



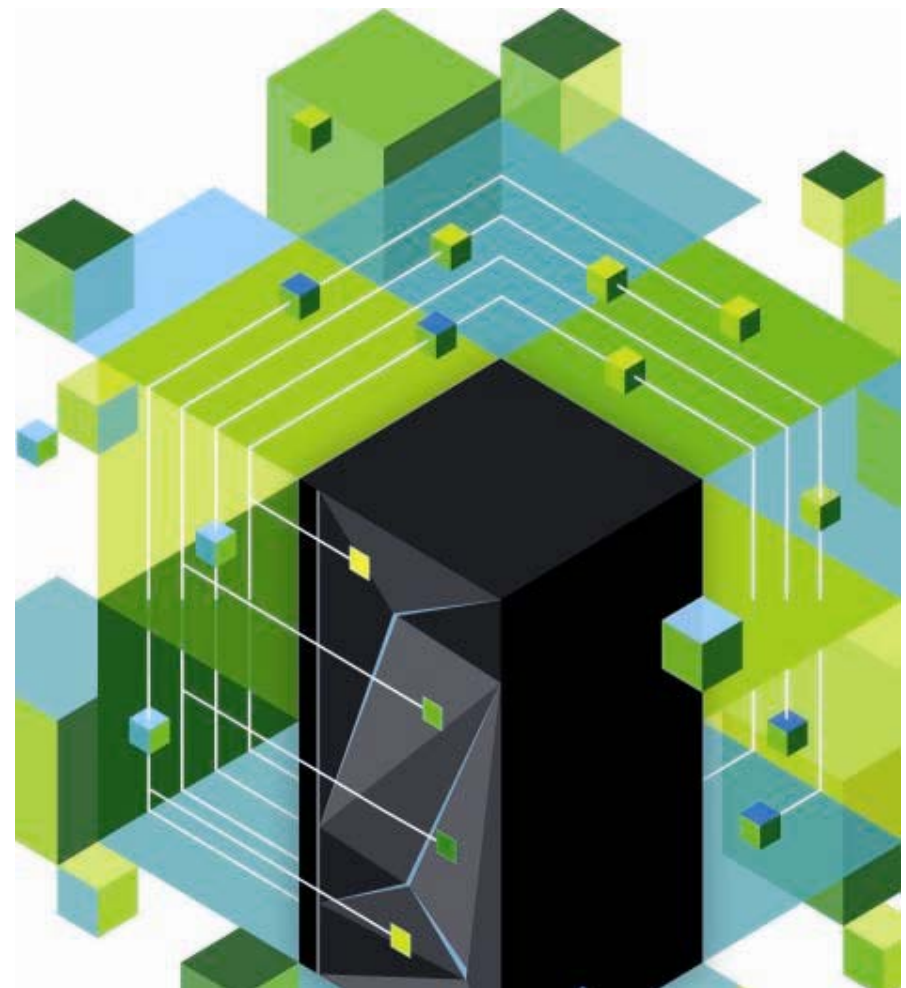
Power Systems

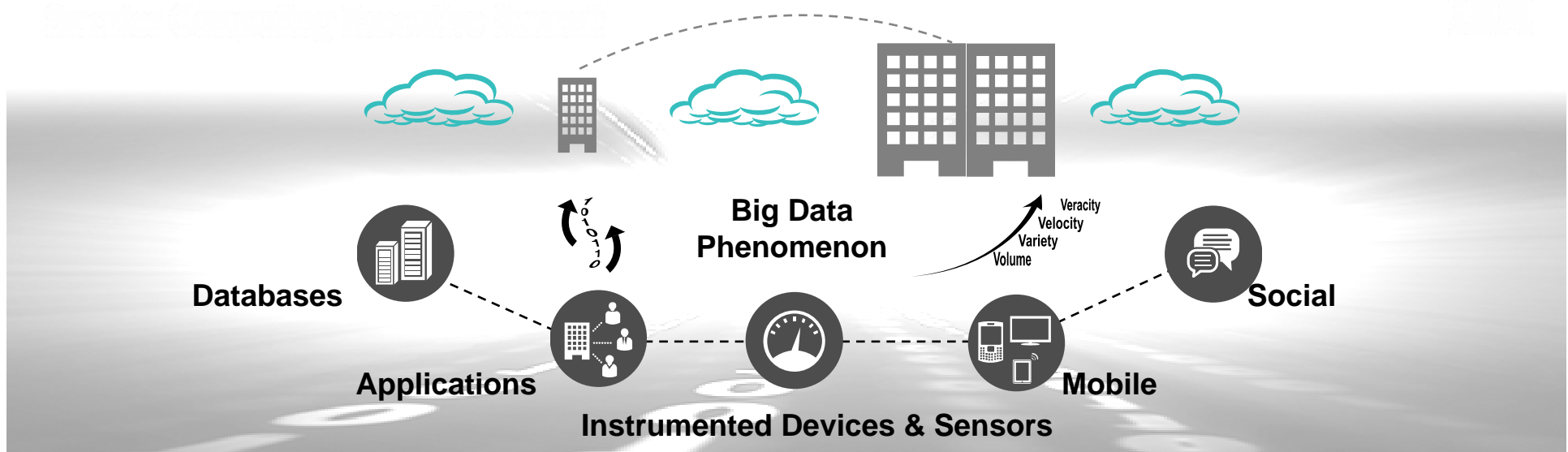
Announcement & Insight

Scott Sullivan
CEE Power Sales Executive

April 18, 2013

Power Systems
#ibmpowersystems





A Time of Transition to ...



New Smarter Services are demanded by the business, but IT budgets are constrained by existing operations

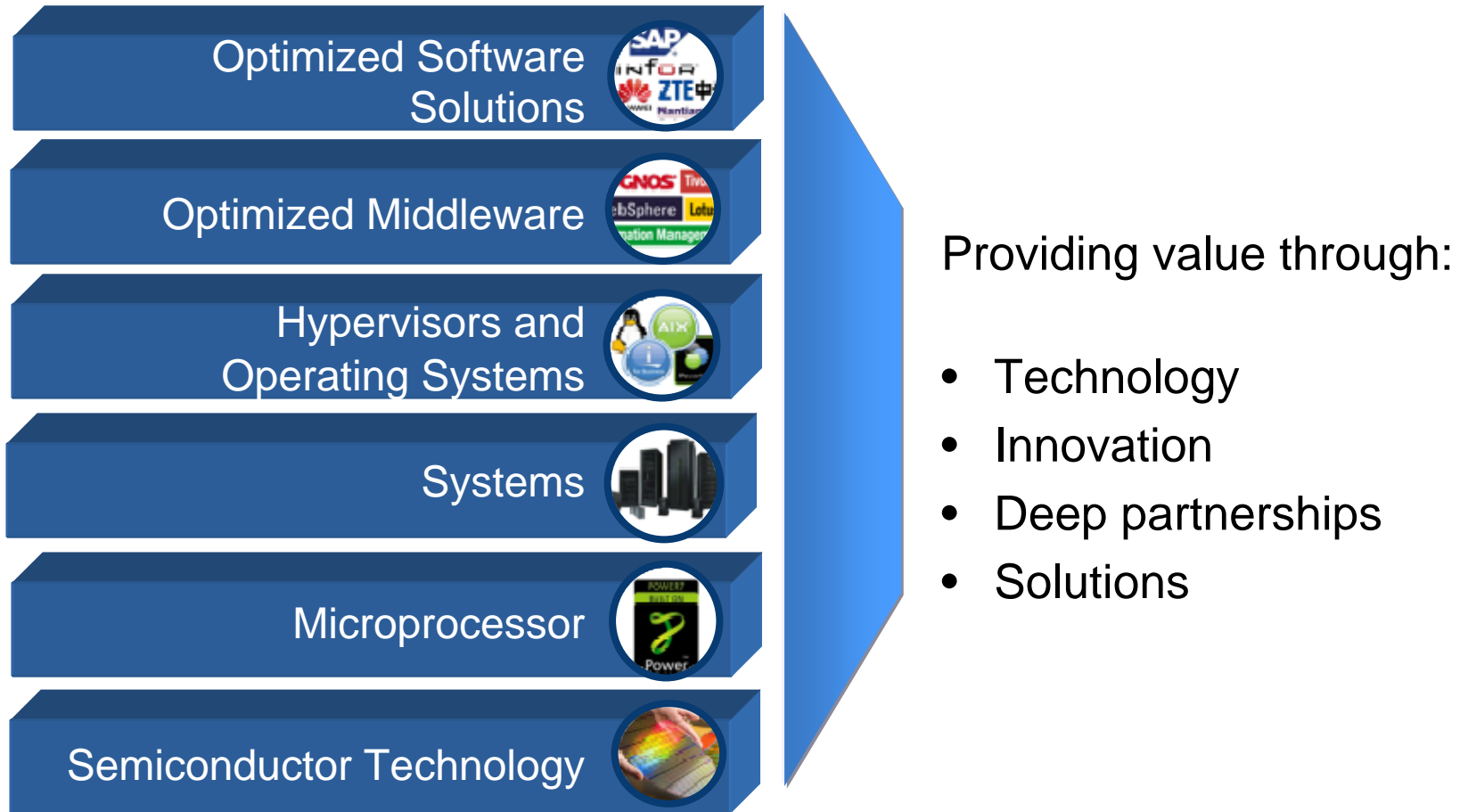


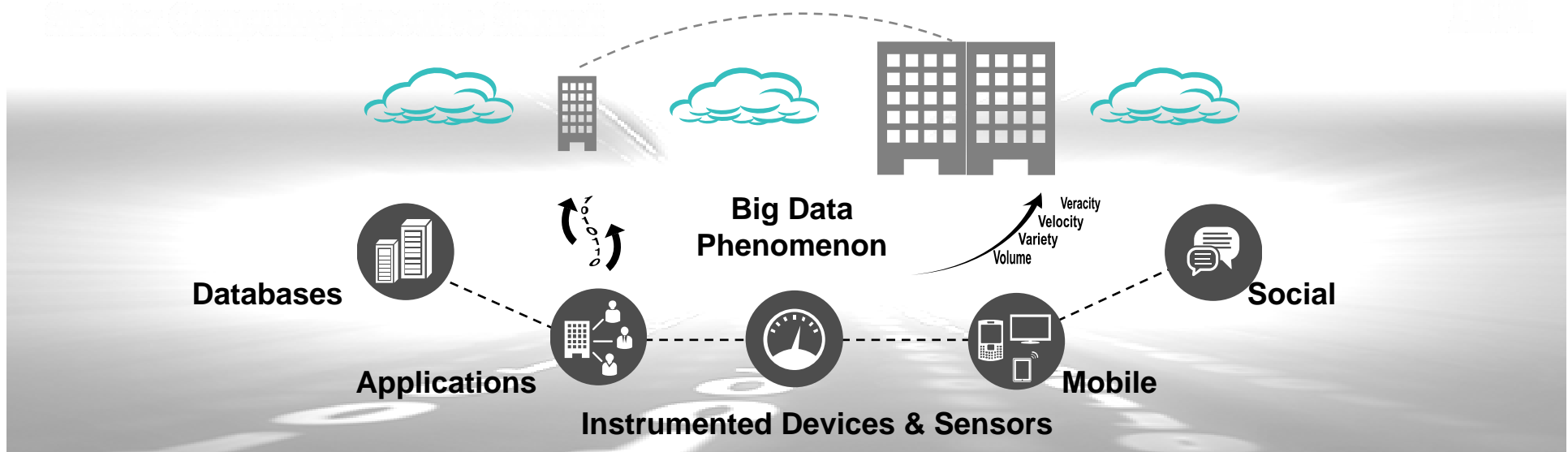
Smarter Actionable Insights are derived from massive volumes of structured and unstructured data



Delivering Smarter IT must be made a more simple & easy experience

Delivering client value through true innovation and partnership





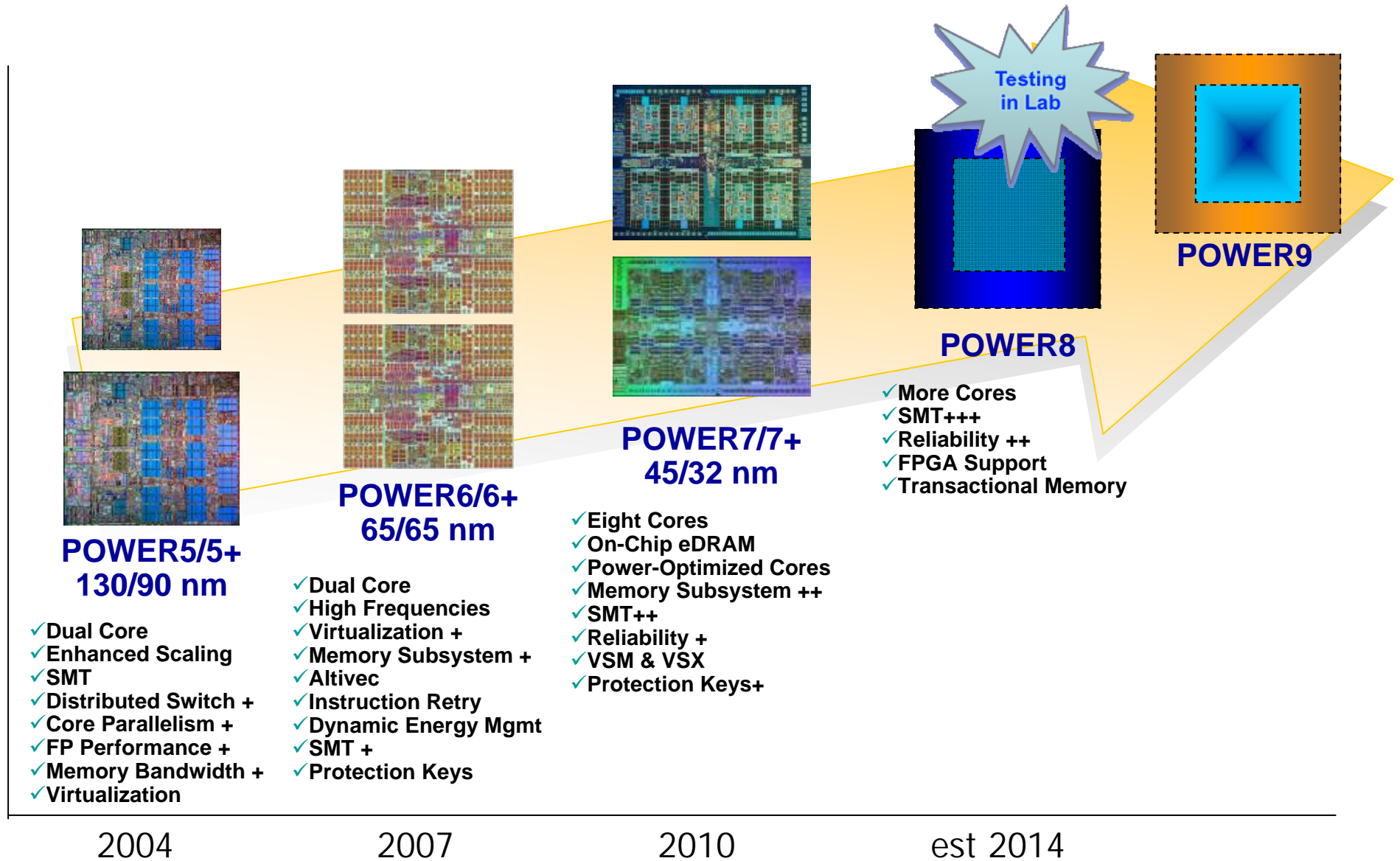
IBM Power Systems – The Ultimate Platform for Compute Intensive Workloads

9,000+	\$4.2B	100+	200M	5 of 10	88%	3,000+	20,000+	#1
Patents since 2001	Investment POWER7 & POWER7+	Industry leading benchmarks	Pages processed in 3 seconds by IBM Watson for healthcare delivering personalized medicine & cancer research	World's fastest super-computers run on POWER, including Sequoia	More SAP Users per core than x86 when running on POWER7+	Competitive displacements	ISV apps running on IBM Power Systems – AIX, iOS, & Linux	UNIX server revenue share leader 6 years running

<http://www-03.ibm.com/systems/power/hardware/benchmarks/>

[#ibmpowersystems](#)

Power Processor Technology Roadmap



POWER7+ Processors & Architecture

Deliver up to 40% more performance, ideal for data and real-time business analytics workloads

Greater Scalability and Flexibility

- 20 Virtual Machines per core
- Elastic Capacity on Demand

Faster Performance

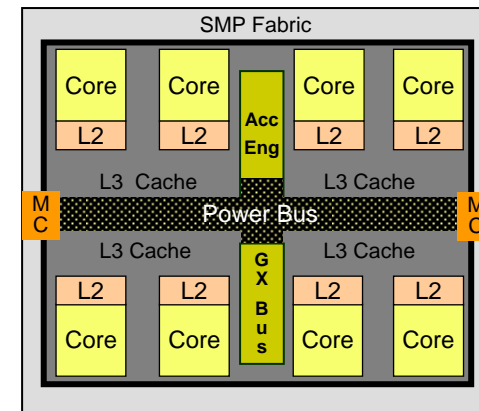
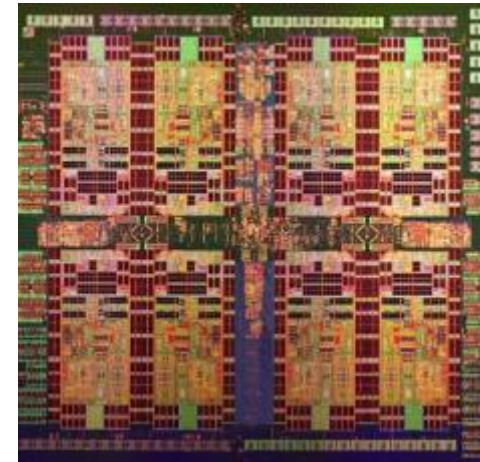
- 10 MB L3 Cache
- up to 4.4 GHz POWER7+ processors
- Memory Compression Accelerator
- Random number generator
- Enhanced Single Precision Floating Point performance
- Enhanced GX system bus

Better Availability

- Self-healing capability for L3 Cache functions
- Dynamic processor fabric bus repair
- Processor re-initialization
- Hardware encryption support for AIX

More Energy Efficient

- Delivering 5x more performance per watt
- Enhanced energy / power gating



POWER7+ 32 nm

Feb 5th
Announcement

Continuing Innovation:

New IBM Power Enterprise and Entry Systems, Software & Services

Reduce Cost
IT Efficiency

Enable New Workloads
Data & Analytics

Deliver Exceptional Customer
Experience

*New Power 760
for virtualized workload
consolidation and analytics*

*New AIX Solution Editions for
analytics with
Cognos & SPSS*

*EasyOptimize software for
system and workload tuning*

*Cost and energy efficient
POWER7+ Entry and
PowerLinux servers*

IBMi 7.1 Technology Refresh

*Power Workload Center
of Competency*

*New Power 710 & 730 offer
Intel-comparable list prices*

*IBM Solution for Mobile and
Web Applications on
PowerLinux*

IBM Watson Lab

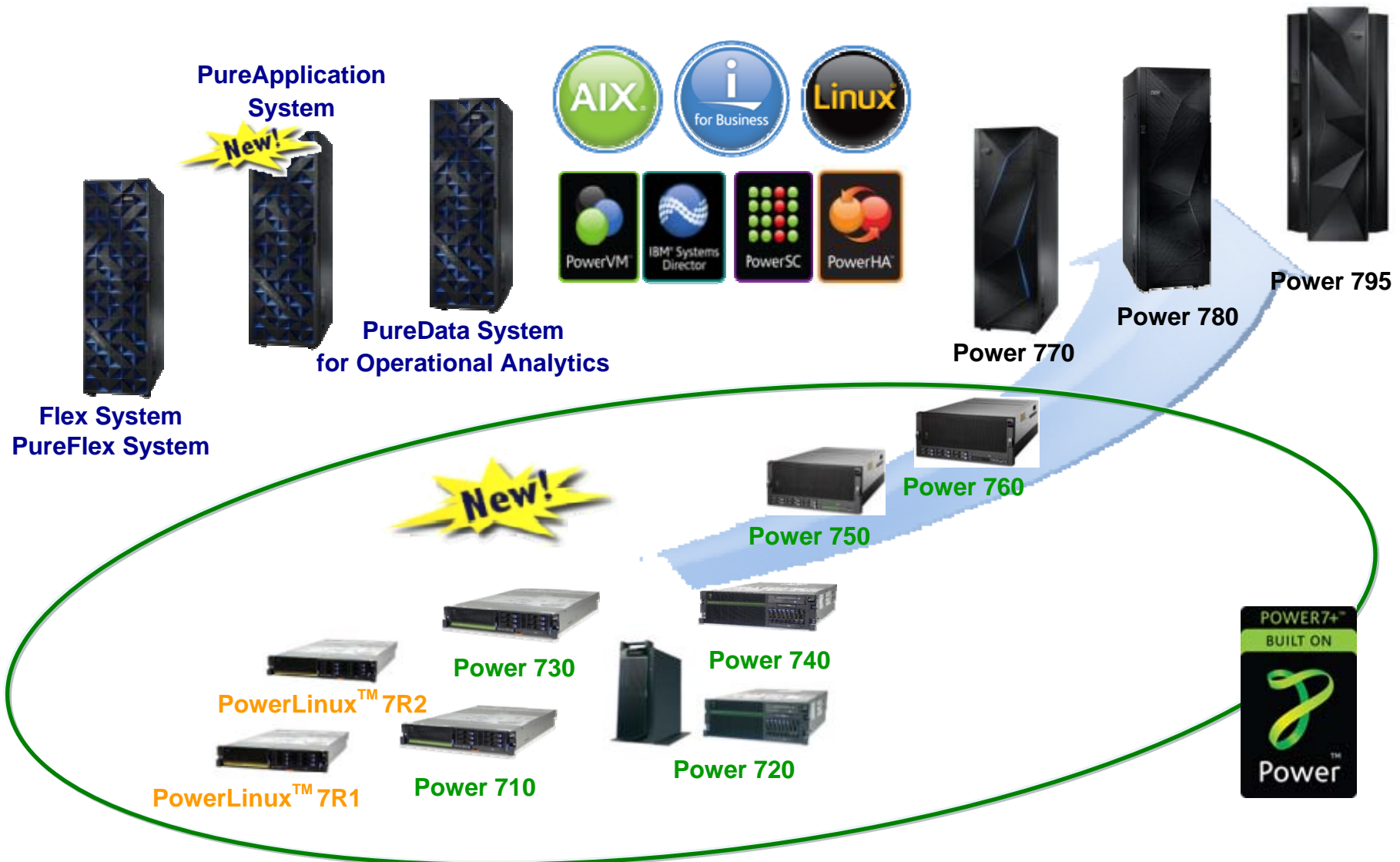
*PureApplication System
based on POWER7+*

*IBM Watson Solution Edition
for Healthcare*

Technical and Lab Services

Power System Portfolio 1Q 2013

Extending the portfolio to reach new clients and drive new workloads



The New Power 710 and 730

What if you had a 2U system that has:

- Industry leading performance
 - Up to 23% higher SPECint_rate*
- Significant RAS advantages
- Far superior Virtualization capabilities
- Greater expansion capabilities for disk and I/O
- Flexibility of the leading Unix, Linux, and integrated operating systems
- Automated Security and Compliance capabilities
- **And is Priced competitive with an x86 box?**



Now you do!

- Edge servers
 - Web, PHP, Proxy
 - Applications
 - Consolidation

	Power 730	HP Proliant DL380p x86
Processor, 64 GB, 2 HDD	16-core 3.6GHz POWER7+	16-core 2.9GHz Xeon ES2600
US List price	\$11,033	\$11,033

* vs. best HP published 2-socket rating

More Performance -- Less Price

New POWER7+ Models Offer Significantly Improved Price/Performance



- Power 710
 - 16 to 39% Better
- Power 720
 - 14 to 21% Better
- Power 730
 - 49 to 60% Better
- Power 740
 - 21 to 42% Better

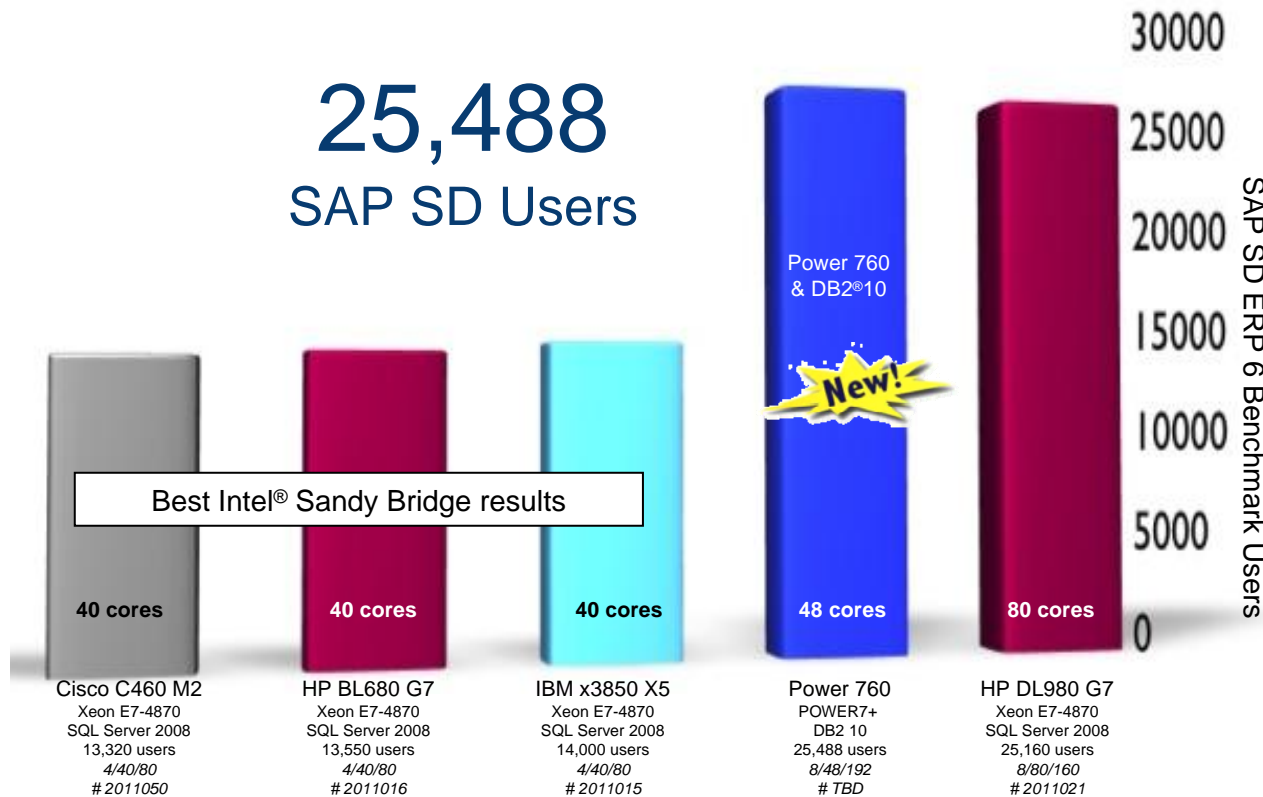
Based on rPerf and USA prices.
Prices are subject to change without notice. Reseller prices can vary

Smarter Computing to Run your Business

Power Systems result even surpasses leading x86 80 core result



25,488
SAP SD Users



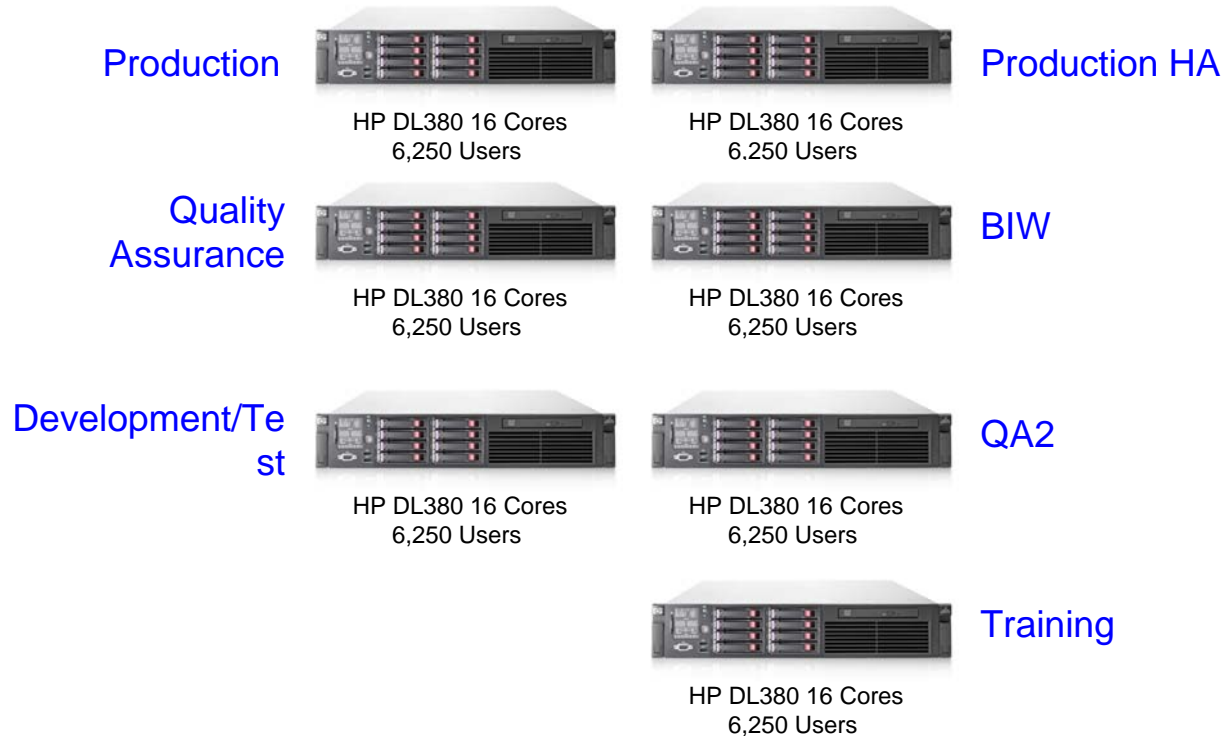
- **Best SAP performance** **
- **Lower TCO** leveraging PowerVM to consolidate your SAP landscapes to achieve greater utilization
- **Streamlined operations** leveraging SAP Landscape Virtualization Manager and System Director/VMcontrol
- **Enhanced Active Memory Expansion** can increase memory capacity 125%
- **Trusted security and resiliency**

(1) IBM Power 760 on the two-tier SAP SD standard application benchmark running SAP enhancement package 5 for the SAP ERP 6.0 application; certification number not available at press time and can be found at sap.com/benchmark. IBM Power System 760, 4 processors / 48 cores / 192 threads, POWER7+ 4.0 GHz, XX GB memory, 25,488 SD benchmark users, running AIX® 7.1 and DB2® 10, dialog resp.: xxxs, line items/hour: xxx, Dialog steps/hour: xxx, SAPS: xxx, DB time (dialog/ update): xxxxxxs, CPU utilization: xx%, Certification #: (TBD). Results valid as of 02/05/2013. Source: <http://www.sap.com/benchmark>. Additional details on following pages.

Smarter Computing to Run your Business



Typical SAP Landscape



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Smarter Computing to Run your Business

Consolidated SAP Landscape



Production
QA
Dev/Test



IBM Power 760 48 Cores
25,488 Users

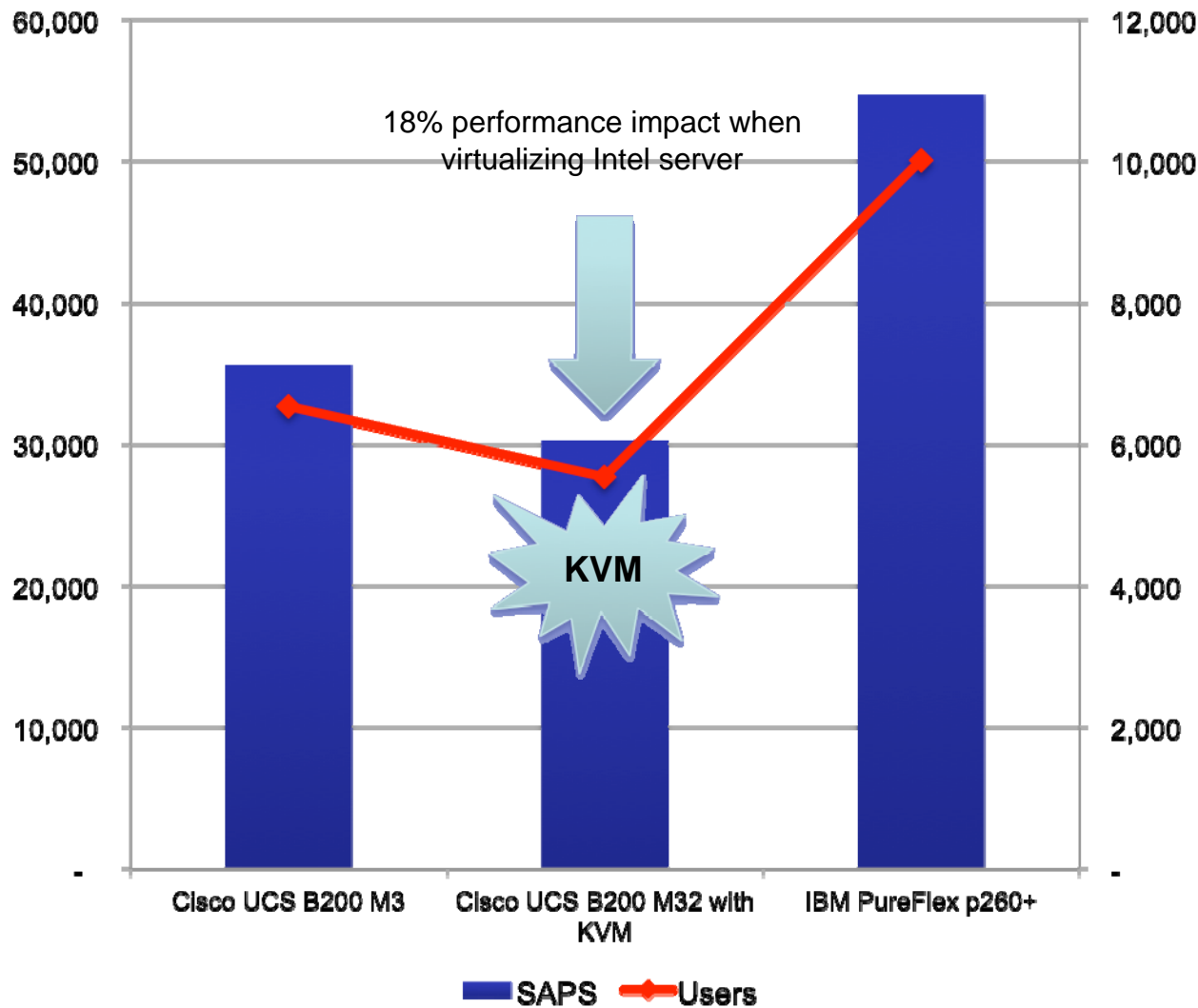


IBM Power 760 48 Cores
25,488 Users

Production HA
BIW
QA2
Training

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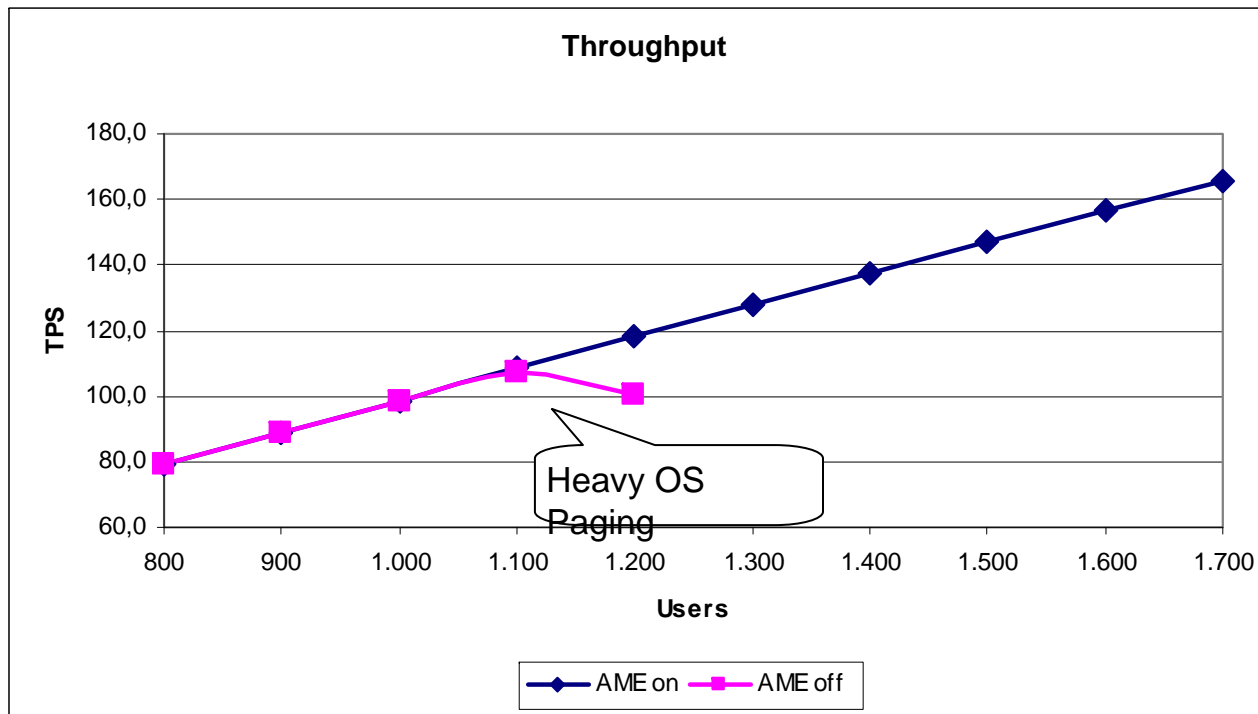
Smarter Computing to Run your Business



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Smarter Computing to Run your Business

SAP Benefits using Active Memory Expansion



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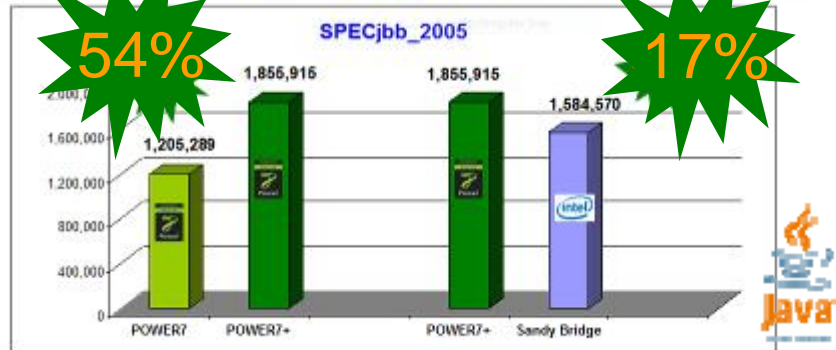
Can AME benefit your environment?

- Test, Try and Deploy

Leadership workload performance vs. Intel x86

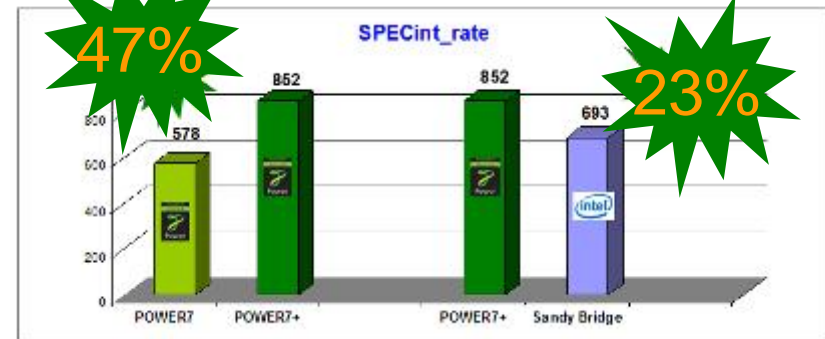
Leadership Java performance

- 54% better than current POWER7 running Linux
- 17% better than best Sandy Bridge for non-virtualized Java workload

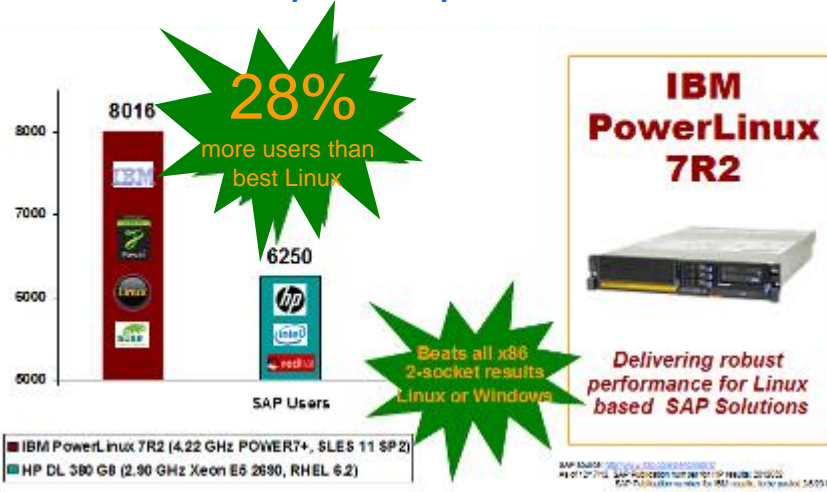


Leadership integer performance

- 47% better than current POWER7 running Linux
- 23% better than best Sandy Bridge for non-virtualized integer workload



Leadership SAP performance



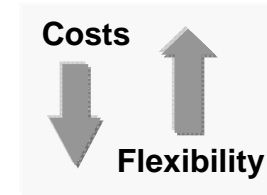
Leadership Big Data performance

Less than half the time as commodity x86 servers*

Technology	Client Benefits
POWER7+ has 4 threads per core vs. Intel Sandy Bridge 2 threads per core	With SMT4, Power7+ has twice the thread capability to use to run parallel Java workloads within the same 2U system unit - maximizing processor utilization.
POWER7+ provides high aggregate memory, I/O b/w	High speed memory, disk and networking options result in superior performance
POWER7+ L3 cache and new 'J9' IBM Java JVM	IBM's Java Virtual Machine is specifically optimized for the Power7+ architecture and larger L3 cache yielding a better performing software / hardware solution stack
I/O Performance	7R2 has higher speed 2.5" disks that outperform 3.5" SATA drives prevalent in competitive Hadoop solutions
Linux Clustering	Hadoop scales very well across PowerLinux system clusters to support clients with growing big data needs

IBM Research sorts 1 terabyte of data in less than 9 minutes vs. 24 minutes on x86 cluster !

Power helps businesses shift resources from maintaining IT infrastructure to investing in new innovative projects.



Dynamic efficiency for cloud

Power Systems Solution Edition for Cloud

Enables deployment of a scalable cloud that is optimized for maximum asset utilization

Elastic Capacity (CoD) for Power System Pools

Provides the flexibility and cost of a public cloud with the security and resilience of a data center

Enhanced PowerVM virtualization

Delivers improved flexibility by allowing VM granularity to 5% of a core and 20 VMs per core

PowerVM Virtualization Performance Advisor

Proactively provides performance optimization recommendations

PowerVM Live Partition Mobility improvements

Offers faster response to changing business needs

Power delivers higher quality services on systems to ensure data security and regulatory compliance.



Enhanced compliance for security

PowerSC

delivers policy-based security compliance reporting and provides real-time alerts for compliance violations. Real-time alerts can be analyzed by advanced security analytics systems such as IBM Q1 Radar

PowerSC Trusted Surveyor

provides visibility to virtual network compliance

Hardware assisted encryption

delivers faster file encryption for AIX and reduces impact on application performance

EasyOptimize software

Streamline system tuning for optimal throughput

Dynamic Platform Optimizer - Designed to reduce the complexity and time required for clients to manage and tune their systems

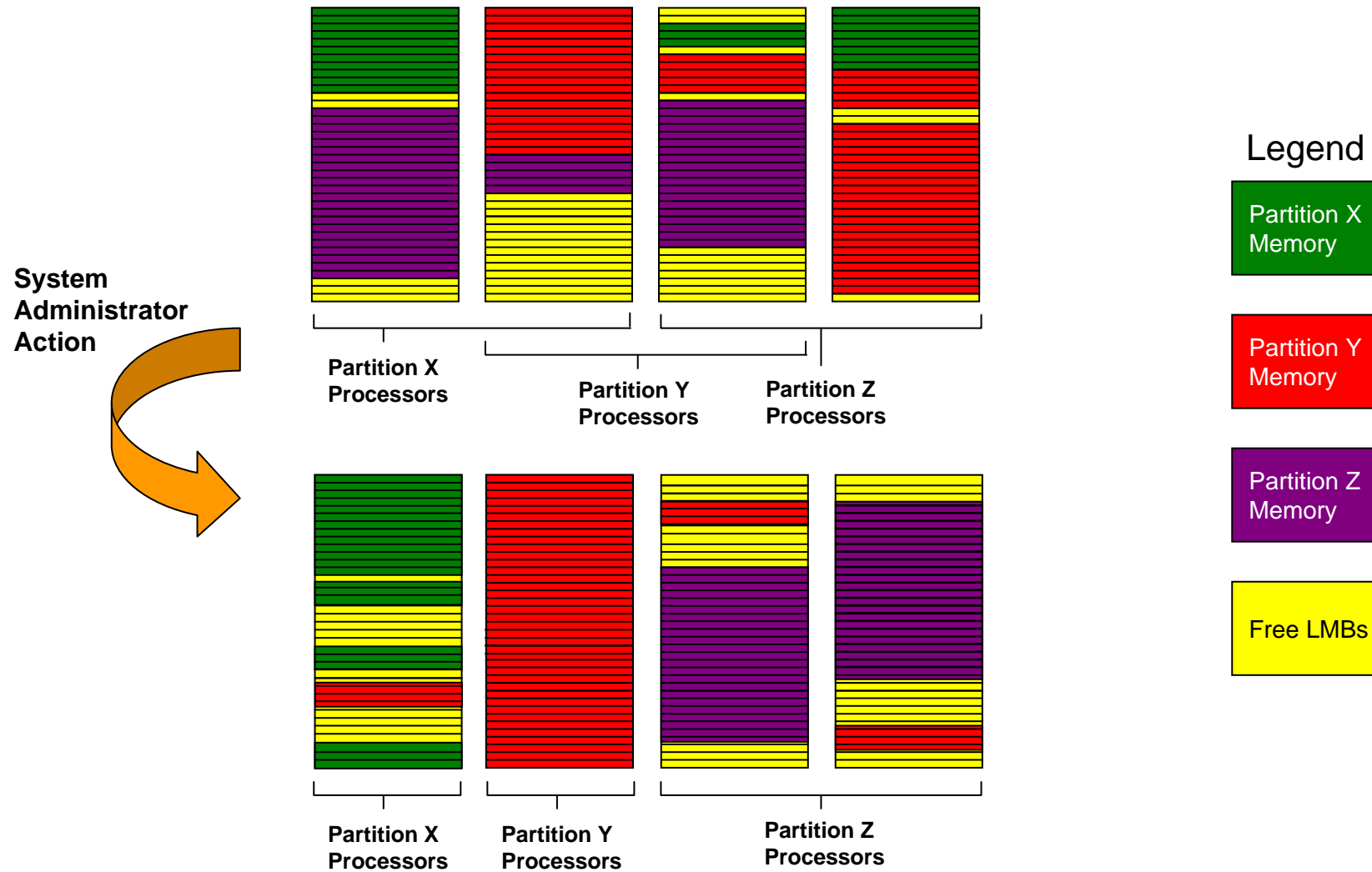
- Optimizes processor and memory affinity in virtualized consolidated environments
- System adjusts workload placement in background to optimize performance without requiring additional interaction
- Available at **no additional charge** for the new POWER7+ systems and the Power 795 with the latest FW available

IBM AIX Dynamic System Optimizer – Designed by IBM Research to simplify operations, adjust for changes in demand and optimize performance

- Automatically identifies opportunities to improve performance, and applies the appropriate system changes thus simplifying operations and adjusting for changes in demand
- Monitors the workload and then adjusts the memory prefetch register to optimize performance of large database workloads (DB2 and Oracle)
- Utilizes the the automatic page size tuning capabilities to improve the performance of workloads that have a large memory space, exhibit high CPU utilization, are memory intensive and are long running.

Dynamic Platform Optimizer

Automatically move processors and memory closer to “siblings” to reduce latencies



POWER7+ RAS Features

Some features are only available on enterprise class systems

- Standard
- Optional
- Not available

RAS Item	710 / 720 / 730 / 740	Power 750	Power 760	770 / 780 / 795
Redundant / Hot Swap Fans & Blowers	●	●	●	●
Hot Swap DASD / Media	●	●	●	●
Concurrent Firmware Update	●	●	●	●
Redundant / Hot Swap Power Supplies	●	●	●	●
Processor Instruction Retry	●	●	●	●
Alternate Processor Recovery	●	●	●	●
Storage Keys	●	●	●	●
Redundant Hot Swap Local Power Regulators	●	●	●	●
PowerVM™/Live Partition Mobility/Live Application Mobility	○	○	○	○
Dual disk controllers (split backplane)	○	●	●	●
Hot Swap PCI Adapters	–	●	●	●
Dynamic Processor Sparing	–	–	○	○
Memory Sparing	–	–	–	○
Active Memory Mirroring for Hypervisor	–	–	–	○
Redundant Service Processors	–	–	–	● *
Redundant System Clocks	–	–	–	● *
Dynamic Service Processor and System Clock Failover	–	–	–	● *
Hot GX Adapter Add	–	–	–	●
Hot GX Adapter Repair	–	–	–	●
Hot-node Add	–	–	–	●
Hot-node Repair / Hot memory Add	–	–	–	● *
Enterprise Memory	–	–	–	●

Solid State Disk can provide substantial benefits

New EXP30 Ultra SSD I/O Drawer combines performance and density

97% less space
...similar IOP performance

- 1U drawer ... Up to 30 SSD
 - up to 11.6 TB (30 x 387 GB drives)
 - Up to 480,000 IOPS (100% read)
 - Up to 4.5 GB/s bandwidth



2.3 TB with up to 140,000 IOPS
for under \$30,000

- Supported on Power 710 through Power 780 via GX+ bus

- Solid State Disk benefits:
 - *Improve transaction response time*
 - *Speed up operational procedures*
 - *Clients have cut batch windows by up to 50% to improve service levels*
 - *Save space, energy, cooling by dramatically reducing the number of HDD up to 10X*
- Ability to attach up to 48 HDD drives downstream, providing an additional 43 TB

IBM Power systems deliver an exceptional client experience throughout the lifecycle of the business solution to drive rapid and lasting business value

Pre-configured, easy to deploy

Global Eco-system 6800+
Power Business Partners

Power Advantage & Power Advantage Elite
& Power Care

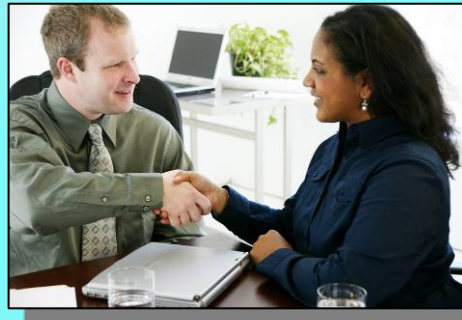
Power Express pricing

Power Workload Center of Competency

- Migration assistance
- Availability studies
- Performance analysis
- Benchmarking
- Design Studies

IBM Watson Lab

- Expertise for developers and customers to jointly engage in evolving the Watson technology



Migration Factory

Upgrade Factory

Comprehensive suite of systems
software to ensure high availability,
virtualization and security - PowerVM,
PowerHA, PowerSC

Packaged offerings for fast
deployment of clouds and business
analytics - Solution Editions for Cognos
& SPSS, Solution Edition for Cloud

20,000 ISV applications
on Power

Pro-active performance &
capacity alerts

- Call Home
- Performance Manager

