



System z Server Strategy and Direction

How New Technologies Help You Deliver Smarter Systems

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IBM System z

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Smarter Planet Solutions Increase Demands on IT



1.2 zettabytes (1.2 trillion gigabytes) exist in the “digital universe

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



Internet connected devices **growing 42% per year**



32.6 million servers worldwide

- **85%** idle computer capacity
- **15%** of servers run 24/7 without being actively used on a daily basis



servers growing **6x per year**
storage growing **69x per year**
virtual machines growing **42% per year**



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

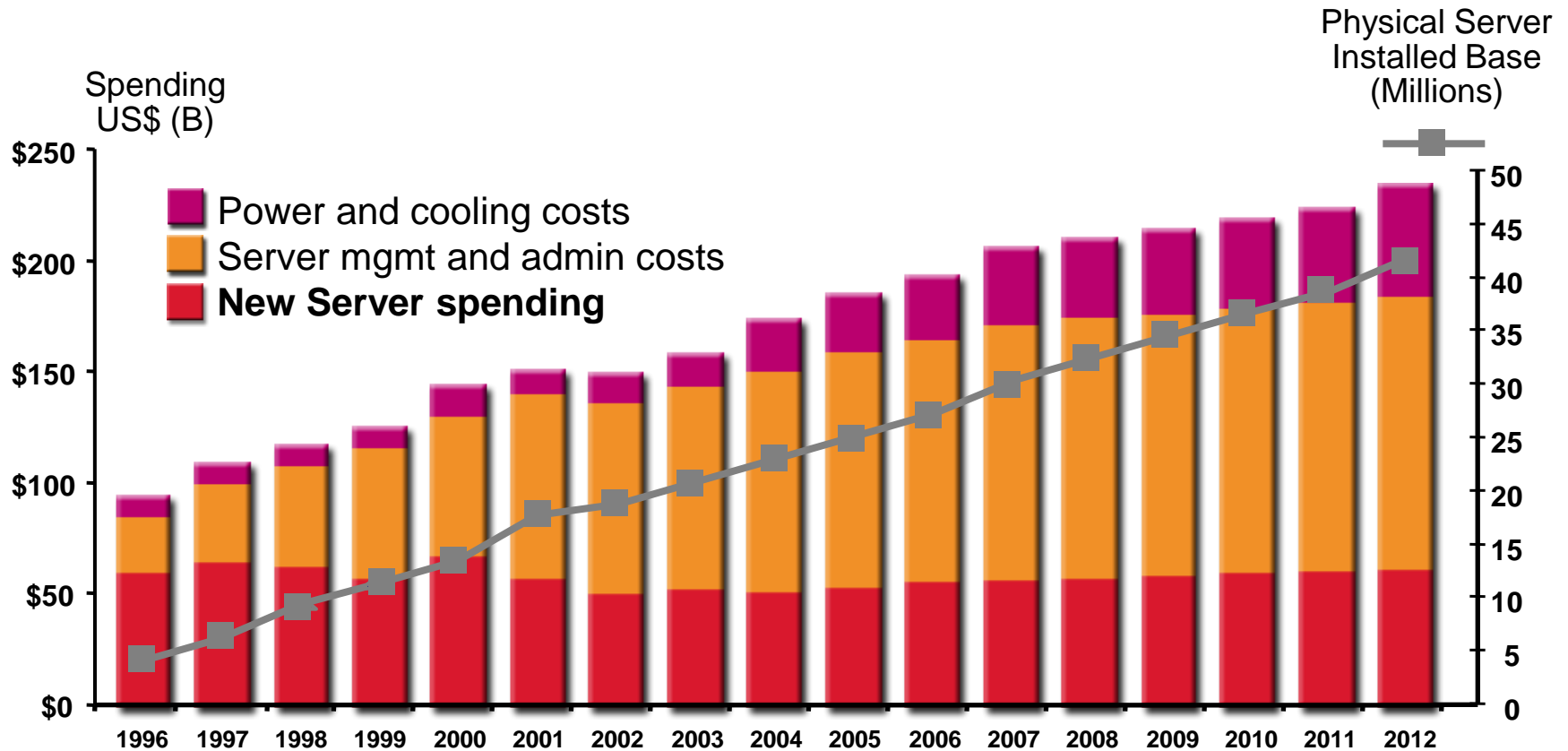
- **18%** increase in data center energy costs projected



But IT budgets are growing less than 0.8% per year

IT Operating Costs are Out of Control

Worldwide IT Spending on Servers, Power, Cooling and Management Administration

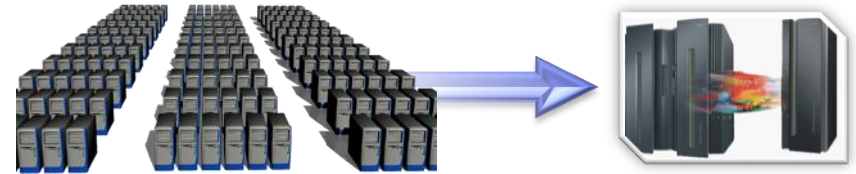


Source: IDC

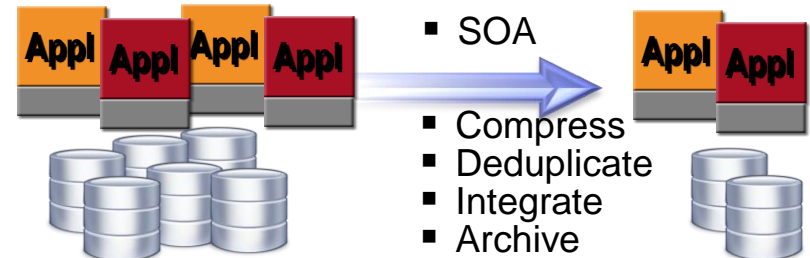
Strategies to Reduce Costs and Improve Value

Optimize the Overall IT Environment

Consolidate Hardware Infrastructure



Eliminate Redundant Software and Data

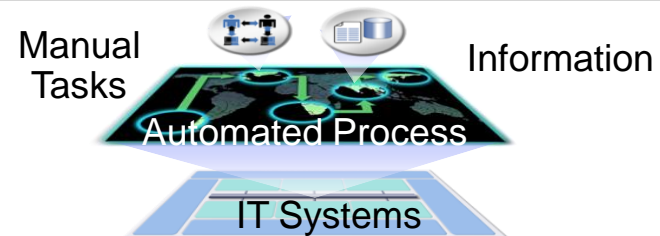


Improve Service Delivery

Integrated Service Management



Modernize the Enterprise

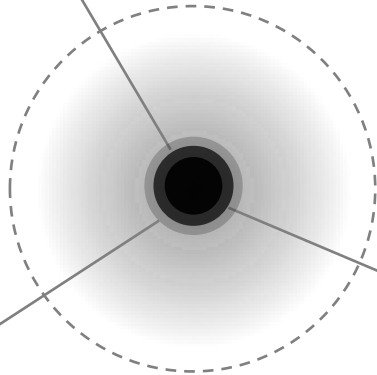


Now we are entering the next era of computing.

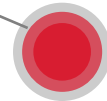
Big data



Cloud

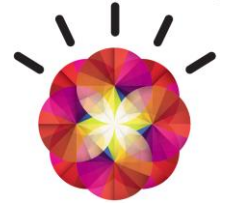


Optimized systems



SMARTER COMPUTING

Strategies to Transform IT to Deliver
Breakthrough Economics and Value



**Twice the capacity
on a flat budget**

**Applied to deliver new
insights and drive
innovation**

**Created by the
integration of Big data
in Optimized systems,
managed as a Cloud**

IBM Systems Provide an Ideal Foundation for Smarter Computing

System z

Freedom by Design

Achieve up to **55% lower TCO per workload** – with hybrid computing



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.

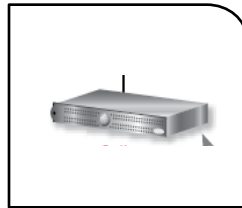
IBM's Integrated, Workload Optimized Systems Accelerate the Path to Smarter Computing

Tightly integrated appliances

- Up in 24 hours or less
- Wire speed processing
- Data security, 5x less time



**IBM WebSphere
DataPower**



**IBM InfoSphere
Guardium**



IBM Netezza

Flexible integrated systems

- Deploy systems in days vs. months
- Reduce storage costs by 40%
- Lower energy consumption by 70-90%

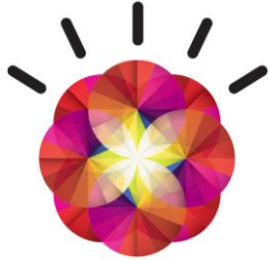


**IBM Smart
Analytics System**



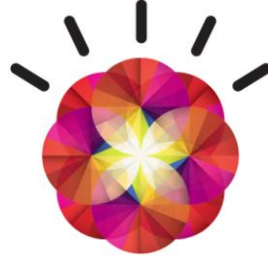
IBM Cloudburst

IBM System z delivers capabilities for Smarter Computing



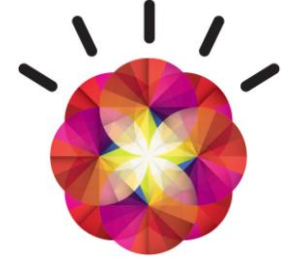
Automate

- Centrally manage and automate operations to lower cost
- Automated provisioning lowers cost of new and existing workloads
- Automated development tools for re-use of existing assets



Integrate

- Integrate multiple platforms to optimize workload deployment
- Integrate operations to free up resources for innovation
- Integrated private cloud for flexible service delivery



Secure

- Secure data for accelerated insight
- Advanced security to manage risk and reduce cost
- Governance to protect existing investments

System z Improves IT Efficiency Across Industries*



44%

*lower cost per
credit card transaction*



31%

*lower IT spend per
consumer loan*



25%

*lower cost per
mega watt hour produced*



24%

*lower cost per
hospital bed*



20%

*lower cost per
airline passenger*



26%

*lower cost per
new vehicle*



25%

*lower cost per
retail store*



23%

*lower cost per
barrel of oil*

“... in the long run, the marketplace **rewards those that make the optimum use of the right computing resources in the right way** as evidenced by business performance.”

-- * Dr. Howard Rubin, CEO and Founder Rubin Worldwide

IBM zEnterprise System

A System of Systems that unifies IT for predictable service delivery



IBM zEnterprise 196 (z196)

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 x86 Blades and high-performance optimizers and appliances

The Value Begins at the Heart of z196 ...

Up to 40% Improvement for traditional z/OS workloads

Up to 60% Improvement for Linux workloads

30% Improvement in CPU intensive workloads via compiler enhancements

60% Total capacity improvement

1 to 80 configurable for client use

IFL, zIIP, zAAP, and ICFs

Up to 3 TB RAIM memory

15 subcapacity settings

Cryptographic enhancements

Optional water cooling and/or HV DC Power

Upgradeable from z10 EC and z9 EC

- Technology and Performance
- Enhanced Availability and Serviceability
- Workload Optimized Simplified Management
- Dynamic Energy optimized



... and the Value Extends to Heterogeneous Workloads

IBM zEnterprise BladeCenter Extension (zBX)

- **Integrated IBM Certified Components**
- **System z support**
- **Expanding OS support for z196**
- **Simplified management**



Optimizers

- **IBM Smart Analytics Optimizer**
- **DP¹**

Select IBM Blades

- **BladeCenter PS701 Express**
- **System x¹**



One to four – 42u racks – capacity for 112 blades

No MIPS/MSU rating

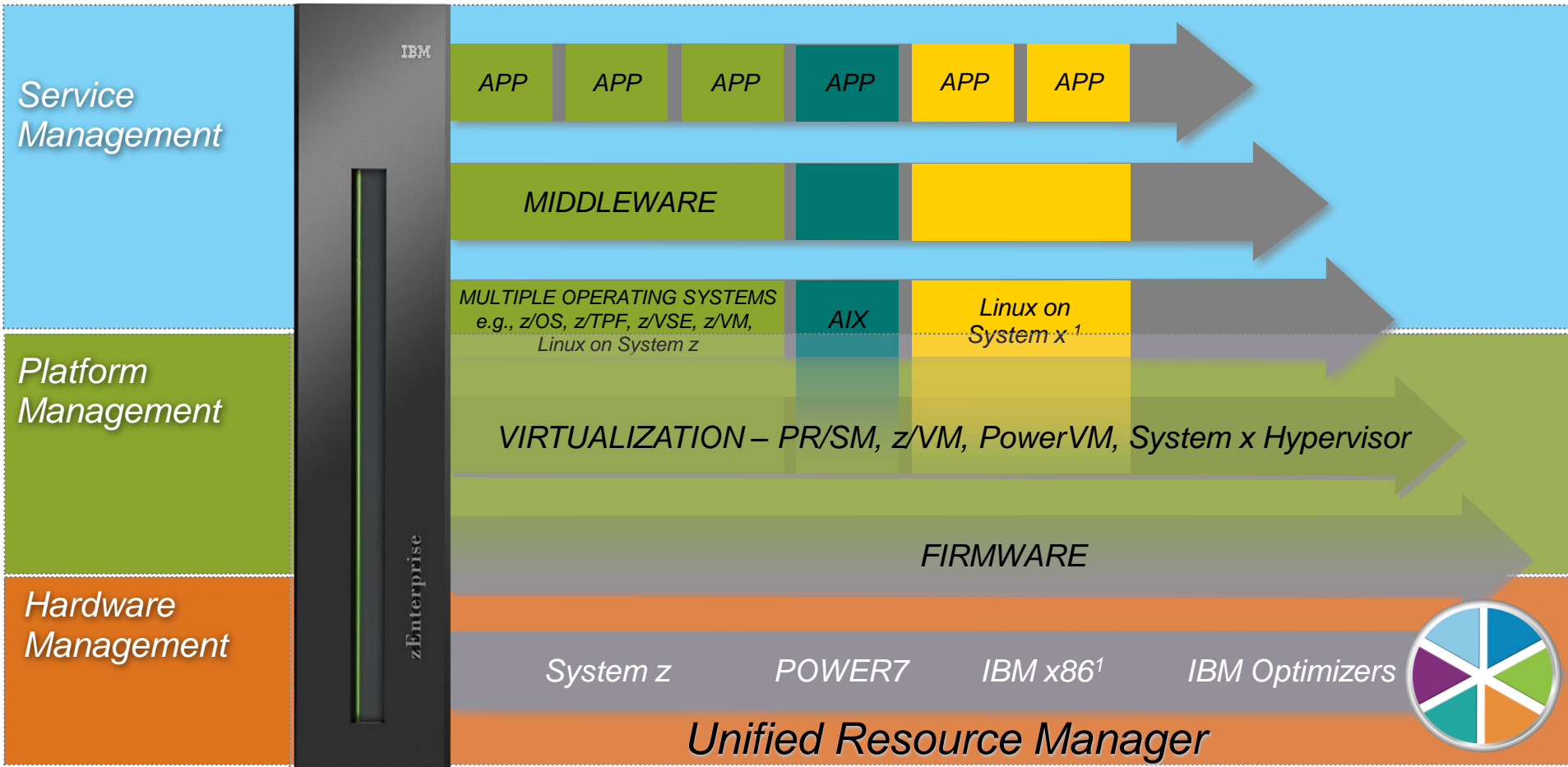
Configured for high availability

Integrated 10Gbe data network

Optional rear door heat exchanger

*... managed by the
zEnterprise Unified Resource Manager*

zEnterprise extends Service Management for Improved Governance



Focused, collaborative innovation

A “complete systems” approach

¹ All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.

IBM Smart Analytics Optimizer

Capitalizing on breakthrough technologies to accelerate business analytics

What is it?

The IBM Smart Analytics Optimizer is a workload optimized, appliance-like add-on that enables the integration of business insights into operational processes to drive winning strategies. It accelerates select queries, with unprecedented response times.



How is it different?

- **Performance:** Unprecedented response times to enable 'train of thought' analyses frequently blocked by poor query performance.
- **Integration:** Connects to DB2 through deep integration providing transparency to all applications.
- **Self-managed workloads:** Queries are executed in the most efficient way.
- **Transparency:** Applications connected to DB2, are entirely unaware of IBM Smart Analytics Optimizer.
- **Simplified administration:** Appliance-like hands-free operations, eliminating many database tuning tasks.

Faster insights for enabling new opportunities

WebSphere DataPower XI50 for zEnterprise (XI50z)

What is it?

The IBM WebSphere DataPower appliance integrated in the zEnterprise System, can help simplify, govern, and enhance the security of XML, Web and IT services by providing connectivity, gateway functions, data transformation, protocol bridging and intelligent load distribution.



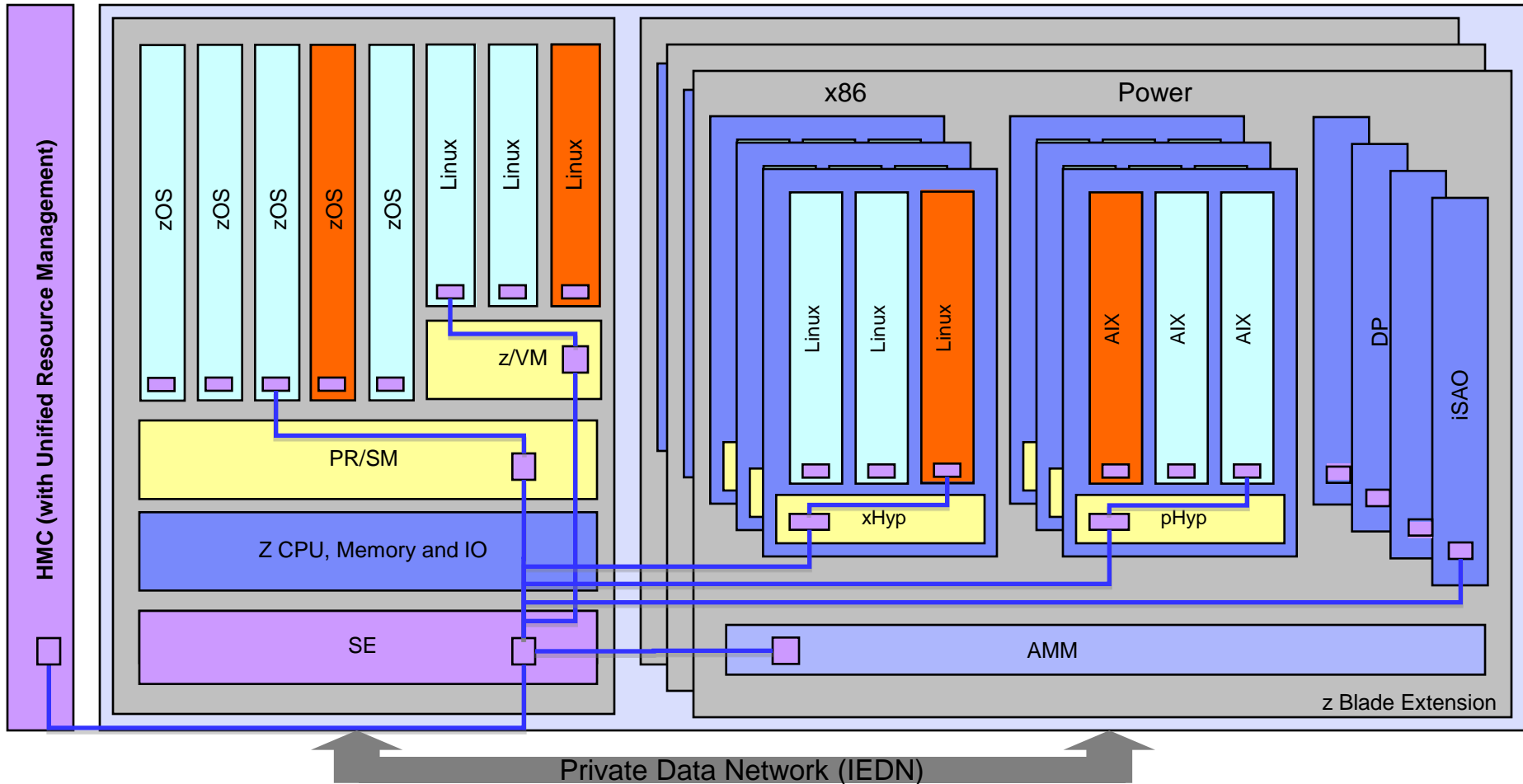
How is it Different?

- **Security:** VLAN support provides enforced isolation of network traffic with secure private networks. And Integration with RACF security
- **Tightly Integrated:** Integration into Sysplex Distributor for improved workload distribution and controls across all z operational images
- **Improved support:** Monitoring of hardware with “call home” for current/ expected problems and support by System z Service Support Representative
- **System z packaging:** Increased quality with pre-testing of blade and zBX. Upgrade history available to ease growth. Guided placement of blades to optimize.
- **Operational controls:** Monitoring rolled into System z environments from single console. Time synchronization with System z. Consistent change management with Unified Resource Manager

Providing fast and flexible application integration

Putting zEnterprise System to the Task

Service Management and Reporting (Deployment, Performance, Availability, Security, Energy)



The IBM zEnterprise System

Lowering the cost of distributed workloads through optimal platform selection



Current data center:

Distributed workloads on a variety of Intel servers, connected to a System z



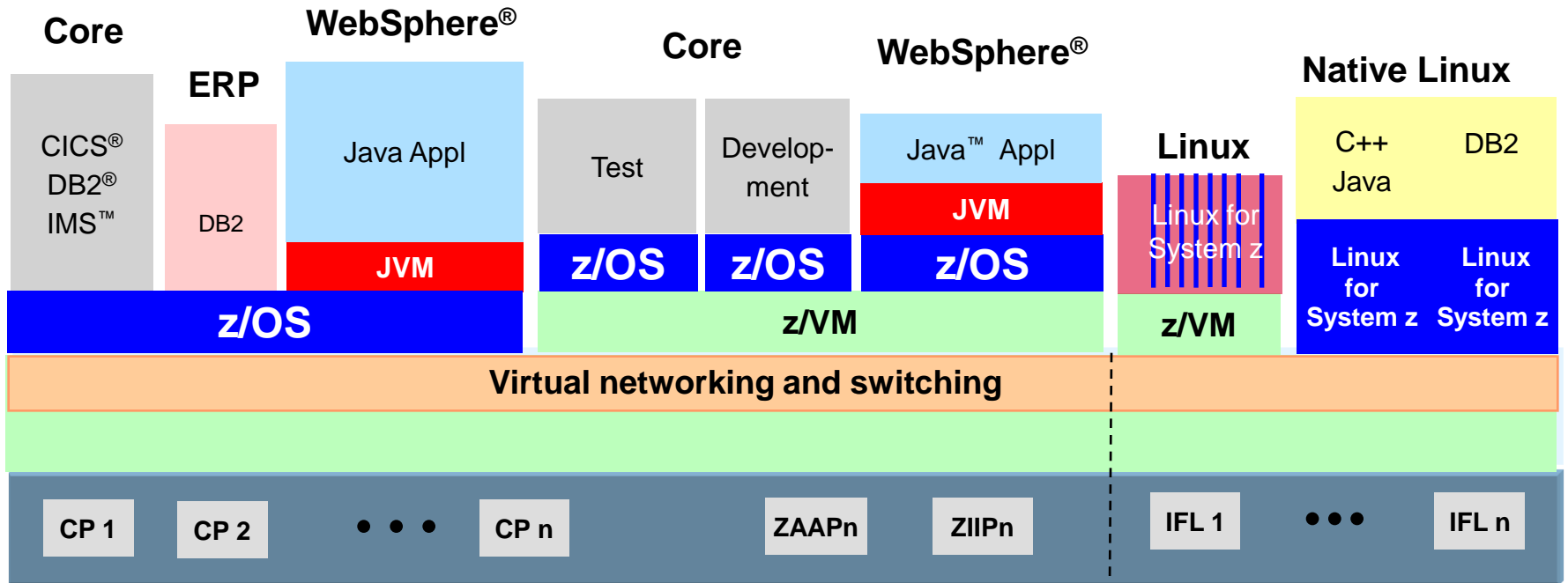
Optimize distributed work on zEnterprise with Linux on System z, POWER7 blades and Intel blades with Unified Resource Manager

Lower cost of acquisition by up to **56%***

Reduce cost of ownership by up to **55%***

Reduce network complexity by up to **98%***

System z – Integrated Workloads



- **Massive, robust consolidation platform**
- **Virtualization is built in**
- **100's to 1000's of virtual servers on z/VM**
- **Intelligent and autonomic management of diverse workloads and system resources**

zEnterprise Enables Critical Computing for Many Industries

Banking	Insurance	Retail	Healthcare	Public Sector
<i>Core Banking</i>	<i>Claims Processing</i>	<i>On-line Catalog</i>	<i>Patient Care Systems</i>	<i>Electronic Tax</i>
<i>Wholesale Banking – Payments</i>	<i>Policy Sales & Management (e.g. Life, Annuity, Auto)</i>	<i>Supply Chain Management</i>	<i>On– line Claims Submission & Payments</i>	<i>Web based Social Security</i>
<i>Customer Care & Insight</i>	<i>Internet Rate Quotes</i>	<i>Customer Analysis</i>		



Telcel: Manages Massive Growth

- Mexico's largest provider of wireless telephony services
- Massive jump in year-on-year post-paid transaction volume
- Consolidated distributed systems to zEnterprise System and upgraded processing engines
- Implemented disaster recovery system

Needs data center to grow with business



- Business strategy change to meet customer demand
- Ability to manage growth and extend to hybrid environment

Senegal: Transforms Import/Export Process

- Forms the government budget, stimulates the economy and controls finances.
- Limited IT access across the country 30 border checkpoints
- Increased system performance 70 percent; reduced power consumption 20 percent; cut operating costs 30 percent

Needs upgraded process to ensure work is done accurately and efficiently

- Geographically dispersed systems
- Customs officers have access to real-time information to ensure improved management of customs processes



New Companies are Migrating to the Mainframe

61 New Accounts
in 2010

- **40%** growth markets
- **60%** major markets
- **50%** running Linux
- **Majority installed Business Class technology**
- **Across all industries**

Russia's Comepay: New Infrastructure in Emerging Economy

- Operates 24/7 self-service payment kiosks for internet, digital TV, mobile phones and utilities – 200 kiosks in 11 regions of Russia
- Business expansion strategy will result in three-fold increase in transactions, from 10,000 to 30,000 per second
- Consolidating OLTP, OLAP, customer portal, bookkeeping database and other services on Linux on mainframe



Needs flexibility to adjust workloads without downtime

- Large amount of unstructured data
- Reduce IT costs to pay for itself in just over a year

Payment Solution Providers: The New Generation of Processing on System z

- An industry leader specializing in business consulting, smart-card solutions, e-payment networks and the integration of financial transaction processing systems
- Rapid growth required the payment switch platform to transform into a more robust and reliable environment
- Migrating from an Oracle on Intel platform to a highly secure System-z based solution

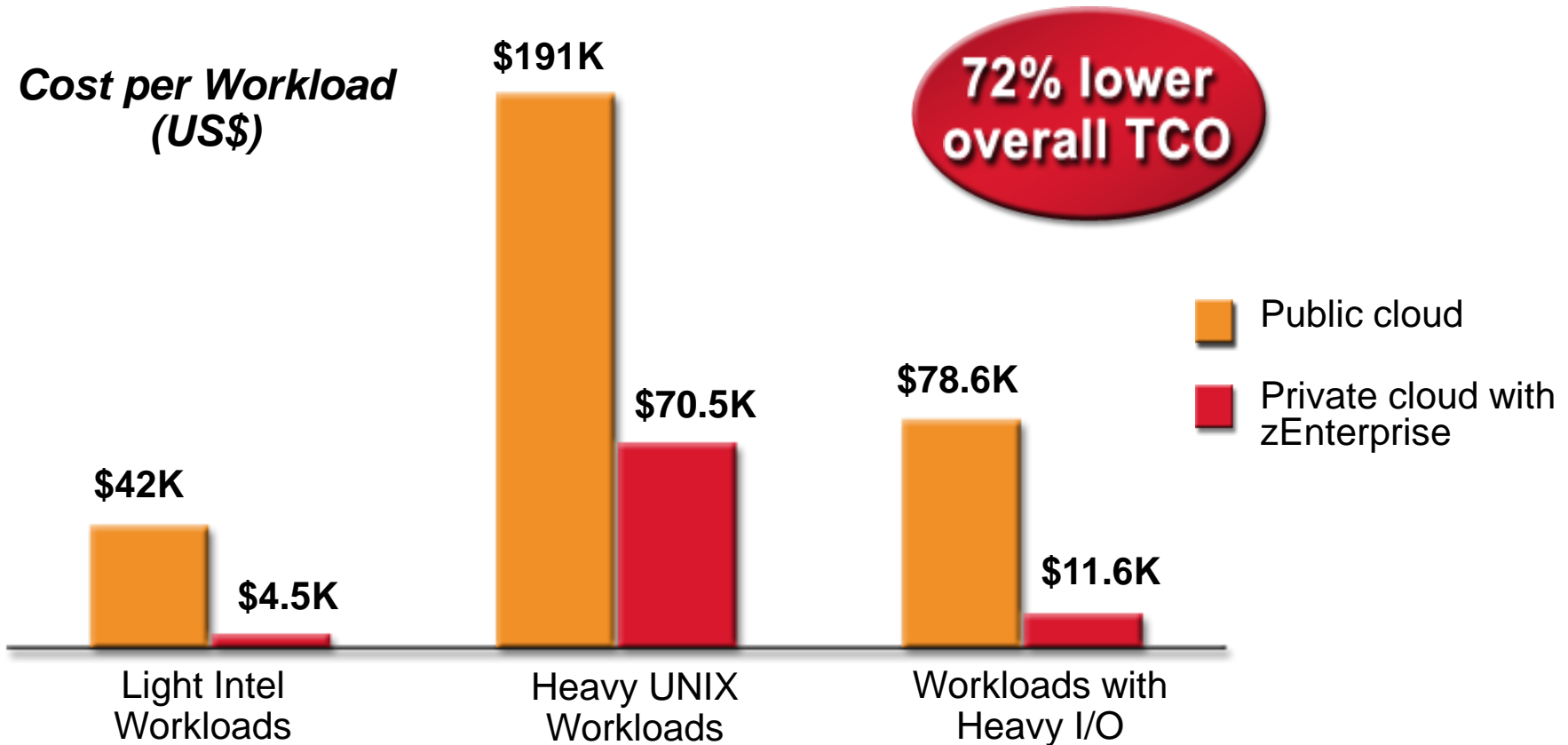


Needs high-transaction payment switch

- Ability to accept millions of transactions each day
- Provides ideal environment for cloud services

Fit-for-Purpose Private Cloud on zEnterprise

Dramatic Reduction in Costs



Cloud Solution Manages 6M Merchant Locations

- Makes payment transactions for merchants, financial institutions and its customers
- Needed to share resources and business data to process 60 billion transactions
- zEnterprise-based cloud solution with IBM software, services and financing



Needs simplified management

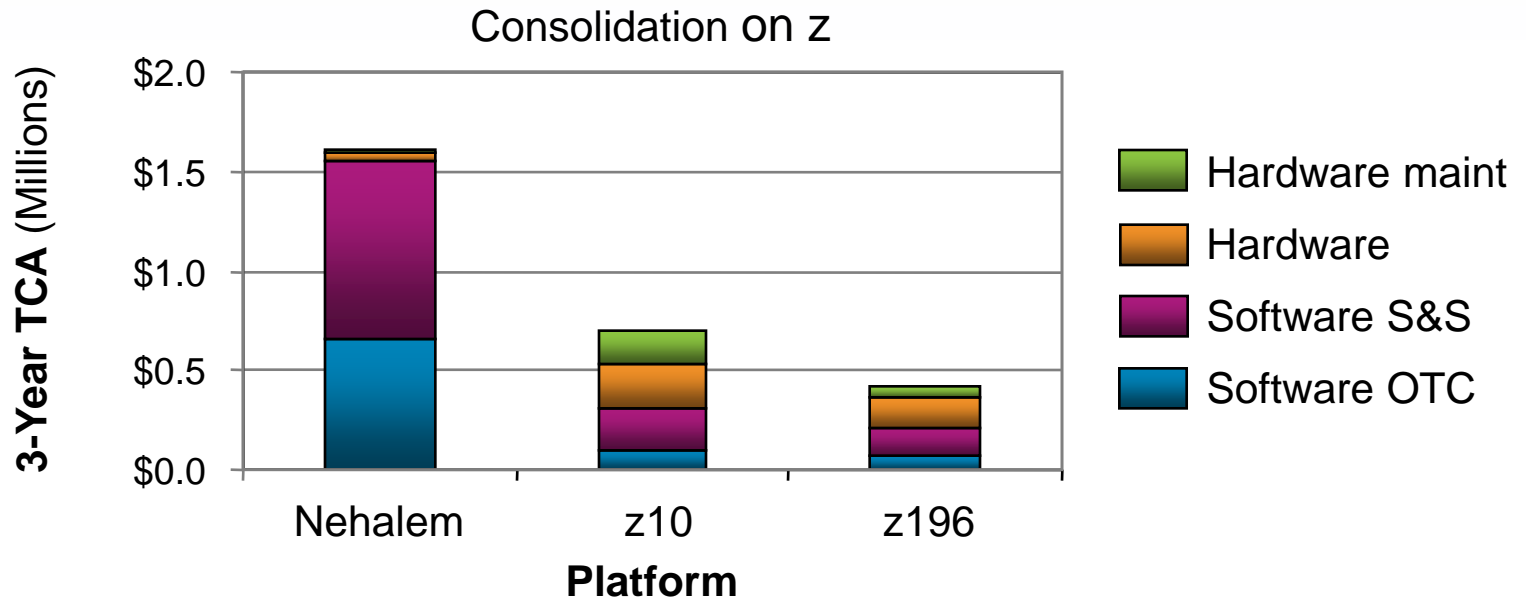
- Manage data from more than 6 million merchant locations
- Process transactions up to 70 percent faster

The Most Efficient Platform for Large-Scale Consolidation

Linux on zEnterprise

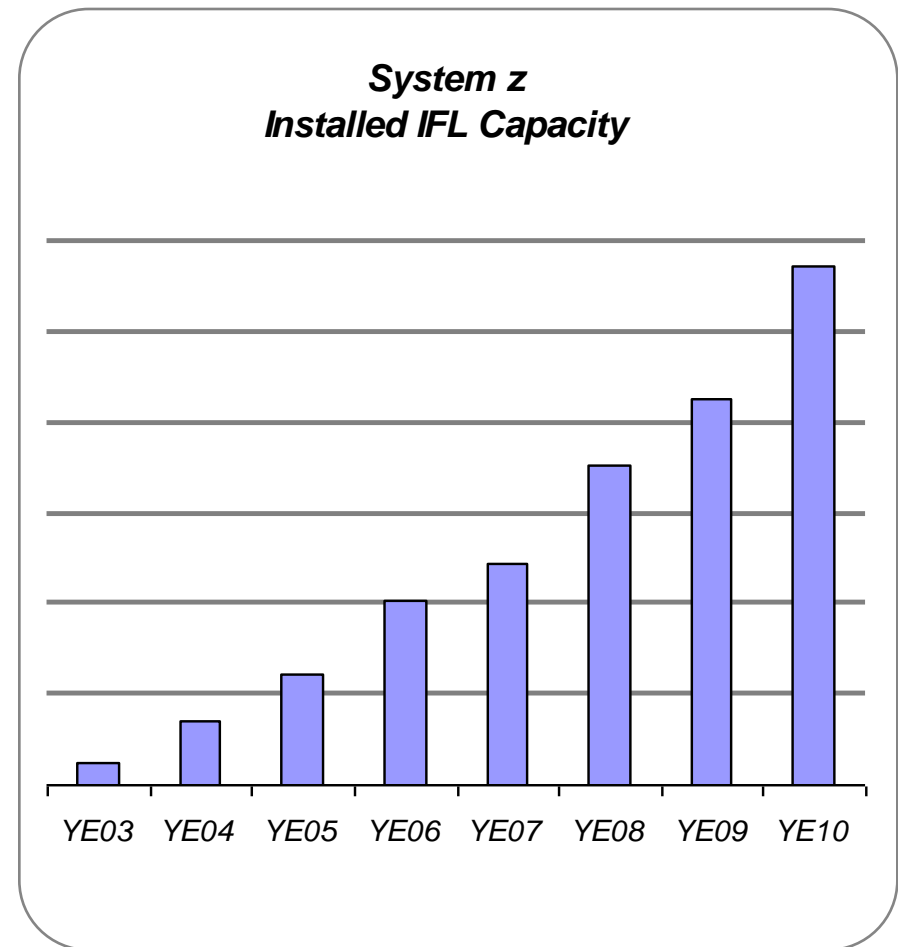
- Lower acquisition costs of hardware and software vs. distributed servers*
- Less than **\$1.00/day** per virtual server (TCA)*
- Reduce floor space by up to **90%** compared to distributed servers*
- Reduce energy consumption by up to **80%** compared to distributed servers*

Example: Consolidate 40 Oracle server cores to 2 Linux engines on zEnterprise



Client Adoption Continues to Drive Linux Success

- 64 of the top 100 System z clients are running Linux on the mainframe
- 32% of System z customers have IFLs installed
- Linux represents 19% of the System z install base capacity (MIPS)
- Installed IFL MIPS increased 35% from 4Q09 to 4Q10
- > 3,250 applications are available for Linux on System z *

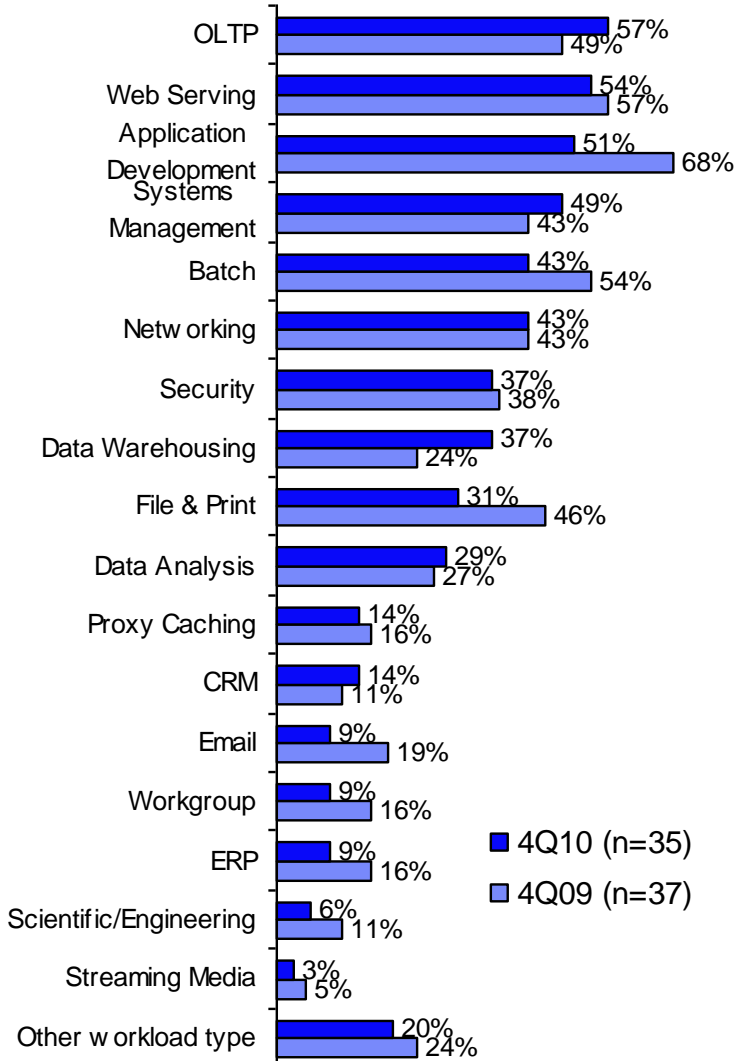


* ISV Enablement – data as of 2Q10

Why are Clients Consolidating to System z?

Workloads run on Linux on System z

(Base: Running Linux on the Mainframe)



Surveys indicate IBM System z customers use Linux for:

- Web Serving
- OLTP
- Systems Management
- Application Development

“Best Fit” Workloads for Linux on System z:

Business connectors: WebSphere MQSeries, DB2 Connect, CICS Transaction Gateway, IMS Connect for Java

Business critical applications: e.g. SAP

Development of WebSphere and Java applications

WebSphere Application Server (WAS)

Email & collaboration: Domino, Web 2.0

Network Infrastructure: FTP, NFS, DNS, etc. and Comm Server and Communications Controller for Linux, CommuniGate Pro (VoIP)

Data services: Cognos, Oracle, Informix, Information Builders WebFOCUS

Applications requiring top end disaster recovery model
Virtualization and Security Services

Bank of New Zealand: Consolidates and Goes Green

- Services individuals, farmers and businesses with their financial pursuits
- At-capacity data center that needed to grow, reduce emissions and costs and become more open
- Consolidated 200 Sun servers into just one mainframe running Linux



Needs carbon neutral data center

- Maximize space while keeping costs down.
- Reduces datacenter footprint by 30%, reduces heat output by 33%, carbon footprint by 39%, and expects a 20% ROI

TD Ameritrade: Modernizes to Linux on System z

- Provides online brokerage services to self-directed investors
- Consolidate and modernize a crumbling infrastructure
- Move production and disaster recovery data centers

Needs reliable, scalable and secure data center

- Remove 6,000 old servers and install 2,000 new, including four System z mainframes running Linux
- Implemented real-time incident and asset management
- Increased online capacity four times



IBM Services

Help get the most for your business from the zEnterprise System

Assess and design an IT architecture to optimize for business advantage

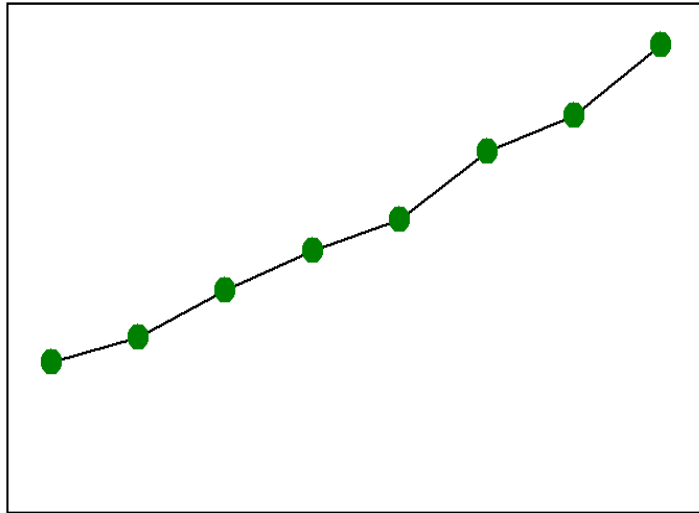
- Develop a business case and high level transition plan
- Fit-for-purpose analysis
- Deliver a roadmap for an adaptable and efficient infrastructure that integrates IT and business strategy and priorities

Build and run a smarter system with services for zEnterprise

- Migrate effectively and efficiently to zEnterprise environment.
- Create a more cost-effective and manageable computing environment with server optimization, integration, and implementation services
- Enhance and simplify cross-platform high availability
- Effectively run and manage zEnterprise with maintenance and technical support services

Marketplace Momentum

System z Install Base



YE03-YE10

“IBM handily claimed the server market share lead in the fourth quarter as **the company rode its new mainframe and Power7** systems, according to Gartner.”

– ZDNet, 25 Feb. 2011

“**IBM has once again made a hit with the mainframe**, as Big Blue's Systems and Technology Group saw revenues increase 21 percent overall and mainframe sales rise nearly 70 percent in Q4 of 2010.”

– eWeek, 25 Jan. 2011

58 percent MIPS growth in 4Q10 – the highest growth in a decade

percent year to year revenue growth in 4Q10 – the best growth in the last decade

69

Thriving System z Ecosystem

*System z Linux:
Fastest growing
server platform*



- Installed Linux MIPS growth of 42% CAGR (2004-2010)
- Shipped IFL engine volumes increased 34% (4Q09 to 4Q10)
- 64 of the top 100 System z clients are running Linux on System z
- 32% of System z clients have IFLs installed
- Linux represents 19% of the System z install base capacity

*Thousands of ISVs
investing in
System z platform*



As of 2010:

- More than 7,000 applications are supported on z/OS and Linux on System z
- 3,250+ Linux applications are supported on System z:
- 4,000+ applications are enabled on z/OS
- There were 1,200 new and upgraded applications on System z in 2010, with 120+ new ISV partners added to the platform.

*Worldwide adoption of
mainframe curriculum*



University adoption:

- 814 schools enrolled globally, 50%+ outside of US
- Continued flow of schools adding curricula
- 32,941 students from 17 countries have participated in Master the Mainframe contests since 2005

Introducing **SystemzJobs.com**

The IBM System z Job Board at [SystemzJobs.com](https://www.systemzjobs.com) is a new resource to connect IBM System z clients, partners, and businesses with students learning the mainframe and professionals seeking System z job opportunities.

[SystemzJobs.com](https://www.systemzjobs.com) lets you post your job requirements for job seekers to review and apply.

Benefits of using **SystemzJobs.com**

- Free, secure, and easy to use
- Specialized audience of mainframe educated students and experienced professionals
- Global pool of mainframe talent

Getting started

Follow these steps at [SystemzJobs.com](https://www.systemzjobs.com) to get started:

1. Create a secure account
2. Post your job description
3. Connect with qualified candidates

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System z future direction

IBM
System z



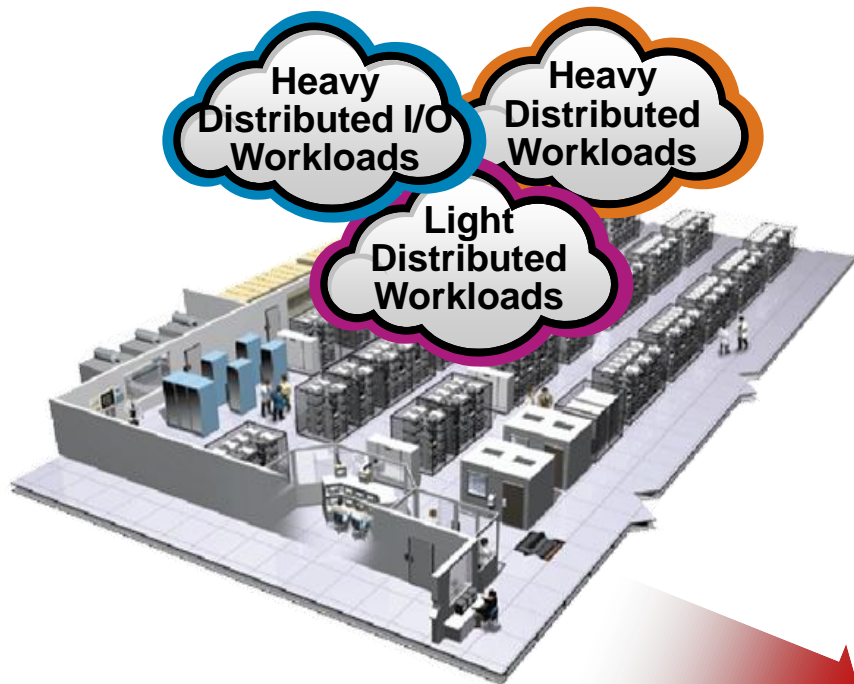
2011

and beyond ...

- DataPower XI50z
- New zEnterprise Statement of Direction for Windows and Linux support in zBX
- zEnterprise midrange follow-on
- zEnterprise 196 GA2 for new and extended hybrid capabilities
- z/OS V13
- Increased performance/scale

- Leadership technologies
 - Improve performance and system capacity
 - Continue leadership on single thread performance
 - Improve OS / app availability via real-time monitoring and diagnosis
 - Simplify management of zEnterprise workloads
- Transformational technologies
 - Enable new capabilities with flash memory
 - Take advantage of connectivity tools and other industry trends

zEnterprise is a Roadmap to the Data Center of the Future



- Lowest cost per unit of work for large scale workloads
- Revolutionary cost reductions for smaller scale workloads
- Data center simplification
- Improve quality of service
- ***No Other Platform Can Match!***

**Mainframe workloads
+
distributed workloads
best fit for cost**





Thank you.