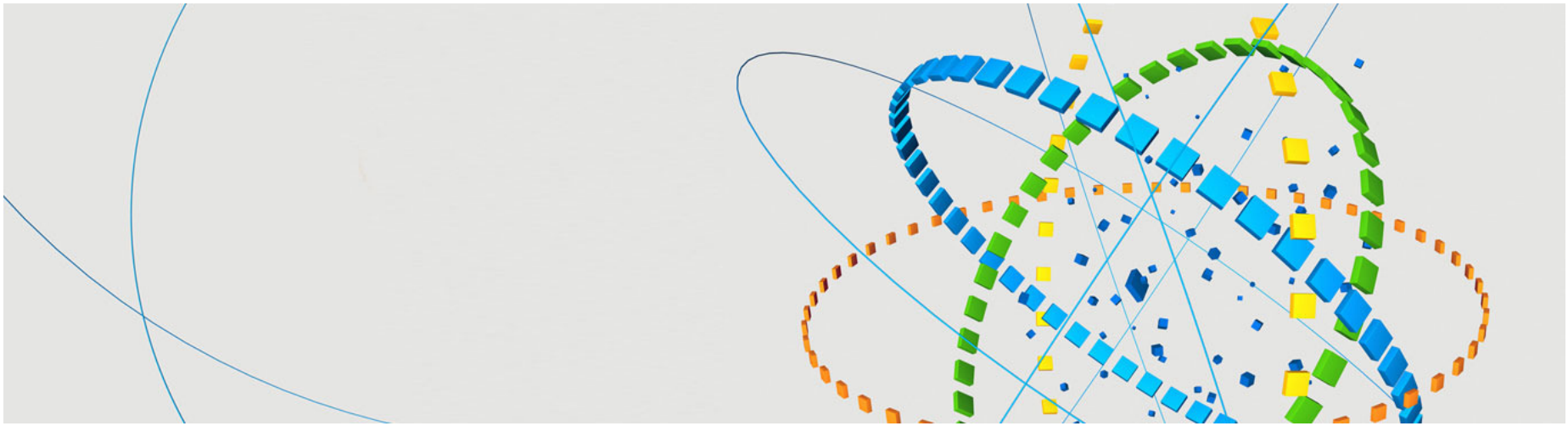
Smarter Workload Optimization – IBM Software And POWER Unleashed

IBM

IBM software on Power Systems – Optimized engines for Smarter Computing

IBMDiscoveryDays2011

Copies of Today's Presentations:
http://www.ibm.com/developerworks/offers/techbriefings/details/power.html



The IT Conundrum:
Insatiable Demand And Finite Budgets


Smart supply chains


Intelligent oil technologies


Smart food systems


Smart healthcare


Smart energy grids


Smart retail

As The World Gets Smarter, Demands On IT Are Increasing

25 Billion

Global trading systems are stressed, handling billions of market data messages each day

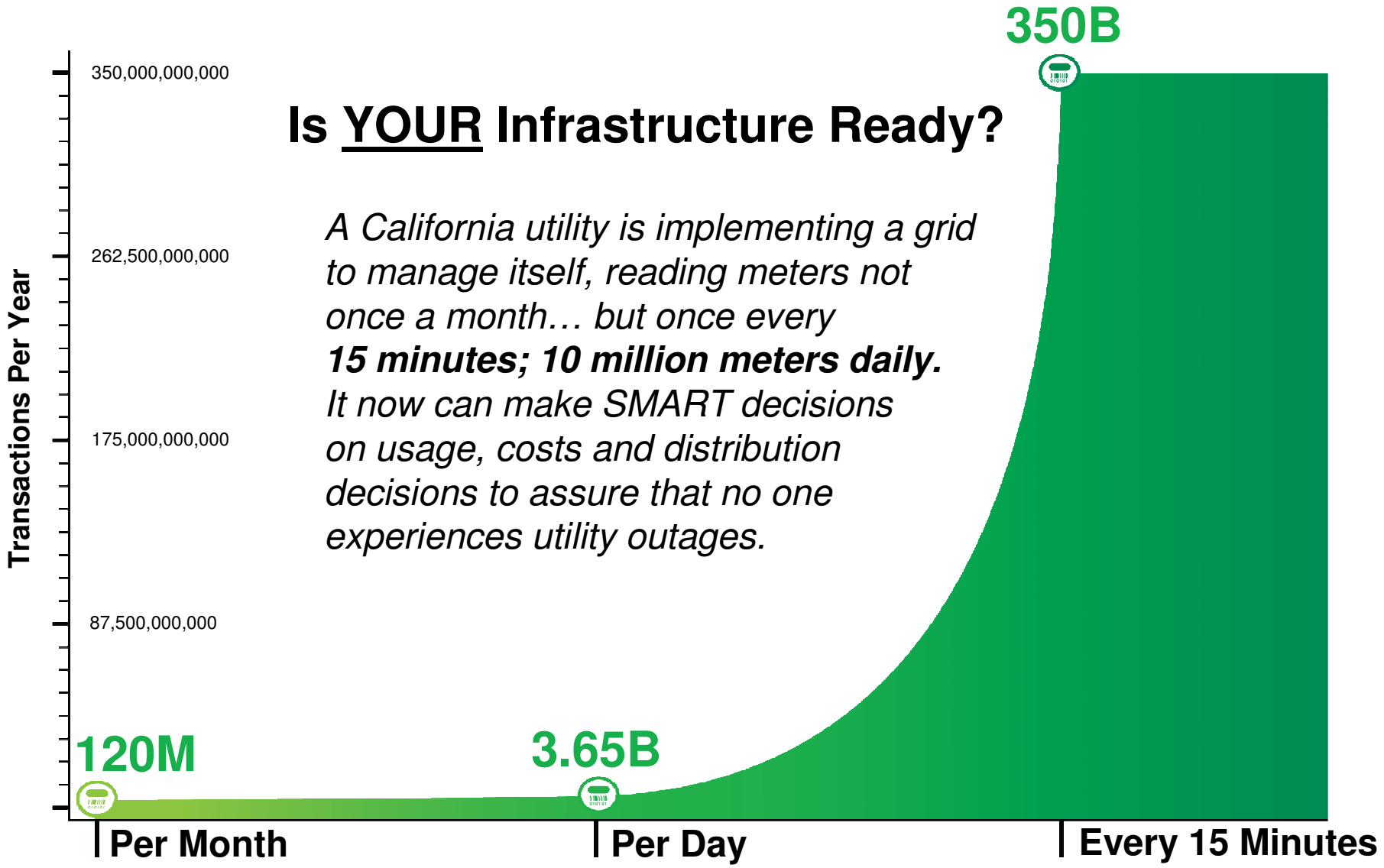
44x

Digital data is projected to grow tenfold from 2007 to 2011

1 Trillion

Devices will be connected to the Internet by 2011

Smarter Computing Workloads Are Here!



Smarter Computing Systems – The Solution For The IT Conundrum

- **Workload Optimized Systems**

  Meet the insatiable demand for processing

- **Efficient Data Processing and Analytics**

  Meet exploding data demand

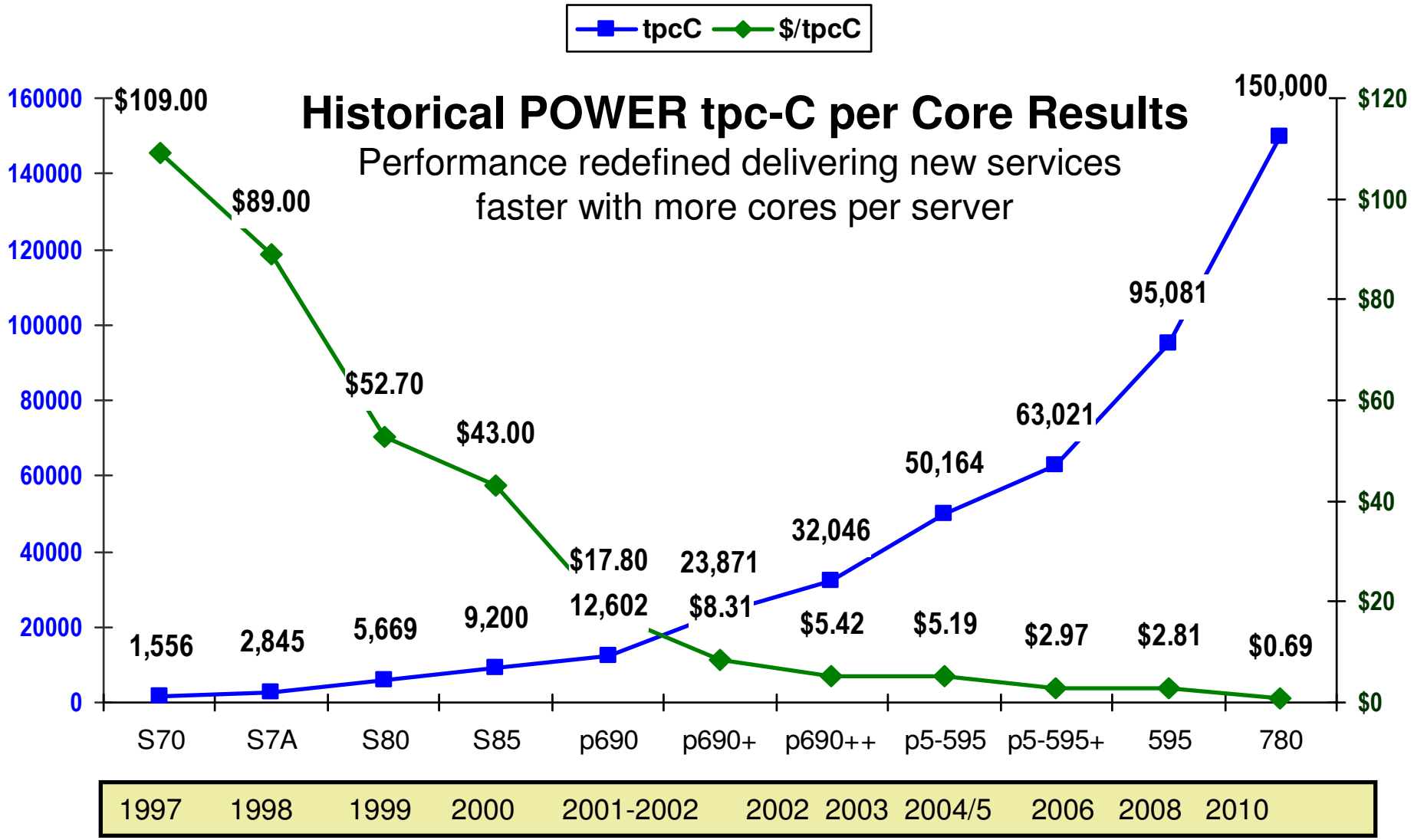
- **Virtualization and Consolidation**

  Implement cost savings and provide the foundation for Private Clouds

- **Private Cloud and Integrated Service Management**

  Transform the way you deliver IT services while reducing costs

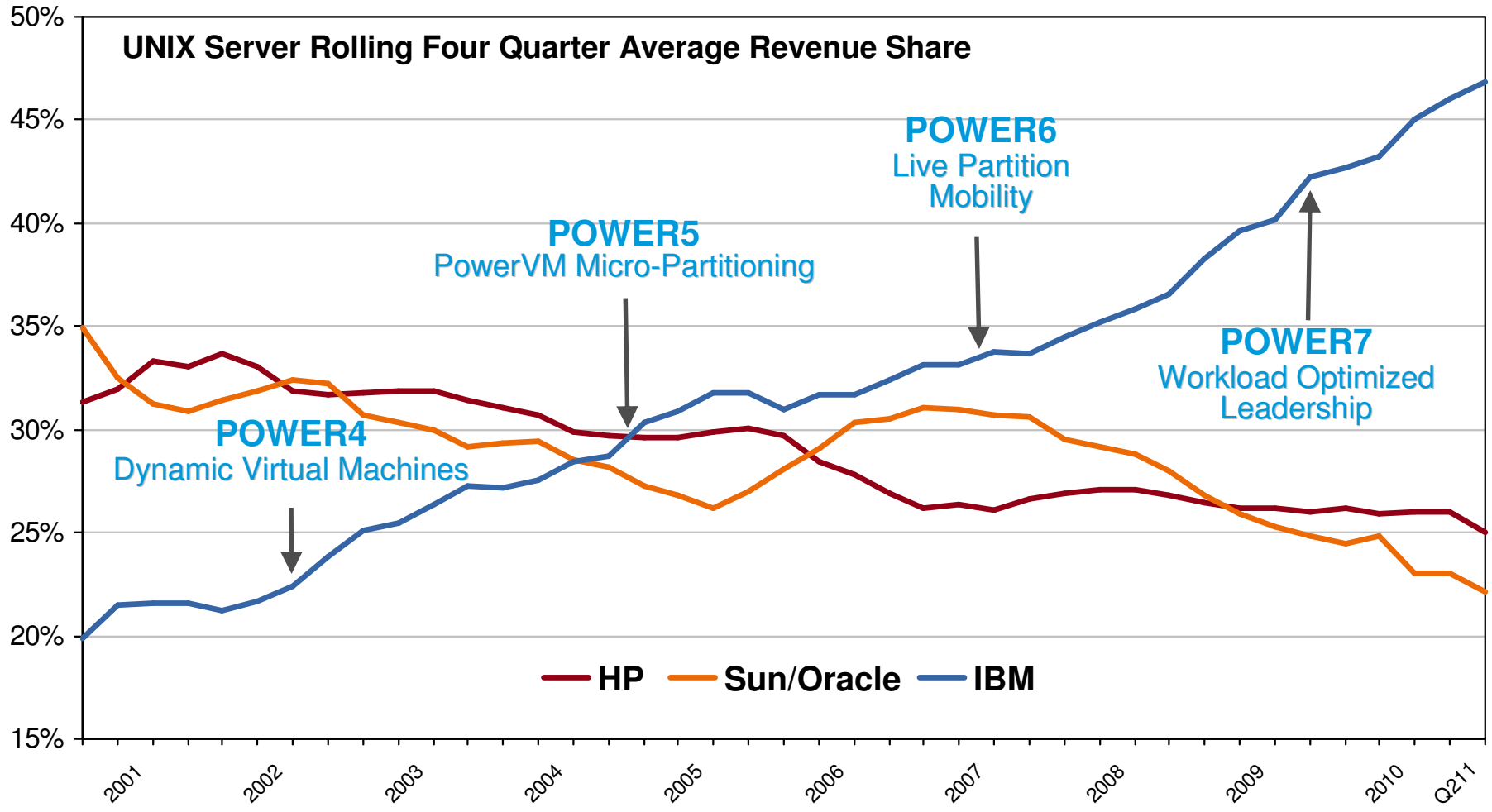
Historical, Sustained Investment In Technology That Delivers The Best Price / Performance For Customers



Source: www.tpc.org

IBM Power Systems – Industry Leading Platform

Power Systems march to commanding leadership



Source: IDC Server Tracker, August 2011

Power Systems Scalable Servers Deliver The Lowest Cost Per Workload Across The Family

BladeCenter PS700 Express
1 socket / 4 cores

BladeCenter PS701 and PS702 Express
1 socket / 8 cores
2 sockets / 16 cores

BladeCenter PS703 and PS704 Express
2 sockets / 16 cores
4 sockets / 32 cores

Power 710 Express
1 socket / 8 cores

Power 730 Express
2 sockets / 16 cores

Power 720 Express
1 socket / 8 cores

Power 740 Express
2 sockets / 16 cores

Power 750 Express
1-4 sockets / 4-32 cores

Power 755
4 sockets / 32 cores

Power 770
8 sockets / 64 cores

Power 780
8 sockets / 64 cores

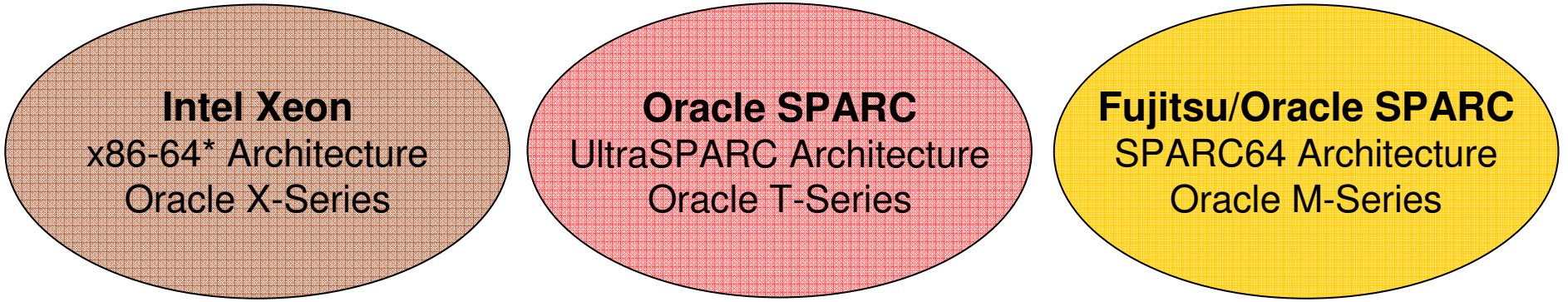
Power 795
32 sockets
256 cores

Blade Economics **Small Business Servers** **Medium Enterprise Scale** **Large Enterprise Scale**

Note: Numerous configurations are available. Max socket and max cores per socket configuration shown.

Oracle Has A Divided Systems Strategy

- Three different processor architectures
  - Oracle controls only one – UltraSPARC
- SPARC-based architectures are non-competitive on performance
- Lack of investment, strategy and clear roadmaps



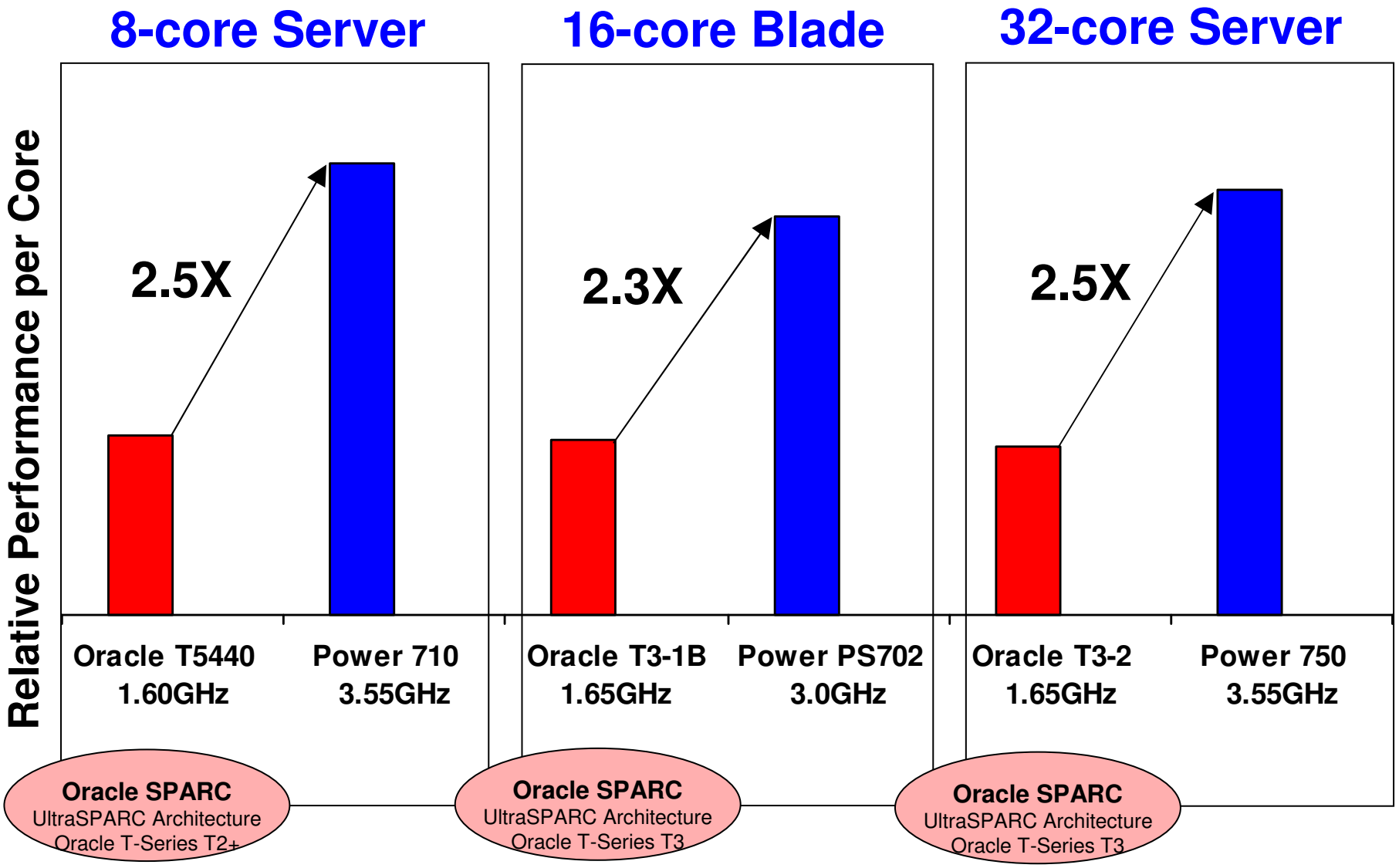
- Competitive performance
- Exalogic – Intel x86-64
- Exadata – Intel x86-64

- Non-competitive performance
- Low clock rates
- High energy consumption
- Announced plans for Exalogic

- Non-competitive performance
- High energy consumption
- High cost
- No announced plans for Exadata or Exalogic

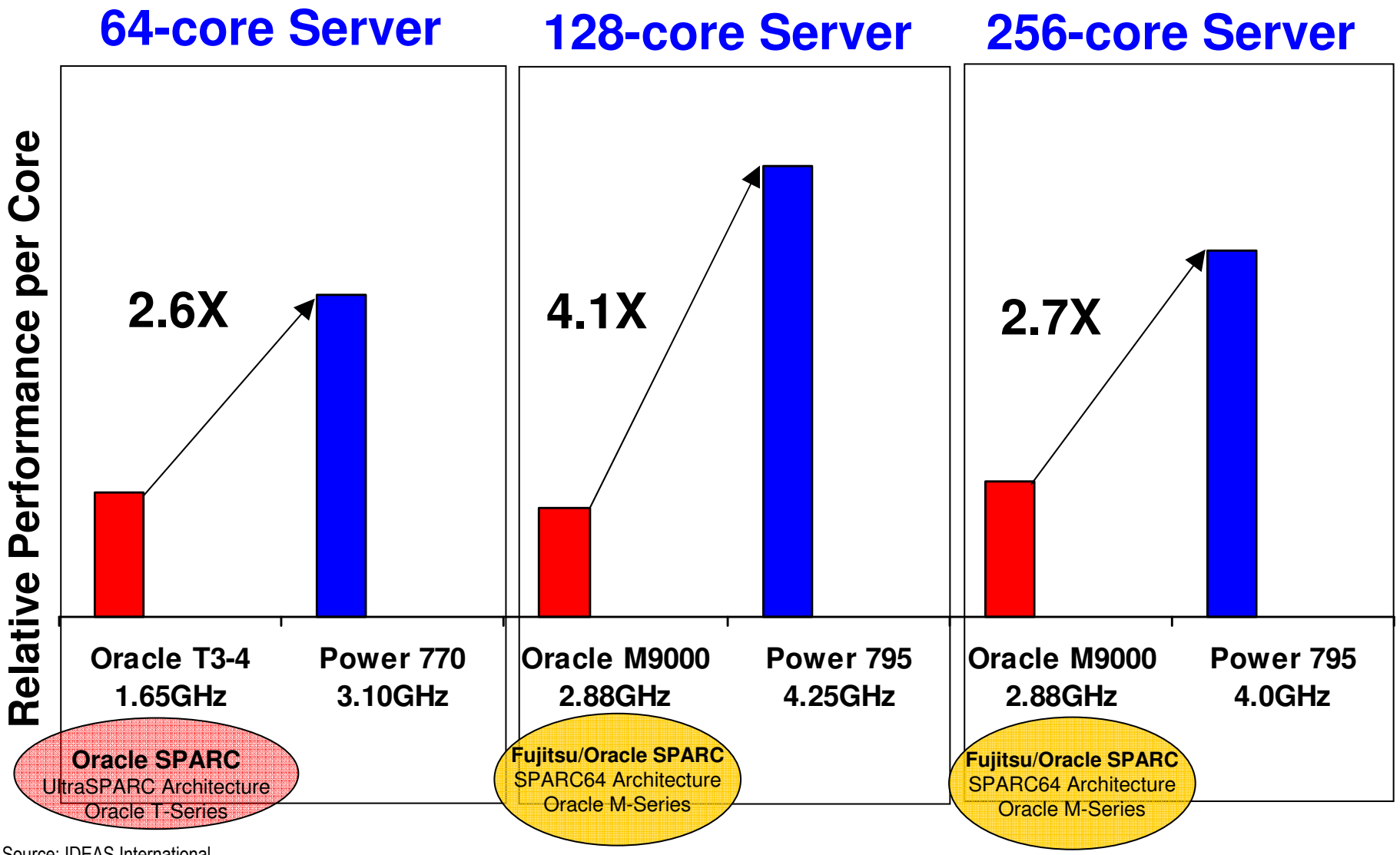
* Oracle also has AMD x86 servers but has announced that AMD is no longer strategic

POWER – Superior Performance Per Core For Small To Medium Business



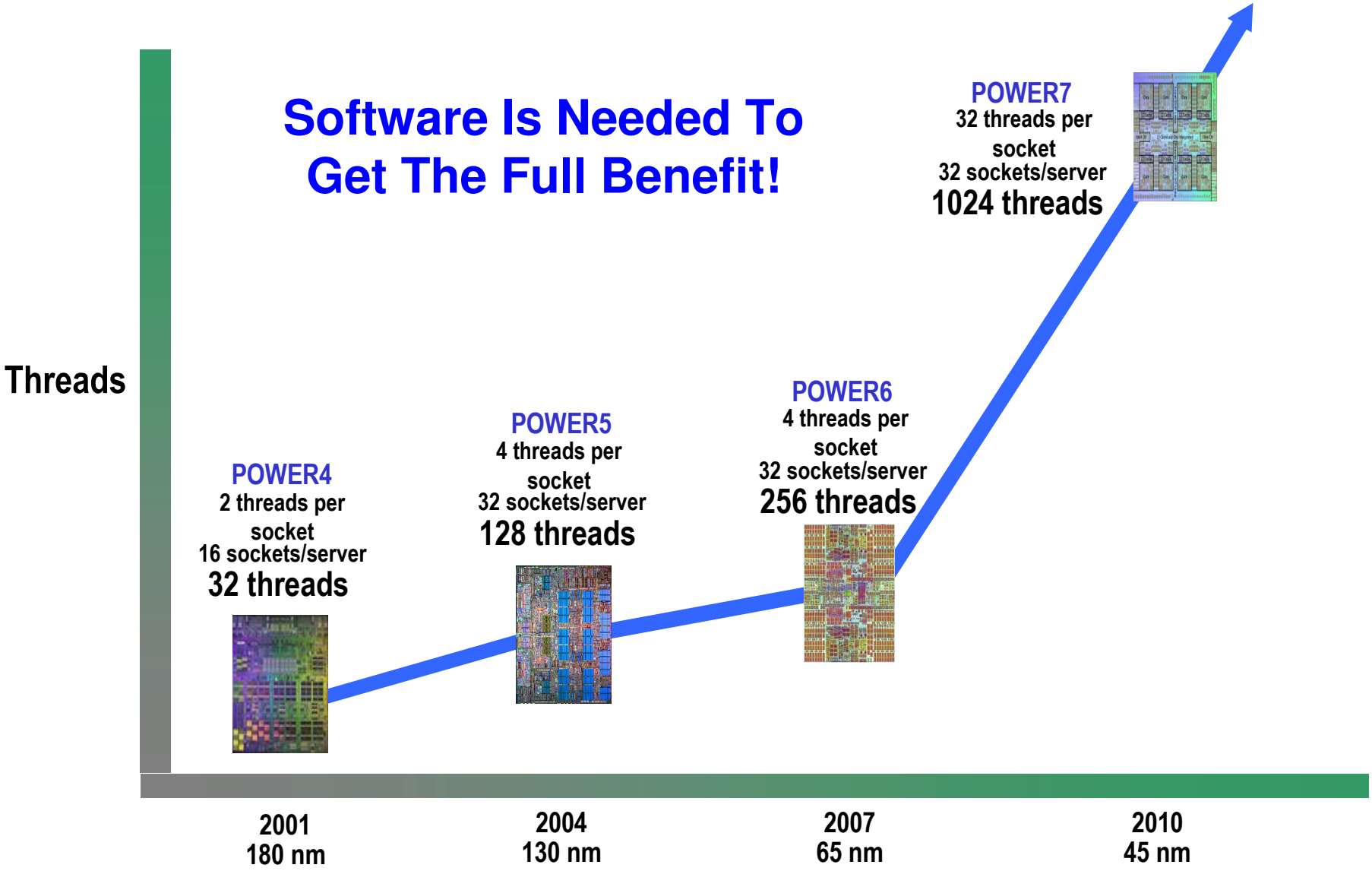
Source: IDEAS International

POWER – Superior Performance Per Core For Medium To Enterprise Business



Source: IDEAS International

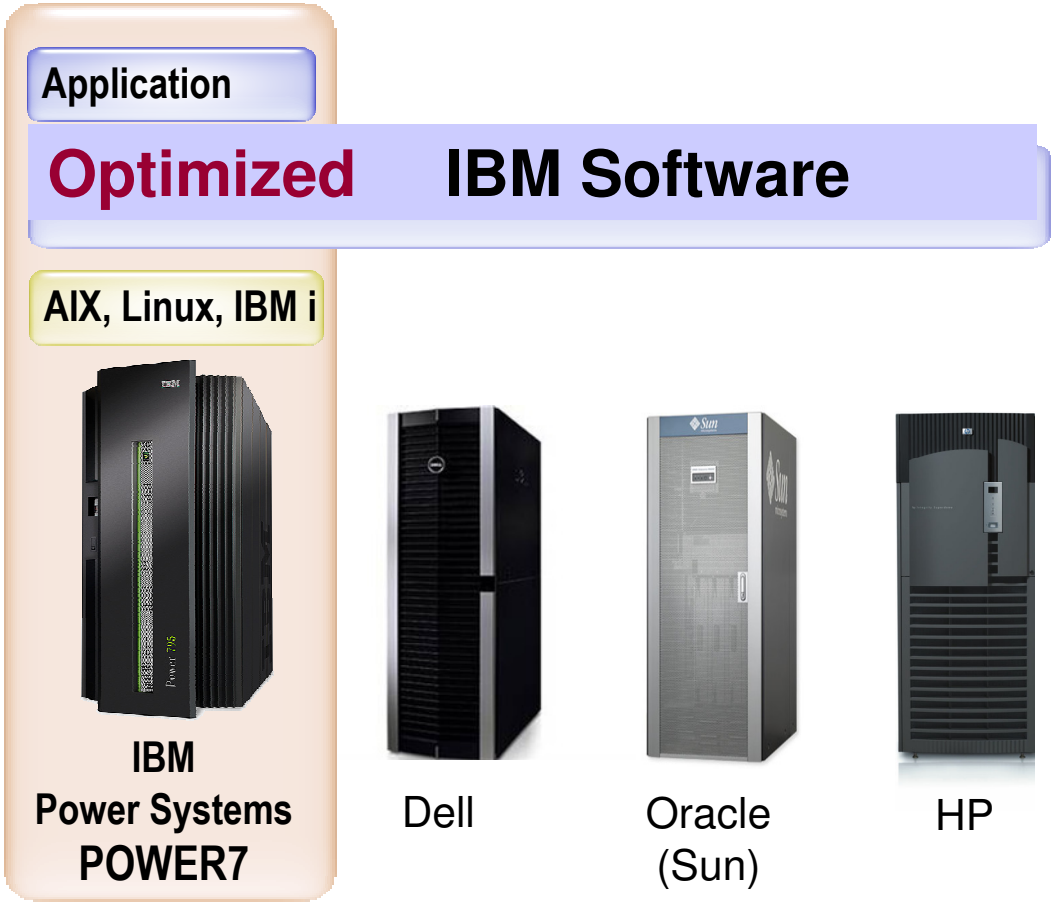
POWER - Based Systems Bring Massive Parallelism Mainstream



IBM Software Is Optimized For Power Systems

IBM Software is tuned to fully exploit the capabilities of the POWER based servers

IBM Software automatically exploits the POWER7-based servers to optimize performance and deliver best value



Optimized IBM Software And Power Delivers Superior Performance And Economics

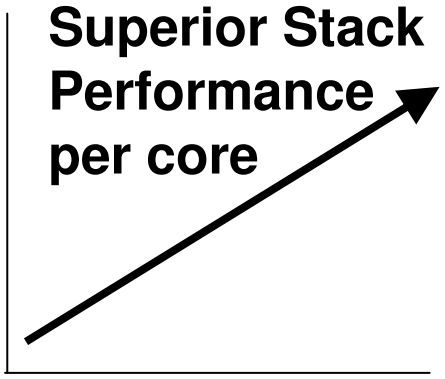
IBM Software

Optimized to exploit IBM hardware performance features

Tivoli software
Lotus software
Rational software
WebSphere software
Information Management

IBM Power Systems

Delivering more power per core, more parallel processing threads per server



Solves the IT Conundrum

Lowest TCA

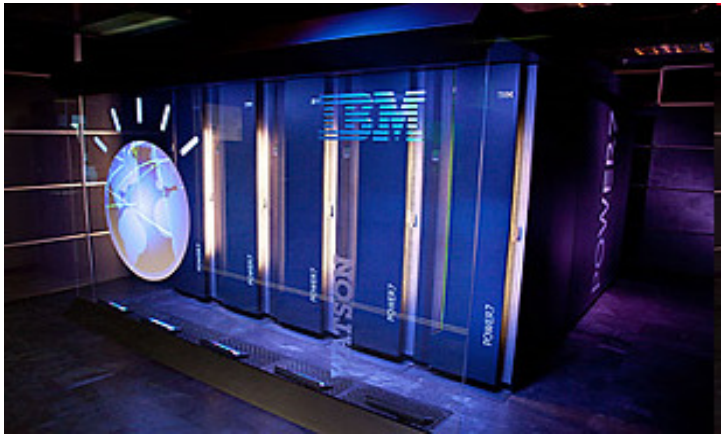
Watson - An Excellent Example Of A Smarter System - Optimized IBM Software On Power Systems

Watson has commercial Power7 Hardware and Software

- Linux, WAS, DB2, SPSS

- Unique: Natural Language Processing & content analysis leveraging UIMA

- **Standard 90 Power 750 server nodes**
- 10-rack cluster system
- 16 terabytes of RAM
- 2,880 cores, 11,520 processing threads
- 80 teraflops of performance



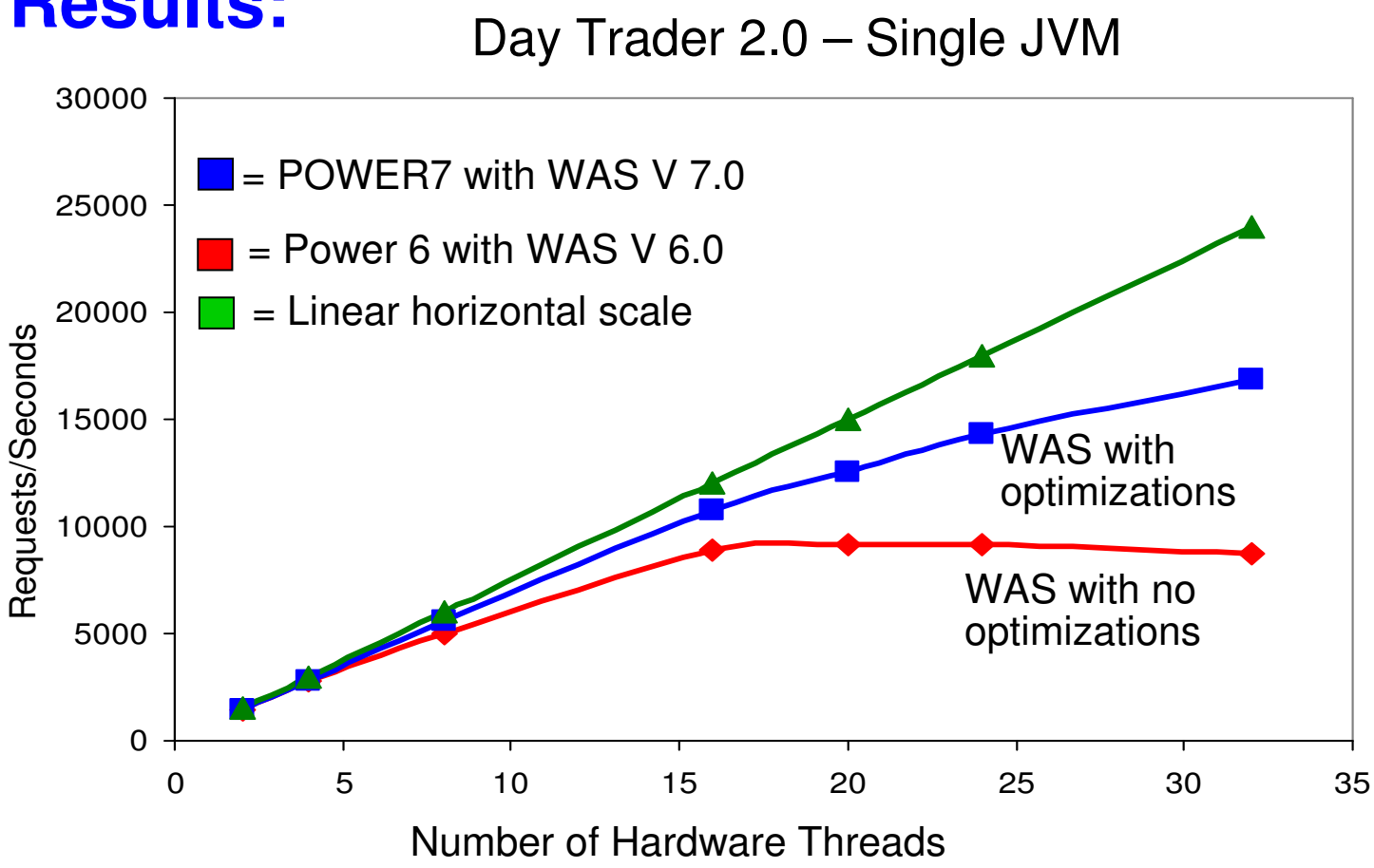
Any Customer can now WIN with POWER7 and IBM Software!

- Optimized for transaction processing and analytics
- Next is real world analytical problem solving: medical diagnostics, financial markets, and any business problem that needs quick accurate answers

UIMA = Unstructured Information Management Architecture

WebSphere Application Server Optimized To Exploit 32 Hardware Threads In POWER7 Socket

Results:



Near linear scaling on Power Systems, up to 32 threads

Optimizations improve performance by 85% over non-optimized single instance

Source: IBM Software Group Internal Study

Efficient Data Processing And Analytics To Handle Exploding Demand

IBM Software

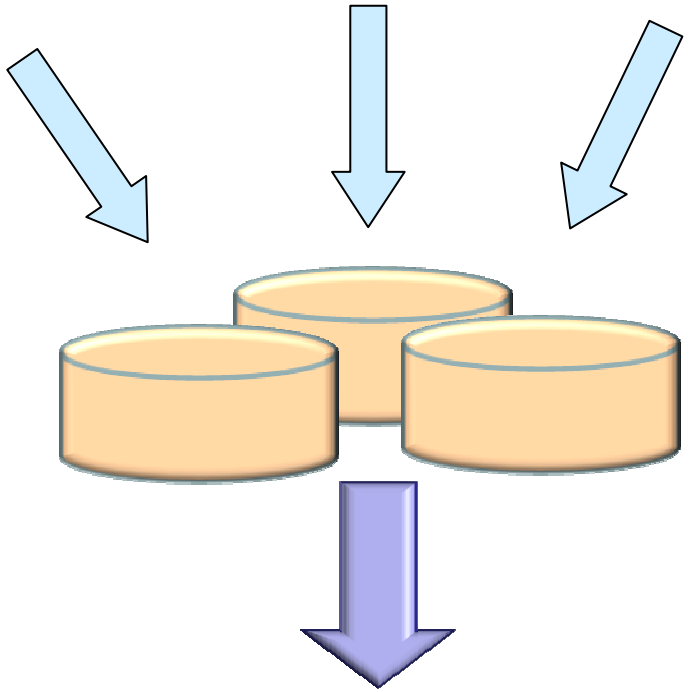
Designed to optimize IBM servers and storage for analytics and data management

Tivoli software
Lotus software
Rational software
WebSphere software
Information Management

IBM Hardware Capabilities

IBM Power Systems, IBM Storage Systems – plus purpose-built innovations likeTurboCore, DB2 pureScale, Smart Analytics, and Easy Tier

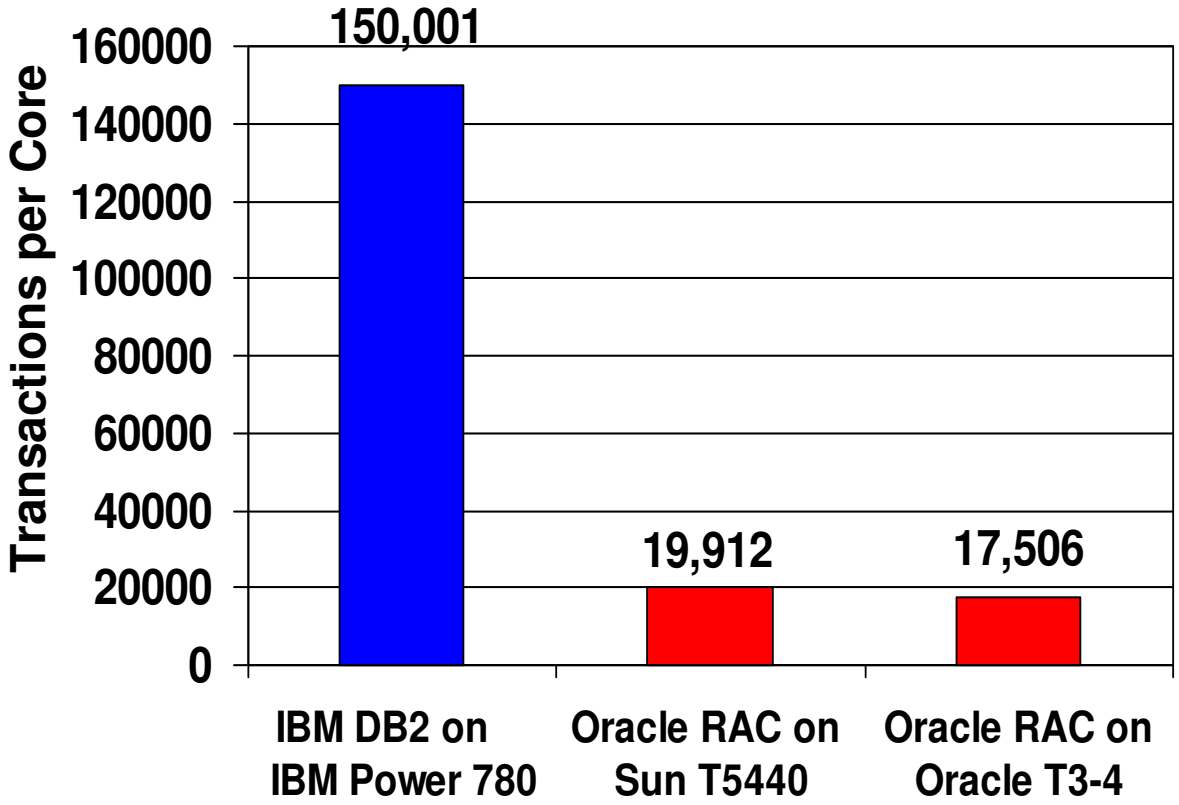
Explosive Growth of Data



IBM Analytics and OLTP
Drive Business Success
Seize Opportunity!

Optimized Database Performance – DB2 On Power 780 With TurboCore

DB2 efficiency leads in Performance Per Core which drives down cost.



IBM DB2 can do more than 8x more transactions per core than Oracle

8 to 1

TPC-C and TPC-H are trademarks of the Transaction Performance Processing Council (TPPC). Data current as of 2/10/2011
All results available at http://www.tpc.org/tpcc/results/tpcc_results.asp?print=false&orderby=submitted&sortby=desc,

Virtualization, Private Cloud, And Integrated Service Management Dramatically Transforms Service Delivery

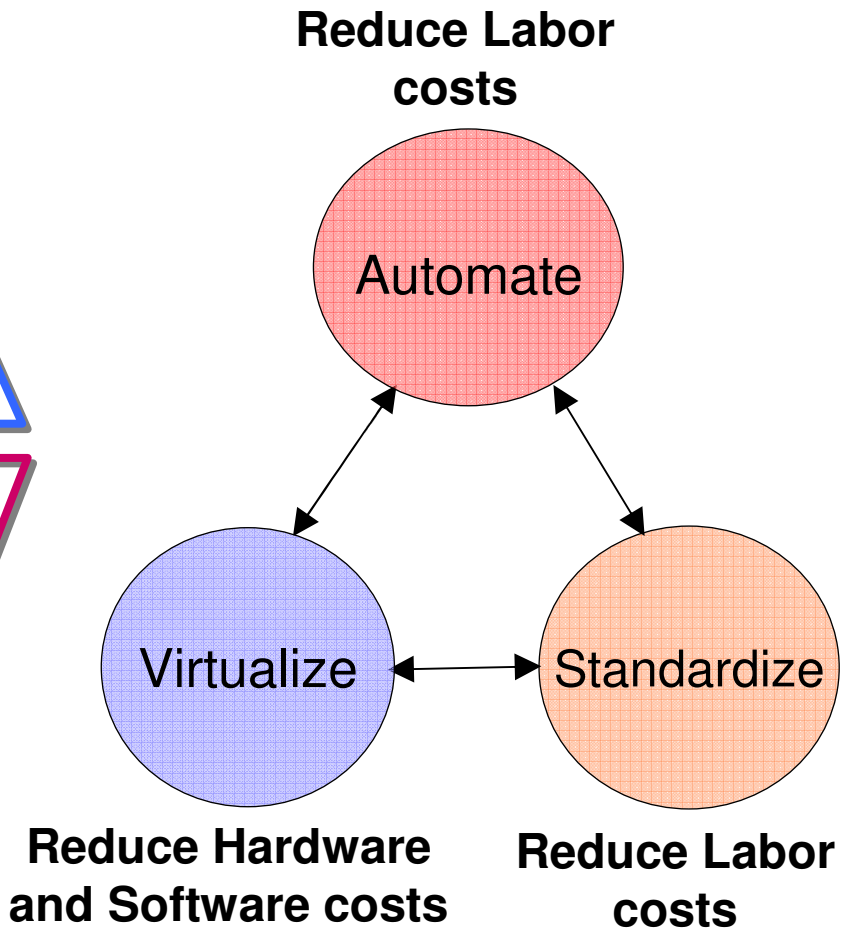
IBM Software

Virtual Server lifecycle management, self-service automated provisioning, and metering and billing

Tivoli software
Lotus software
Rational software
WebSphere software
Information Management

IBM Power Systems

Built-in Power server virtualization with superior hypervisor efficiencies to leverage scale



No Wonder Customers Are Migrating To POWER-based Solutions

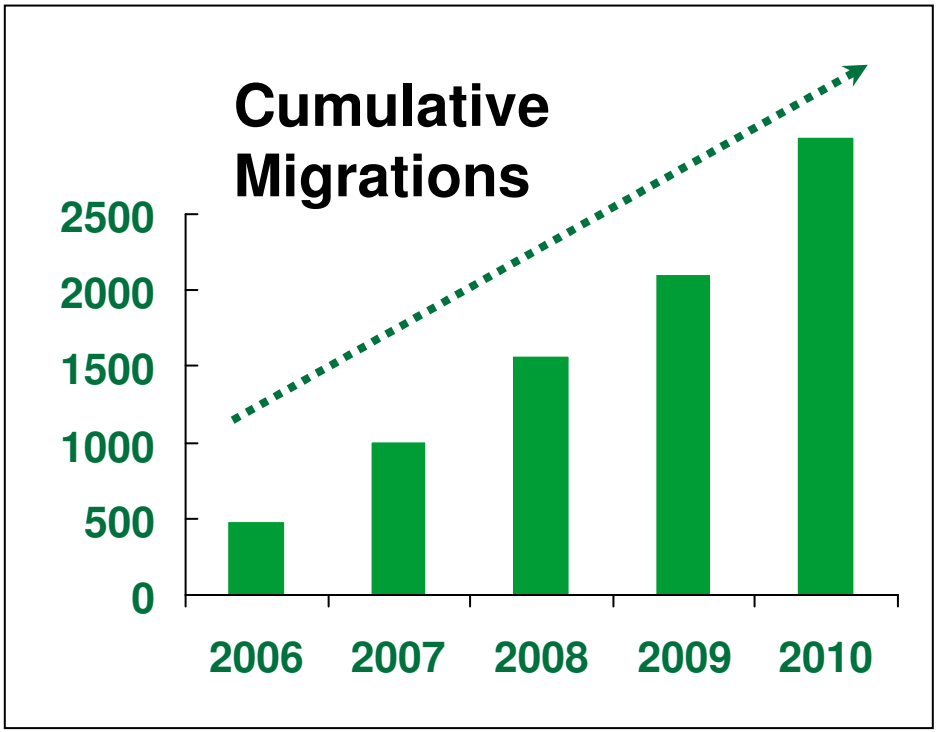
3,583+

Successful migrations to IBM Power Systems from Oracle and HP

Companies are moving their mission-critical workloads to IBM Power Systems and IBM Software

Immediate Benefits:

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



Note: 3,583 customers that paid for migration services as of June 2011

Davis + Henderson Company - Largest Financial Services Firm In Canada

The Old Production Infrastructure

- 172 Application Server Cores on 67 physical frames

- 200 Oracle database cores on 80+ physical frames

- Mix of Sun v120, v240, v245, v440, V480, v490, T5120, v890

30:1
Consolidation Ratio!

1. WLS to WAS
2. Oracle to DB2
3. Oracle ESB to WebSphere ESB

The New Lower Cost Production Infrastructure

2 IBM Power 770
3 IBM Power 740

- 70% Utilization with PowerVM

- 80-90% reduction Space & Power

- 300% application performance improvement

- 10X DB performance improvement

"What used to fill cages now fits in the back of a mid-size pickup truck"

Source: Paul Lewis, D+H Vice President, Technology & Architecture

Oracle Is Also Talking About Smarter Computing Systems

We will compare Oracle's solutions to the IBM Workload Optimized Systems on POWER.

Exalogic

"Optimized to run Fusion Middleware Java workloads"

?

Exadata

"Optimized to run Oracle database transaction and data warehousing workloads"

?

Introducing Service Oriented Finance – A Growing Business That Needs Smarter Systems

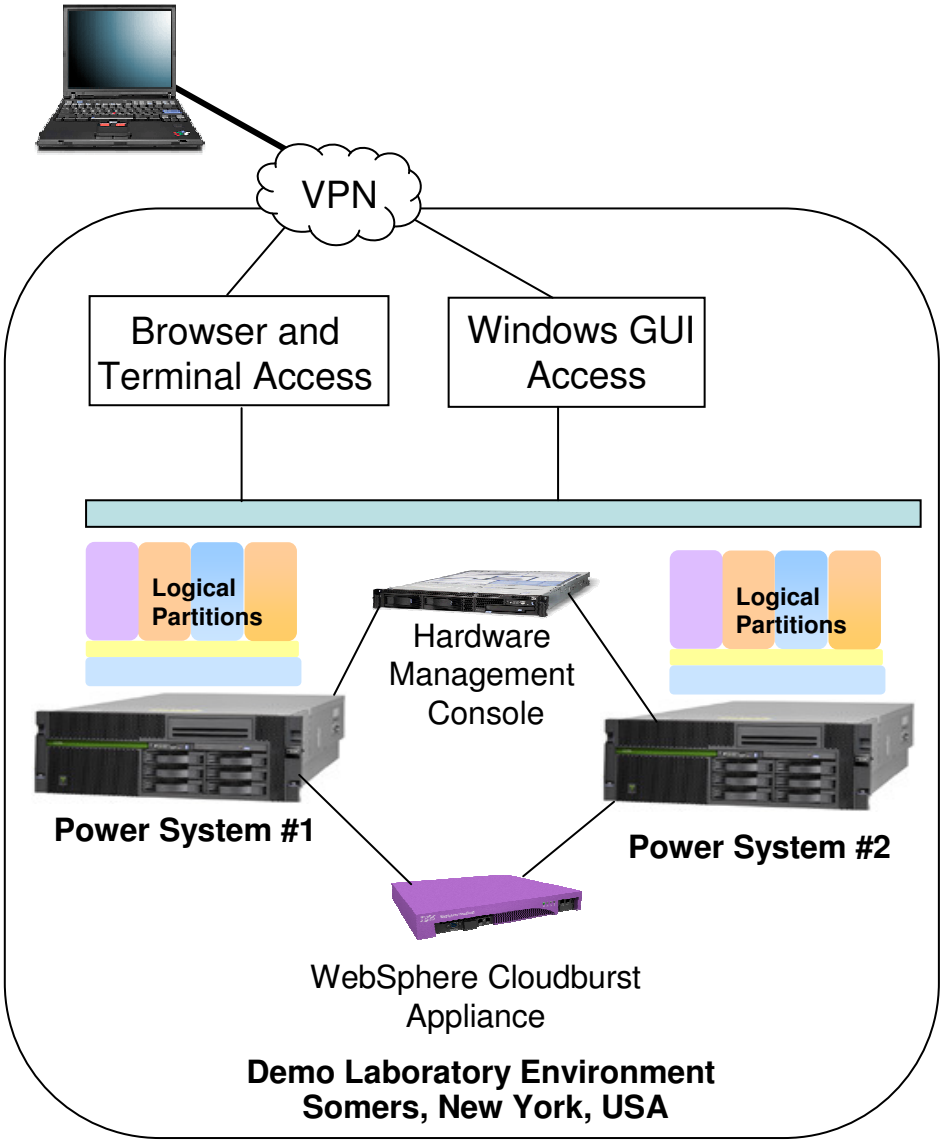
I have increasing workload demands and a flat budget. What options do I have?

Service Oriented Finance CIO

IBM Power Systems and IBM Software offer you industry leading Smarter Computing Systems at the lowest cost per workload. We will prove this to you today.

IBM

DEMO – Live Demos On Power Systems Will Prove IBM Has Smarter Computing Systems



Demo subjects covered:

1. **Optimized Web Facing Engine**
2. **Efficient Database and Analytics**
3. **Best Virtualization**
4. **Proven Cloud & Service Delivery**
5. **Easy Migration Techniques**

Today's Agenda:
IBM Delivers The Smartest Systems

Today, we will examine each of these topics in detail	IBM Software on POWER	Oracle – SUN Exadata / Exalogic
01 – IBM Software on Power Systems		
02 – Optimized Web Facing Engine	YES	?
BREAK		
03 – Optimized Analytic Engine	YES	?
04 – Consolidate Diverse Workloads	YES	?
LUNCH		
05 – Private Clouds	YES	?
06 – It Is Easy To Switch To IBM		

Copies of Today's Presentations:
http://www.ibm.com/developerworks/offers/techbriefings/details/power.html