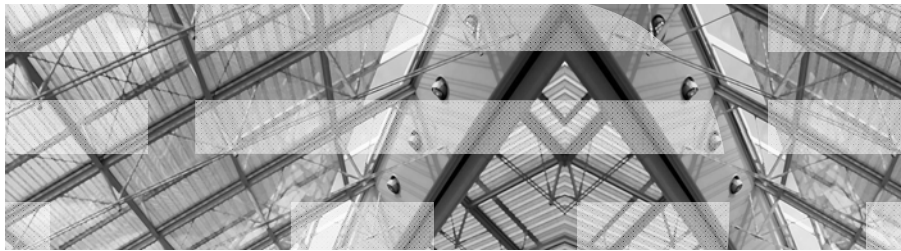


## Architectures for supporting information and analysis workloads

Doha, November 30th 2010

Ciro Puglisi, Manager of Infrastructure Solutions  
 IBM Middle East and Africa  
 cpug@ch.ibm.com



## Enterprises of all sizes are facing the challenge of managing the growth of information.....

- Rigid & siloed resources
- Performance bottlenecks
- Unacceptable downtime
- Cost and complexity of scaling
- Growing cost of space and energy
- Time-consuming, manual management tasks



## Data and transaction growth increases demand for storage and server architectures for supporting data processing and analysis

### *A Smarter Planet demands smarter systems*



**Smarter Information Infrastructure**  
**Managing information explosion**



**Smarter Systems for data processing**  
 Workload optimised systems



**Optimization**  
 IBM middleware optimised for IBM Systems



**Reduced complexity**  
 Improving speed of deployment with the Smart Analytics System

## There are fundamental technical challenges that need to be solved in order to affordably conquer the chaos



### Information Infrastructure

### IBM offers



Scaling flexibly

- Next generation block storage systems
- Smarter use of solid state technology
- Large scale, file-based storage



Improving asset utilization

- Storage Virtualization
- Deduplication



Increasing operational productivity

- Simplified Device Operations
- Operations and Flash Management

## XIV: unprecedented Customer Adoption

Customer logos include: MERCY, SK telecom, Spartan, Pfizer, GEICO, JPMorganChase, Liberty Mutual, IRON MOUNTAIN, BARQUEST AUTO PARTS, MOUNT SINAI HOSPITAL, MetaBank, EMP, EDISON, VINCI, MAYO CLINIC, Fidelity, Colgate, Deutsche Post, PEARSON, SARGENT, DAILY NEWS, Bank of America, FORTIS, Capgemini, PHILIPS, Aetna, Business Connexion, Jump Trading, CSL, iStockphoto, TRINITY HEALTH, COSVI, North Dakota Supreme Court, Penn State Milton S. Eisenhower College of Medicine, GERBER SCIENTIFIC, carillion, vodafone, AMERICAN EXPRESS.

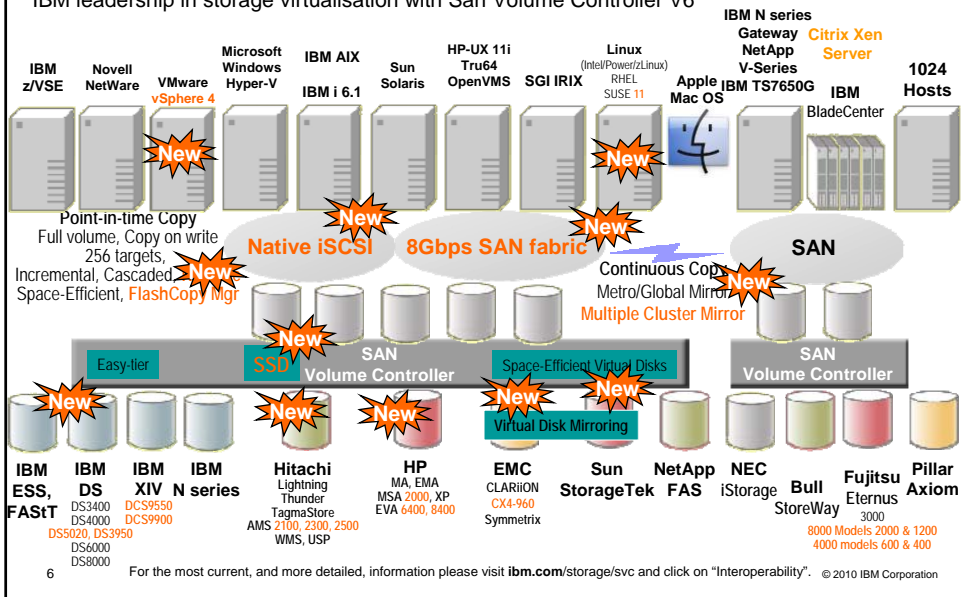
Testimonial 1: "IBM XIV Storage System is allowing us to meet our recovery time objectives while reducing our storage total cost of ownership" Greg Johnson, Director & CTO, IT Technology & Engineering Services, VCU Health Systems

Testimonial 2: "We are exceeding our SLAs and driving cost down". Maher Atwah, Ph.D. Vice President and CTO Health Data Management Solutions (HDMS) an Aetna Subsidiary

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## Improving the information infrastructure's utilization

IBM leadership in storage virtualisation with San Volume Controller V6



## Ease of management

Summary: 1 Thin Provisioned VDisk, 0 bytes virtual capacity, 0 bytes real capacity, 20.0 GB free in pool

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### *A Smarter Planet Demands Smarter Systems*

- Smarter Information Infrastructure**  
Managing information explosion

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- Smarter Systems for data processing**  
**Workload optimised systems**

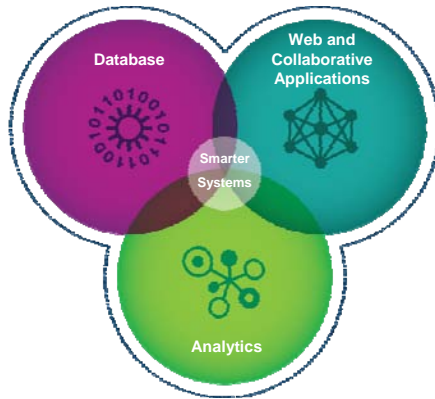
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- Optimization**  
IBM middleware optimised for IBM Systems

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- Reduced complexity**  
Improving speed of deployment with the Smart Analytics System

## Different workloads have different characteristics



**Workload optimization yields the best performance and lowest cost for each.**

**70% better**

Consolidate Sun infrastructure to System z Linux and save. Secure data, transactions and leverage Data-Warehousing and Business Intelligence where the data resides<sup>5</sup>

**73% better**

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

**50% lower cost**

IBM System x running DB2 is 50% the hardware cost per ERP user as the Sun SPARC server running Oracle<sup>3</sup>

**38% lower cost**

DB2 pureScale on Power 780 has lower cost per tpm than Oracle RAC on Nehalem<sup>1</sup>

**20-30%**

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

## Maximize memory, minimize cost, simplify deployment

**The new thinking of x**

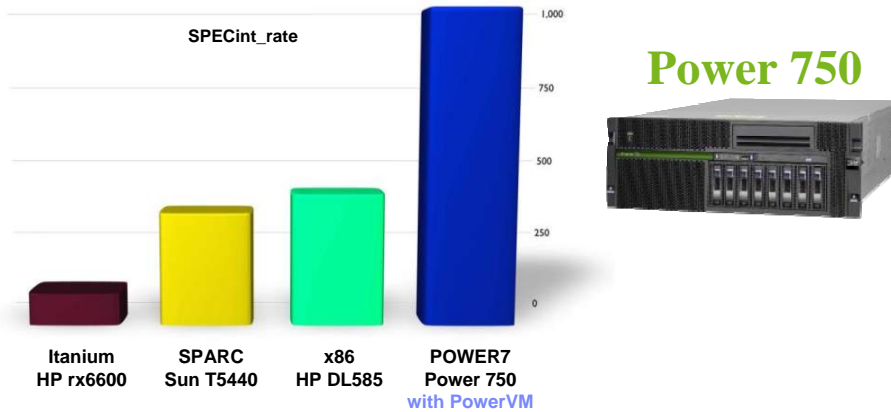


- ➔ **5<sup>th</sup> generation** portfolio of IBM industry-leading technology
- ➔ **Expansion of Enterprise X-Architecture to IBM BladeCenter**
- ➔ **2X the memory capability of competitive offerings** resulting in up to 2/3 software costs
- ➔ **Lowest costs of acquisition and deployment** for enterprise x86 computing in the industry

**#1** Market share leader in scalable x86 servers

## The highest performing 4-socket system on the planet

### POWER7 continues to break the rules with more performance



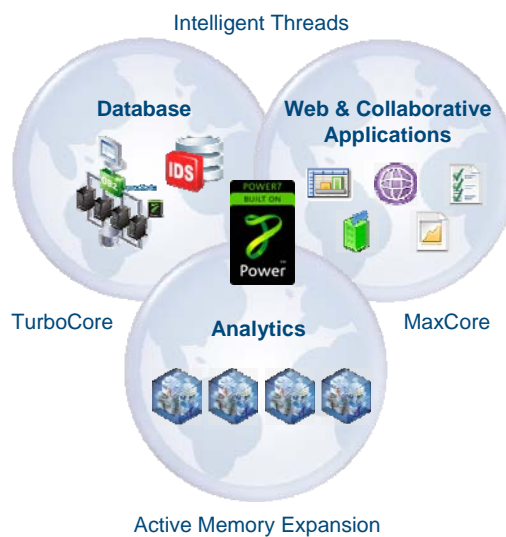
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## Unparalleled flexibility and range with Power Systems

**38% lower cost**

DB2 pureScale on Power 780 has lower cost per tpm than Oracle RAC on Nehalem <sup>1</sup>



**73% better performance**

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

**#1**  
Unix share WW

<sup>1</sup> DB2 pureScale scaling factor projected from IBM Internal Studies. Oracle RAC scaling factor projected from Dell Study of Oracle RAC with InfiniBand. <http://www.dell.com/downloads/global/power/ps2007-20070279-Mahmood.pdf>  
<sup>2</sup> Price per tpm includes 3-year total cost of acquisition of hardware, software, maintenance. Price does not include storage or networking  
<sup>3</sup> Exchange on Nehalem configuration from HP's sizing tool. HP Sizer for Microsoft Exchange Server 2010 at <http://093338.sizer.hp.com/ActiveAnswers/us/en/sizers/microsoft-exchange-server-2010.html>  
<sup>4</sup> As much as 40% improved throughput vs. Power6 in Tivoli portfolio for the identity duplicates process and event processing bus.

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## IBM zEnterprise System – Best in Class Systems and Software Technologies

*A system of systems that unifies IT for predictable service delivery*



### Unified management for a smarter system: **zEnterprise Unified Resource Manager**

- Part of the IBM System Director family, provides platform, hardware and workload management
- Unifies management of resources, extending IBM System z® qualities of service across the infrastructure

The world's fastest and most scalable system:  
**IBM zEnterprise™ 196 (z196)**

- Ideal for large scale data and transaction serving and mission critical applications
- Most efficient platform for Large-scale Linux® consolidation
- Leveraging a large portfolio of z/OS® and Linux on System z applications
- Capable of massive scale up, over 50 Billion Instructions per Second (BIPS)



Scale out to a trillion instructions per second:  
**IBM zEnterprise BladeCenter® Extension (zBX)**

- Selected IBM POWER7® blades and IBM System x® Blades<sup>1</sup> for tens of thousands of AIX® and Linux applications
- High performance optimizers and appliances to accelerate time to insight and reduce cost
- Dedicated high performance private network

## Data and transaction growth increases demand for storage and server architectures for supporting data processing and analysis

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## A series of successive optimizations leads to workload Optimized Systems

- **Start with best of breed components**
  - POWER Systems or System x or System z
  - IBM Systems Storage
  - WebSphere Application Server, Cognos, DB2, Infosphere
- **Optimize these components to work together on IBM Systems**
  - Deep analysis & tuning across whole stack
  - Not focused on benchmarking: realistic workloads, run in customer-typical configurations (eg. Day Trader 2.0)
  - Performance delivered out-of-the-box wherever possible
  - Focus on default tuning when software installed; less reliance on manual application of best practices



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## A series of successive optimizations leads to workload Optimized Systems

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  - WebSphere Application Server, Cognos, DB2, Infosphere
- **Optimize these components to work together on IBM Systems**
- **Integrate and tune components for a specific workload**
  - IBM pureScale Application System for transactional application platforms
    - DB2 pureScale + WebSphere + POWER7
  - IBM Smart Analytics System for business intelligence and analytics
    - Cognos + InfoSphere Warehouse + IBM Systems + DS3500

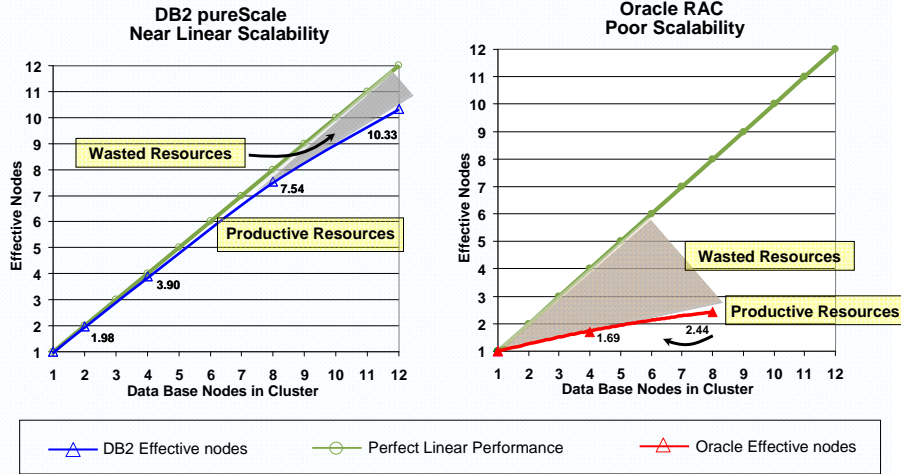


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Result: best of breed + optimization = near linear scalability



DB2 pureScale scaling factor projected from IBM Internal Studies. Oracle RAC scaling factor projected from Dell Study of Oracle RAC with Infiniband. <http://www.dell.com/pressreleases/global/powerflex07-20070229-Mahmood.pdf>

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## IBM Smart Analytics System

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 available in **days rather than months!**

Everything you need for Business Analytics – not just a data warehouse...

## IBM Smart Analytics System

Highly Flexible and Scalable

Choose the way that your IBM Smart Analytics System is deployed  
Add capacity and analytic capabilities as your business requirements evolve

### Start right



### Add analytics



### Add capacity



IBM SMART ANALYTICS SYSTEM

## IBM Smart Analytics System

Portfolio overview

Meeting clients where their information is...



### 9600

#### Based on System z

- ...Advanced query/workload management
- ...Database designed and optimized for system
- ...Disk controller, optimized to reduce data latency

### 1050 **New**

#### Based on System x

- ...Cost-effective solutions for analytics and reporting
- ...Compact, appliance-like single analytics solutions
- ...Available for mid-market

### 2050 **New**

#### Based on System x

- ...Cost-effective solutions for analytics and BI
- ...Balance of power and simplicity out of the box
- ...Available for mid-market and departments within enterprises

### 7700 **New**

#### Based on POWER7 Servers

- ...Scaling to hundreds of terabytes of data
- ...Standard Solid State Drive – reducing data latency
- ...Extract insights from untapped information

### 5600

#### Based on System x

- ...Designed for business analytics workloads
- ...Growth flexibility at exceptional price-to-performance
- ...Optional Solid State Drive – reducing data latency

## IBM Smart Analytics System

Value proposition



	IBM Smart Analytics System	Custom
One Call support	<input checked="" type="checkbox"/> Included	
Coordinated Stack certification (SW, OS, & Firmware)	<input checked="" type="checkbox"/> Included	<input checked="" type="checkbox"/> Not Available
Services	<input checked="" type="checkbox"/> Included <input checked="" type="checkbox"/> Premium Support <input checked="" type="checkbox"/> 1 <sup>st</sup> year Included	1 off 1 off 1 off
Server, Storage, SW	Power 550, DS5300, Cognos, & InfoSphere Warehouse	Power 550, DS5300, Cognos, & InfoSphere Warehouse
Bottom Line	All of the above part of the System	<b>\$ Significantly more expensive</b>



## Netezza TwinFin®

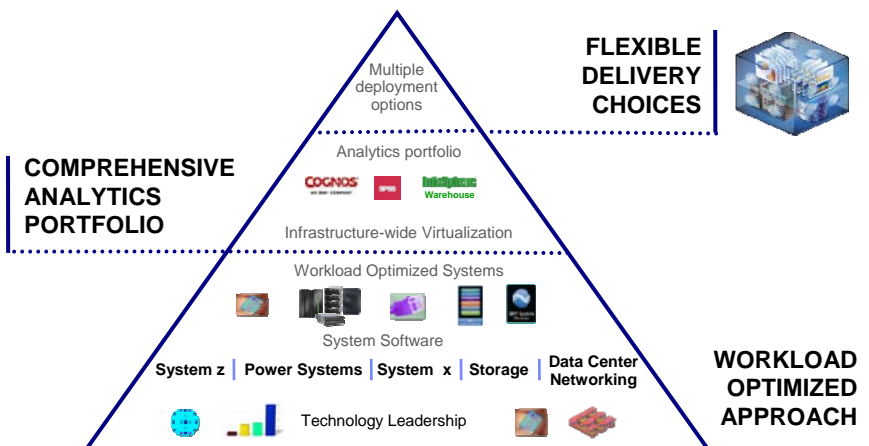
- ✓ Appliance simplicity
- ✓ Integrated database, server & storage
- ✓ 10-100x faster than traditional systems
- ✓ Purpose-built data filtering engine
- ✓ Built-in security & compliance
- ✓ Standard interfaces



Focused Appliance for high performance Data Warehouse

## Summary

Experience from thousands of client engagements, our own transformation and structured architecture based on industry best practices

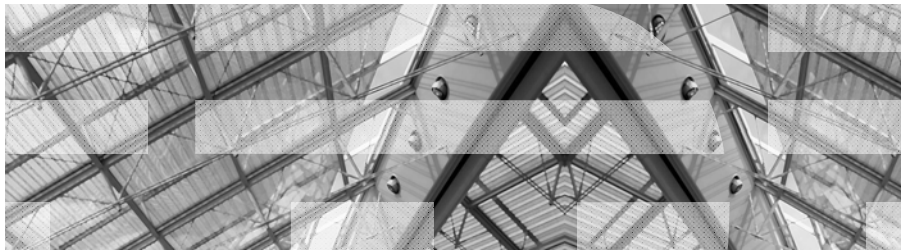




# Thank you!

[ibm.com/smarterystems](http://ibm.com/smarterystems)

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Architectures for Supporting Information & Analytics Workloads



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