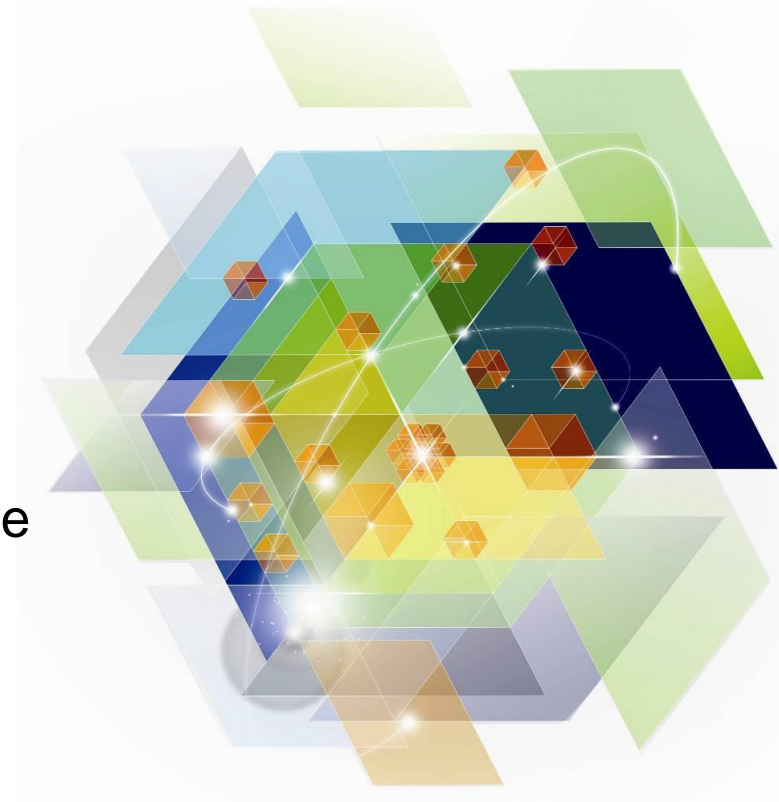




System z Server Strategy and Direction

How New Technologies Help You Deliver Smarter Systems

Greg Lotko
Vice President and Business Line Executive
IBM System z
11 October 2011



Three years ago we started describing the Smarter Planet we saw emerging, **fueling innovation across industries.**



Neonatal Care



Law Enforcement



Telecom



Fraud Prevention



Resource Management



Traffic Control



Manufacturing



Trading

To realize the promise of a smarter planet, enterprises must address unprecedented IT challenges

Meet the insatiable demand for new services...

...while IT budgets are growing less than 1% per year



32.6 million servers worldwide

- 85% idle CPU capacity
- 15% of servers run 24/7 without being used daily



1.2 zetabytes (1.2 trillion gigabytes) exist in the “digital universe”

- 50% YTY growth
- 25% of data is unique; 75% is a copy



Between 2000 and 2010:

- servers grew 6x
- storage grew 69x



Data centers have doubled their energy use in the past five years

- 18% increase in data center energy costs projected



Internet connected devices growing 42% per year

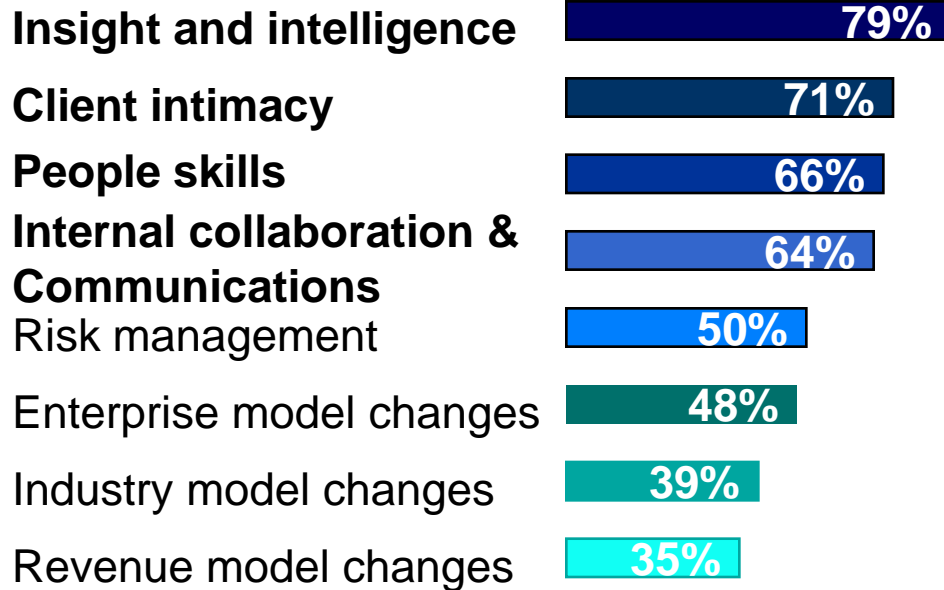


Security vulnerabilities grew eightfold since 2000

What CIOs are telling us

2011 Global
CIO Study

CIO focus over the next 5 years



1 in 3

business leaders **frequently make decisions** based on information they don't trust or don't have

2 in 3

CIOs view technology as having high transformative potential to **enhance client interaction**

3 in 4

CIOs look to IT to **simplify key client processes** (3+ in 4 to simplify internally)

Smarter Computing

The IT infrastructure that enables a Smarter Planet

Designed for data

Harness all available information - **89% of CEOs** want better insight via Business Intelligence and analytics



Managed with cloud technologies

Reinvent IT - **60% of CIOs** plan to use cloud technologies and **55% of business executives** believe cloud enables business transformation

Tuned to the task

Drive greater performance and improve IT economics - **total cost per workload can be reduce up to 55%** with optimized systems

Through smarter computing, an enterprise can reverse this cycle and double their capacity for IT service on a flat budget

Reduce cost to improve IT economics

- Server acquisition cost by up to 56%
- Database costs by 68%
- Floor space by up to 90%
- Power consumption by 80%

Reinvest in innovation

- Deliver new services more quickly
- Identify new trends more quickly
- Create new markets
- Utilize IT resources more effectively

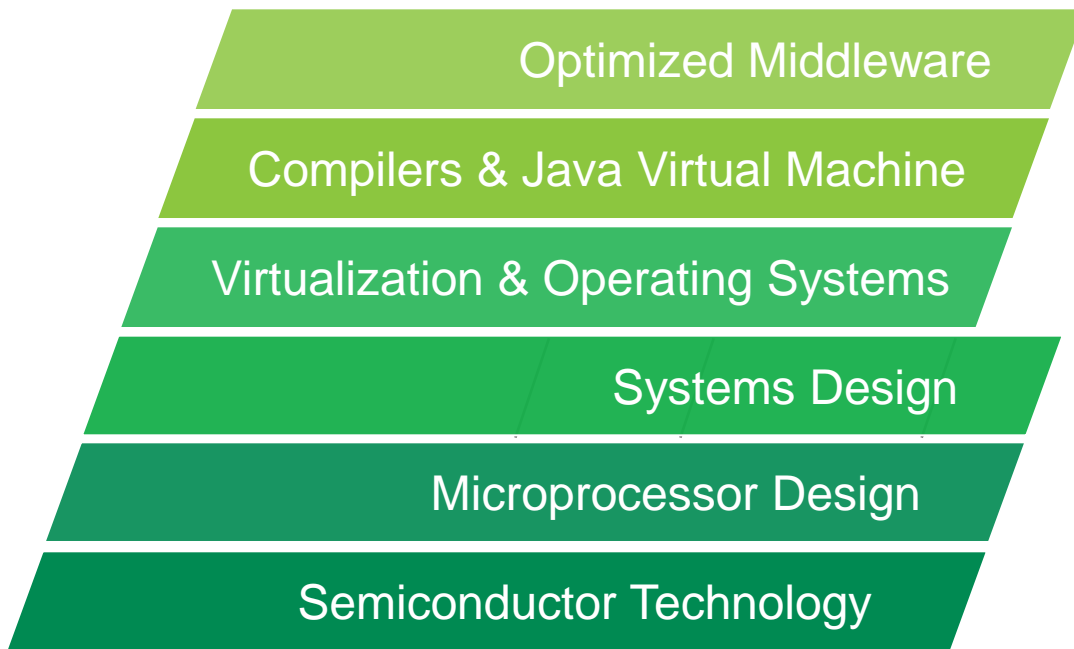


Doubled IT capacity and held costs flat



Transformed operations through real-time analytics for accurate pricing analysis

Elements required to design an optimized system



Domain Knowledge

- Workload characteristics
- Workload interdependencies
- Architecture options

Software

- Full Stack integration
- Middleware tuned for hardware
- Integrated management across architectures

Hardware

- Multi-core architectures
- Advanced threading
- Low latency

Clients require a range of workload optimized systems

Client-built with Optimized Components



IBM DB2 & WebSphere on IBM Power Systems

Integrated, Optimized Systems



IBM Smart Analytics System

Appliances



IBM Netezza TwinFin & IBM DataPower

Characteristics	Need flexibility to deploy multiple workloads of different types - e.g., data management, messaging, web facing	Requires moderate flexibility to tune small number of workloads – e.g., data management and analytics	Flexibility not required -need high performance at low cost for a specific workload
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Matching workloads to the right system can deliver superior performance and economics

System z

Freedom by design



Achieve up to 55% lower TCO per workload

Power Systems

Performance redefined



Power Systems running DB2 as low as 1/3 the cost of Oracle Database*

System x

Defining the next-generation of x86 servers



Industry-leading Intel performance and lower management cost by 50%

IBM Storage

Storage reinvented



Reduce power, operating and cooling costs by up to 60%

Source: Based on IBM internal studies

*Pricing comparison based on US list prices of IBM DB2 Advanced Enterprise Edition and the Oracle software with analogous capabilities: Oracle Database Enterprise Edition, Advanced Compression, Active Data Guard, Label Security, Partitioning, Oracle Enterprise Manager, Internet Developer Suite, Diagnostics Pack, Oracle-to-Oracle Federation, Golden Gate. All list prices based on US and valid as of 01/26/2011.

System z improves IT efficiency across industries.*



44%

lower cost per credit card transaction



20%

lower cost per airline passenger



31%

lower IT spend per consumer loan



26%

lower cost per new vehicle



25%

lower cost per mega watt hour produced



25%

lower cost per retail store



24%

lower cost per hospital bed



23%

lower cost per barrel of oil

IBM zEnterprise System

A System of Systems that unifies IT for predictable service delivery



**IBM zEnterprise 196 (z196)
IBM zEnterprise 114 (z114)**

The next generation of mainframe technology, more performance, more scale, more efficient

**zEnterprise Unified
Resource Manager**

Centralized management of heterogeneous resources for simplification and resiliency

**zEnterprise BladeCenter
Extension (zBX)**

Integrated IBM POWER7 blades, IBM System x and high-performance optimizers and appliances

zEnterprise System is tuned to the task

Consolidate and scale. The IBM zEnterprise 196 and 114 mainframe technologies running z/OS and/or Linux are ideal for mission-critical data, transaction serving and very large-scale consolidation.

Customize and centralize. The zEnterprise BladeCenter Extension can combine POWER7 and System x blades and special function optimizers with mainframe technology – all managed and controlled with Unified Resource Manager.



zEnterprise matched BG-Phoenix' IT strategy of selecting different platforms based on different application needs. BG Phoenix moved its infrastructure servers from standalone Power servers to zBX.

New capabilities for IBM zEnterprise System

Extending the boundaries of hybrid computing

Windows and Linux support in zBX

- Expands application portfolio that can run on zEnterprise BladeCenter Extension (zBX)
- Freedom of choice of architecture and operating system for multi-tiered application deployment

Dynamic discovery of storage resources

- Simplified configuration of storage resources and virtual servers

Increased flexibility for deployment and management

APIs for Unified Resource Manager

- Integration between Unified Resource Manager and the broader ecosystem of management tools
- Programmatic access to the same functions provided by the Hardware Management Console

Enhanced disaster recovery

Geographically Dispersed Parallel Sysplex

- End-to-end application CA/DR now available for all zEnterprise resources including zBX

World record running SAP banking solution on zEnterprise with DB2 10

[Huge SAP database load of **150 million accounts** and based on SAP for Banking 7.0]

Day processing achieved throughput of **more than 3X** the number of account postings per hour than prior capabilities.

Night processing settled **more than 3X** the number of accounts balanced per hour than prior capabilities.

zEnterprise is the ideal platform for handling scalability with ease.

zEnterprise reduces network cost and complexity

86%
less cost

240
heavy I/O
workloads

25
heavy
workloads

235
light
workloads

Best Fit on zEnterprise

21 Total network parts

\$0.03M TCA

Additional network parts

1 Switch

10 Cables

10 Adapters

Deploy on Intel

664 Total network parts

\$0.2M TCA

Additional network parts

16 Switches

340 Cables

208 Adapters

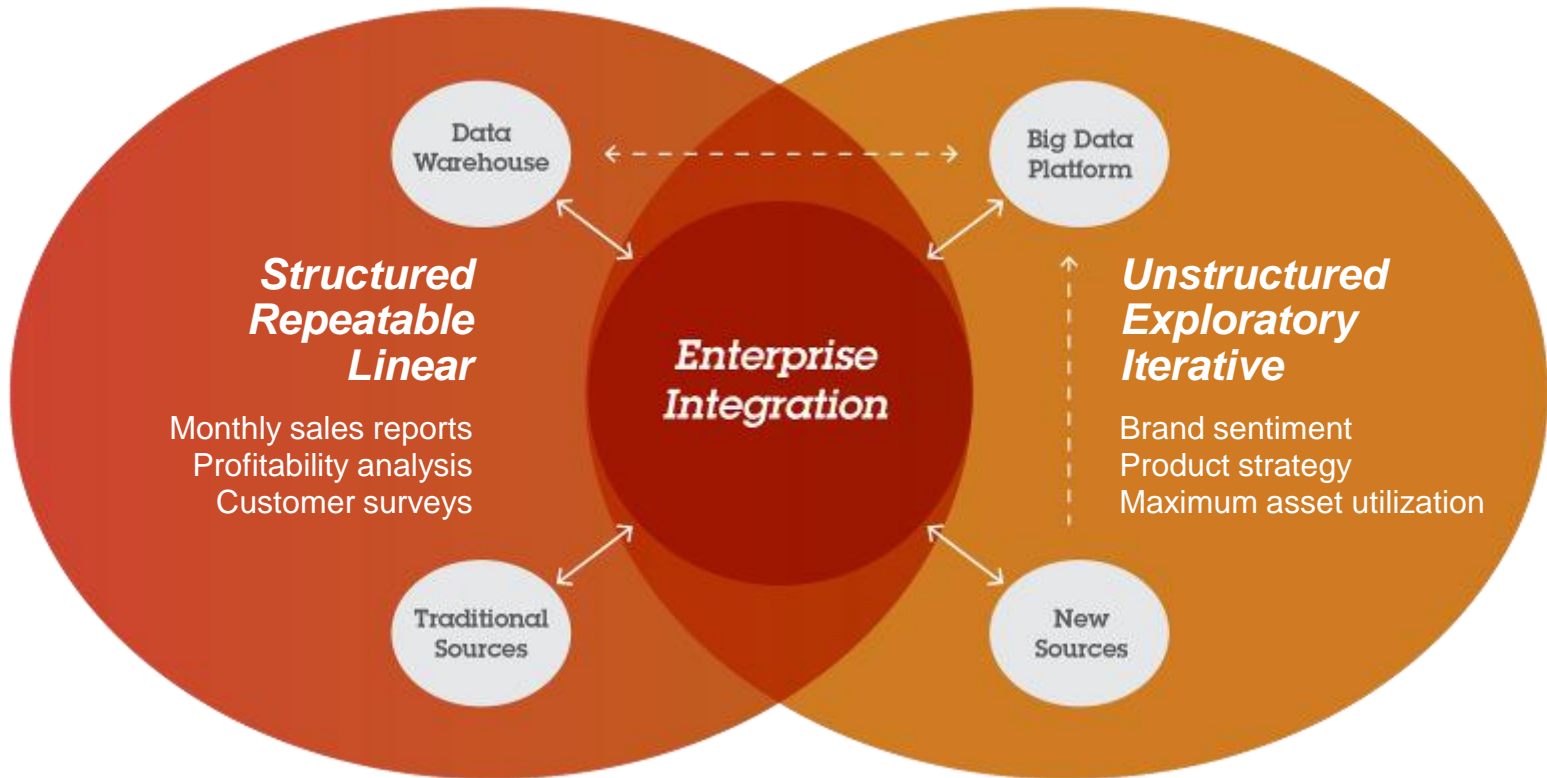
Designed for Data: Extending beyond traditional sources of data to generate insight by leveraging new forms of information

Traditional Approach

Structured, analytical, logical

New Approach

Creative, holistic thought, intuition



zEnterprise System is designed for data

Optimized technology

An integrated platform that enables new insight to be delivered within the timeframe of the business transaction.

Enterprise data serving

Highly secure and scalable corporate data repository

Comprehensive business intelligence

A full portfolio of analytics and data warehousing solutions



Swiss Re



"The IBM DB2 Analytics Accelerator delivers the speed to create the insights we need to work smarter. Putting the right answers into the hands of decision makers across our business enables us to quickly adapt and grow." – Reto Estermann,

Director, Information Technology, SwissRe

Combining the best transaction system with the best analytics system

Best in OLTP

Industry-recognized leader in mission-critical transaction systems

Best in data warehouse

Proven appliance leader in high-speed analytic systems

Best in consolidation

Unprecedented mixed workload flexibility and virtualization providing the most options for cost-effective consolidation

Business insight integration

IBM DB2 Analytics Accelerator is a new workload optimized, appliance add-on, that enables the integration of business insights into operational processes
[Evolution of ISAO]



Unprecedented value in deploying new business analytics



NEW! Smart Analytics System – 9700/9710

End-to-end BI environment that can support a data distribution hub and transactional analytics platform for modernized reporting and predictive analytics.

NEW! Cognos 8 Business Intelligence for z/OS 8.4.1

Broad range of BI capabilities including advanced reporting, multi-dimensional analysis, sophisticated dashboards, customized self-service personal alerts, and system health and administration of devices.

NEW! Tivoli Analytics for Service Performance V1.1

Helps identify performance issues in an organization's IT and network infrastructure prior to a costly service disruption or outage.

IBM Smart Analytics System 9700 / 9710 and DB2 Analytics Accelerator

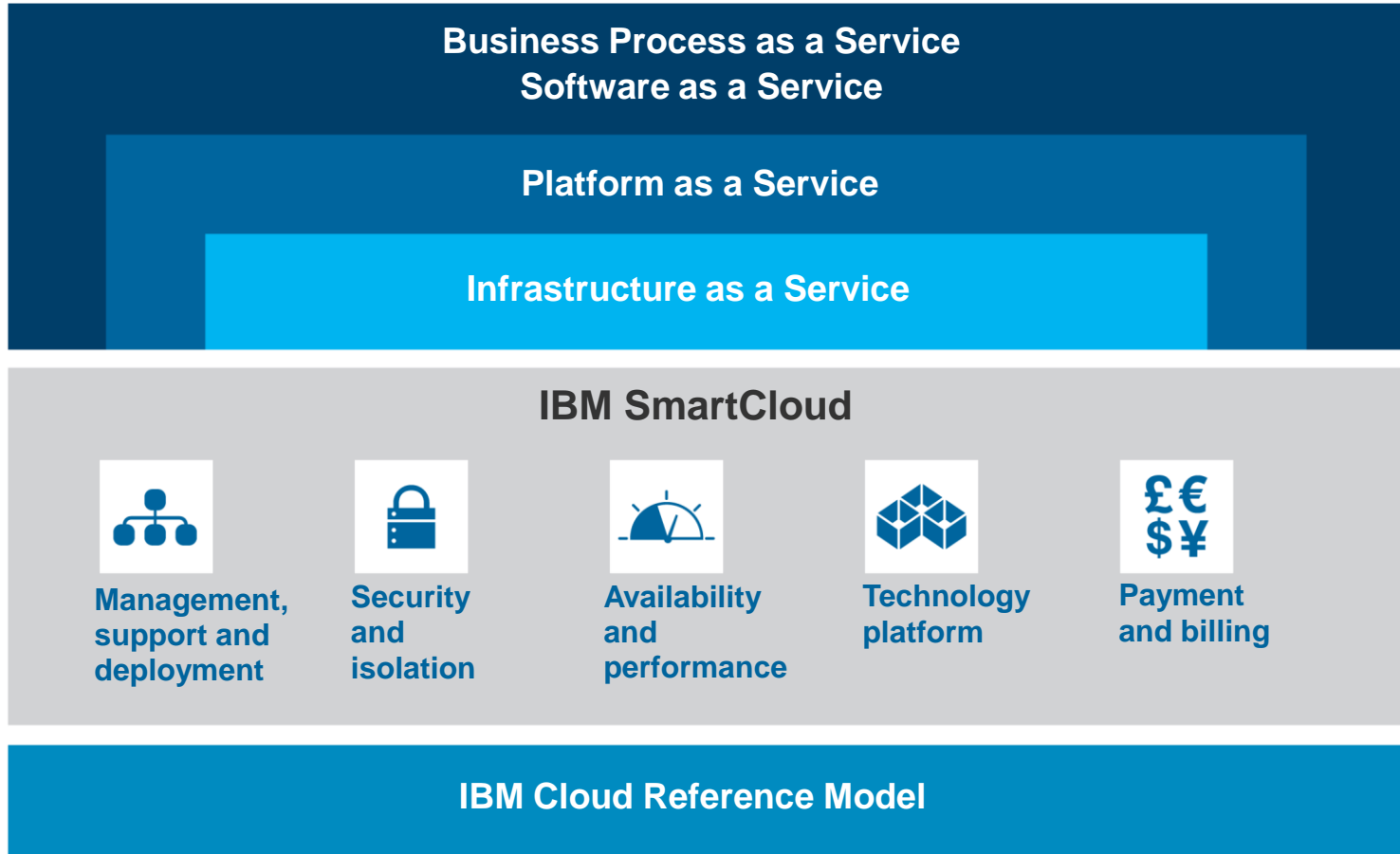
The ultimate hybrid, workload-optimized analytics server



- System z qualities of service applied to all data
- A true hybrid DBMS
- Fastest performance with specialized query engines

- TCO reduction through consolidation
- Dedicated capacity at a competitive price that matches the value received

Managed with cloud technologies



zEnterprise System for the flexible delivery of high value services

The best of both worlds

IBM zEnterprise is the convergence of the data center and the cloud

Cloud computing

- Flexible delivery of services
- Superior economics
- Full accounting and chargeback

Enterprise-class computing

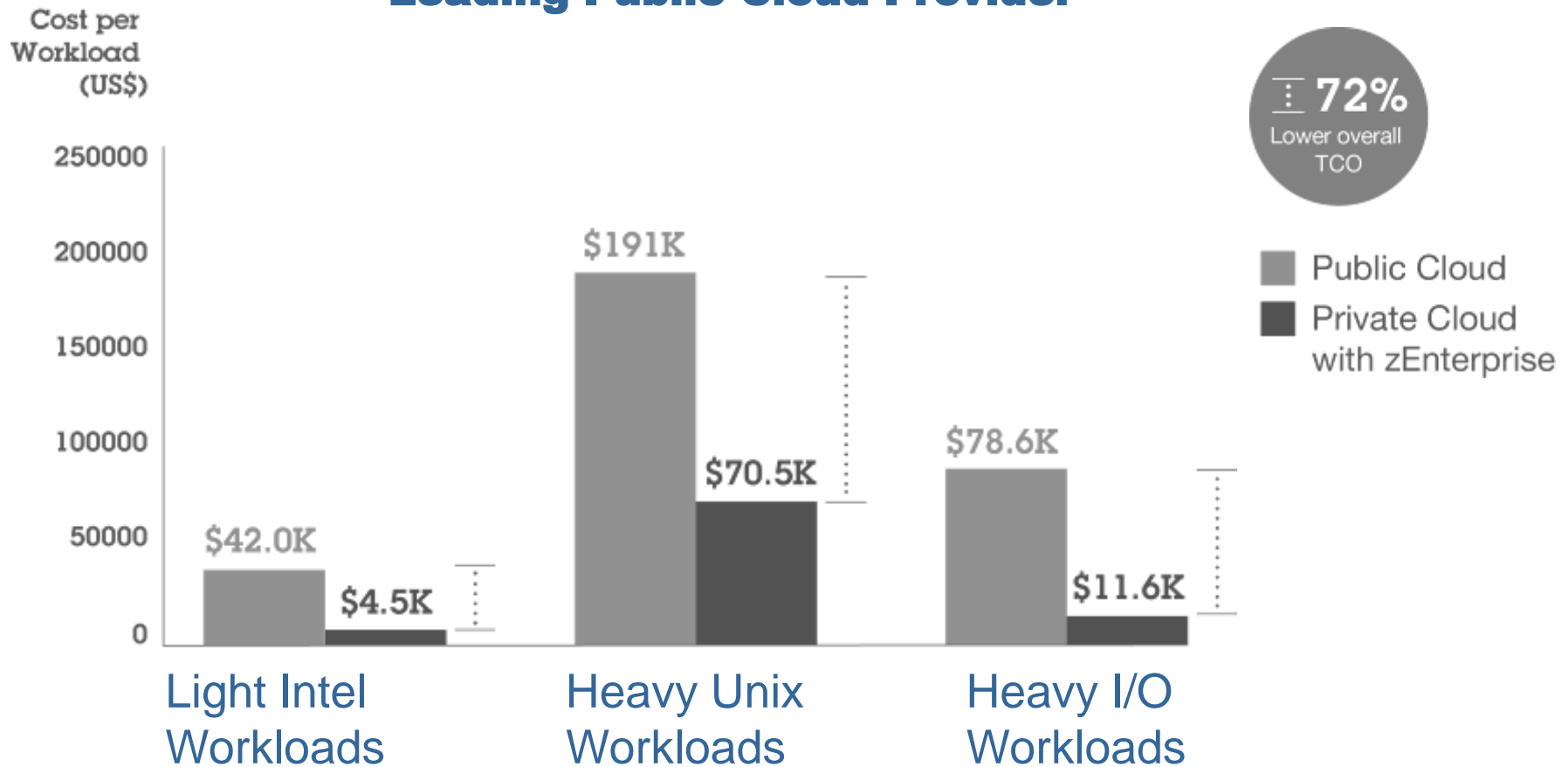
- Unparalleled quality of service
- Maximizes ROI
- Centrally managed in-house



Yi Lian Zhong Information Technology is building a **Linux on System z cloud computing solution to connect 300M+** citizens with businesses and organizations, including social services, medical institutions and schools.

Optimizing private cloud workloads can drive dramatic reductions in costs

Workload deployment on zEnterprise vs. Leading Public Cloud Provider



Enhancements to deployment options for cloud on System z

Entry-level **Infrastructure as a Service** delivery model for Linux on System z with Tivoli Provisioning Manager

NEW! zEnterprise Starter Edition for Cloud

- Provisioning an easy to deploy, highly scalable, highly secure, highly resilient turnkey cloud-in-a-box!
- Attractive offering for rapidly deploying an IaaS Cloud on the System z platform
- Ensure success in deploying an automated solution for provisioning Linux on z under z/VM
- Minimize customer IT operational costs by simplifying administration and optimizing usage of HW resources
- Monitoring and implementation services



Superior virtualization for today and the future: z/VM 6.2

Relief from the challenges associated with **virtual machine sprawl** on competitive systems

- **Increased flexibility** with Live Guest Relocation (LGR) to move virtual servers without disruption.
- **Increased management** of resources with multi-system virtualization to allow up to four z/VM instances to be clustered as a single system image.
- **Increased scalability** with up to four systems horizontally, even on mixed hardware generations.
- **Increased availability** through non-disruptively moving work to available system resources and non-disruptively moving system resources to work.

“ LGR is the very best z/VM software enhancement since 64-bit support became available. ”

– [Mark Shackelford, Vice President, Information Services, Baldor](#)

BALDOR
A MEMBER OF THE ABB GROUP

Continued investment in System z software for zEnterprise

Information Management

**Strong information management platform
built for business workloads**

DB2, IMS, InfoSphere, Optim, solidDB, Informix, Netezza

- NEW! DB2 Analytics Accelerator
- NEW! Smart Analytics System 9700/9710
- NEW! IBM InfoSphere Guardium
- NEW! DB2 10
- NEW! DB2 for z/OS Tools
- NEW! IMS 12
- NEW! GDPS/Active Active

Business Analytics and Enterprise Content Management

**Strong business analytics and content platform
to turn insights into action**

FileNet, Cognos, SPSS,

- NEW! Cognos on z/OS
- NEW! Content Manager OnDemand for z/OS
- NEW! FileNet
- NEW! Case Manager

Tivoli

**Visibility, control, security, and automation
from System z across your business**

*IBM Service Management on System z, TSAM, System Automation and
NetView for z/OS, TWSz, OMEGAMON*

- NEW! SOD - Tivoli ISM for zEnterprise API Support
- NEW! Tivoli Application Dependency Discovery Manager
- NEW! Cloud and Lifecycle Management for zEnterprise
- NEW! Netview
- NEW! ITCAM for Transactions
- NEW! Tivoli Asset Discovery for z/OS
- NEW! Tivoli Application Management for zEnterprise
- NEW! IBM Security Key Lifecycle Manager for zOS
- NEW! Tivoli Advanced Reporting and Management for DFSMSHsm
- NEW! IBM Security zSecure suite
- NEW! IBM Tivoli Workload Automation
- NEW! OMEGAMON for z/OS Management Suite
- NEW! Tivoli Business Service Manager V6.1
- NEW! Tivoli Analytics for Service Performance V1.1



WebSphere

**Application infrastructure, connectivity and
dynamic business processes**

*WAS, CICS, BPM, WMQ, ESB, DataPower, ILOG,
Lombardi*

- NEW! WebSphere Application Server
- NEW! CICS
- NEW! WebSphere Extended Deployment Compute Grid
- NEW! Business Monitor for z/OS
- NEW! Business Process Manager
- NEW! IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise
- NEW! WebSphere Operational Decision Management
- NEW! MQ
- NEW! WebSphere Message Broker

Rational

**Application Development Tools and Software
Delivery Platform**

*Compilers (C/C++, PL/I, COBOL),
RDz, RTC*

- NEW! Collaborative Lifecycle Management
- NEW! Rational Virtual Developer Desktop
- NEW! Rational AppScan Source and Enterprise Edition
- NEW! Rational Automation Framework for WebSphere
- NEW! Rational Developer for zEnterprise
- NEW! Rational Developer for System z – Unit test
- NEW! Rational Host Access Transformation Services
- NEW! Rational Host Integration Solution
- NEW! Business Rules Modernization
- NEW! z/OS XL C/C++ V1.13
- NEW! Enterprise PL/I v4.2

Lotus

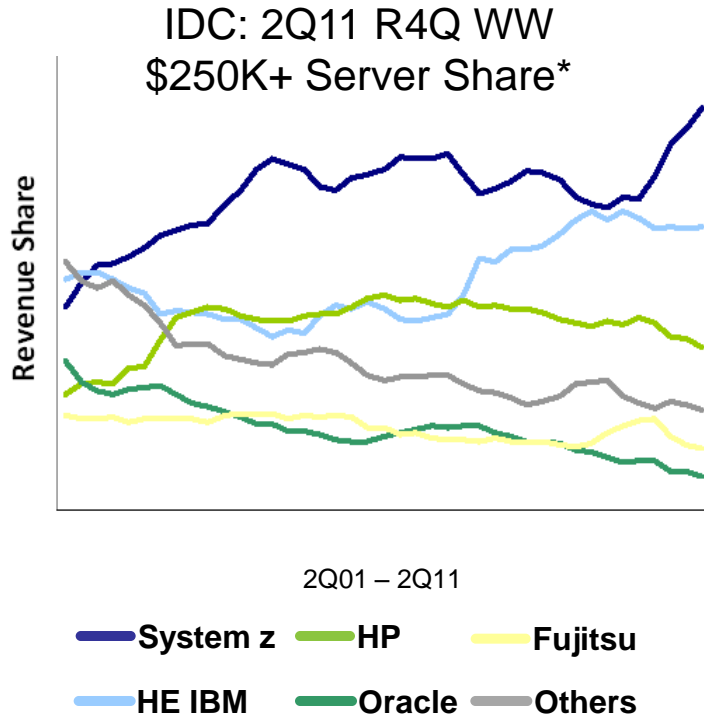
Productivity and Collaboration

Portal, Connections, Notes Domino, Sametime

- NEW! IBM® Lotus Connections
- NEW! IBM Lotus Notes and Domino
- NEW! IBM Lotus Quickr for Domino
- NEW! IBM WebSphere Portal for z/OS and Linux on z

***New versions in Q4**

IBM System z marketplace momentum



“... IBM’s System z solutions continue to play **integral roles in existing and emerging enterprise cloud computing** environments for many years to come.”

– *Charles King*

“From its groundbreaking mainframe architecture to its cutting edge cross platform integration, zEnterprise™ represents a **radical departure from computing as usual.**”

– *Ptak, Noel & Assoc.*

86 percent MIPS growth in 2Q11 – culminating in the **best four-quarter period** in the past five years

percent year to year revenue growth in 2Q11 – the strongest 2Q growth in the last decade

61

Clients are realizing the value of System z and hybrid computing

80+ BladeCenter Extension units
400+ blades shipped

.....
*An IBM benchmark validated the benefit of zEnterprise running POWER7 blades for an Italian client's SAP workload – moving from **60K bills per hour to 430K bills per hour.***

“ When we confirmed that the z196 met our needs very well, we ordered our own two z196 systems—each with one zBX [IBM zEnterprise BladeCenter Extension]—with a great deal of confidence. ”



– [Per Johansson, Senior Manager, Mainframe Global Infrastructure & Operations, Volvo Information Technology](#)

Underpinned by a thriving System z ecosystem

Thousands of ISVs invest in System z

7,000+ applications supported on z (3250+ Linux and 4000+ z/OS)	1,200 new and upgraded applications on System z in 2010	120+ new ISV partners added to the platform
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“Banks have to be up 24x7x365 in today's market. ...System z has a proven track record of high availability both within an implementation and also within an entire enterprise with business continuity and failover capabilities.”

– Frank Sanchez, FIS



Worldwide adoption of mainframe curriculum

814 schools enrolled with more adding curricula	32,941 students from 17 countries participated in Master the Mainframe contests	SystemzJobs.com connects System z clients, partners and businesses with students and professionals seeking z jobs
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“The contest allowed us to have a real-world experience with real projects. I feel learning DB2 was one of the reasons I was able to advance to a database-focused job at work.”

– Jay Thomas, Pace University

IBM continues to invest in and develop System z

IBM
System z



2011



and beyond ...

- DataPower XI50z
- New zEnterprise Statement of Direction for Linux and Windows support in zBX
- zEnterprise midrange follow-on
- zEnterprise 196 GA2 for new and extended hybrid capabilities
- z/OS V13
- IBM DB2 Analytics Acceleration for z/OS v2 (SoD)

Leadership technologies

- Improve performance and system capacity
- Continue leadership on single thread performance
- Improve OS / app availability via real-time monitoring and diagnosis
- Further simplify management of zEnterprise workloads

Transformational technologies

- Enable new capabilities with flash memory
- Take advantage of connectivity tools and other industry trends

IBM zEnterprise System: Freedom by design

IBM enhanced the System z platform to deliver new capabilities



The integration of a shared pool of virtualized heterogeneous resources, managed as a single system, that is:

Tuned to the task

Extending and enhancing the hybrid capabilities of zEnterprise with improved management options and support for a broader set of workloads

Managed with cloud technologies

Extending the System z portfolio of cloud offerings with a new entry-level Infrastructure as a Service delivery model

Designed for data

Building on the success of the IBM Smart Analytics Optimizer with increased performance for a broader set of queries

Get started and realize value quickly

1. Consider acquisition opportunities

IBM zEnterprise financing offer

Acquire zEnterprise today and defer payments until 2012 with buy-back assistance with competitive migrations.

0% 12-month software financing available for zEnterprise Starter Edition for Cloud.

3. Migrate your competitive workloads

zEnterprise BladeCenter Extension offer

Realize the full benefits of the zEnterprise System by replacing HP blades with up to six, zBX Power or System x blades at the same cost as zBX alone.

2. Get started on an implementation

zEnterprise set-up and migration services

Accelerate the adoption of zEnterprise System technology and realize the value sooner.

4. Integrate IBM storage

IBM DS8000 BC is ideal for z114 workloads

Implement the unparalleled availability of the DS8800, with an attractive entry price point.

IBM zEnterprise System's freedom by design delivers:

- **Superior economics**
- **Better decision making**
- **Accelerated innovation**



Thank you.