

Barrett Boston



IBM Director Database, WW 11/09/2010

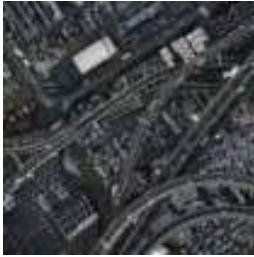
Accelerating Business Value with Smarter Systems *Optimized Software, Hardware and Services*

IBM Smarter Systems Tour 2010



The world is getting smarter

More instrumented, interconnected, intelligent



**Smart
traffic
systems**



**Smart
oil fields**



**Smart
food
systems**



**Smart
healthcare**

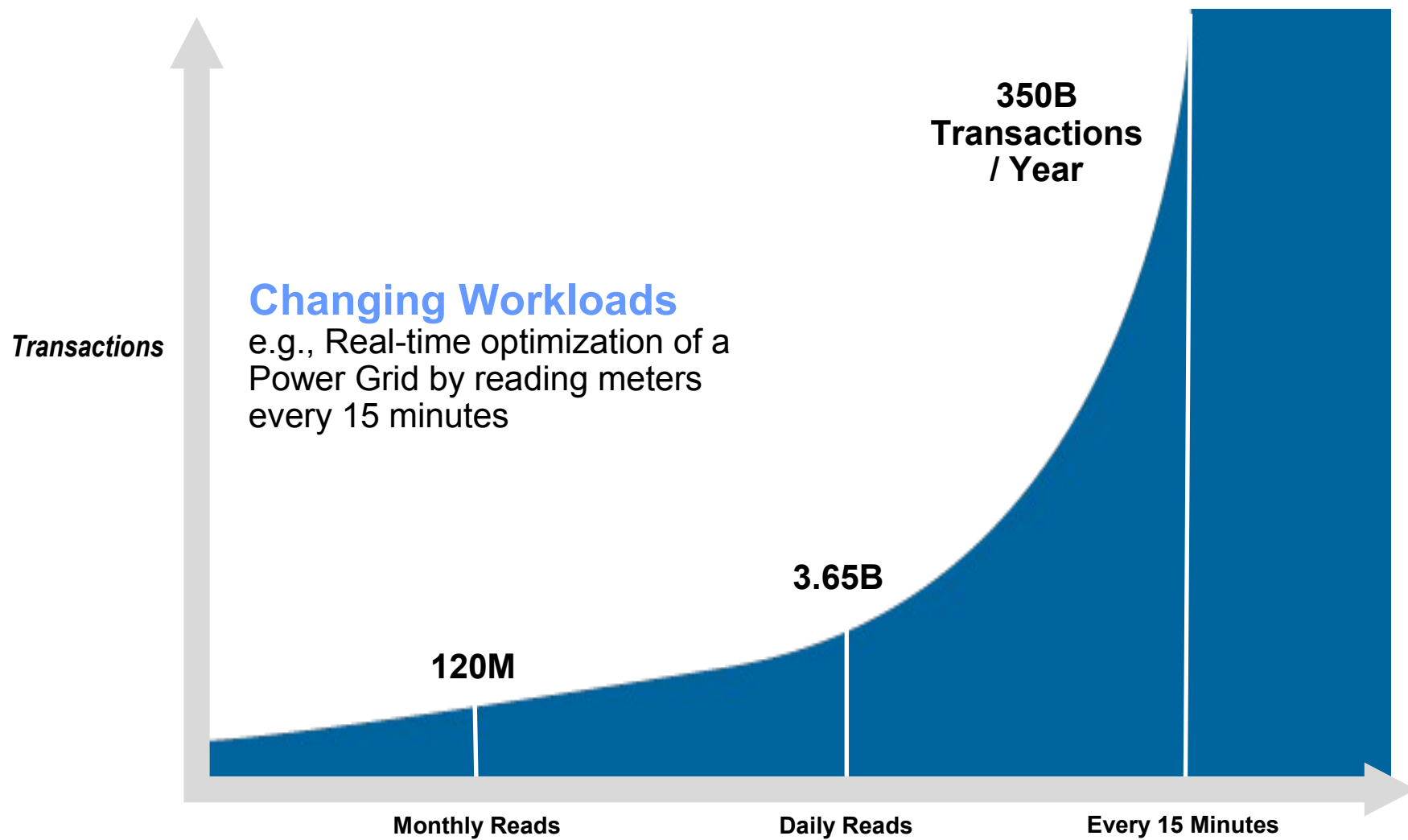


**Smart
energy
grids**



**Smart
retail**

Organizations are challenged to handle the ever growing volume and velocity of data and transactions



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



Electronic Toll Collection

Transaction processing systems linked to bank accounts and credit cards

Traffic Flow Prediction

Analytic workload system looking for patterns real-time and historical data

Weather, Local News, Major Events and etc

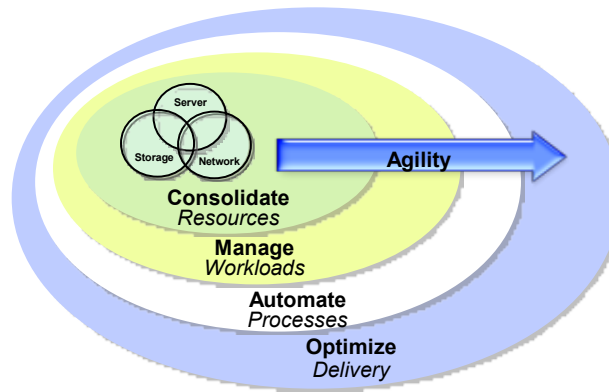
Integrate processes and people

Smarter Planet solutions have diverse workloads

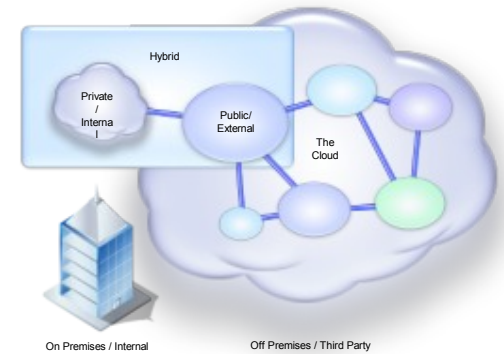
Building a smarter data center infrastructure requires looking at IT delivery from the business perspective, leveraging:



**Workload
Optimized
Systems**

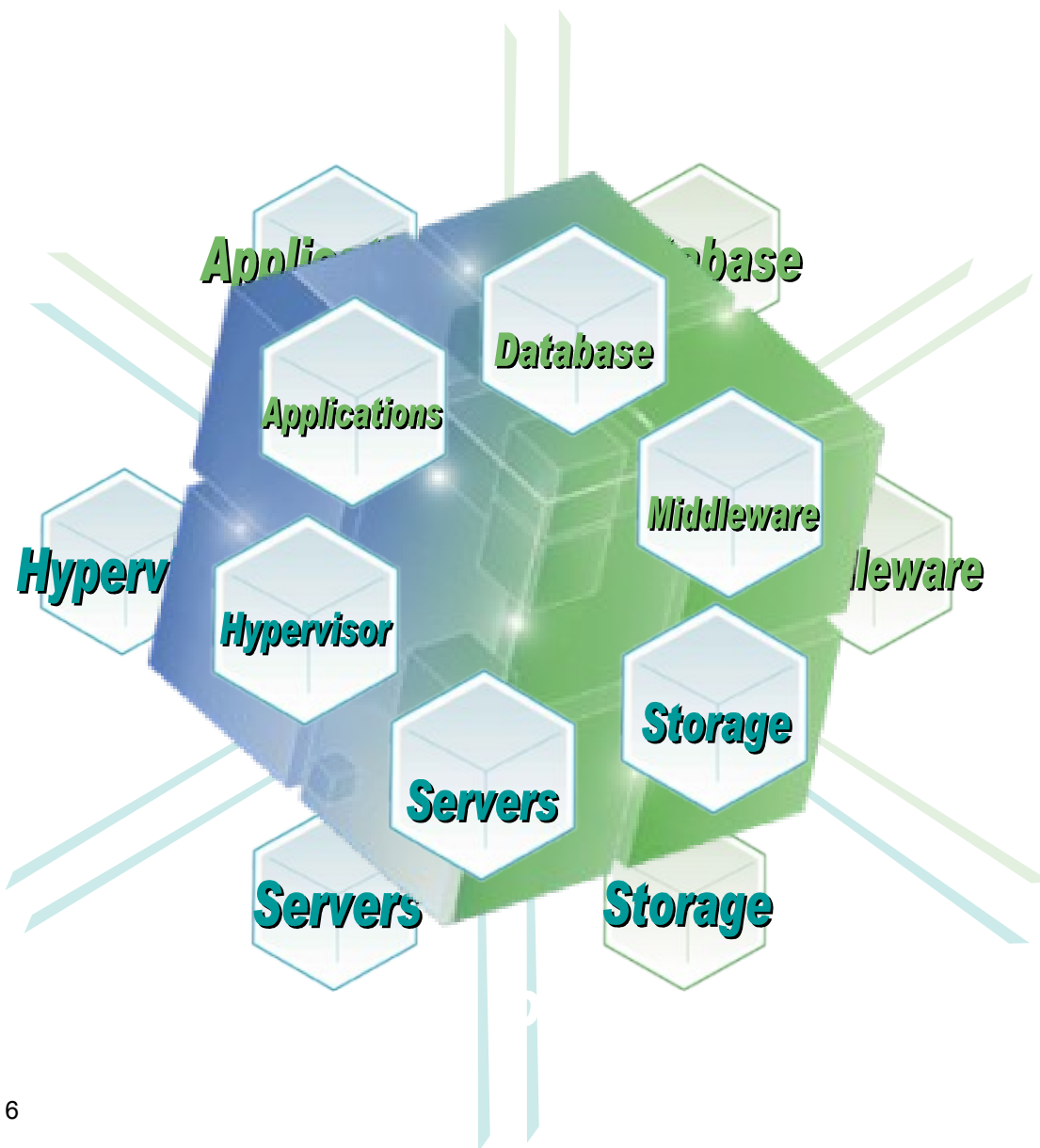


**Virtualization with
Integrated Service
Management**



**Flexible Delivery
Models**

Introducing Smarter Systems for a Smarter Planet



Benefits:

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

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

Smarter systems for transaction processing and database workloads

Examples of optimization:

- DB2 and WebSphere Application Server automatically leverage POWER7 processing threads
- Unique DB2 pureScale clustering design
- DB2 Optimized for SAP applications



**IBM pureScale
Application System**

POWER7 and DB2 lead in performance, cost and efficiency

1st to top10 million tpmC

- ✓ 10.36 million tpmC demonstrated on Power 780 and DB2 with TPC-C
- ✓ The highest TPC-C benchmark result ever recorded

2.7x faster per core

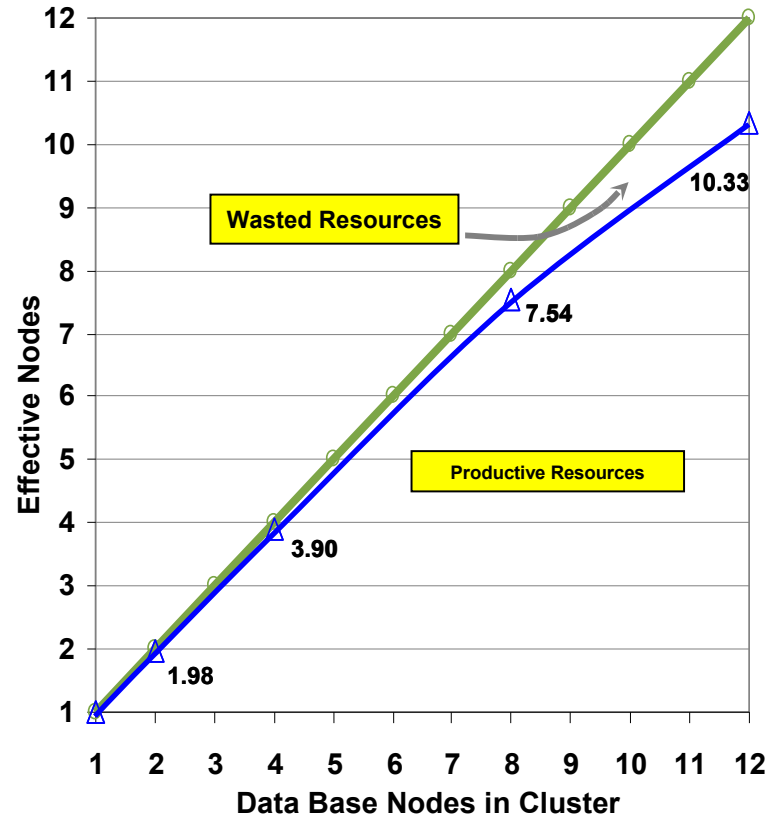
- ✓ 2.7x better performance per core than the best Oracle/Sun TPC-C result
- ✓ 35% greater throughput on 1/2 the cores than the best Oracle/Sun TPC-C result

41% lower cost per

- ✓ **transaction** 41% lower cost per transaction than the best Oracle/Sun TPC-C performance result
- ✓ The lowest cost per transaction for any result over 1.21M transactions

IBM POWER7 TPC-C Result: IBM Power 780: 10,366,254 tpmC at \$1.38USD/tpmC avail 2010/10/13, (24proc/192core/768thread) Oracle Sun TPC-C Result: Sun SPARC Enterprise T5440: 7,646,486 tpmC at \$2.36USD/tpmC, avail 2010/03/19, (48proc/384core/3072thread). TPC-C results available at www.tpc.org. TPC, TPC Benchmark, TPC-C and tpmC are trademarks of the Transaction Processing Performance Council. Results current as of August 17, 2010.

Near Linear Scalability



—○— Perfect Linear Performance
—△— Effective Nodes

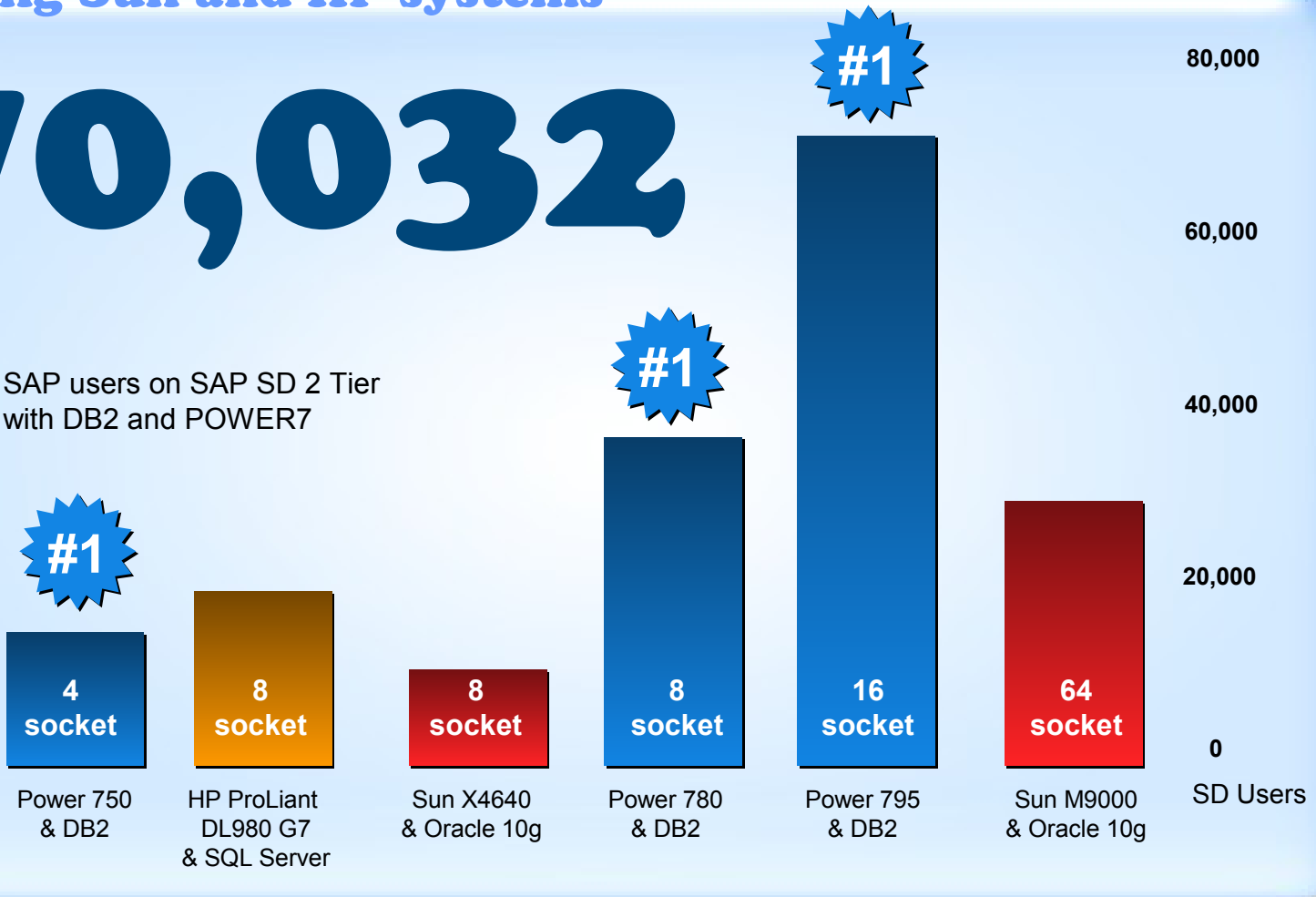
Source: DB2 pureScale characteristics as shown in IBM published results from internal tests

IBM DB2 and Power Systems top all others in SAP benchmarks

Including Sun and HP systems

70,032

SAP users on SAP SD 2 Tier with DB2 and POWER7



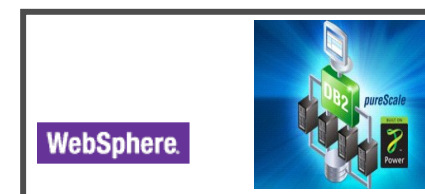
1) IBM SAP 2-Tier SD result of 15,600 SD (Sales & Distribution) users (Average dialog response time: 0.98 second), running DB2 9.7 on AIX 6.1 and SAP enhancement package 4 for SAP ERP 6.0 on the IBM Power System 750 with 4 POWER7 3.55 GHz processor chips (32 cores, 128 threads) and 256 GB main memory, certification Number: 2010004.
 2) HP SAP 2-Tier SD result of 18635 SD (Sales & Distribution) users (Average dialog response time: 0.99 second), running SQL Server 2008 R2 Datacenter Edition and SAP enhancement package 4 for SAP ERP 6.0 on the HP ProLiant DL980 G7 with 8 Intel Xeon Processor X7560 processor chips (64 cores, 128 threads) and 512 GB main memory, certification number 2010040.
 3) Sun Microsystems SAP 2-Tier SD result of 30,000 SD (Sales & Distribution) users (Average dialog response time: 0.90 second), running Oracle 10g on Solaris 10 and SAP enhancement package 4 for SAP ERP 6.0 (Unicode) on the Sun Fire M460 with 8 AMD Opteron S835 Processors at 2.6 GHz (48 cores, 48 threads) and 256 GB main memory, certification Number: 2009049.
 4) IBM Power System 780, 8x / 64-4 / 256-4, 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 (diag/update): 0.01% / 0.031%, CPU utilization: 99%, OS: AIX 6.1, DB2 9.7, cert# 2010013.
 5) Sun Microsystems SAP 2-Tier SD result of 17,340 SD (Sales & Distribution) users (Average dialog response time: 0.95 second), running Oracle 10g on Solaris 10 and SAP enhancement package 4 for SAP ERP 6.0 (Unicode) on the SPARC Enterprise Server with 32 SPARC64 V7 Processors at 2.88 GHz (128 cores, 256 threads) and 1,024 GB main memory, certification Number: 2009038.
 6) Sun Microsystems SAP 2-Tier SD result of 32,000 SD (Sales & Distribution) users (Average dialog response time: 0.93 second), running Oracle 10g on Solaris 10 and SAP enhancement package 4 for SAP ERP 6.0 (Unicode) on the SPARC Enterprise Server M9000 with 64 SPARC64 V7 Processors at 2.88 GHz (256 cores, 512 threads) and 1,152 GB main memory, certification Number: 2009046

Transparently scalable and continuously available

IBM pureScale Application System

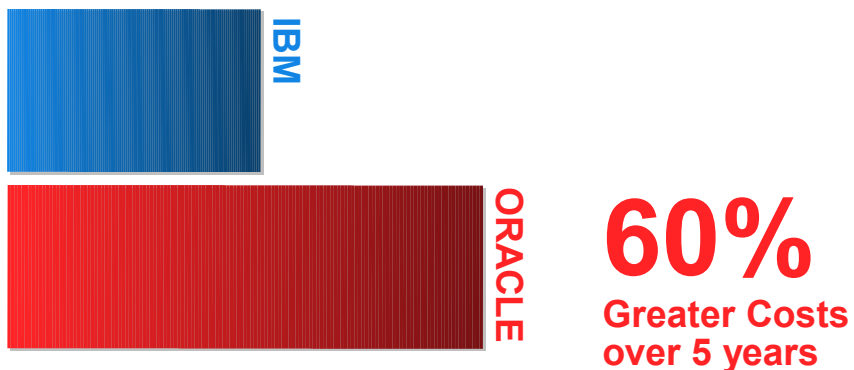
Scale Up, Scale Out, Scale Within

- **IBM Power 770**
drives up to 90% server utilization with virtualization, lowers energy consumption 70-90%
- **DB2 pureScale**
offers superior performance and scale-out efficiency
- **WebSphere Application Server**
on Power provides 6.8x better performance than a competitive application server on Sun T5140

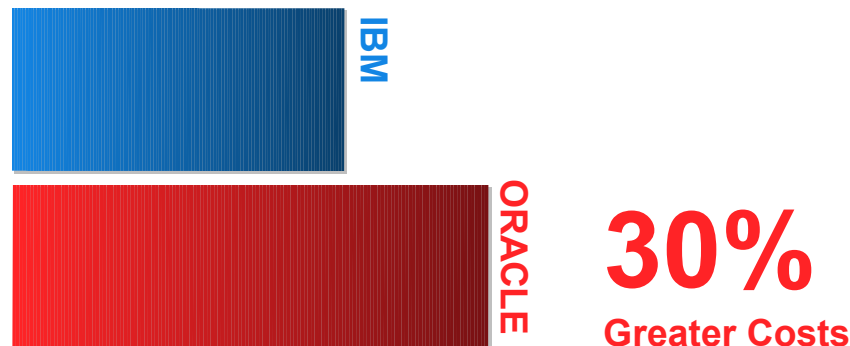


Optimized transaction processing and database systems maximize ROI

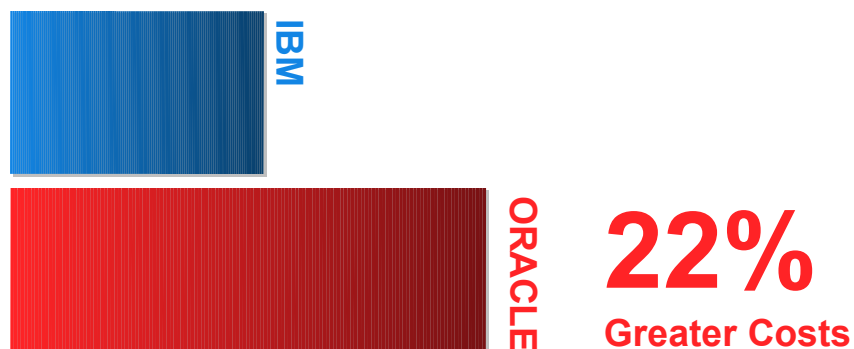
5-year costs for WebSphere Application Server and Oracle WebLogic Server¹



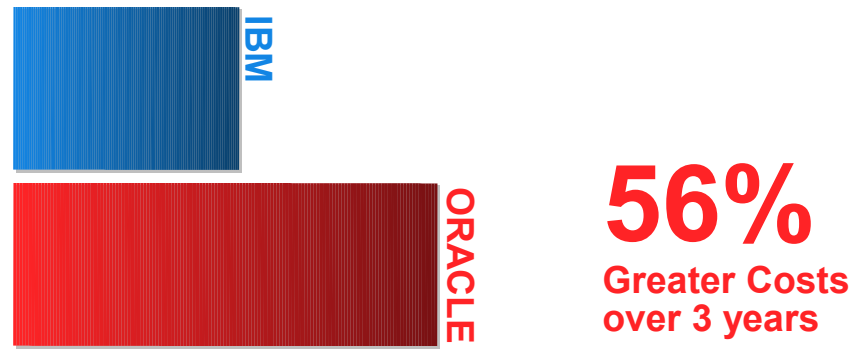
Storage costs for IBM vs. Oracle²



Price/Performance for WebSphere Application Server vs. competitive App Server³



3-year costs for DB2 and Oracle Database⁴



1 Source: Oracle technology global price list. Based on comparison of US Prices of single processor core, equivalent of 100 PVU's.

2 Source: IBM surveys of IBM clients using IBM DB2 and compression

3 Source: IBM testing: IBM WebSphere Application Server 7 - 1 JVM, AIX TL4, 64 bit, 16 threads vs. Competitive Application Server - 1 JVM, Windows 64 bit, 16 threads

4 Source: ITG whitepaper: VALUE PROPOSITION FOR IBM DB2 9.7: Cost Savings Potential Compared to Oracle Database 11g

Coca Cola Bottling Company Consolidated



Business Challenges:

- Reduce database costs
- Optimize performance and manageability
- Manage adoption of Unicode standard as part of a big SAP upgrade

Benefits:

- **40%** smaller database
- **65%** faster performance
- **40%** less storage
- **Lower** software license and maintenance costs

Smarter systems for business intelligence and analytics workloads

Examples of optimization:

- DB2 and Cognos software are tuned to leverage capabilities of Power Systems, System z and System x platforms
 - 2X query performance increase with SSD
 - Optimized, sequential IO scales linearly
- DB2 advanced compression and integrated IBM Storage systems
 - 100% performance maintained through a system failover



**IBM Smart
Analytics System**

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
- Powerful Data Warehouse
- Hardware & Services



*Transforming
information into
business insight*

3x Faster - Workload optimized analytics

50% less floor space

World record performance

Blue Cross Blue Shield Association



Business Challenges:

- Consolidated view of members
- Ability to analyze claims
- Gain actionable insights

Benefits:

- Insight into healthcare trends
- Information about treatment and medical technology effectiveness
- Emerging trends in healthcare practice and delivery

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



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



State tax agency



Challenges:

- Slow, expensive, paper-intensive, manual processes
- Lengthy exception processing times
- No real-time management reporting

Benefits:

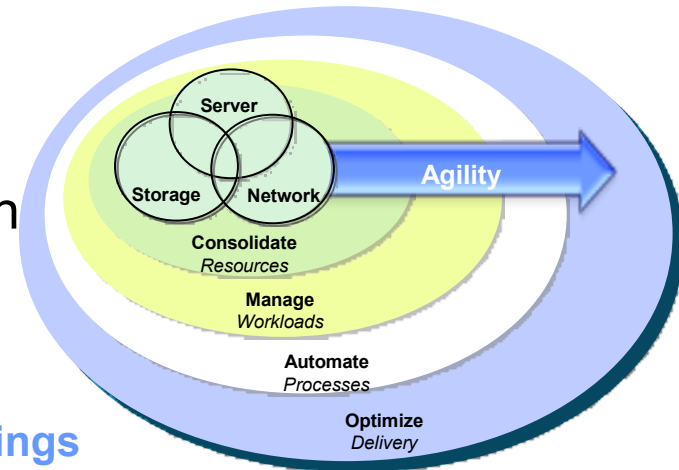
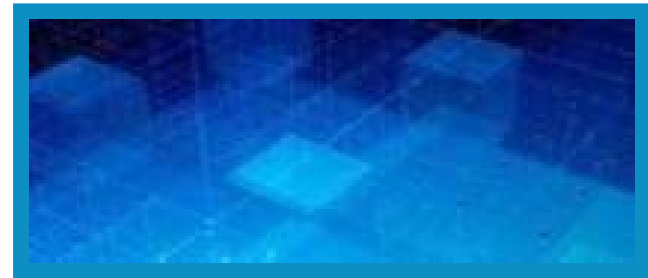
- **80%** reduction in average age of work
- Real-time process visibility and reporting
- **80%** reduction exception backlogs
- Reduced inventory by **60%**

Smarter data center 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



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

Gruppo FIAT Italy



Challenges:

- Reduce electricity consumption
- Reduce data center complexity – servers, storage, and network devices
- Keep major SAP systems operational

Benefits:

- **2:1** target for consolidation achieved
- **30%** improvement in response times
- **50TB** increase in available storage
- **70%+** fewer discrete databases

Power is Performance Redefined

Moving from x86 and Windows to Power and DB2, ERP outages have been eliminated, response times are up to 96% faster, and YTY IT costs are down 52%.



Deliver New Services Faster

- 20% faster application development with Rational
- 67% faster deployment with Tivoli provisioning

Deliver Higher Quality Services

- Resiliency without downtime with PowerHA
- No security vulnerabilities with PowerVM vs. 119 for VMware¹

Deliver Services With Superior Economics

- 37% less cost than comparable HP x86 solution
- 65% more throughput with PowerVM vs. VMware

How Smarter Systems for a Smarter Planet can help



1. Smarter Systems – optimized hardware, software and services
2. Investment Protection and Ease of Migration
3. Commitment

500

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

3,000

Customers have switched to IBM in the last 4 years

Thank You!

ibm.com/smarterystems



*Simply put, IBM is
making systems smarter.*