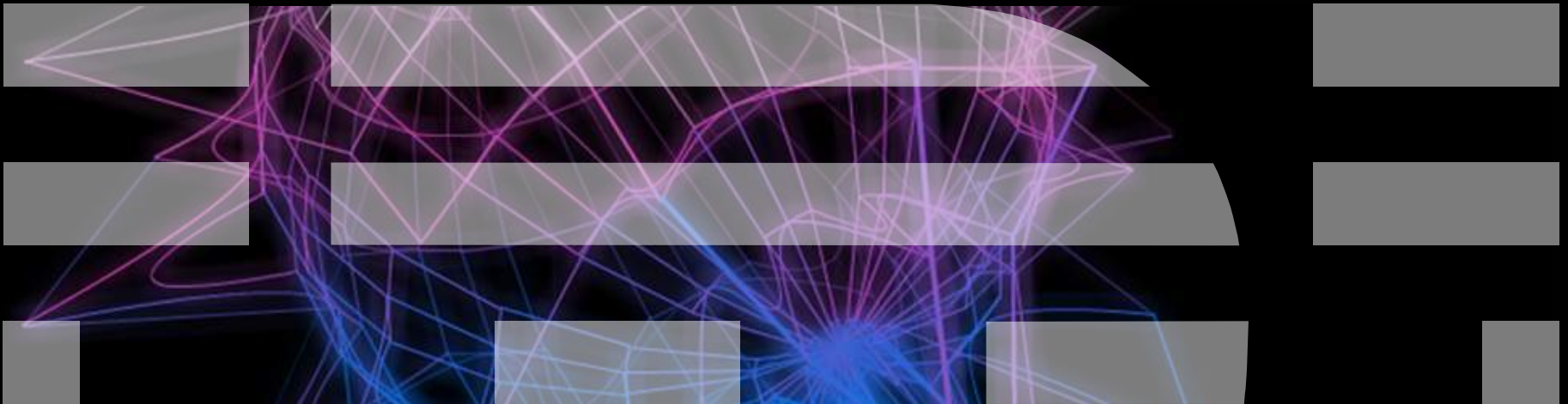


Accelerating Business Value with Smarter Systems

Optimized Software, Hardware and Services



IBM Smarter Systems Tour 2010

The world is getting smarter

More instrumented, interconnected, intelligent



Smart traffic systems



Intelligent oil field technologies



Smart food systems



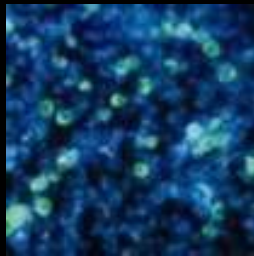
Smart healthcare



Smart energy grids



Smart retail



Smart water management



Smart supply chains



Smart countries



Smart weather



Smart regions



Smart cities

Think about the workloads that enable intelligent traffic systems ...



Electronic Toll Collection

Transaction processing systems (OLTP) linked to bank accounts and credit cards needing high integrity and availability

Traffic Flow Prediction

Analytic workload system looking for patterns in large volume of real-time and historical data

Weather, Local News, Major Events and Other Relevant Informational sources

Integrate processes and people in an agile fashion

...workloads that drive holistic risk management...

Manage Financial Risk

Analytic workloads to understand risk exposures across silos and make risk decisions consistent with business objectives

Prevent, Detect and Remediate Financial Crime

Secure all transactions (high volume and speed) and forms of interaction real-time and effectively manage detected events

Monitor and Manage Compliance

Automatically manage business processes while providing regulatory compliance reporting and monitoring at minimal cost

...and workloads that underlie tomorrow's energy and utility systems.

CRM System and Customer Information System

Analytic workload system to enhance customer participation and experience

Localized and Distributed Energy Resources

Transforming the grid from a one-way system to a dynamic, automated information network


Regulation and Target Fulfillment

Monitoring and managing emissions levels while maintaining a reliable, cost-effective power supply


....A Smarter Planet has diverse workloads!!

What does this all mean to IT?


Workload's are driving IT organizations to ...



Handle the ever growing volume and velocity of data and transactions



Uncover deeper insights and optimize business decisions and processes



Optimize data center resources and deliver greater system utilization

... which require systems that are optimized

Different workloads have different **characteristics**

TRANSACTION PROCESSING AND DATABASE



- Thousands of online users
- Large transactional databases
- 24x7 operation

BUSINESS INTELLIGENCE AND ANALYTICS



- Fewer users
- Complex queries
- Multiple data sources
- Large data warehouse

BUSINESS PROCESS MANAGEMENT



- Unite content, people and process flows
- Orchestrate multiple services
- Empower business users

Different workloads have different requirements

TRANSACTION PROCESSING AND DATABASE



- High scalability
- High availability
- Moderate to high I/O bandwidth
- Larger cache per core

BUSINESS INTELLIGENCE AND ANALYTICS



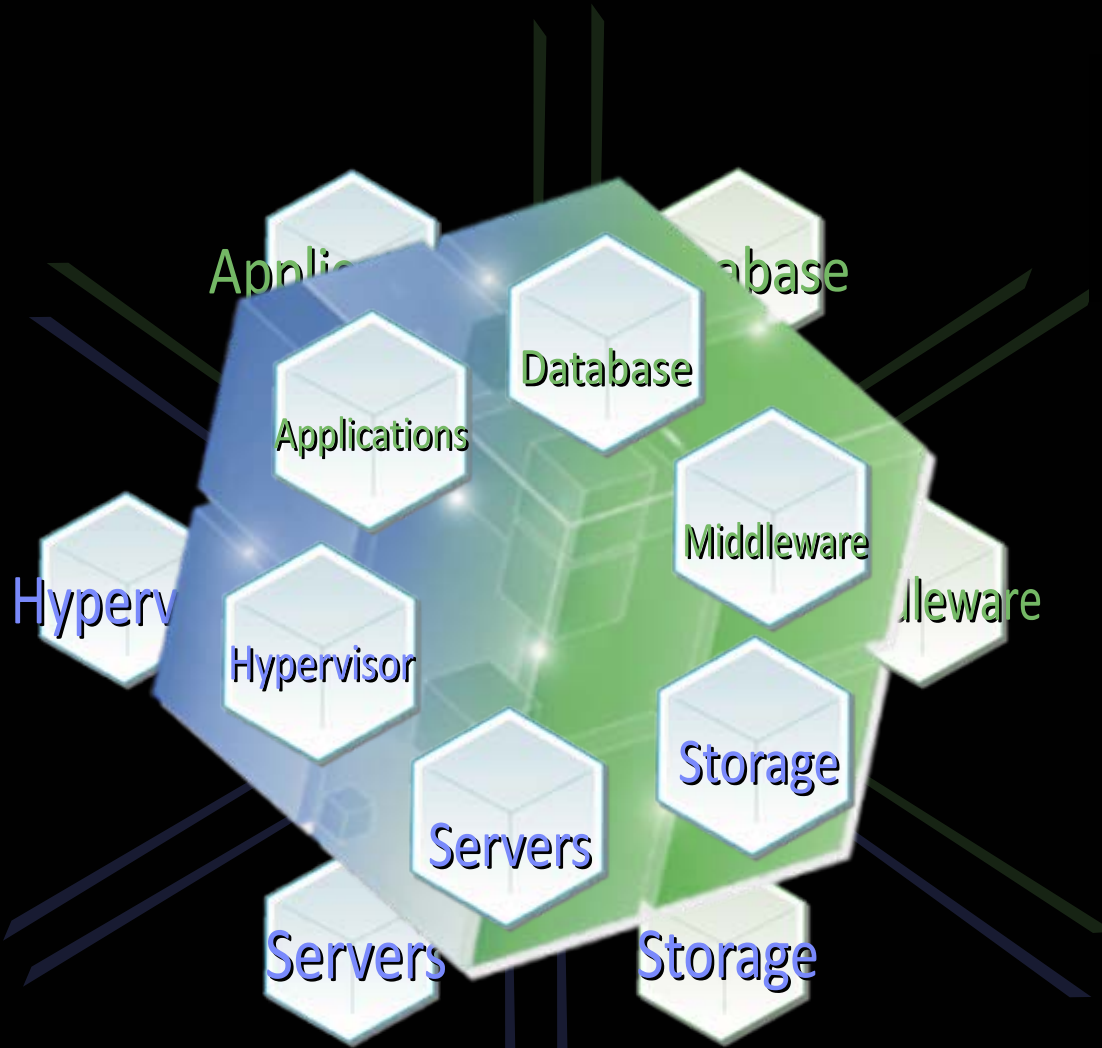
- Faster query performance
- High I/O bandwidth
- Deep compression for warehouse databases

BUSINESS PROCESS MANAGEMENT



- Moderate to high volume processing
- Low to moderate I/O bandwidth
- Tools for diverse business users

Introducing Smarter Systems for a Smarter Planet



- *Faster Time to Value*
- *Greater Agility & Management*
- *Embodies Deep Client Experience*
- *Better Performance, Lower Cost*

Smarter Systems for a Smarter Planet

IBM offers smarter systems for specific workloads



**Smarter systems for
Transaction Processing
and Database workloads**

*Flexibility
Performance
Integrity*



**Smarter systems for
Business Intelligence
and Analytics workloads**

*Discover insights
Predict outcomes
Act faster*



**Smarter systems for
Business Process Management
workloads**

*High performance
Process integrity
Ensure compliance*

WAS optimizations for POWER7

Better performance

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

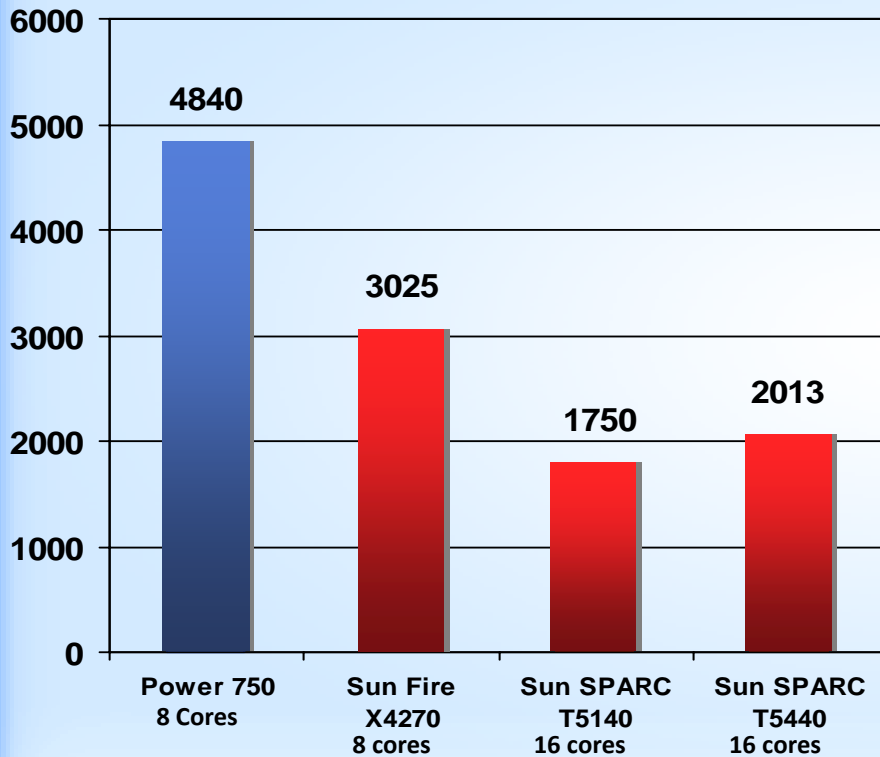
Transactions/sec

WAS optimizations yield lower cost

1/4th the Cost

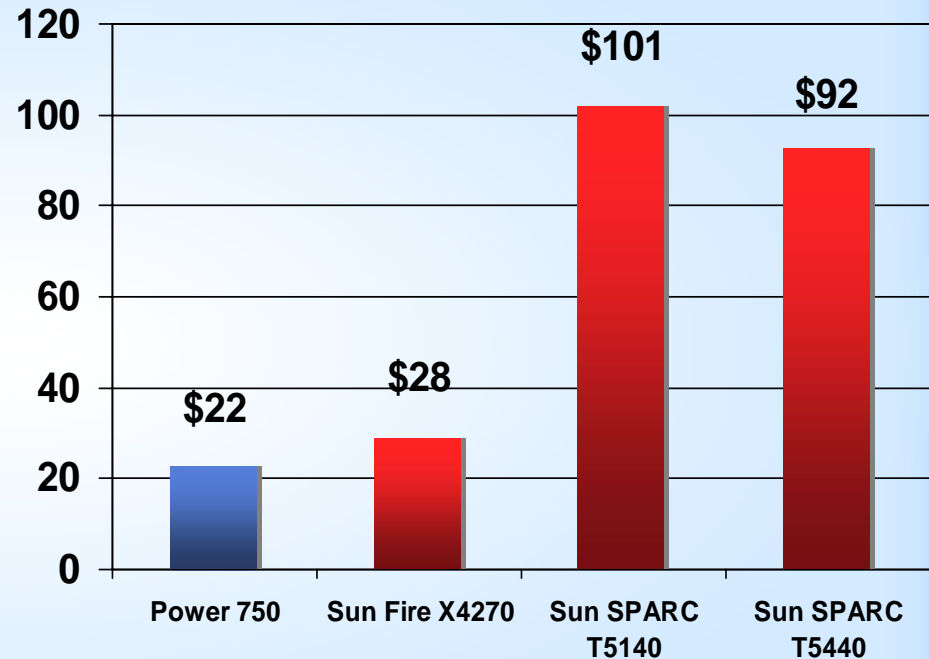
Transactions Per Second (TPS)

JVM's Configured for Maximum Throughput



Total Cost of Acquisition per TPS

(Cost of Hardware, Software, and 3 Years' Maintenance)



Prices as of 03/18/2010

<http://www.oracle.com/corporate/pricing/pricelists.html>


Source: IBM Internal Studies

Sun Fire x4270 estimated from test run on a comparable IBM System x

Sun SPARC T5440 estimated from test run on a T5140

DB2 optimizations reduce infrastructure requirements

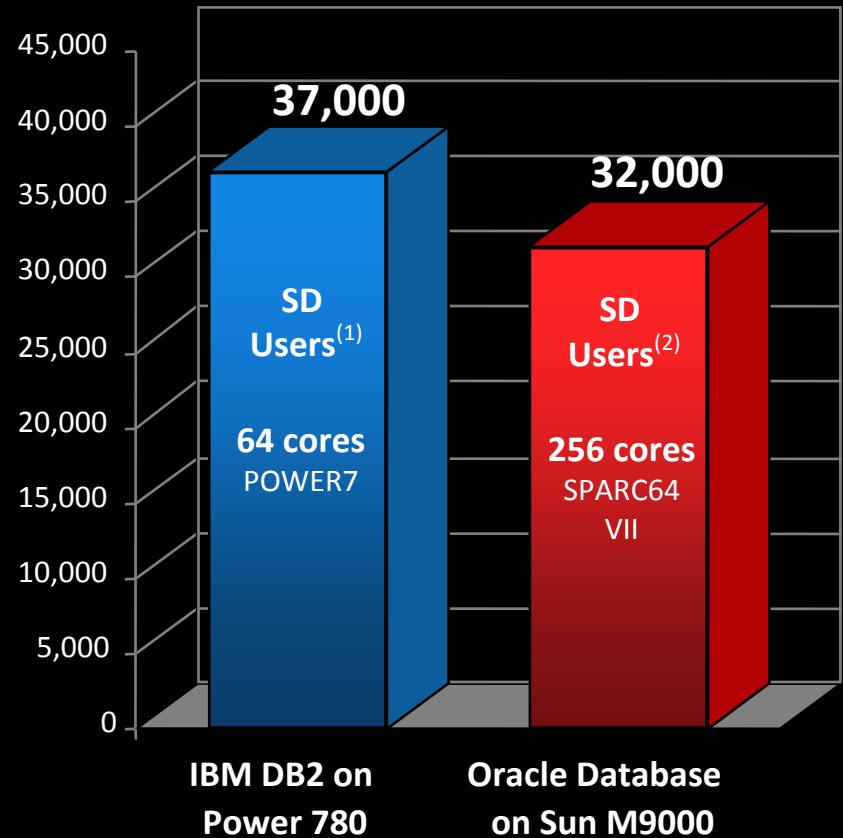
**SAP and DB2 on
Power 780**



1/4th

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**

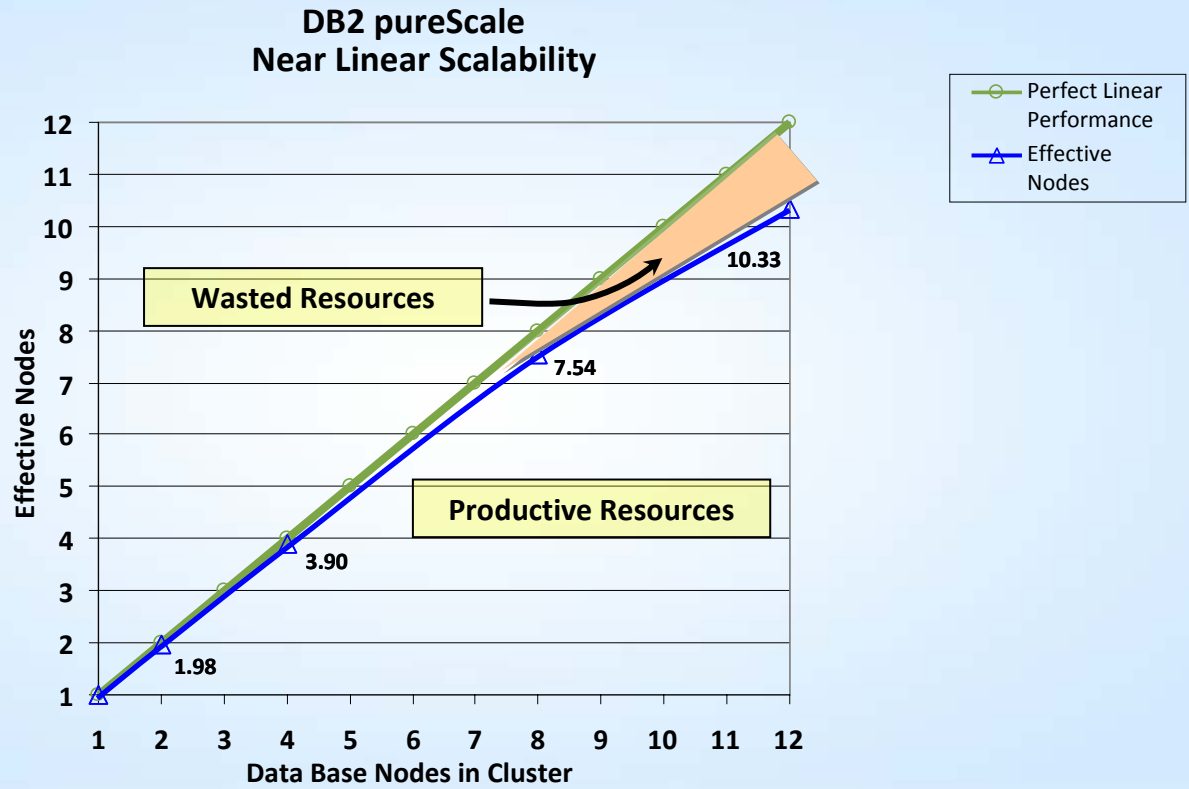


IBM Power System 780, 8p / 64-c / 256-t, POWER7, 3.8 GHz, 1024 GB memory, 37,000 SD users, dialog resp.: 0.98s, line items/hour: 4,043,670, Dialog steps/hour: 12,131,000, SAPS: 202,180, DB time (dialog/ update): 0.013s / 0.031s, CPU utilization: 99%, OS: AIX 6.1, DB2 9.7, cert# 2010013; **SUN** M9000, 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

Why DB2 pureScale is better than Oracle RAC

Near-linear scale-out efficiency of DB2 pureScale



Transparently scalable and continuously available

IBM pureScale Application System

Scale Up, Scale Out, Scale Within

IBM Power 770

drives up to 90% server utilization with industry-leading virtualization, lowers energy consumption 70-90% with dynamic energy utilization, and provides resiliency without downtime

DB2 pureScale

offers superior performance and scale-out efficiency

WebSphere Application Server

on POWER7 provides 6.8x better performance than a competitive application server on Sun T5140



SBI Sumishin Net Bank



Business Challenges:

- New entrant into internet banking market
- Provide full range of services
- Get ahead of their competition

Benefits:

- New banking platform, optimized for web-based transaction processing
- Shorter development time compared to conventional financial products
- Solution architecture reduced implementation risks substantially

Smarter systems for **business intelligence and analytics**

Examples of optimization:

- **DB2, IBM Information Server and Cognos leverage underlying platform capabilities**
 - Better query performance

- **DB2 advanced compression**
 - Optimized storage

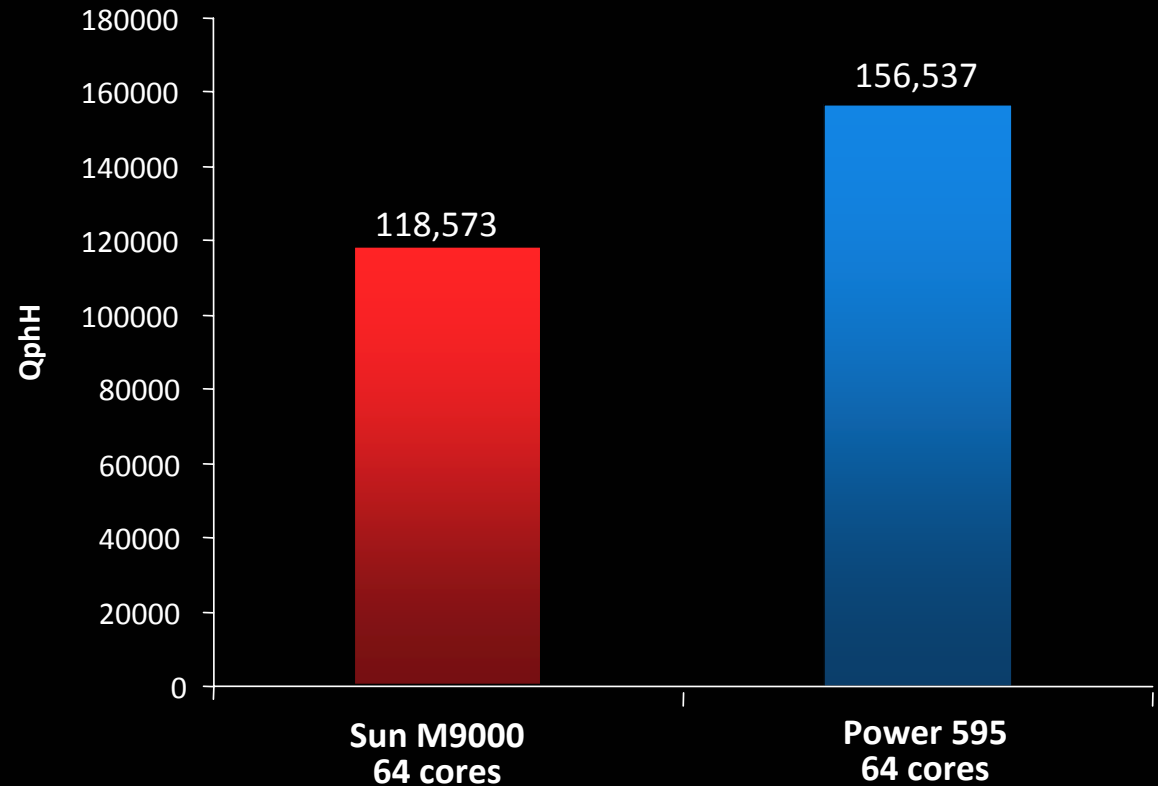


**IBM Smart
Analytics System**

Better data warehouse performance

1.32x

**More Query
Performance**



QphH = TPC-H composite query per hour performance metric

Efficient compression and XML data support

2x

Better Compression

77x

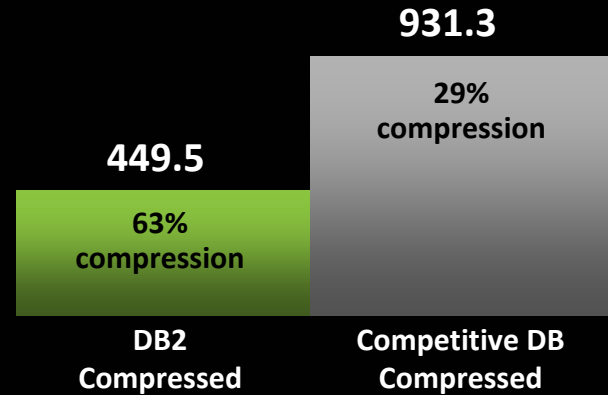
Better XML Query Performance

50%

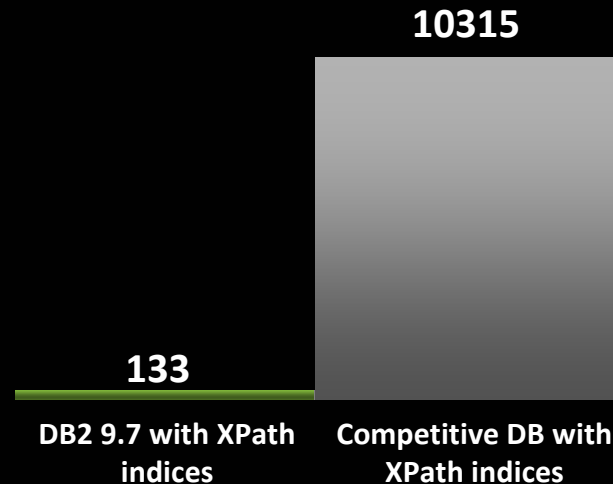
Less Storage

Source: IBM internal studies - compression based on TPC-H warehouse data, XML based on test cases from <http://tpox.sourceforge.net/>

Storage for 1200 MB Warehouse Benchmark



Time (sec) Per 1000 X Queries



IBM Smart Analytics System

What smart organizations want and need for faster results

EVERYTHING you need for Business Analytics – not *just* a data warehouse appliance...

Analytics Software

- Business Intelligence
- Cubing Services
- Text Analytics & Data Mining

Powerful Data Warehouse

- Warehousing Platform
- Advanced Workload Management
- System Automation

Hardware & Services

- Flexible Server Platform Options
- Modular Storage Capacity
- Build, Deploy, Health Check and Premium Support Services



*Transforming
information into
business insight*

3x *Faster* - Workload optimized analytics run
business intelligence 3x faster

50% *less floor space*
Data compression reduces storage cost

World record performance

German travel and leisure organization



Business Challenges:

- Staying ahead of fast changing market
- Maintaining profitable offerings
- Deliver consolidated, near real-time insight

Benefits:

- Better alignment of capacity and demand
- Shorter product cycles
- Increased flexibility and lower costs using one-stop decision support
- Greater agility from comprehensive near real-time insight company wide

Smarter systems for **business process management** workloads

Examples of optimization:

- **Tools optimized for business users**
 - Less effort, time and risk to develop and deploy BPM workloads performance

- **BPM leverages POWER7 hardware capabilities**
 - Better performance
 - Higher scale



BPM tools optimized for business users

Less effort, time and risk compared to Oracle's developer-only tools

1. Model Driven, code-free BPMS platform
2. Extend rule authoring to business users
3. Define event patterns and correlations
4. Unite content, process and people with Advanced Case Management



*Also, free cloud-based tools for business users
Get started quickly with an easy on-ramp to BPM Oracle doesn't offer!*

BPM optimizations on POWER7

Optimize costs with WebSphere process server on POWER7

- **Up to 50%** improved performance on **POWER7***
- **Over 5x** increased scaling on **POWER7 ***
- Drive **increased throughput** for critical, high volume business processes
- **Optimized for virtualized environments** enabling higher hardware utilization

*Performance based on POWER6 over POWER7



IBM BPM Suite

Achieve growth and agility through process discovery, interactions and optimization

Take control of your processes to fuel new growth, optimize costs and drive **Greater Business Agility**

WebSphere Lombardi Edition

- Build and manage process applications in a single executable platform

WebSphere ILOG Business Rule Management Systems

- Accelerate business rule automation by leveraging business user expertise

WebSphere Business Events

- Easily capture and correlate events from a wide range of sources for a more agile response to market demands

WebSphere Process Server

- Advanced Case Management capabilities that support structured and unstructured activities



Ball State University



Business Challenges:

- Maintaining single view of a student
- Graduates not receiving diplomas
- Lack of data integrity across the campus

Benefits:

- Improved user satisfaction by reducing registration processing times
- Reduce new application development from 1-2 months to a few days
- Higher quality of service to their students

Organizations are challenged to optimize their data center resources and deliver greater system utilization

41%

of data center managers claim their data centers will max out their energy capacity within one to two years¹

80%

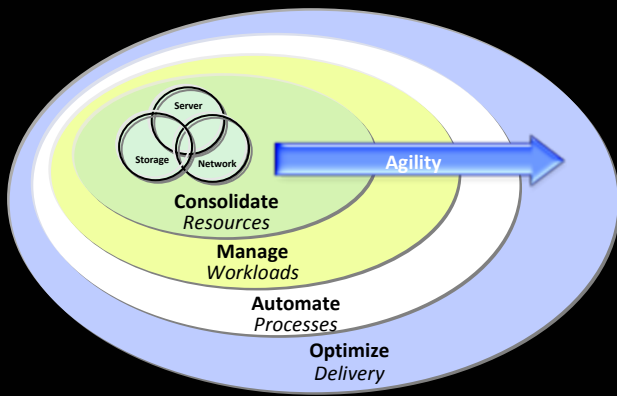
of digital data is now unstructured² and requires greater effort to transform it into usable intelligence

Up to 85%

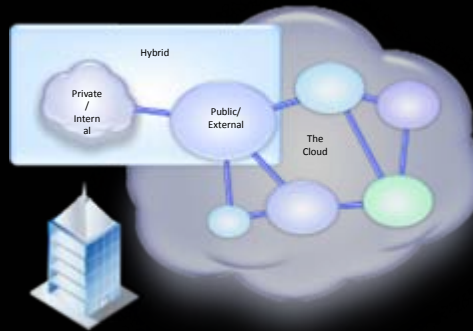
of computing capacity is idle in distributed data centers³

- **Improve Service**
 - Ensure high availability and quality of existing services
- **Reduce Cost**
 - Contain operational cost and complexity
- **Manage Risk**
 - Address today's security, resiliency, and compliance challenges

Building a **smarter business infrastructure** requires looking at IT delivery from the business perspective, leveraging:



Virtualization with Integrated Service Management



Flexible Delivery Models



Workload Optimized Systems

Smarter **business infrastructure** enables smarter planet solutions

Virtualization with Integrated Service Management

Examples of optimization:

- **Consolidation** reduces infrastructure and license costs
- **Integrated management** improves productivity
- **Automated** processes based on best practices reduces labor
- **Optimize** delivery by aligning IT resources with business imperatives

Server Virtualization

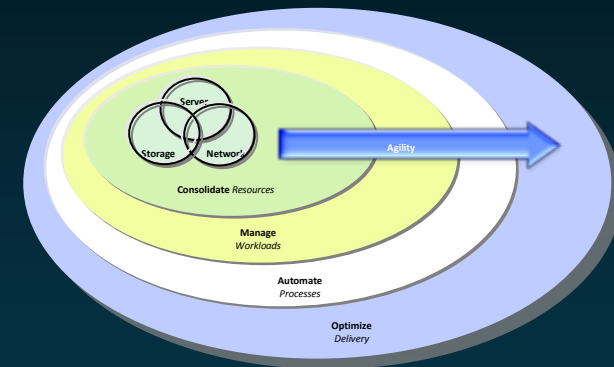
Up to 30-70% savings

Storage Virtualization

Up to \$10M annual cost savings

Application Virtualization

Up to 98% reduction in unplanned outages



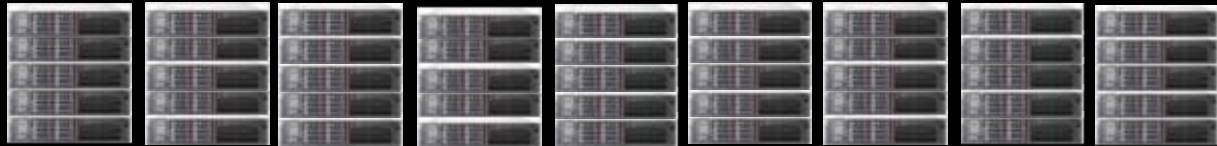
How many servers are needed to run these workloads?
POWER7 enables large scale virtualization

*Run 45 online banking workloads,
each driving 745 transactions per second*

1

2

45



Power 770
server

Power 750
servers

Sun Fire
servers

10100100101001

IBM WebSphere Application Server

10100100101001

10100100101001

10100100101001

10100100101001

Systems to match your consolidation and virtualization needs

System z



- Extreme consolidation for extreme cost savings of over 70%
- Gold standard reliability, dynamic scalability and extensive virtualization functions for superior service & support

Power Systems



- More performance per core than any other system in the industry
- Drive over 90% utilization and dynamically scale per demand

System x



- Pre-loaded with VMware virtualization solution
- 78% more virtual machines for same VMware cost

System Storage



- Virtualize existing storage and increase utilization by up to 30%
- Reduce TCO up to 66% by deploying automated, virtualized storage

Oracle cannot match IBM's workload optimized systems

Workloads



**TRANSACTION
PROCESSING AND
DATABASE**

Keep up with exploding data growth with fast and secure transaction handling



**BUSINESS
INTELLIGENCE AND
ANALYTICS**

Uncover deeper insights hidden among diverse information sources



**BUSINESS PROCESS
MANAGEMENT**

Respond to change more efficiently and effectively with Business Process Management

Smarter Business Infrastructure



**CONSOLIDATION &
VIRTUALIZATION**

Reduce costs and increase agility through consolidation and Integrated Service Management

Simply put, IBM is making systems smarter



**TRANSACTION
PROCESSING AND
DATABASE
WORKLOADS**

pureScale Application System



**BUSINESS
INTELLIGENCE AND
ANALYTICS
WORKLOADS**

Smart Analytics System



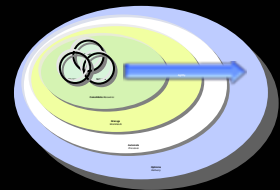
**BUSINESS PROCESS
MANAGEMENT
WORKLOADS**

BPM Suite



**LEVERAGE
CONSOLIDATION &
VIRTUALIZATION**

*Virtualization with Integrated
Service Management*



IBM has a proven track record of optimizing systems and data centers: Your trusted partner

1950s...1960s

TPF: Airline Reservation System

IMS & s/360: Transaction & Database System



1990s

IMS, CICS, and DB2 Parallel Sysplex:
High-scale Application and Data Serving



1970s...1980s

System 38 and AS/400:
Integrated Application and Data Serving

DB2 & S/370: Online Transaction Processing



2000s

IBM Smart Analytics System

- High-scale Business Intelligence and Relational / XML Data Warehousing

DB2 pureScale on PowerHA:

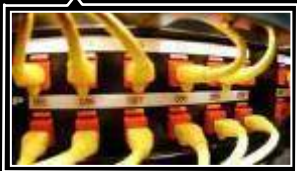
- High-Scale Database Management

WebSphere Edge Server:

- High-scale Web Application Serving

Datapower:

- XML & Web services appliance



Take action now!

- Learn more about how the [IBM Migration Factory](#) can help make your move to IBM Systems efficient and successful
- Do your own complimentary consolidation assessment using the [IBM Systems Consolidation Evaluation Tool](#)
- Contact your IBM seller or business partner for a complimentary IBM Systems Makeover Analysis to help you get started
- [The Server Makeover Analysis](#) (including for SAP or Oracle Environments)



200

Customers have moved critical workloads to IBM systems from Oracle/Sun, HP and others in 1Q-2010 alone

2,700

Customers have switched to IBM in the last 4 years

Thank You!

ibm.com/smarterystems



Simply put, IBM is making systems smarter.