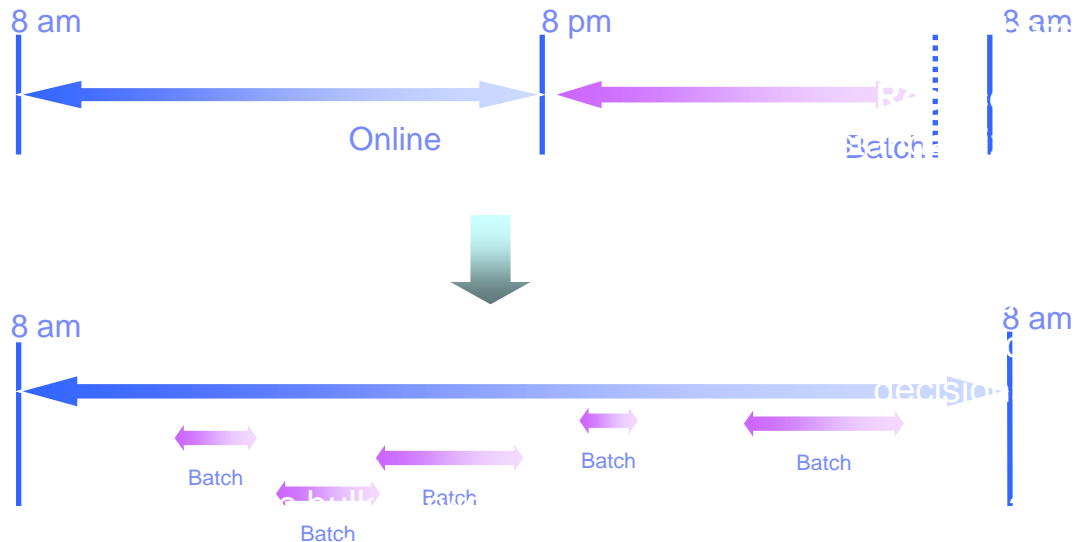




# WebSphere Compute Grid

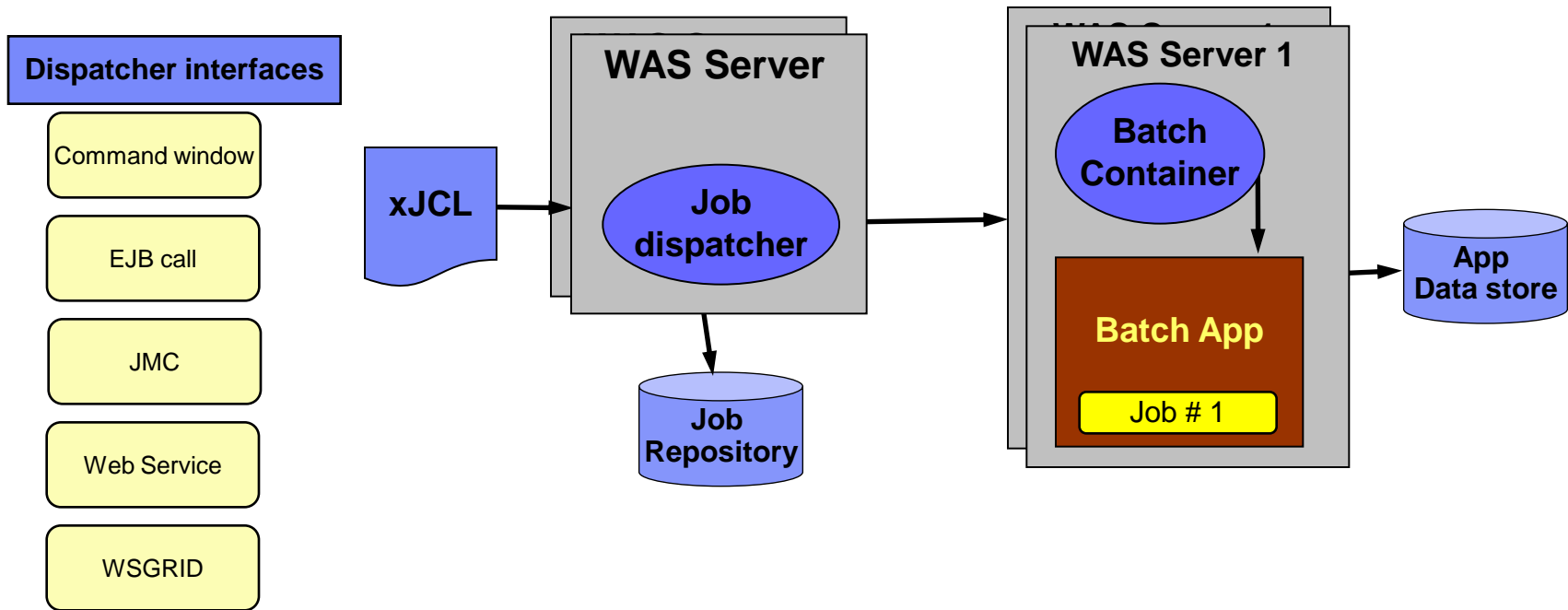
# Achieve business efficiency through a balanced blend of Batch and Online processing

A **continuous interleaving of bulk and real-time** processing maximizes the balance between operational efficiency and market responsiveness on a 24x7 global basis. It enables an cost effective, always-on business environment



IBM's batch offerings are designed to support this growth path

# Compute Grid: Basic Components



## ■ Job Dispatcher

- The job entry point to Compute Grid
- Job life-cycle management (Submit, Stop, Cancel, etc) and monitoring
- Dispatches workload to batch endpoints
- Hosts the Job Management Console (JMC)

## ■ Batch Container (PGC)

- Executes the actual business logic of the batch job
- Hosts the programming model

## ■ xJCL

- XML descriptor for the job
- Allows variable substitution

## Enterprise Features at a glance...

- Check Point Restart
  - Container-Managed **Checkpoint Strategies**
    - Keep track of the current input and output positions on behalf of the batch step
    - Provide flexible options: Time-based, Record-based, Custom algorithms
  - Container-Managed **Restart Capabilities**
    - Seek to the correct positions in the input and output streams
    - Restart should be **transparent** to the application
  - Dynamically adjust the checkpoint strategies based on Workload Management metrics, OLTP load, and application priorities
  
- Parallel processing
  - Provides a parallel processing infrastructure for partitioning, dispatching, managing and monitoring parallel batch jobs.
  
- Standardization
  - Delivers a workload-managed batch processing platform, enabling 24x7 combined batch and OLTP capabilities.
  - Java™ Plain-Old-Java-Object (POJO)-based application development with end-to-end development tooling, libraries, and patterns for sharing business services across OLTP and batch execution paradigms.

## Enterprise Features at a glance...

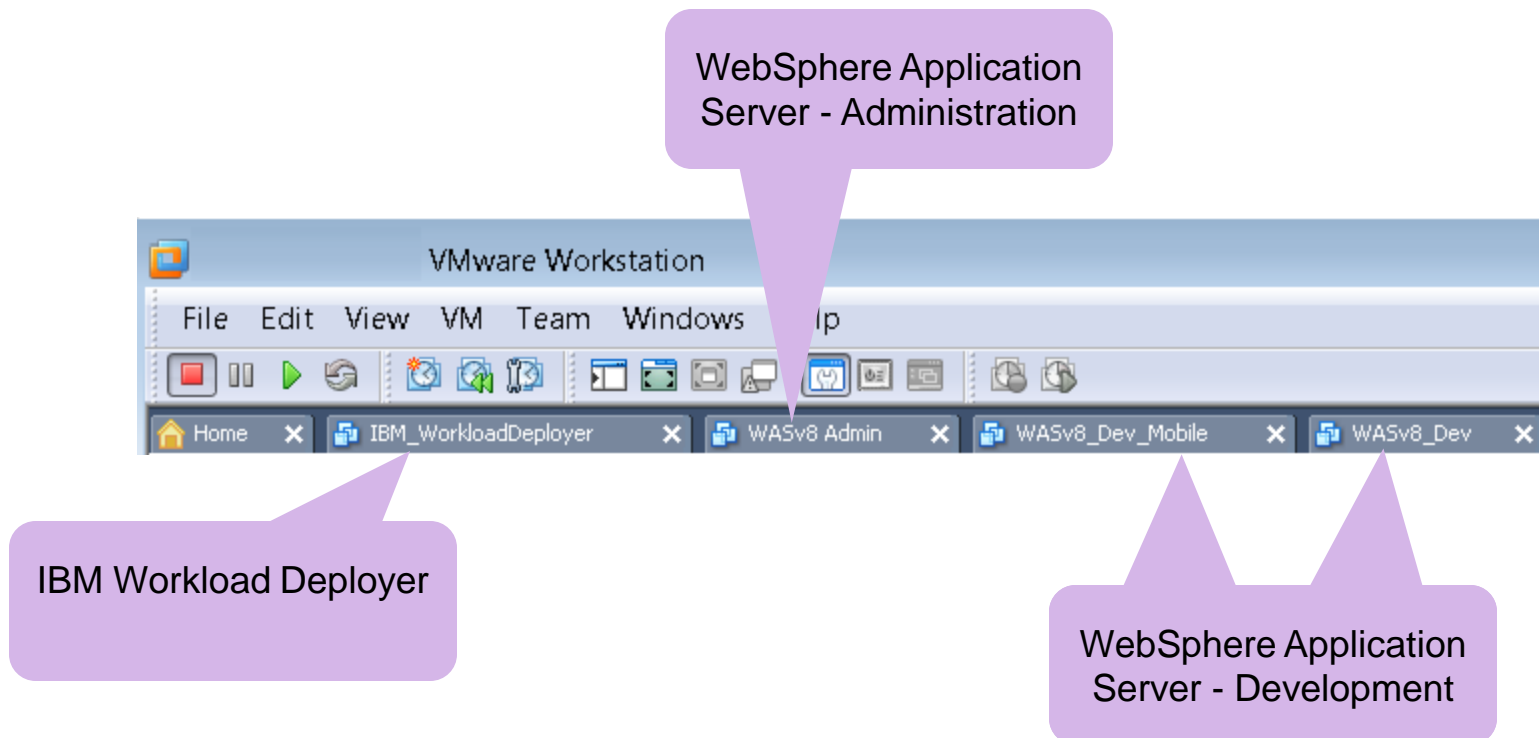
- Integrated Operation control
  - Provide an operational infrastructure for starting/stopping/canceling/restarting/etc batch jobs
  - Integrate with existing enterprise schedulers such as Tivoli Workload Scheduler
  - Provide log management and integration with archiving and auditing systems
  - Provide resource usage monitoring
  - Integrate with existing security and disaster recovery procedures
  
- High Availability
  - Clustered Job Dispatcher
  - Clustered Endpoints
  
- Disaster recovery through multisite topology

And now for the “Labs”



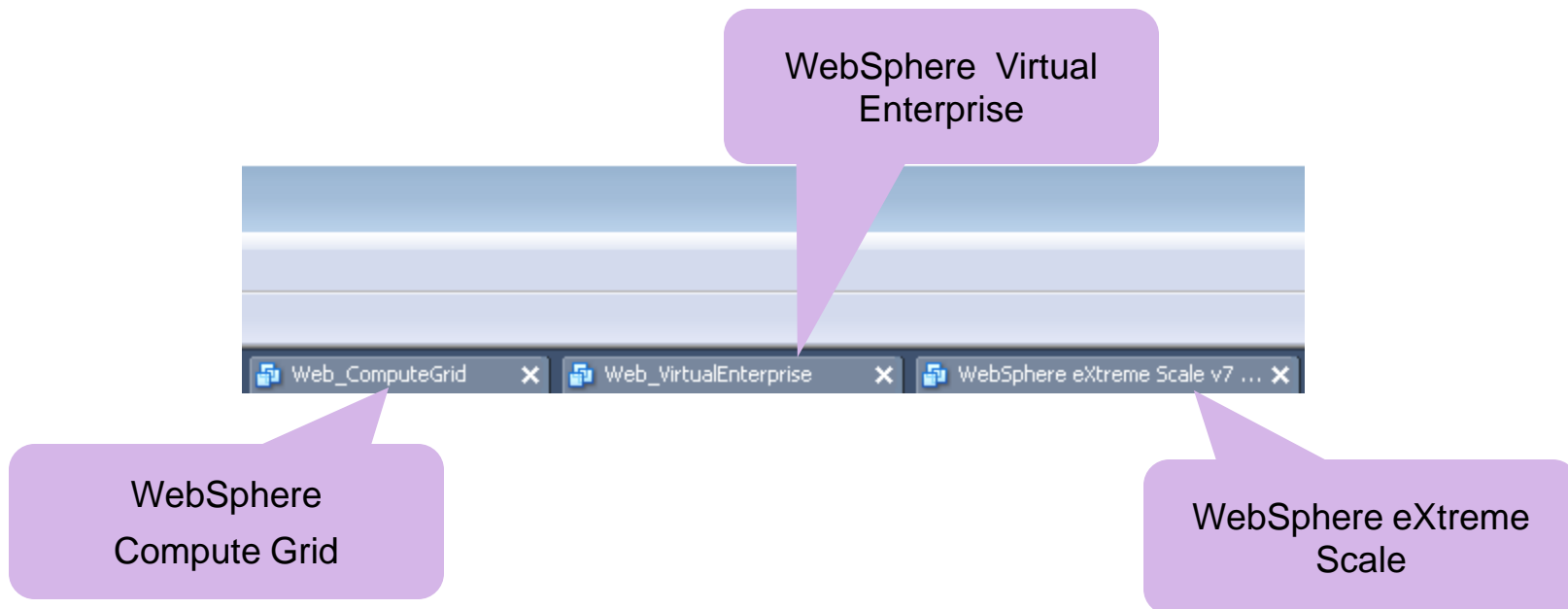
## Getting Started - Labs

- Lab Choices:
  - IBM Workload Deployer
  - WebSphere Application Server - Administration
  - WebSphere Application Server – Development (requires two vmware images)
- Select the vmware tab to choose your lab



## Getting Started – Labs (cont.)

- Lab Choices:
  - WebSphere Compute Grid
  - WebSphere Virtual Enterprise
  - WebSphere eXtreme Scale
  
- Select the vmware tab to choose your lab



## Start the vmware image

- Look in the “Description section” for Log on and password information
- Select the “Power on this virtual machine”

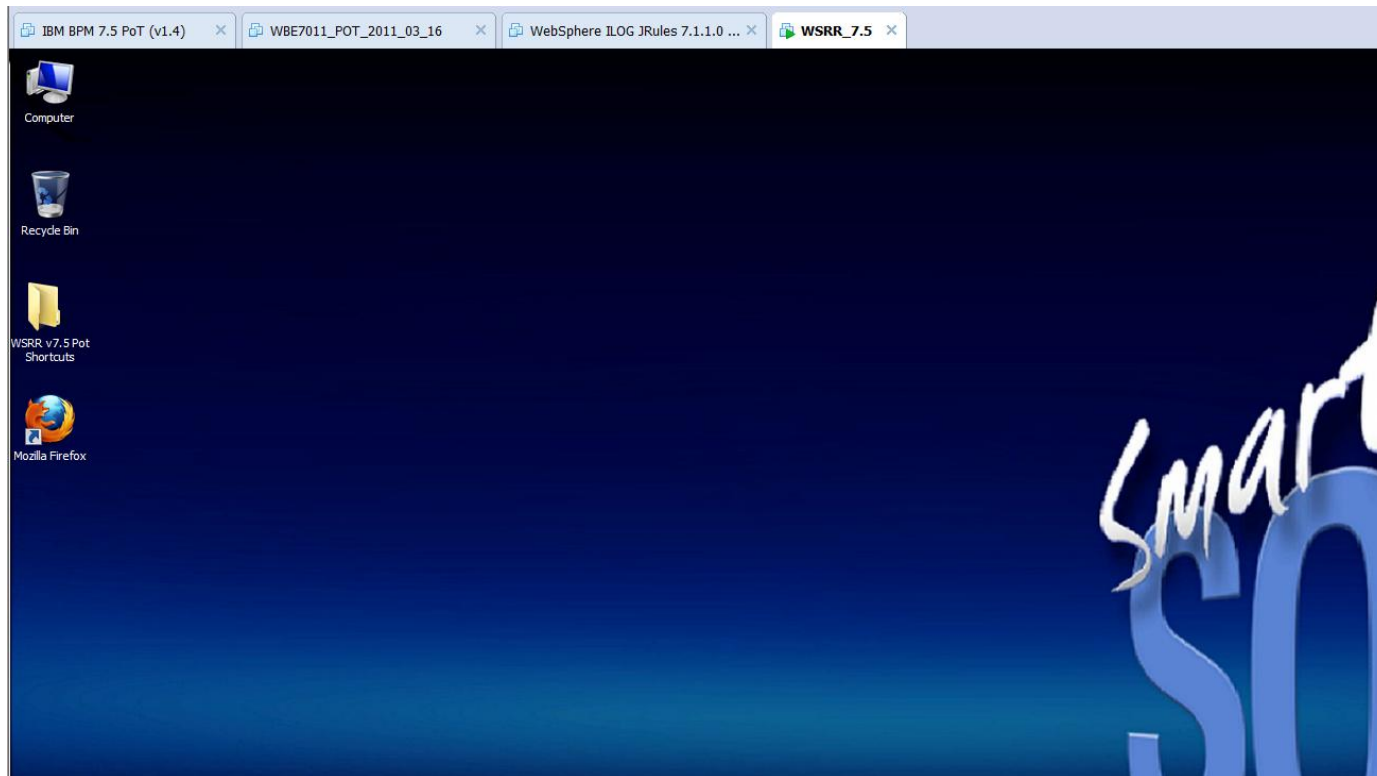
The screenshot shows the IBM WebSphere Lab Jam interface. At the top, there are several tabs: 'DataPower PoT 4.0 WinXP', 'WMQV7\_POT\_20080820 - stude...', 'MB7 PoT', 'StudentCastIron', and 'WSRRv7 PoT'. The main content area is titled 'MB7 PoT'. On the left sidebar, the 'Power on this virtual machine' button is highlighted with a red box. Below it are links for 'Edit virtual machine settings' and 'Upgrade this virtual machine'. The 'Devices' section lists: Memory (2.0 GB), Processors (2), Hard Disk (IDE) (20 GB), Network Adapter (NAT), USB Controller (Present), and Sound Card (Auto detect). The 'Description' section, also highlighted with a red box, contains the following text:

user id/pw = admin/oneclick  
-----  
4 Nov 2009 Upgrade to Toolkit and Runtime V7.0  
  
1 Nov 2009 Upgraded to MQ V7.0.1  
  
18 Sept 2008  
WAS upgraded to V6.1, FP17  
WSRR upgraded to V6.2  
  
Updates June 14, 2007  
1. Testbed WAS V6.0 - FP17

The main content area on the right is a large dark gray rectangle, likely representing the virtual machine's display or a placeholder for a screenshot.

## Bring up the image

- Select “OK” for any pop-ups
- Once the image is up, move into full screen mode by selecting, Ctrl-Alt-Enter
- You may begin your lab
- Please see a specialist, if you have any problems with the labs



IBM Software

# Impact2012

The Premier Conference for Business and IT Leadership

**Innovate. Transform. Grow.**

April 29 – May 4 Las Vegas, NV



# Thank You

WebSphere. software

