IBM

zEnterprise.

A New Dimension in Computing

zUpdate - IBM zEnterprise System

Smarter Planet:
The progress is inspiring

Smarter cities around the world

Smarter medicine

Smarter energy grid

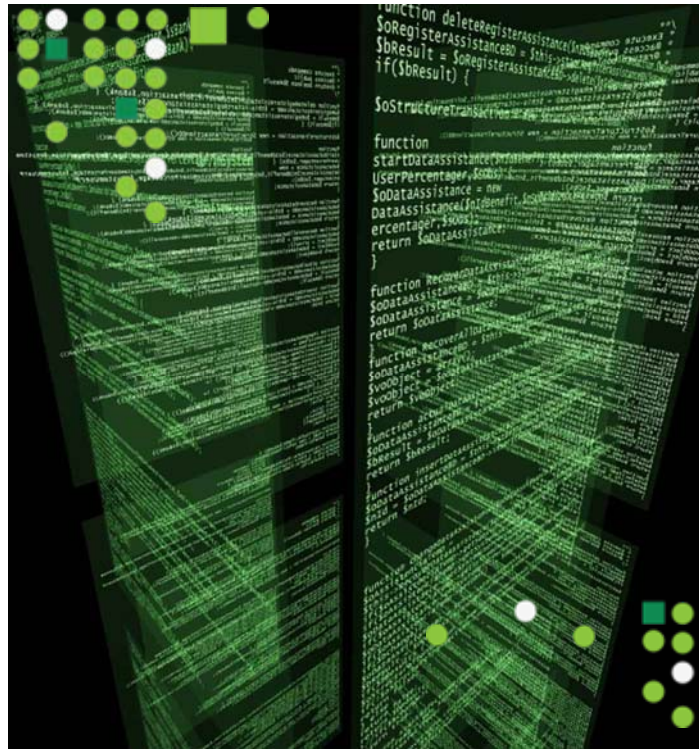
Smarter traffic systems

Yet the Reality Can Seem Daunting

While technology has made great strides and all platforms are more capable than ever before…

… the demands set upon them have never been greater

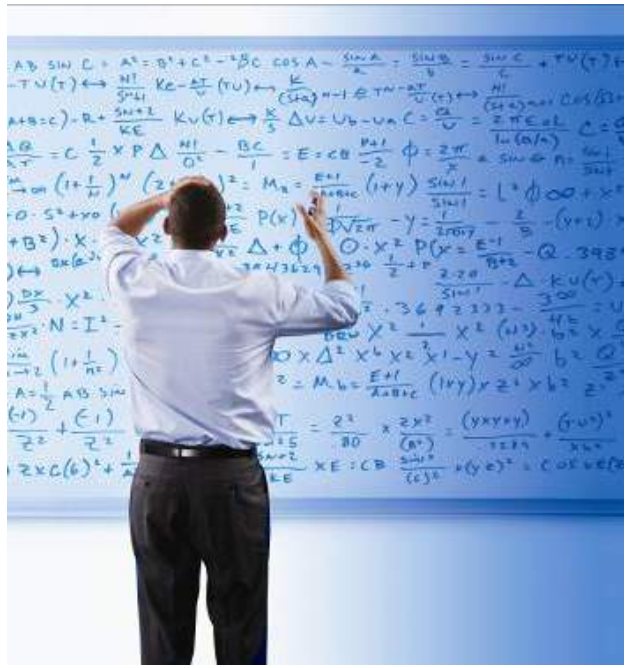
- Workloads are more diverse and more complex
- The volume of data is unprecedented
- The sheer performance required is staggering
- Security and resiliency are paramount



And the reality is that these demands grow exponentially as we embrace the opportunities of a smarter planet.

Despite the Allure of a *"one size fits all"* Server Approach …

- Today's enterprise computing environments are multi-platform for a reason. They're optimized to run different workloads:
  - Database and Transaction processing.
  - Analytics.
  - Web-based interactions.
  - Enterprise applications such as ERP.
  - The myriad of x86 applications.



- Complex solutions are optimally deployed on multi-tier heterogeneous infrastructures

And cost less on System z….

System z lowers IT spending across many industries

Based on an analysis of actual IT spend and business performance, comparing companies with greater than average mainframe mix vs. less than average mainframe mix…*

44%

lower IT cost per credit card transaction

31%

lower IT costs per consumer loan

25%

lower IT cost per mega watt hour produced

24%

lower IT cost per hospital bed

20%

lower IT cost per airline passenger

26%

lower IT cost per new vehicle

25%

lower IT cost per retail store

23%

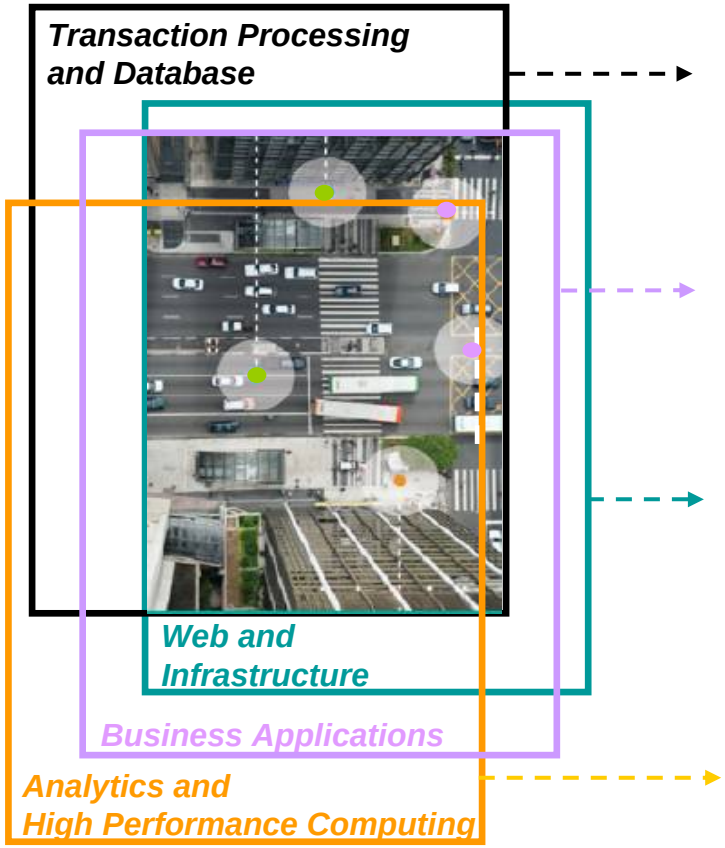
lower IT cost per barrel of oil

*"…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*

A Smarter Traffic System:

Optimized with the right mix of technologies



Tariff calculation of 300K vehicles a day

IBM System z® with multiple LPARs, DS4000® storage

Real time license plate recognition

IBM BladeCenter®, HS22 and DS4500 storage

Web/retail channels for payment processing

IBM BladeCenter, HS22 and DS4500 storage

Analytics and Intelligence for metrics and incentives

Power system with multiple LPARs and DS4000

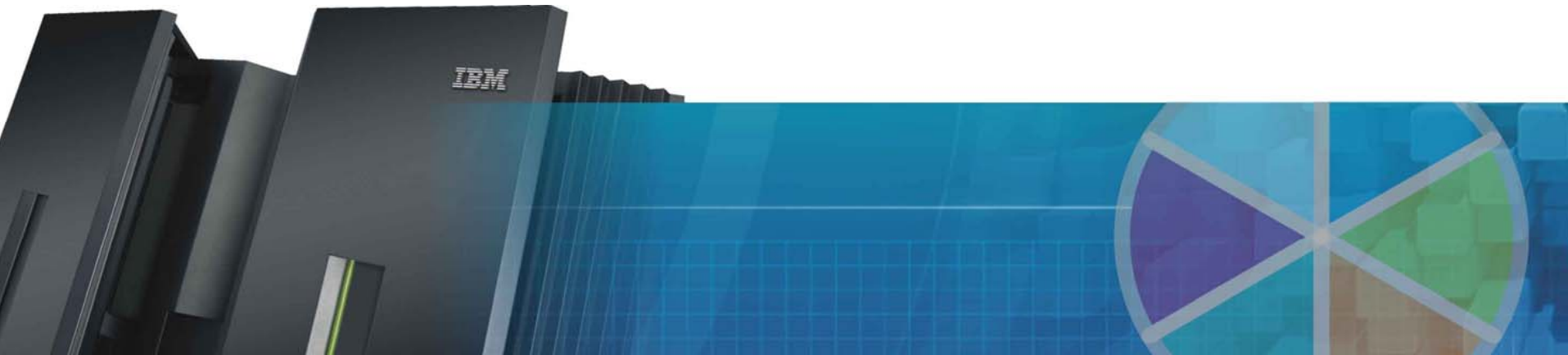
While optimizing each of these workloads in its native environment is smart…

…Optimizing the way they work together is smarter.

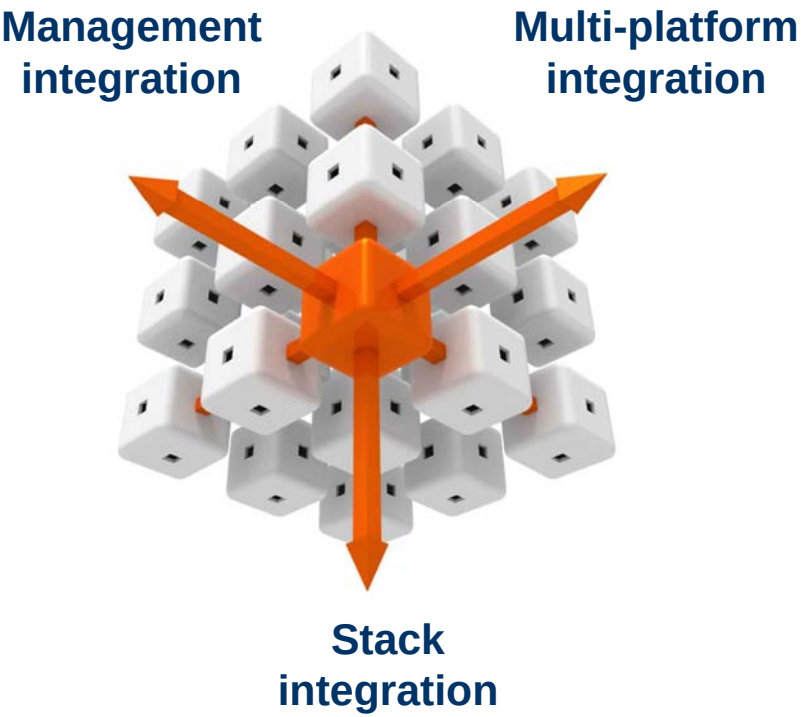
Agenda

The Value of zEnterprise

What the computer does vs. what the computer is



Announcing the IBM zEnterprise System:
A New Dimension in Computing



- A “System of Systems”, integrating IBM’s leading technologies to dramatically improve productivity of today’s multi-architecture data centers and tomorrow’s private clouds.
- The world’s fastest and most scalable enterprise system with unrivalled reliability, security, and manageability.
- The industry’s most efficient platform for large scale data center simplification and consolidation.

Three new innovations of zEnterprise

IBM zEnterprise 196 (z196)

- *Optimized to host large scale database, transaction, and mission critical applications*
- *The Most efficient platform for Large-scale Linux consolidation*
- *Capable of massive scale up*
- *New easy to use z/OS V1.12*

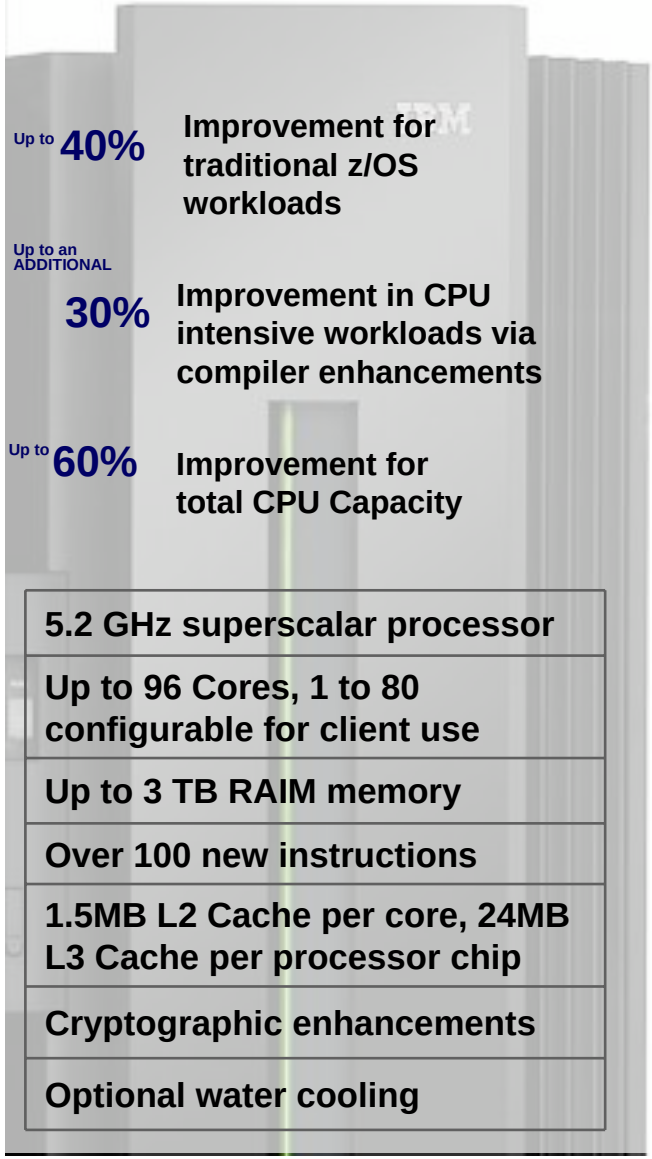
zEnterprise Unified Resource Manager

- *Unifies management of resources, extending IBM System z qualities of service end-to-end across workloads*
- *Part of the IBM System Director family, provides platform, hardware and workload management*

zEnterprise BladeCenter Extension (zBX)

- *Selected IBM POWER7 blades and IBM System x Blades* 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*

The Value begins at the heart of zEnterprise…….



SAP

- Speed, Scalability and Memory/Cache enhancements allow large SAP systems to continue to grow effectively at a competitive cost.
- Security on System z increasingly provides the safest data serving capability in the industry from which to build a flexible SAP infrastructure

Key to Banking, Retail, Manufacturing

Multi-Tier Web Serving

- New instructions, combined with new compilers ensures a place for System z as a scalable and available platform for web growth and flexibility

Key to Banking, Insurance, Government, Healthcare

Business Intelligence / Data Warehousing

- Increased Speed, Memory architecture and processor capacity opens avenues to extend the value of DB2 in the analytics arena

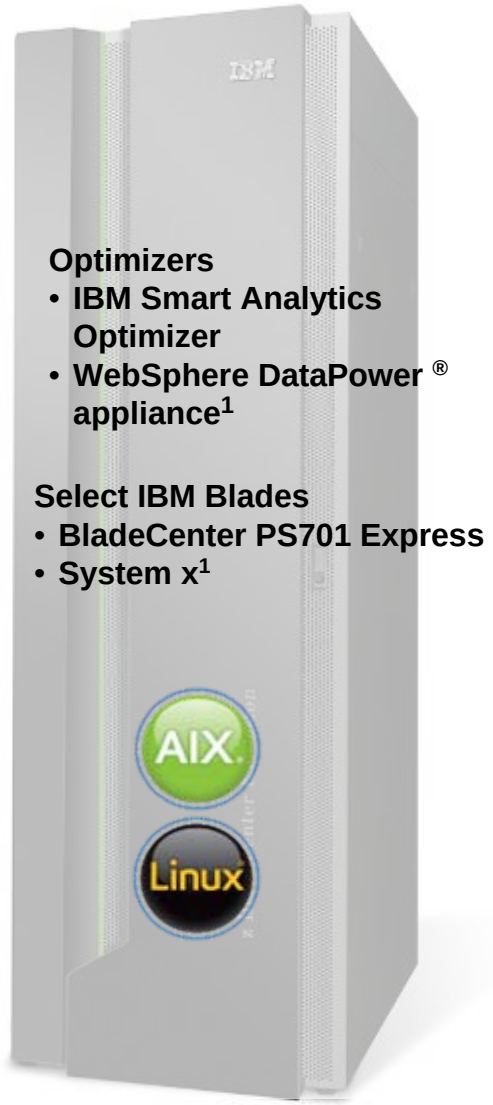
Key Cross Industry

Extending the Magic of System z to Heterogeneous Platforms ……

IBM zEnterprise BladeCenter Extension (zBX)

- Up to 4 shareable racks, capacity for 112 blades
- Configured for high availability
- Secure network connection between zBX and z196 for data and support.
  - Fast 10 Gb Ethernet connection to the data
  - Less latency – fewer ‘hops’ to get to the data an no need for encryption / firewall
  - Traffic on user networks not affected.
- System z support
  - Problem reporting, hardware and firmware updates

… managed by the zEnterprise Unified Resource Manager



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

…… reaching across the levels of architecture…….

Optimize System z Business Workloads and Applications

- Extending System z as a hosting environment for a **broader set of workloads**
- **Increasing the application inventory** on the platform
- Enhancing System z by **extending the value** proposition across the application portfolio
- Extending **superior manageability** and **QoSs** for **distributed applications accessing data or applications hosted on System z**, facilitating lower overall cost. while improving user experience
- Providing **competitive price-performance** for new and existing workloa

IBM Blades –Power 7 and System x ***(Statement of Direction)***

- *Provide* **Choice** for application hosting
  - Choose the IT platform that best fits the needs of a workload at the lowest cost
- Provide **Speed** for deployment
  - Liberate the lines of business enabling them to focus on Functional Requirements for expanding and growing their contribution to the bottom line – typically, get function out faster to generate revenue

IBM Smart Analytics Optimizer

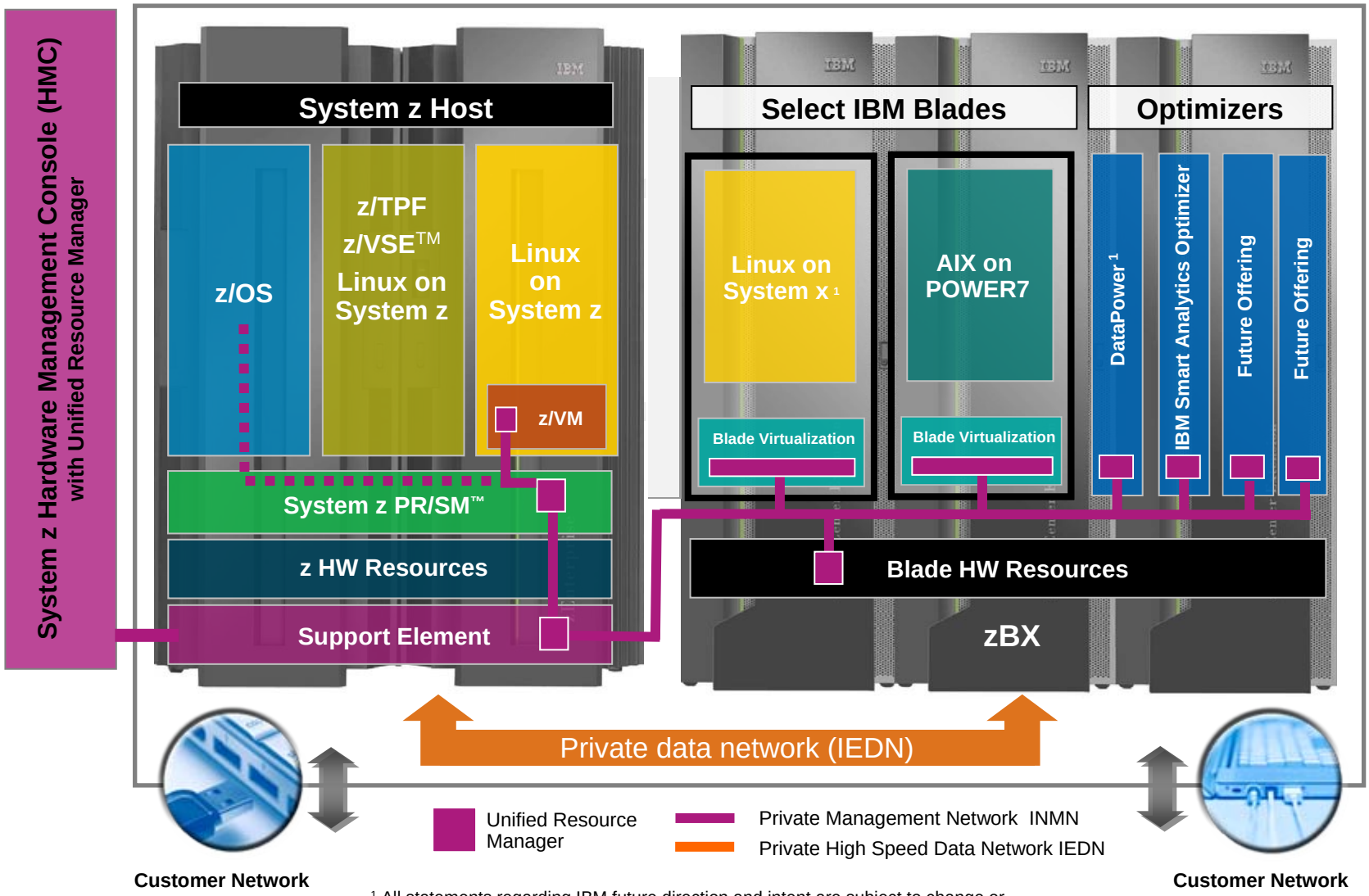
Add a new dimension to traditional workloads, extending most DB2 application to become a source of ***information and analytics.***

IBM WebSphere DataPower ***(Statement of Direction)***

Simplifying and enhancing ***Service Oriented Architecture*** *by providing connectivity, gateway functions, data transformation, protocol bridging, and intelligent load distribution*

A look inside the IBM zEnterprise System

Enabling a new dimension in application architecture



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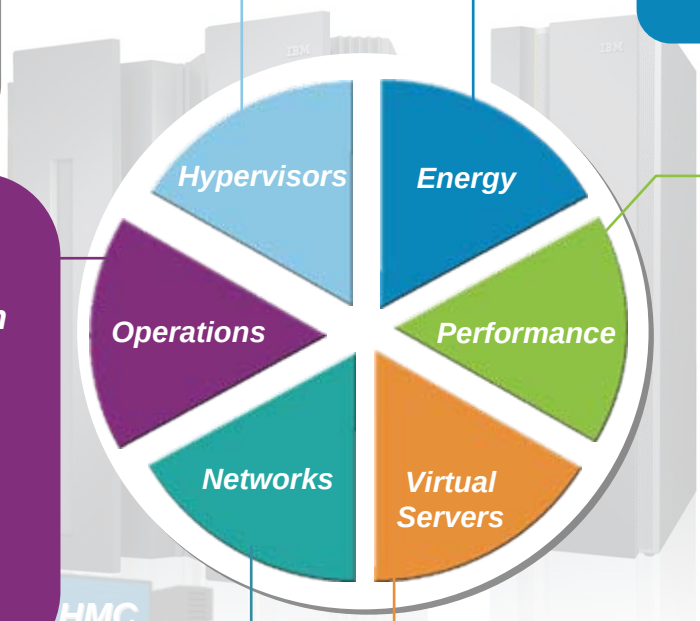
zEnterprise Unified Resource Manager: enabling a new dimension

Simplified installation of hypervisors

Gain significant time to market with improved speed of deployment

Simplified energy management

Energy cost savings



Save time, cost and simplify asset management

Decrease problem determination and resolution time for cross-platform resources

Improve and simplify cross-platform availability procedures

Enable broader and more granular view of resource consumption

Allocate resources and adjust priorities based on goal-oriented policies aligned to business requirements

Smart business adjustments based on workload insight

Provide deep insight into how IT resources are being used

Factory installed and configured network

Improved network security with lower latency, less complexity, no encryption/decryption

Gain flexibility, consistency and uniformity of virtualization

Provide the business with faster time to market

Simplified network management for applications

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

Option 1:

Deploy distributed work on new Intel servers with 3rd Party virtualization

--OR--

Option 2:

Optimize distributed work on zEnterprise with Linux on z, Power7 blades and Intel blades with Unified Resource Manager

Simplify, automate, and improve service quality by consolidating on zEnterprise and …

Lower cost of acquisition by up to 56% compared to purchasing new Intel blades (option 1)

Reduce cost of ownership by up to 55%* compared to current distributed data center

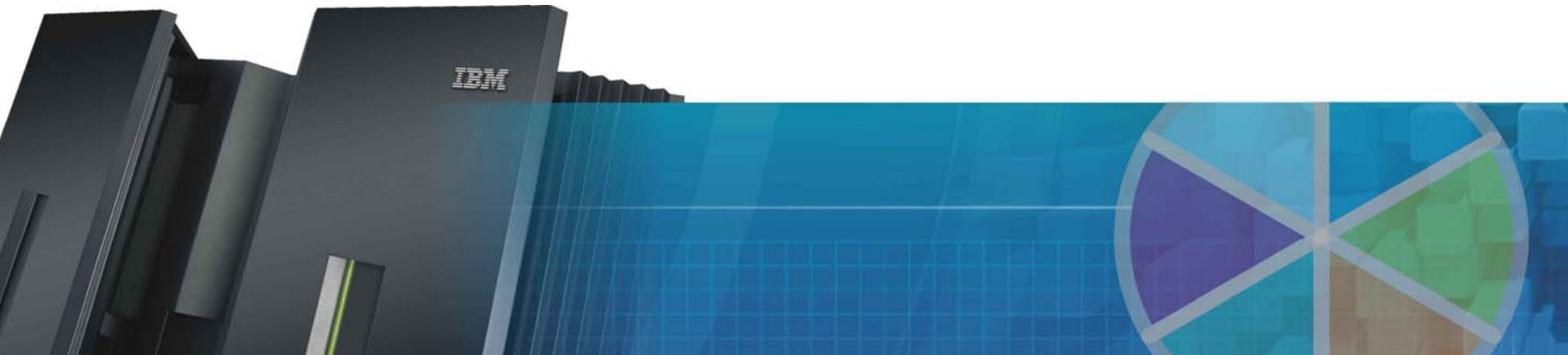
Reduce network complexity (adapters, cables and switches) by up to 98%* compared to current distributed data center

- Based on IBM analysis of a large Financial Services company Datacenter. See details on ibm.com/systems/zenterprise/
- Deployment configurations based on IBM studies and will vary based on workload characteristics. Price calculations based on publicly available US list prices, prices will vary by country.

Agenda

Real Customers - Real Value

Our initial learning from studies done with clients like you



These workloads have recognizable patterns

Core Applications

Database (z)
- ✓ DB2 for z/OS, IMS

Application (z)
- ✓ CICS
- ✓ COBOL
- ✓ WebSphere

Database (z)
- ✓ DB2 for z/OS
- ✓ Oracle on Linux for z

Application (z)
- ✓ WebSphere

SAP

Database (z)
- ✓ DB2 for z/OS

Application (z)
- ✓ Linux for z

Database (z)
- ✓ DB2 for z/OS

Application (x86)
- ✓ Linux for x86

Database (z)
- ✓ DB2 for z/OS

Application (Power)
- ✓ AIX

Multi-Tier Web Serving

Database (z)
- •DB2 for z/OS

Application (z)
- •WebSphere

Application (x86)
- •WebSphere
- •Apache / Tomcat

Database (z)
- •DB2 for z/OS

Application (Power / Unix)
- •WebSphere
- •JBoss

Database (z)
- •DB2 for z/OS, IMS

Transaction Processing (z)
- •CICS, MQ

Application (Power /UNIX)
- •WebSphere
- •JBoss
- •WebLogic

Presentation (x86)
- •WebSphere
- •Windows

Database (z)
- •DB2 for z/OS or IMS

Application (Power /UNIX)
- •WebSphere
- •JBoss

Presentation (x86)
- •WebSphere
- •Apache / Tomcat

Data Warehouse & Analytics

Master Data Management

Database (z)
- ▪ DB2 for z/OS

Application (z)
- ▪ WebSphere MDM (AIX, Linux on z)

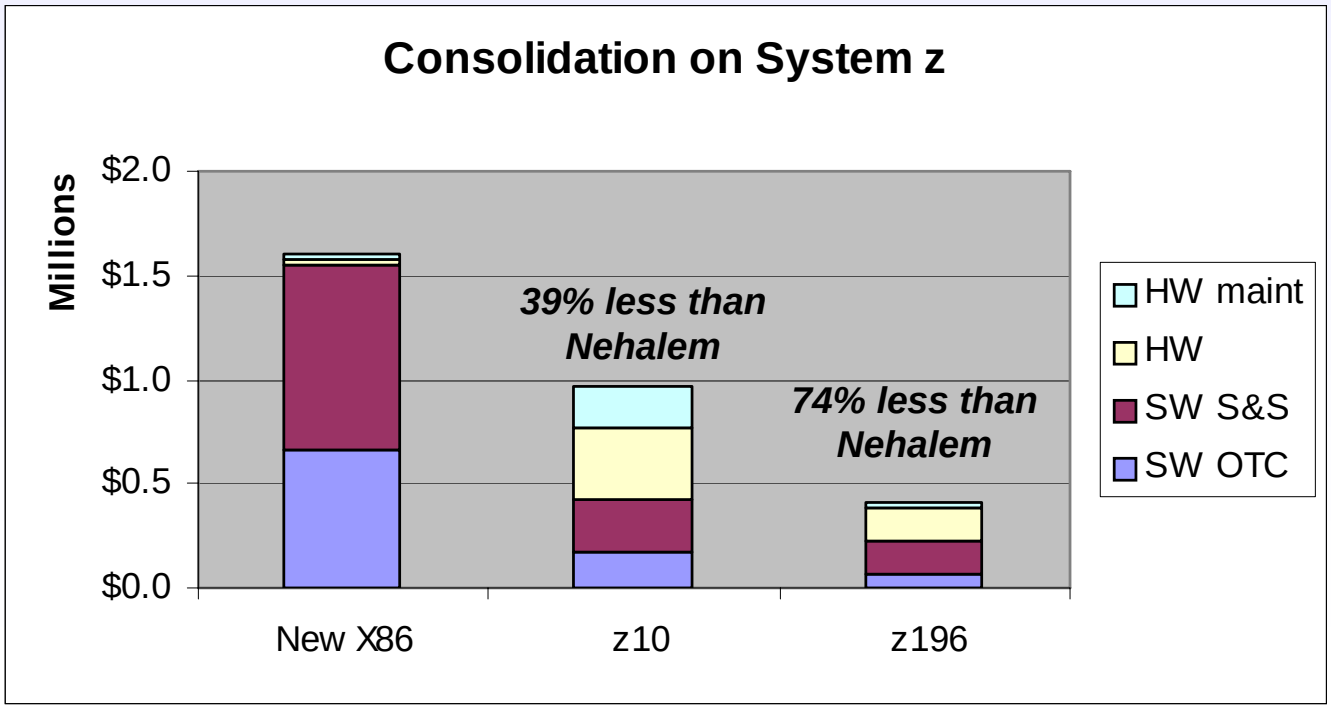
Analytics
- ▪ System z/OS
  - ▪ DB2
  - ▪ Cognos (Soon!)
  - ▪ SAS
- ▪ Linux for System z
  - ▪ Cognos
  - ▪ SPSS
  - ▪ InfoSphere Warehouse

The Most Efficient Platform for Large Scale Consolidation:

Linux on zEnterprise

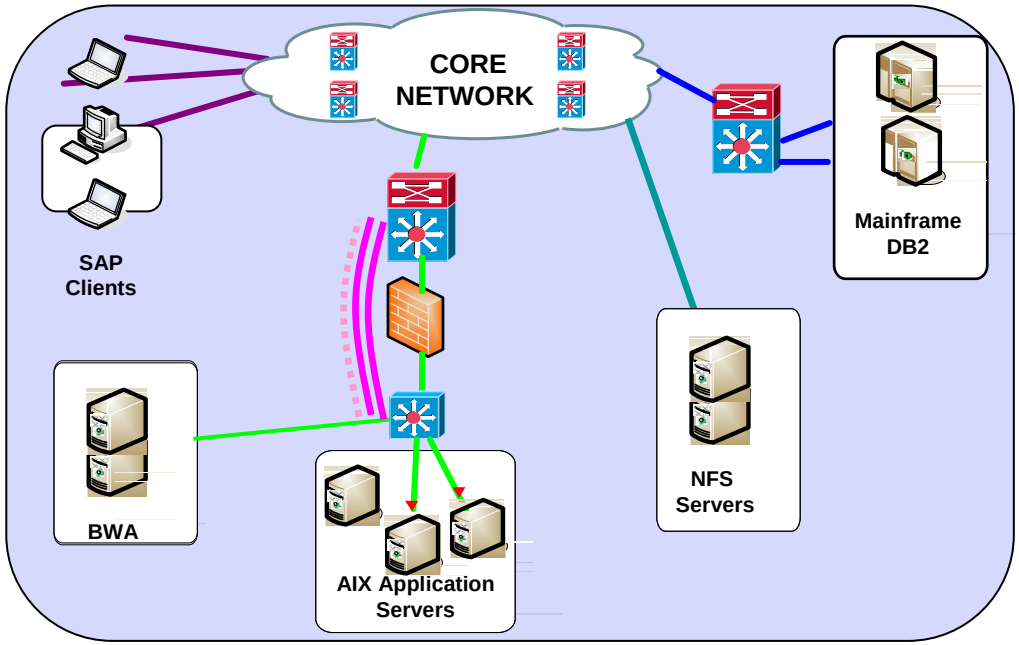
- ***Lower acquisition costs of hardware and software vs distributed servers****
- ***Less than $1.00/day per virtual server (TCA)****
- ***Reduce floor space by up to 90% compared to distributed servers****
- ***Reduce energy consumption by up to 80% compared to distributed servers****

Consolidate 40 Oracle server cores to 2 Linux Cores on zEnterprise



** Distributed server comparison is based on IBM cost modeling of Linux on zEnterprise vs. alternative distributed servers. Given there are multiple factors in this analysis such as utilization rates, application type and local pricing, etc.; savings may vary by user*

Retail Client using SAP Financials (today)



Today's Environment

SAP Financial modules are run with data serving on DB2 for z/OS and the application servers are spread across several Power based systems; also currently using SAP Business Warehouse Accelerator.

Challenges/Issues

- Coordination of application across platforms is resource intensive and vulnerable to several points of impact.
- Too many network hops from one platform to another to get data
- Hardware microcode updates cannot be applied without an outage
- Different monitoring software tools per server type with different software process for site failovers

Retail Client using SAP Financials (tomorrow)

The Environment with zEnterprise

SAP data server on DB2 z/OS with application serving on Power 7 Blades in zBX integrated in a zEnterprise system.

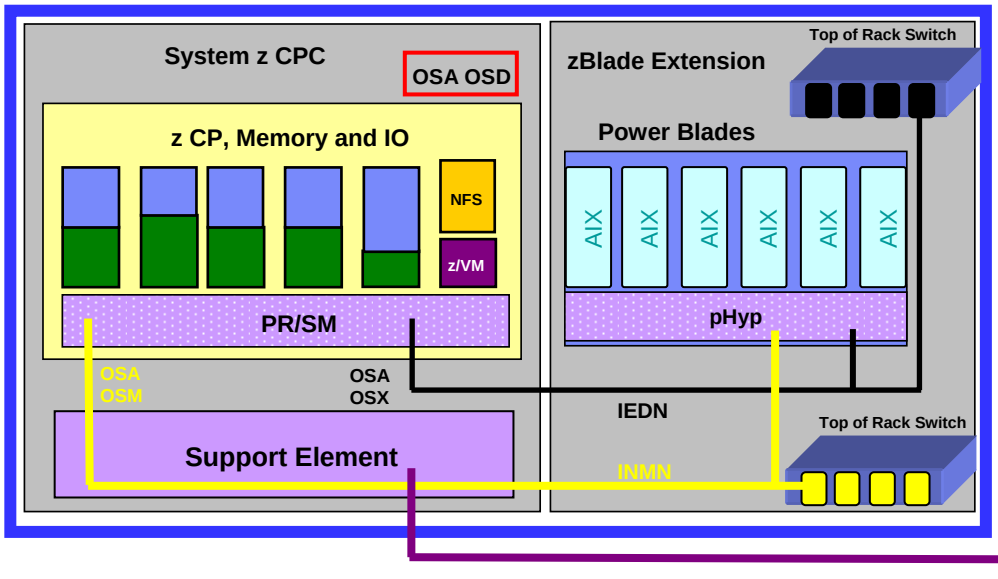
*"We think we can anticipate a reduction of **12** hops across the network down to **1,** saving network cost and improving our application performance!"*
Client IT Management

Business Advantage

•Ensuring business controls, such as security and compliance, are achieved on a consistent basis across the applications and platforms

Operational Advantage

•Ability to monitor and manage a critical application end to end from a workload view
•Ability to make adjustments in available resources, apply maintenance, manage server availability and handle business peaks with true application insulation
•Potential of up to 60% savings identified for the SAP workload across power, cooling and floor space



Organizational Advantage

•Insulate application development teams from Infrastructure technology
•Consolidation of skills thru consistent tools

A few thoughts about a way forward

- **Learn more about zEnterprise and what it can do for your business**
- **Ask your IBM team for a customized proposal including how it can deliver value in your context**
- **Explore one of our Workload Optimization, Fit for Purpose or Architectural Design workshops at no cost**
- ***… thanks for joining us today***