

IBM Smarter Business and Technology Series

# Lotusphere and InformationOnDemand Come to You

Get Social. Do Business. Gain Insight. Optimize Results.

DATE March 1, 2011 Bangkok, Thailand

## Moving to the Fast Lane with Workload Optimize Systems

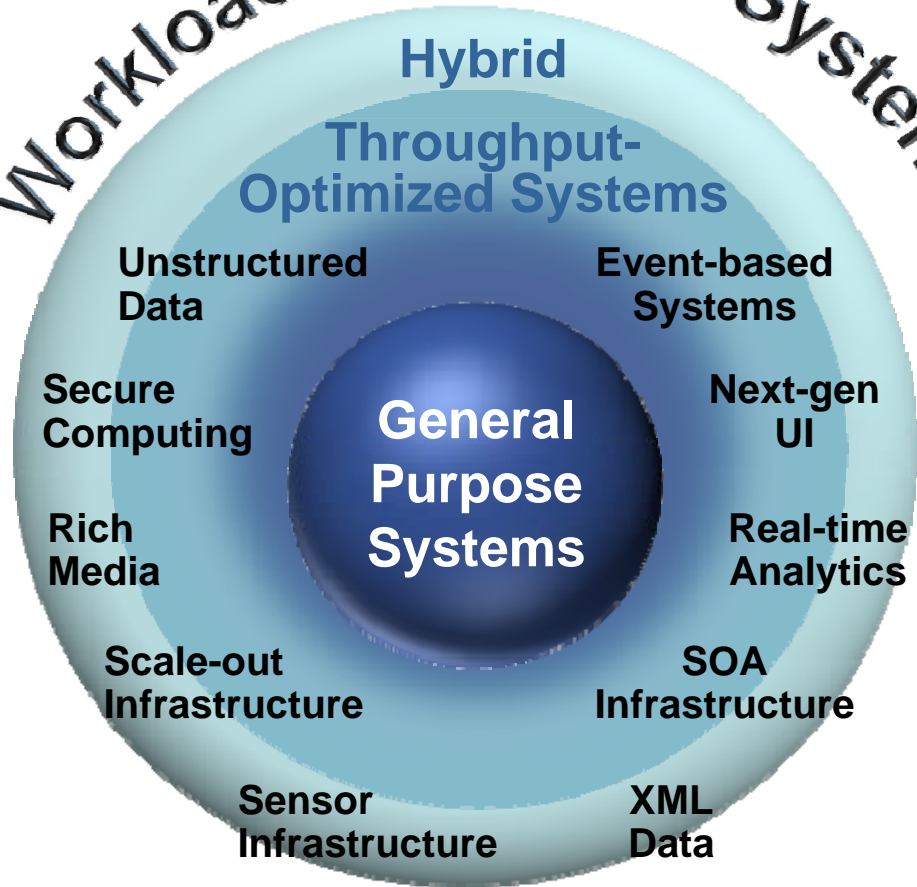
Santi Prasanwongwuthi





# Increasing Complex and Vastly Different Workloads.

## Workload Optimized Systems



Workloads that will enable them to

Handle the increasing volume and velocity of data.

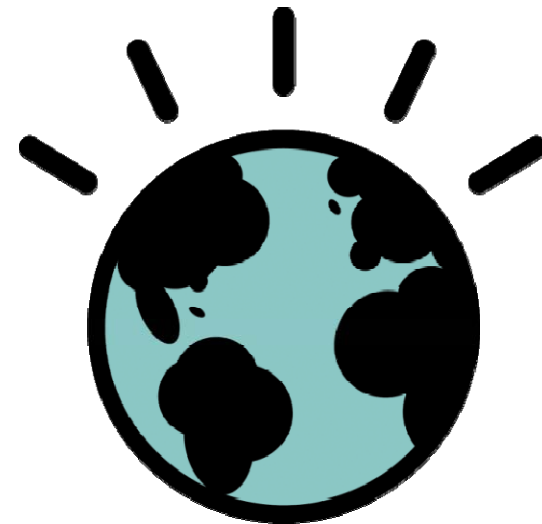
Uncover deep insights hidden across diverse information sources.

Quickly process the rapidly growing number of transactions and interactions.



## New Challenges...

- Breadth and complexity of workloads
- Many pieces to the puzzle : Reliability, Speed, Scalability, Stability, Security
- No one approach to systems fits all
- The solution lies in optimization
- We have to make systems smarter





## IBM Provides Built-for-Purpose Workload Systems...

- Integrated hardware, software and services
- Optimized for a specific workload
- Proven success in multiple industries
- Better client business execution, better performance and optimized analytic tools
- Lower cost with integrated design, testing, workload consolidation and scalability choices

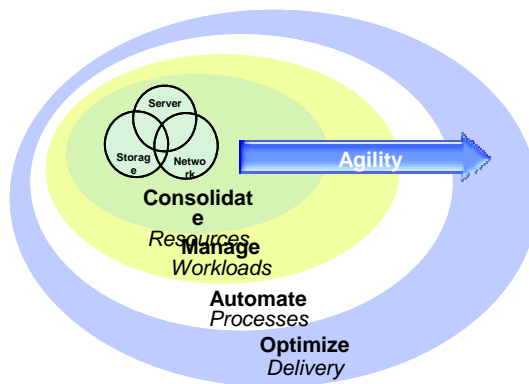




# Major changes in I/T

## SYSTEMS ARE DESIGNED

Vertically integrated and optimized for performance, scale and efficiency



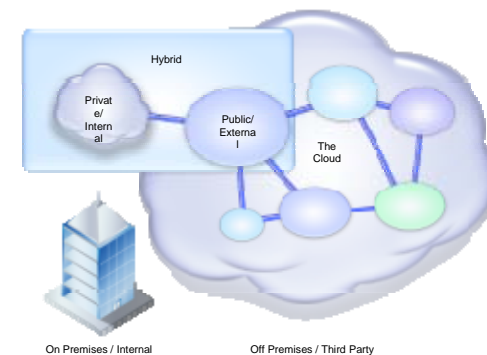
## DATA IS MANAGED AND ANALYZED

Trusted IM capabilities that unlock insight from data regardless of volume, variety and velocity



## I/T IS DELIVERED AND CONSUMED

New delivery models that leverage Integrated Service Management for greater flexibility, time to value and new capabilities





# Smarter Hardware: Value of Power Systems



Workload-Optimizing Systems



**AIX - the future of UNIX**

Total integration with i

**Scalable Linux ready for x86 consolidation**



## Virtualization without Limits

- ✓ Drive over 90% utilization
- ✓ Dynamically scale per demand



## Dynamic Energy Optimization

- ✓ 70-90% energy cost reduction
- ✓ EnergyScale™ technologies



## Resiliency without Downtime

- ✓ Roadmap to continuous availability
- ✓ High availability systems & scaling



## Management with Automation

- ✓ VMControl to manage virtualization
- ✓ Automation to reduce task time





# Power your Planet with IBM POWER7 Systems

Compared to POWER6 Systems, the industry leader, POWER7 has:



**4x**

the energy efficiency

**2x**

the performance

**1x**

the price

**8 to 1**

HP Integrity Superdome 64-core systems into a single IBM Power 780

*POWER7 is .... Breakthrough performance, virtualization without limits, intelligence systems software ... all at the same price*

## Workload Optimizing Systems

**Virtualization without Limits**

**Resiliency without Downtime**

**Dynamic Energy Optimization**

**Management with Automation**

**Integrated Value**

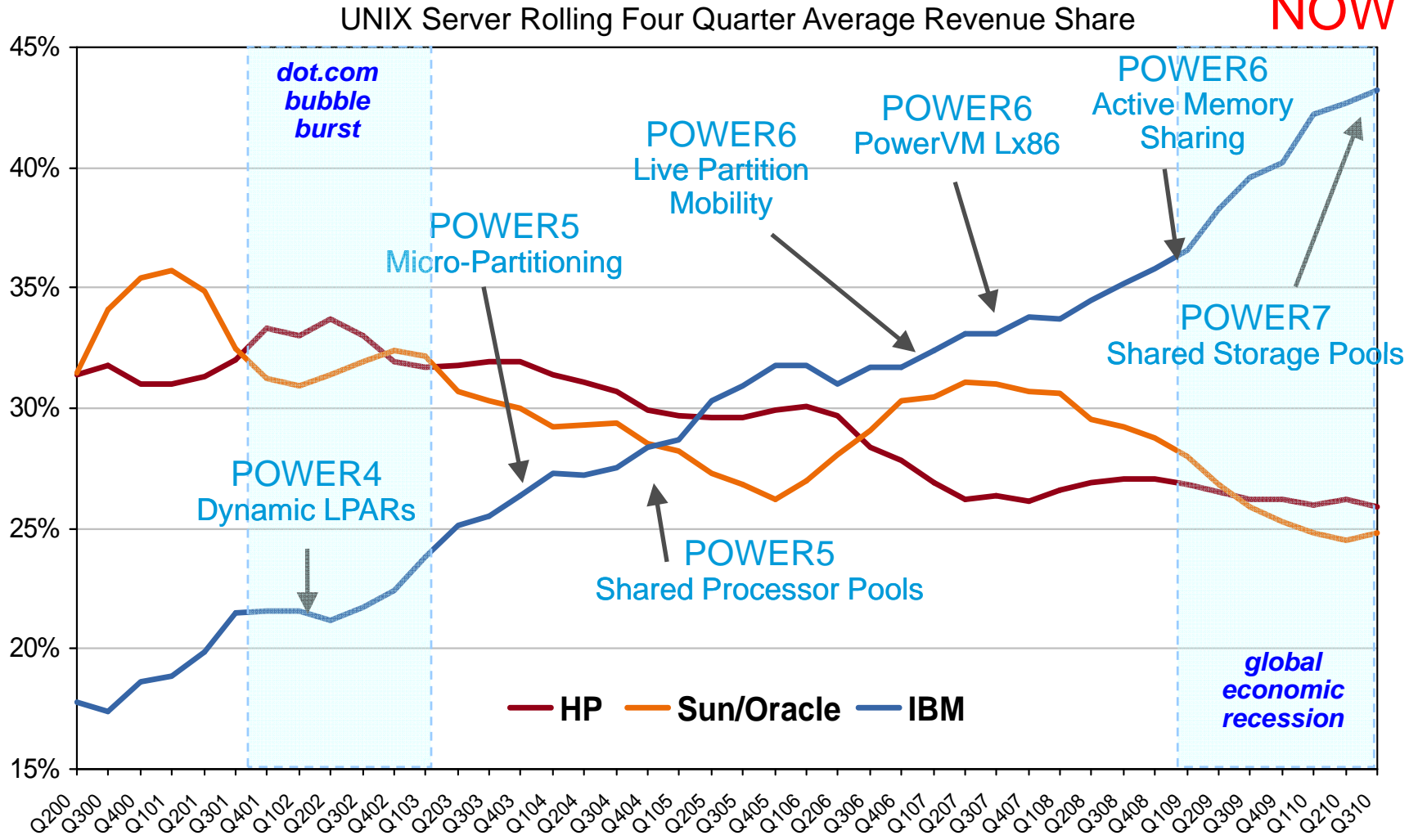




# IBM's Ten-Year March to UNIX Leadership

The largest shift of customer spending in UNIX history

Up to 53%  
NOW



Source: IDC Server Tracker, Dec 2010

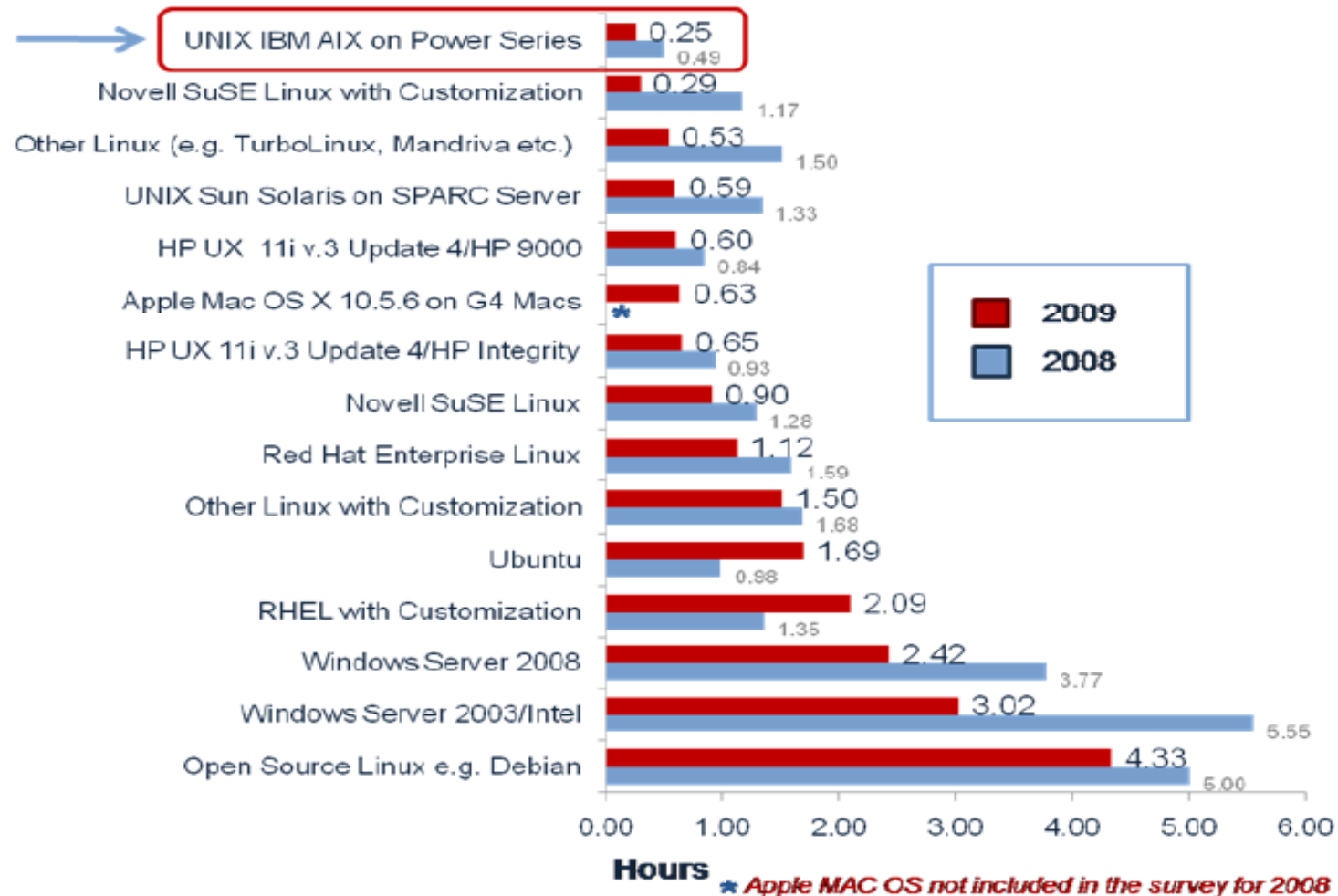






## Power Systems run the most stable OS – Keep Headache Away

**Exhibit 1: Corporate Enterprise Downtime (Hours per Year)**



Source: ITIC July 2009



# IBM POWER7 and IBM Software Optimization

## Delivering greater value across the portfolio

### Up to 40%

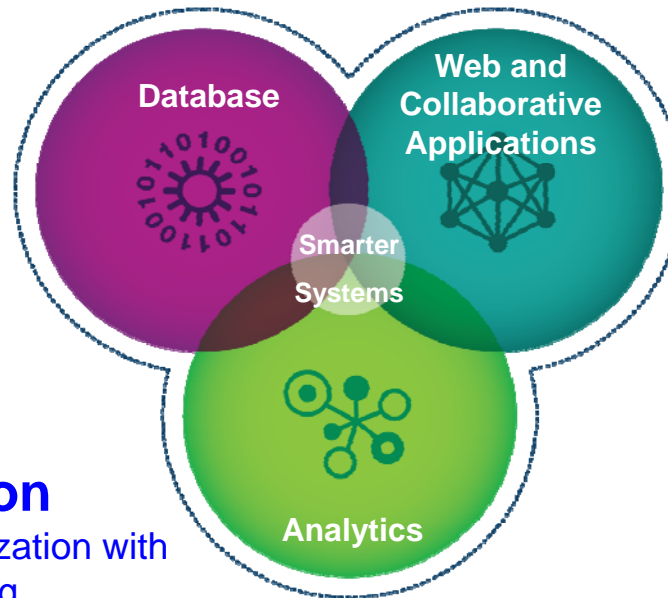
More efficient through better systems management <sup>5</sup>

### 17K applications

available which support the POWER7 platforms<sup>4</sup>

### 40% better utilization

Up to 40% better system utilization with the latest compilers, exploiting POWER7 architecture<sup>7</sup>



### 73% better

performance using a single JVM of WebSphere on POWER7 vs. competitive application server on Nehalem<sup>2</sup>

### 20-30% improvements

in application quality and development productivity with Rational software delivery platform<sup>4</sup>

### 40% lower cost

Lotus Domino on POWER7 supporting 40,000 users vs. Microsoft Exchange on Nehalem<sup>3</sup>

### 86% lower cost

for DB2 on IBM Power 780 than Oracle on Sun<sup>6</sup>

<sup>2</sup> IBM CPO Internal Study

<sup>3</sup> Exchange on Nehalem configuration from HP's sizing tool. HP Sizer for Microsoft Exchange Server 2010 at <http://h20338.www2.hp.com/ActiveAnswers/us/en/sizers/microsoft-exchange-server-2010.html>

<sup>4</sup> Based on IBM customer study, "Making a Business Case for IBM Rational Developer for i" <http://www-949.ibm.com/software/rational/cafes/docs/DOC-3369>

<sup>5</sup> As much as 40% improved throughput vs. Power6 for the identify duplicates process. One example of performance improvement, TSM 6.2

<sup>6</sup> CPO Study - DB2 on POWER7 Delivers The Most Efficient TPC-C Result EVER!

<sup>7</sup> Based on compiler optimization of POWER7 – results are from internal study using Linpack; System utilization improvement depends on the application and result may vary





# Optimized System Innovations with Breakthrough Software

*DB2 and WebSphere Application Server automatically exploits POWER7 Processor and Systems Architecture*

- Clients immediately benefit from
  - Faster time to value
  - Better price performance
  - Lower total cost of ownership
- Applications benefit from IBM Software on POWER7
  - No redesign of application required
  - No rewriting of business queries
  - Faster calculations with greater precision
  - Near-Linear DB2 and WAS scalability





# Virtualization

## Scale out, unvirtualized on HP ProLiant DL380

- 15% Utilization
- 1,323.23 EjOPs/System

30 servers/240 cores



## Virtualized on HP ProLiant DL380

- 39% Utilization
- 10% VMware Overhead
- 1,323.23 EjOPs/System

13 servers/103 cores



## PowerVM on Power 750 Express

- 56% Utilization
- 7,172.93 EjOPs/System

2 servers/48 cores



- 78% less energy costs
- 69% less space
- 34% lower SW costs

\* Based on WebSphere client requirement 6,000 EjOPs  
See WebSphere detail in backup for more information (W6000A)



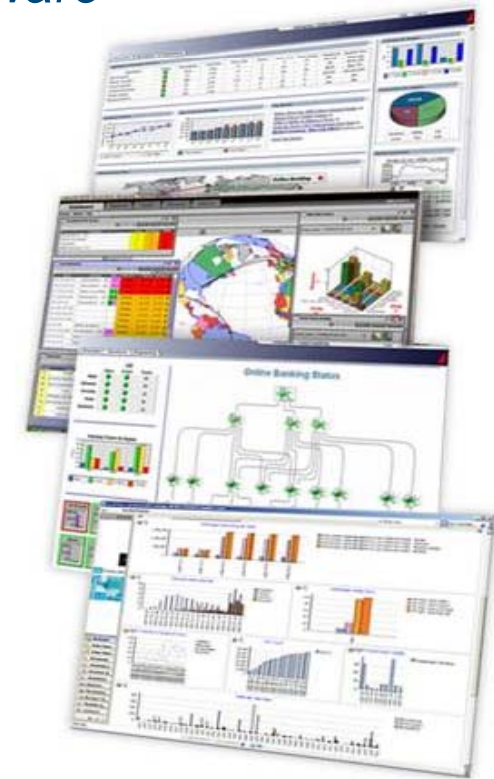


# Breakthrough IBM Software for Virtualization and Consolidation

*IBM Software automatically exploits  
POWER7's PowerVM Virtualization Software*

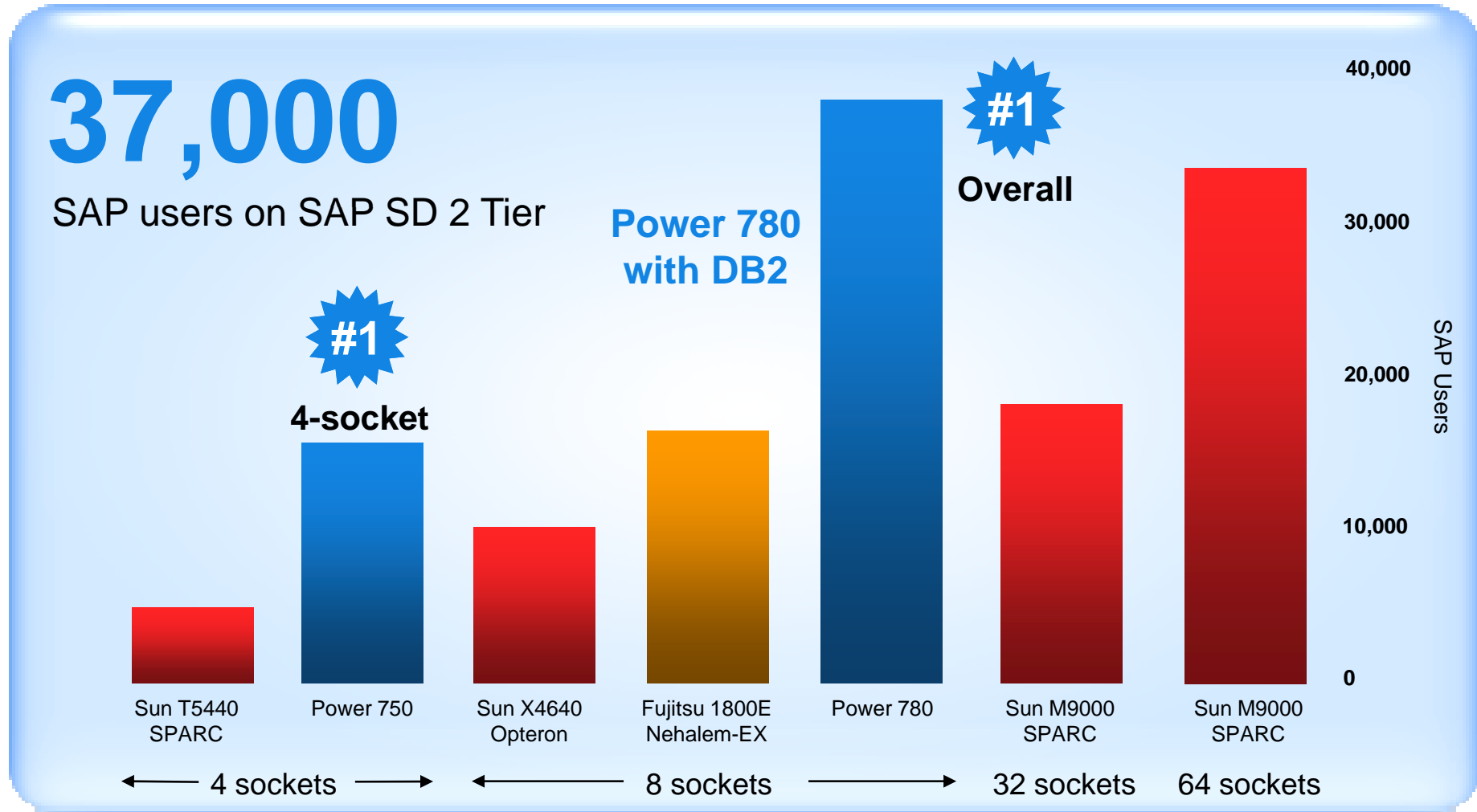
## IBM Software benefits from POWER7

- Automatic and Optimized Workload management
- Reduction of memory footprint
- Exploitation of Active Memory Sharing
- End-to-end Application and Resource Management
- Enablement of Cloud ready software





# Data Management: Simplify SAP Infrastructure And Reduce Costs



- IBM Power 780 certification number not available at press time and can be found at [sap.com/benchmark](http://sap.com/benchmark) . IBM Power System 780, 8p / 64-c / 256-t, POWER7, 3.8 GHz, 1024 GB memory, 37,000 SD users, dialog resp.: 0.98s, line items/hour: 4,043,670, Dialog steps/hour: 12,131,000, SAPS: 202,180, DB time (dialog/ update):0.013s / 0.031s, CPU utilization: 99%, OS: AIX 6.1, DB2 9.7; All results are 2-tier, SAP EHP 4 for SAP ERP 6.0 (Unicode) and valid as of 4/1/2010.
- Source: <http://www.sap.com/solutions/benchmark/sd2tier.epx> - See Power 780 benchmark details for more information






# SAP on DB2 on Power – support for more users...

Core-for-Core, IBM Power and DB2.  
Run 3.3x More Users

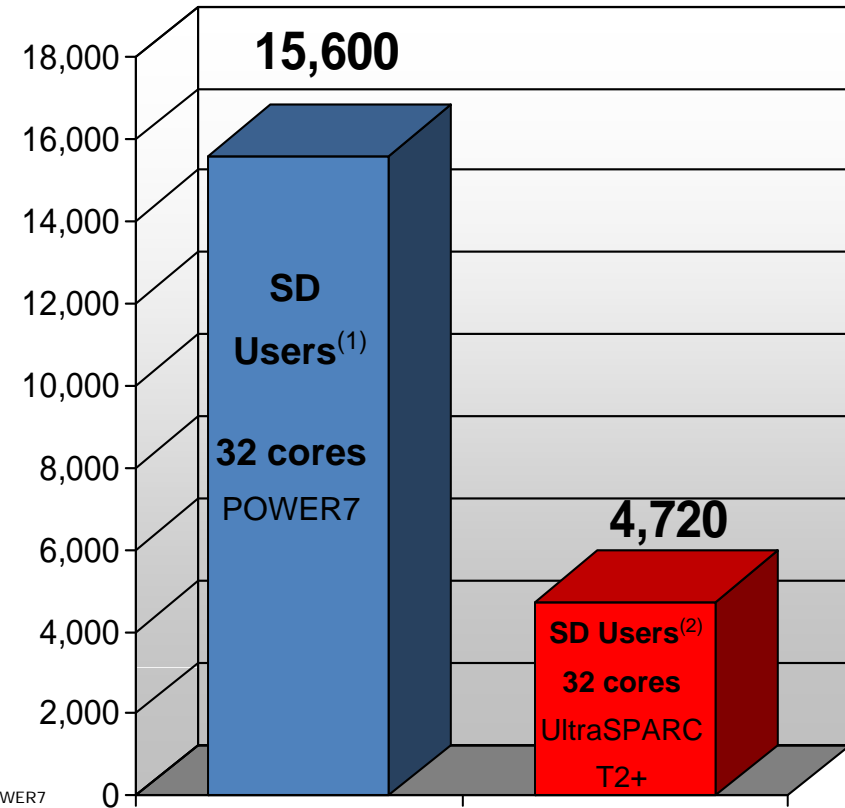
**SAP and DB2 on Power 750**



**3.3x**

More SD users on  
IBM DB2 and Power 750  
than Oracle Database on Sun T5440

## SAP Sales and Distribution ERP 6.0 EHP4 2-Tier performance



**IBM DB2 on Power 750**

**Oracle Database on Sun T5440**

Results as of 4/02/2010



(1) IBM SAP 2-Tier SD result of 15,600 SD (Sales & Distribution) users (Average dialog response time: 0.98 second), running DB2 9.7 on AIX 6.1 and SAP enhancement package 4 for SAP ERP 6.0 on the IBM Power System 750 with 4 POWER7 3.55 GHz processor chips (32 cores, 128 threads) and 256 GB main memory, certification Number: 2010004. For more details, see <http://www.sap.com/benchmark>.

(2) Sun Microsystems SAP 2-Tier SD result of 4,720 SD (Sales & Distribution) users (Average dialog response time: 0.97 second), running Oracle 10g on Solaris 10 and SAP enhancement package 4 for SAP ERP 6.0 (Unicode) on the SPARC Enterprise T5440 with 4 UltraSPARC T2 Plus 1.6 GHz processor chips (32 cores, 256 threads) and 256 GB main memory, certification Number: 2009026. For more details, see <http://www.sap.com/benchmark>.



# SAP on DB2 on Power – fewer cores required....

Core-for-Core, IBM DB2 and Power  
Need ¼ the Cores

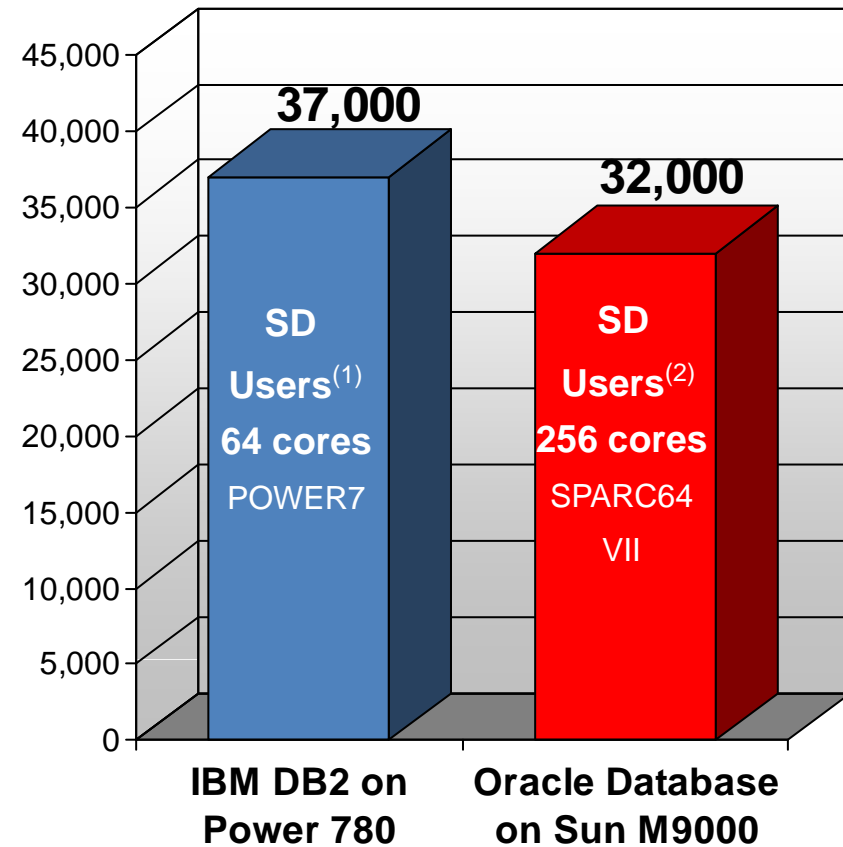
**SAP and DB2 on Power 780**

**1/4<sup>th</sup>**

**New**

The number cores required for IBM DB2 and Power 780 than Oracle Database on Sun M9000

SAP Sales and Distribution  
ERP 6.0 EHP4 2-Tier performance



IBM Power 780 certification number not available at press time and can be found at [sap.com/benchmark](http://sap.com/benchmark). IBM Power System 780, 8p / 64-c / 256-t, POWER7, 3.8 GHz, 1024 GB memory, 37,000 SD users, dialog resp.: 0.98s, line items/hour: 4,043,670, Dialog steps/hour: 12,131,000, SAPS: 202,180, DB time (dialog/update): 0.013s / 0.031s, CPU utilization: 99%, OS: AIX 6.1, DB2 9.7; SUN M9000, 64p / 256-c / 512-t, 1156 GB memory, 32,000 SD users, SPARC64 VII, 2.88 GHz, Solaris 10, Oracle 10g, cert# 2009046; All results are 2-tier, SAP EHP 4 for SAP ERP 6.0 (Unicode) and valid as of 4/2/2010.

Results as of 4/02/2010

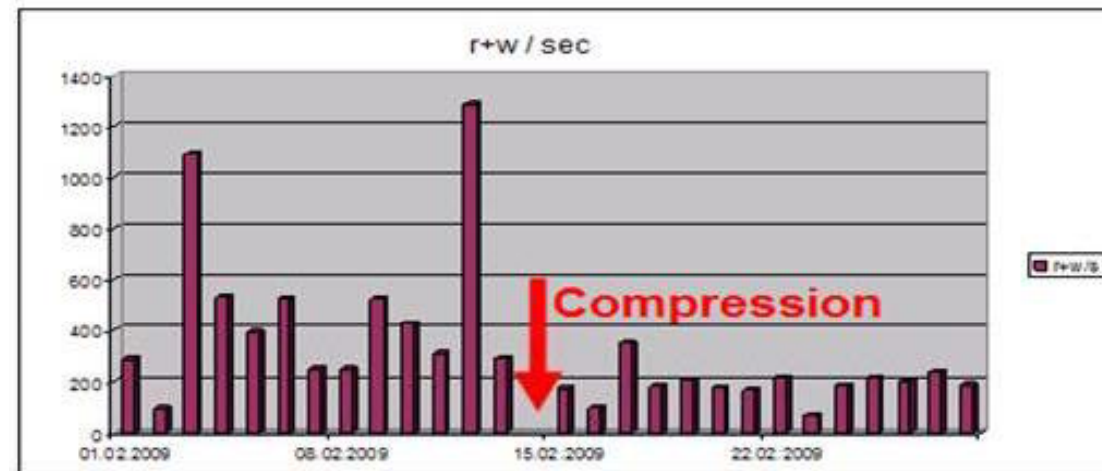
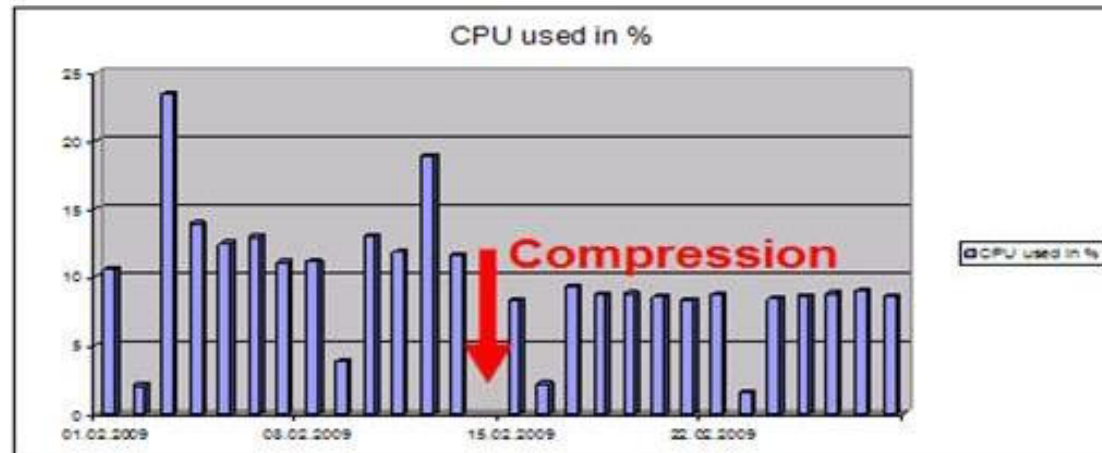






# DB2 on Power Compression Benefits

- Storage Usage – database about 5% to 68% smaller
- CPU Usage - Avg SAP Response time ~ 20% faster
- RAM Usage – Physical database RAM virtually~ 50% larger
- Backup Usage – backup size down upto 85% and backup time reduced upto 65%
- Batch performance – Upto 10x faster





## Smarter Transactions: Coca Cola Bottling Company Consolidated



### Challenge:

Improve performance, scalability, and efficiency for their SAP environment

### Solution:

Tightly integrated IBM hardware and software. Implemented “Easy button” configuration for SAP

### Benefits:

- Predicted savings in the next five years of US \$750,000
- 40% reduction in database size
- Better performance – up to 65% faster
- Reduced IT staff workload

### Solution components:

- DB2
- Power Systems

*“By choosing to implement DB2 compression right away, we have reduced the database size by around 40 percent. This gives us faster backup and reduced storage costs, and makes the SAP technical upgrades easier and quicker.” - Andrew Juarez SAP Lead Basis, Coca Cola Bottling Company Consolidated*





# Application Infrastructure: Simplify Web Facing Application Deployment

## IBM WebSphere Application Server 7

1 JVM  
AIX TL4  
64 bit  
16 threads



IBM Power 750  
8 cores



**3920**

Transactions/sec

**6.8x**

More work

## Competitive application server

1 JVM  
Solaris  
64 bit  
16 threads



Sun T5140  
8 cores



**570**

Transactions/sec

WebSphere





# Connectivity & Integration: Build Message Backbones With Huge Capacity

**Message Workload**



**IBM Message Broker v7**

7 Execution Groups

MQ Server 7.0.1

AIX v6.1 64 bit

**IBM**

**Power 750 3.0 GHz**

8 cores

**21,808**

Messages/sec

**53** times faster

**Message Workload**



**Microsoft Biztalk 2009**

12 Host Instances

**SQL Server 2008**

MQ Server 7.0.1

Windows 32bit

**Nehalem EP**

8 cores

**409**

Messages/sec

Workload is mix of in/out, routing, transformation, transformation and routing messages

Projecting from Power 570 8 cores 4.7GHz to Power 750 8 core 3.0GHz using rPerfs

**WebSphere**





# What's New: IBM Software for Power Systems:

## Design & Development



### IBM Rational for Power Systems

- New Rational Power Appliance - Integrated Power System hardware with pre-loaded / pre-integrated Rational software
- New compilers exploit POWER7 – Linux & AIX

## Cloud on Power



### IBM Service Delivery Manager SOD

Software virtual images - pre-configured and pre-installed for POWER6 or POWER7

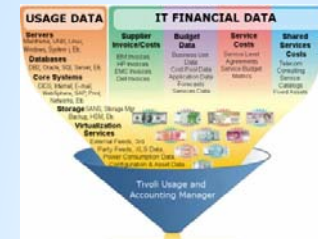
## Business Analytics



### IBM Smart Analytics System

Complete End to End Analytical Solution shipped with everything you need and fully optimized for analytics - reducing risk and improving time to value.

## Business Service Management



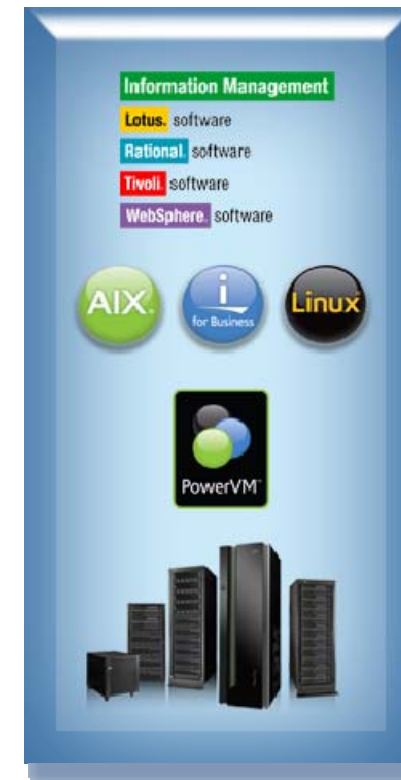
### Tivoli Usage & Accounting Manager

Collect usage metrics at an aggregated LPAR level or at granular process level!



# IBM Software on POWER7, delivering...

- Faster time to value
- Better price performance
- Lower total cost of ownership



**For more information:**

Learn More: [www.ibm.com/software/info/swforpower](http://www.ibm.com/software/info/swforpower)

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# Thank You!

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