Mike Kott – System z Client Architect Community Leader, SWG

Kathy Grabarits – System z Technical Sales Support Manager, STG

IBM zEnterprise System - The Value of Hybrid Computing

Use Case Scenarios for the Hybrid Computing Environment

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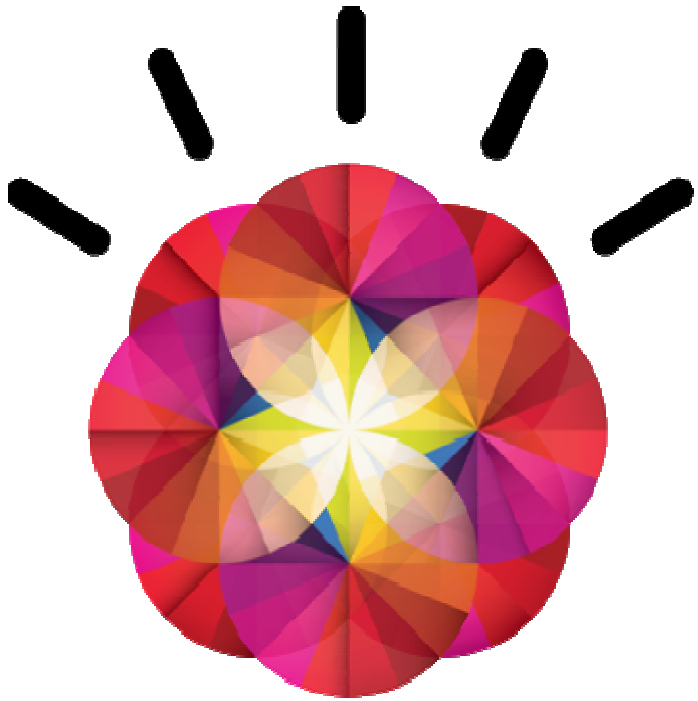
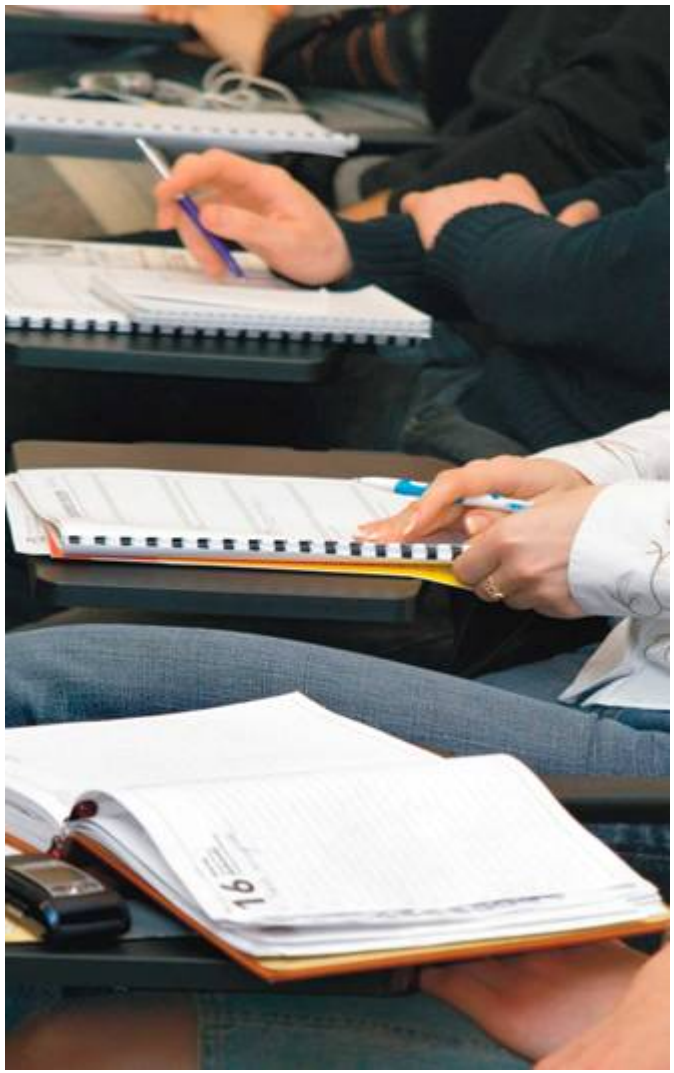
Objectives - zEnterprise Hybrid Computing Model Learning for Growth

- Briefly introduce the IBM zEnterprise™ System and hybrid capabilities
- Provide a few examples of hybrid computing use case scenarios and proof points
- The scenarios are intended to support STG and SWG technical sellers and external marketing initiatives.
- Most are based on actual customer projects
- Others were developed by the IBM Client Centers to support customers and ISV's.
- The scenarios include customer challenges and the benefits of a zEnterprise hybrid computing model.



Link to full scenarios deck on SSI and PartnerWorld
Link to full scenarios deck with Nov 9th System z replay on SSI and PartnerWorld

Agenda



- Overview of the IBM zEnterprise System
- Customer Profiles for zEnterprise and Hybrid Computing
- Examples of Hybrid Use Case Scenarios
- Summary
- Resources and Key Links
- Additional Hybrid Use Case Scenarios

A “System of Systems” for Predictable Service Delivery

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

- Optimized to host transaction, and mission-critical applications
- The most efficient platform for large-scale Linux® consolidation
- Massive scale-up – 26 MIPS to over 50K MIPS

zEnterprise Unified Resource Manager

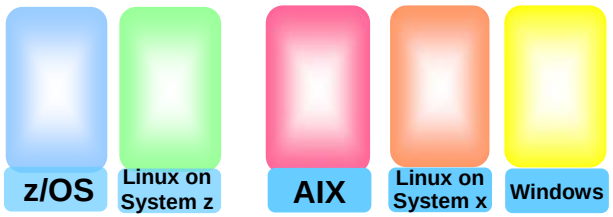
- Unifies management of resources, extending System z qualities of service end-to-end across workloads
- Provides platform, hardware and workload management

zEnterprise BladeCenter® Extension (zBX)

- Selected IBM POWER7® blades and IBM System x® blades for deploying applications in a multi-tier architecture
- High-performance optimizers and appliances to accelerate time to insight and reduce cost
- Dedicated high-performance private network

zBX Values

Platforms Optimized For Different Workloads



Best fit for workload
Lowest acquisition cost

Consistent Structured Management

Lowest labor costs
Lowest cost of operation

Why zBX is better than a Do-It-Yourself (DIY) Solution

- Reduce network latency
- Benefits of workload management
- Unified Resource Manager labor savings

zBX Provides Additional Significant Advantages Over Other Blade Systems

- Multiple server architectures support best fit workload assignments
  - zBX supports power blades, x86 blades, and special purpose optimizers
  - Competition is typically limited to a single architecture

- Dual power domains and dual DC supply lines
  - zBX offers higher levels of availability
  - Competition typically provides single power and DC supply

- Performance management dynamically adjusts resources as needed

- Automated Unified Resource Manager facilities reduce labor

zEnterprise Networking Value Points

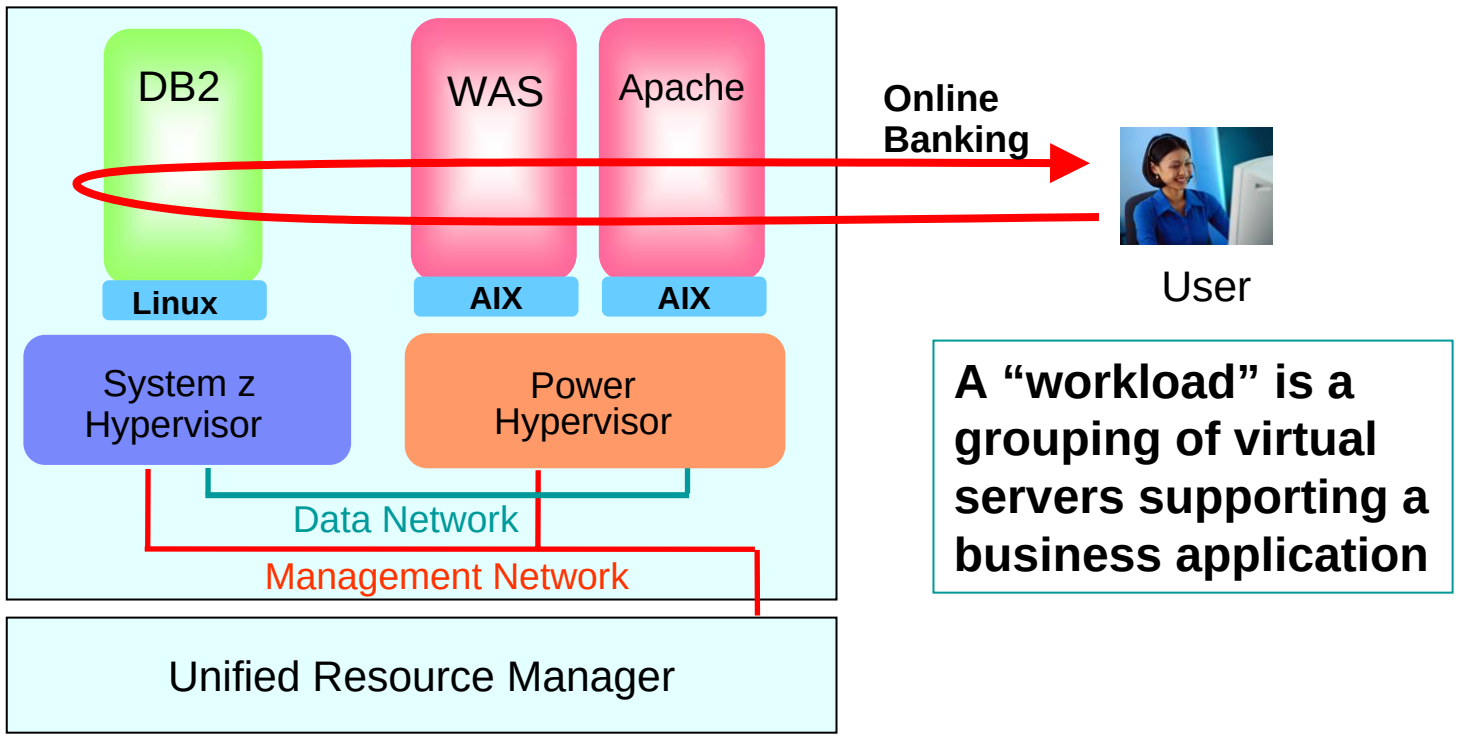
- Network simplification
  - Single physical network
  - Central point of Management including zBX, z114/z196
  - Reduced network path length

- Secure communications
  - Physical security
  - Logical security
  - Network Virtualization and Isolation

- Unique System z QoS
  - Isolated / dedicated equipment
  - Special purpose dedicated data network

Unified Resource Manager Workload Management

- Enables definition of workload performance goals
- Tracks transaction performance end-to-end and isolates bottlenecks
- Can dynamically adjust virtual server entitlements on a particular hypervisor to achieve performance goals



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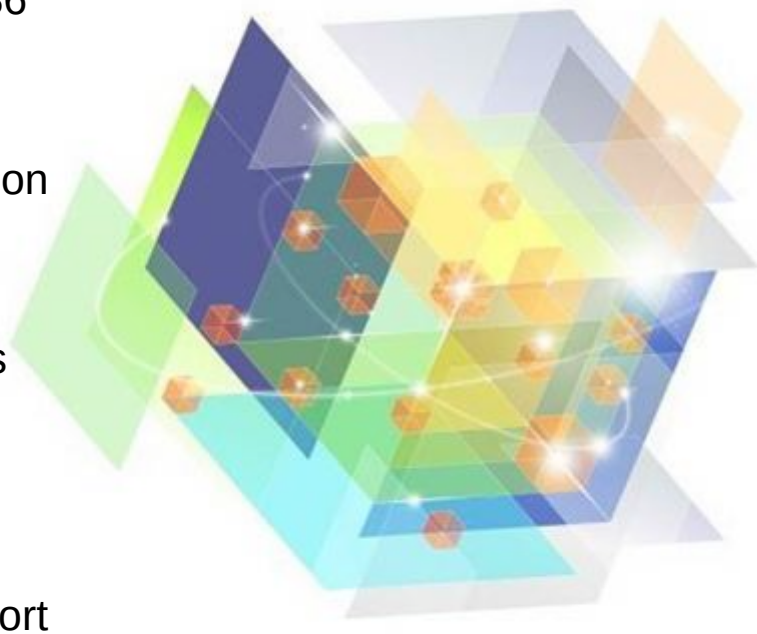
Examples of Typical Customer Profiles for the zEnterprise Hybrid Computing Environment

- Clients with multi-tier business applications such as SAP or Core Banking where the data base tier is DB2® for z/OS® and the application servers are on distributed platforms such as UNIX® for the application tier and x86 for the presentation tier
- Clients with multi-tier business applications where the data base runs on Linux for System z and the application servers are on distributed platforms
- Clients with a mainframe as well as a sprawl of older UNIX and NT servers running on competitive platforms
- Clients with a data base on DB2 for z/OS and possibly data marts on distributed platforms who need to accelerate query performance
- Clients extending their mainframe applications to support web serving
- Clients implementing a Service-Oriented Architecture to extend or re-use existing mainframe assets



Examples of Hybrid Use Case Scenarios

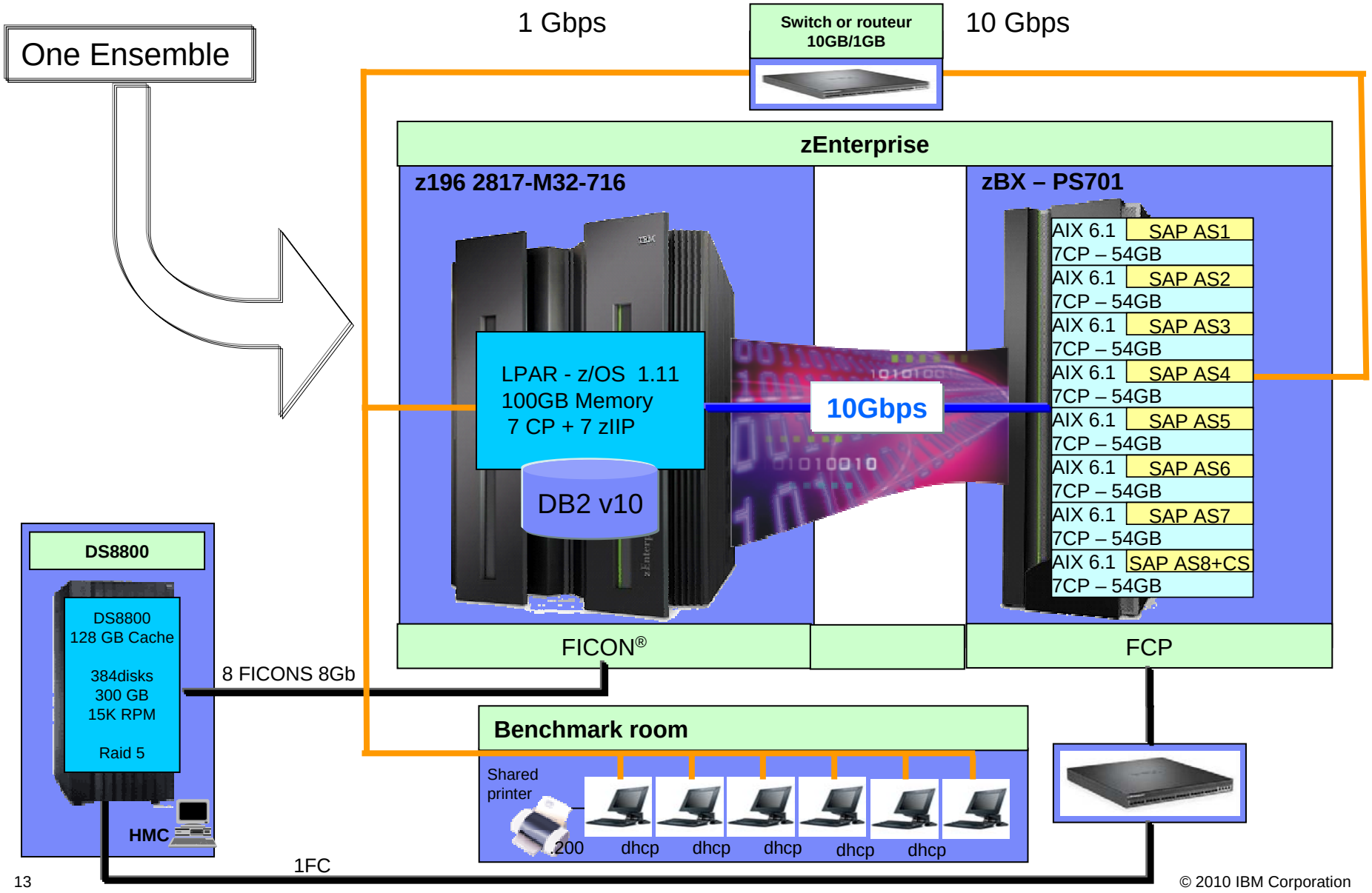
- Business Applications
  - SAP Industry Solution for Utilities Customer Scenario
  - SAP and Legacy Applications Scenario for a Large Banking Customer
- IT Optimization / Consolidation
  - BG-Phoenics: zEnterprise Helps Client Achieve Strategic Vision

SAP Industry Solution for Utilities Customer Scenario

- Environment prior to zEnterprise
  - Application server runs on Power Systems™
  - Current production performance is 60,000 – 80,000 bills / hour
- Challenges / Goals
  - Expect to add up to 30 million customers in the next 18 months
  - Require throughput greater than 150,000 bills / hour
- Environment with zEnterprise
  - z196 and zBX with POWER7 blades
  - Unified Resource Manager with dedicated network
  - z/OS 1.11 with DB2 for z/OS V10
- Benefits
  - Scalability – up to 426,000 bills / hour
  - Capacity to support growth in billing volumes
  - Reduced time to upload billing applications

External Link to IBM SAP International Competency Center Technical White Paper: SAP for Energy Utility Companies using IBM zEnterprise System and DB2

SAP Industry Solution for Utilities Customer Benchmark Configuration

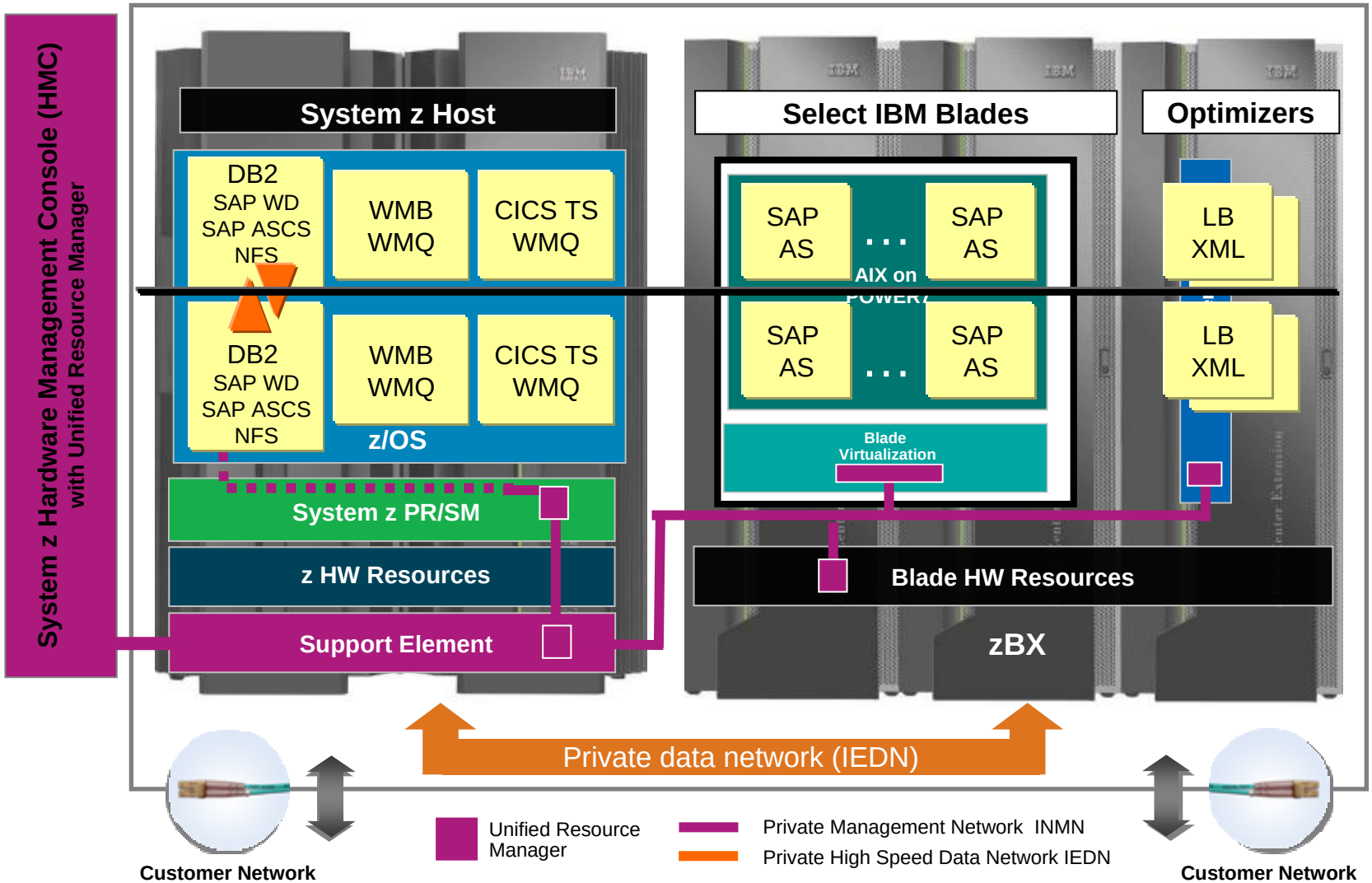


SAP and Legacy Applications Scenario for a Large Banking Customer

- Environment prior to zEnterprise
  - SAP and legacy application access DB2 for z/OS
  - SAP accessed through SOA services invocation
  - Production volumes exceeding available capacity
- Challenges / Goals
  - Migrate legacy applications to SAP
  - Increase capacity by 5 – 10 X
  - Reduce infrastructure complexity
- Environment with zEnterprise
  - z196 with zBX, DataPower X150z and POWER7 Blades
  - Latest functionality in DB2 for z/OS V10
  - CICS TS, WebSphere Message Broker, WebSphere MQ
  - Fully redundant architecture
- Benefits
  - > 10X increase in capacity
  - Online response time improvement of 2x – 3X
  - Dramatic reduction in batch processing
  - Simplified management of application components

Internal Link to presentation summarizing customer benchmark : SAP and Legacy Banking Solution on zEnterprise

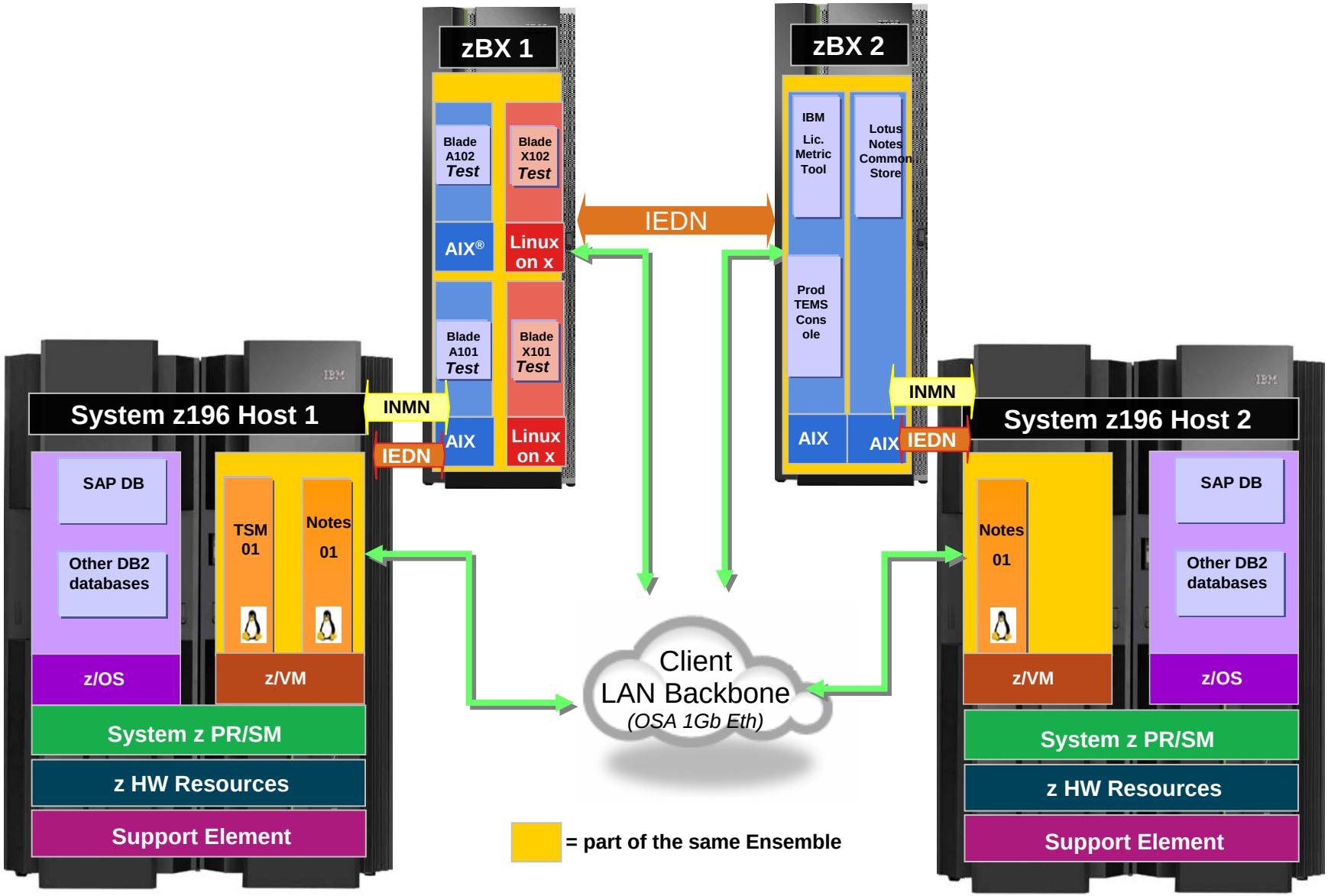
Integration of SAP and Legacy Applications in a zEnterprise hybrid model



BG-Phoenics: zEnterprise Helps Client Achieve Strategic Vision

- Environment prior to zEnterprise
  - Applications on multiple platforms
  - Database on DB2 on z/OS
- Challenges / Goals
  - Reduce operational complexity
  - Increase flexibility
  - Reduce cost
- Environment with zEnterprise
  - Two zEnterprise 196 systems - each with zBX and 5 IFL's
  - Two POWER7 and System x Blades per zBX
  - One ensemble for workloads on z/VM® and zBX
  - DB2 on z/OS
  - Lotus Notes Common Store (zBX)
  - Tivoli Enterprise Management Console (zBX)
- Benefits
  - Combines the best features of three architectures: mainframe, UNIX and x86
  - Cost reduction based on "best fit" platform selection
  - Single point of control with Unified Resource Manager

BG-Phoenics Client Architecture – as of October 2011



BG-Phoenics

Combining simplicity with performance and flexibility

The need:

BG-Phoenics runs numerous multi-tier applications and workloads, requiring it to maintain multiple architectures. The company wanted to simplify and integrate its diverse infrastructure to reduce costs and ensure high quality of service. The key challenge was to achieve this while maintaining the flexibility and optimization of the existing multi-platform approach.

The solution:

BG-Phoenics added an IBM zEnterprise BladeCenter Extension (zBX) with two IBM POWER7® processor-based blade servers and two Intel Xeon processor-based blade servers to each of its IBM zEnterprise 196 servers. The entire ensemble is controlled using IBM zEnterprise Unified Resource Manager.

The benefits:

- The zEnterprise System supports BG-Phoenics' vision of being hardware-agnostic, enabling it to choose the best architecture for each requirement
- Standardized tools and virtualization will deliver significant operational cost savings and enable faster time-to-market
- With centrally managed and optimized platforms, BG-Phoenics can be far more responsive to changing client requirements.

"A key driver for adopting zBX was to have the same method for implementing new servers across AIX, Linux and Microsoft Windows."

—Randolf Sigmund, Team Leader Operating Systems/Systems Management, BG-Phoenics

Solution components:

- IBM® zEnterprise™ 196
- IBM zEnterprise BladeCenter® Extension
- IBM zEnterprise Unified Resource Manager
- IBM BladeCenter PS701
- IBM BladeCenter HX5

External Link to IBM Case Study

Summary

- Recent product announcements extend the value of zEnterprise for hybrid computing.
- Key workloads to exploit zEnterprise and hybrid computing include multi-tier business applications, IT Optimization, Data Warehouse and Business Analytics as well as Enterprise Modernization.
- Customers are realizing real value with the zEnterprise System for hybrid computing.
- Use case scenarios are available based on actual customer implementations for use by System z technical sales and marketing.
- The Systems Centers are supporting customer requests for benchmarks and proof-of-concepts.
- Customer success stories will continue to be publicized in regular executive communication updates to the technical sales teams.

Resources and Key Links

- IBM System z Software Learning Roadmap: SSW Link, PartnerWorld Link
- IBM System z Master Resource Kit: SSI Link, PartnerWorld Link
- IBM System z Champions List (System z and SWG) : Link
- System z External Page on ibm.com: Link
- IBM SAP International Competency Center Technical White Paper: Energy Utility Companies using IBM zEnterprise System and DB2: Link
- IBM Technical Brief for SAP 150 Million Accounts Measurement on zEnterprise: Link
- Internal Technical Architecture Presentation: SAP and Legacy Banking Solution on zEnterprise: Link
- BG-Phoenics extends the benefits of mainframe computing with the world's first production deployment of IBM zEnterprise with the BladeCenter Extension: Link
- Redbook: Set up Security and Integration with the DataPower x150Z for zEnterprise: Link
- Redbook: IBM zEnterprise Unified Resource Manager: Link

Additional Hybrid Use Case Scenarios

Use Case Scenarios - Business Applications

- IBM Sets World Record running SAP Banking Solution on zEnterprise
- Callataÿ & Wouters Thaler Multi-Tier Core Banking Application

IBM Sets World Record Running SAP Banking Solution on zEnterprise with DB2 10 for z/OS

[zEnterprise BladeCenter Extension delivered *59 million account postings per hour* in a 150-million-bank-account benchmark based on SAP for Banking]

Day processing and night processing performance improved *more than 3X* over previous results (which were already better than competitive results).

Actions

- Bring this to target clients: SAP core banking, SAP or any core banking opportunities
- Engage with Geo banking leaders or contact David Zimmerman, Martin Dvorsky or Michael Sheets for assistance.
- IBM Technical Brief for SAP 150 Million Accounts Measurement: External Link

Thaler Multi-Tier Core Banking Application

- Environment prior to zEnterprise
  - Thaler Core Banking available on z/OS
  - Thaler Front End only supported on distributed servers
- Challenges / Goals
  - Multiple server platforms to run Thaler solution
  - Increase flexibility
  - Reduce operational complexity
  - Improve performance
- Environment with zEnterprise
  - zEnterprise with zBX
  - Thaler Front End runs on zBX with POWER blades
- Benefits
  - Simplified management of end-to-end solution
  - Tighter integration of Thaler data and applications
  - Performance benefits of fast private network

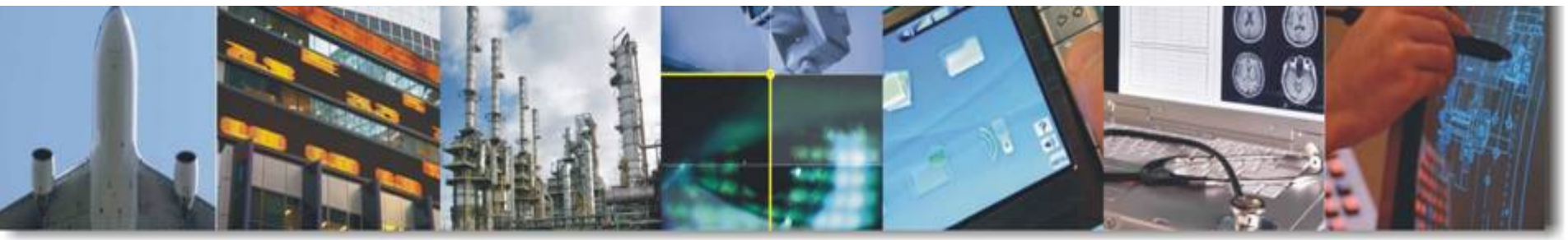
zEnterprise with zBX results exceed expectations for Thaler multi-tier core banking application

The Thaler multi-tier core banking application has been re-evaluated on IBM zEnterprise BladeCenter Extension (zBX) hybrid integrated infrastructure. Yet again the results returned were extraordinary and far exceeded expectations from both IBM and Callataÿ & Wouters. These tests provide further tangible proof of the true modular end-to-end solution of Thaler on System z and the further evolution towards industrialization, that both parties are firmly committed to. These results show that Thaler on z/OS is ideally positioned as the solution to assist banks in reducing costs and helping them meet their future ambitions.

Renaud Winand - Head of Product - Callataÿ & Wouters

Use Case Scenarios – IT Consolidation

- EUROCONTROL – European air traffic management organization



EUROCONTROL Consolidates IT Environment into Virtual Hybrid Datacenter

- Environment prior to zEnterprise
  - One-server-one-application model
  - Multiple applications and servers
  - Rapidly growing data center
- Challenges / Goals
  - Improve operational efficiency
  - Reduce costs
  - Consolidate applications and servers
- Environment with zEnterprise
  - zEnterprise with Integrated Facility for Linux
  - zBX with Intel® Blades
  - Single virtual environment
- Benefits
  - Improved systems management
  - Increased flexibility and capacity
  - Higher availability

zEnterprise Enables EUROCONTROL to Increase Flexibility

- ***Huub Meertens, Head of the Support Engineering Section at EUROCONTROL, the European air traffic management organization in the Netherlands,, explains: " On our existing servers, the various applications operate independently on diverse platforms, based upon the one-server-one application model. The combination of IBM System z with Intel servers in an Ensemble configuration turns out to be the best solution for modernization of our IT infrastructure. Given our complex IT infrastructure with high safety and security requirements, reliability, scalability and management at a competitive price are very important. It is for these reasons that EUROCONTROL has opted for the IBM zEnterprise with zBX environment. The new heterogeneous virtual IT infrastructure will give us greater flexibility and scalability."***

Link to Nov 7th IBM Press Release

Use Case Scenarios – Data Warehouse / Business Analytics

- Customer Scenario – A large bank in Slovenia (NLB)

Data Warehouse and Business Analytics Customer Scenario

- Environment prior to zEnterprise
  - Heterogeneous information systems
  - Part of data warehouse on IBM DB2 for z/OS
  - Multiple data marts on Microsoft® Windows®
- Challenges / Goals
  - Performance issues with data warehouse
  - Performance issues impacting batch
  - Growing analytics and reporting requirements
  - Missing regulatory reporting deadlines
- Environment with zEnterprise
  - IBM zEnterprise 196 and zBX
  - IBM Smart Analytics Optimizer V1
  - Linux on System z
  - Upgrading to IBM DB2 Analytics Accelerator (IDAA) powered by Netezza
- Benefits
  - Improved query performance
  - Users able to access information more quickly
  - Increased flexibility

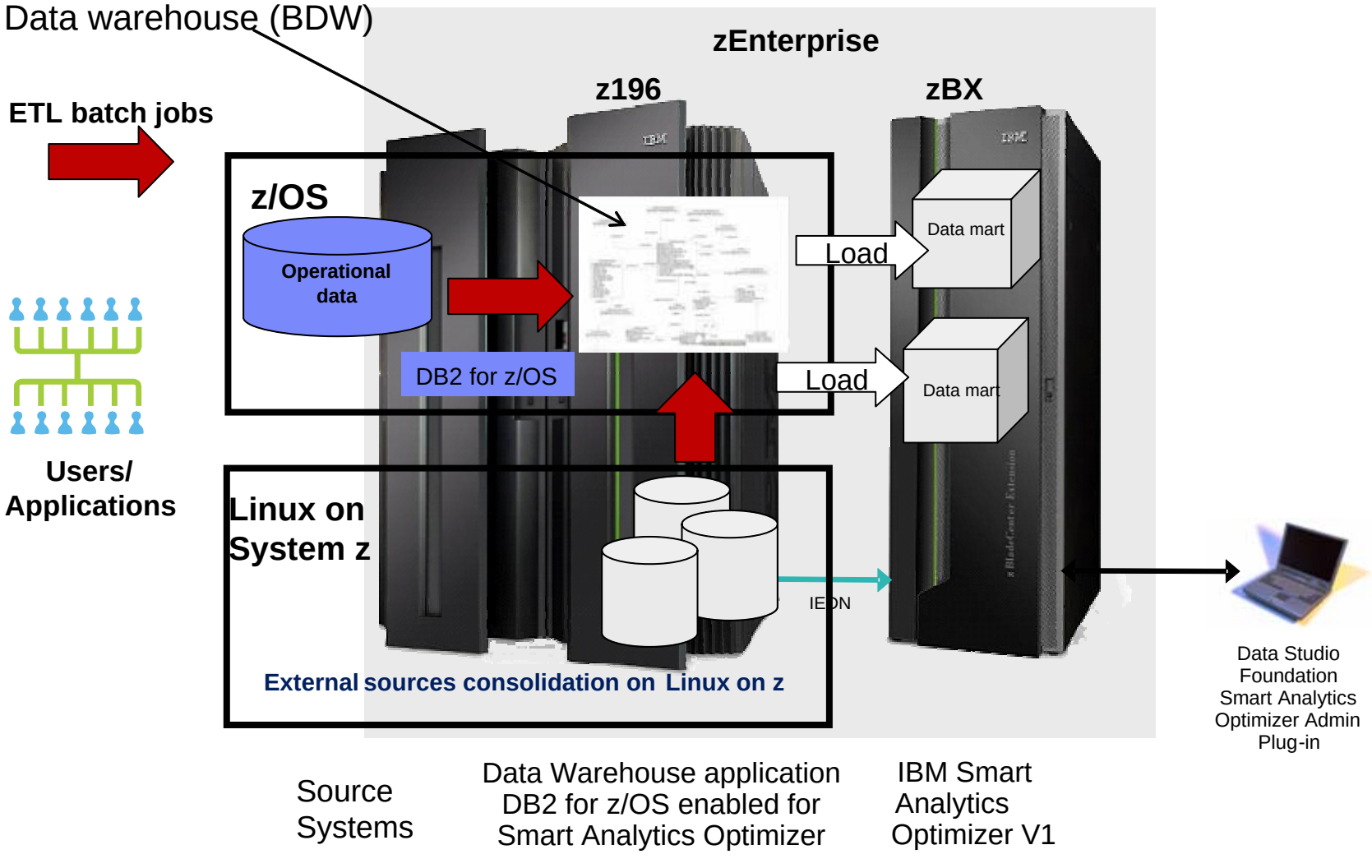
zEnterprise Hybrid Technology Benefits A Large Bank

"The IBM DB2 for z/OS is a secure and highly available repository for the bank's data. High-performance specialty processors have significantly improved query response times as compared to our previous solution. The new zEnterprise hybrid technology is highly scalable and flexible which means that our users are now able to access the information they need more quickly," added Aleš Levstek, chief information officer of NLB (Nova Ljubljanska Bank), a large bank in Slovenia.

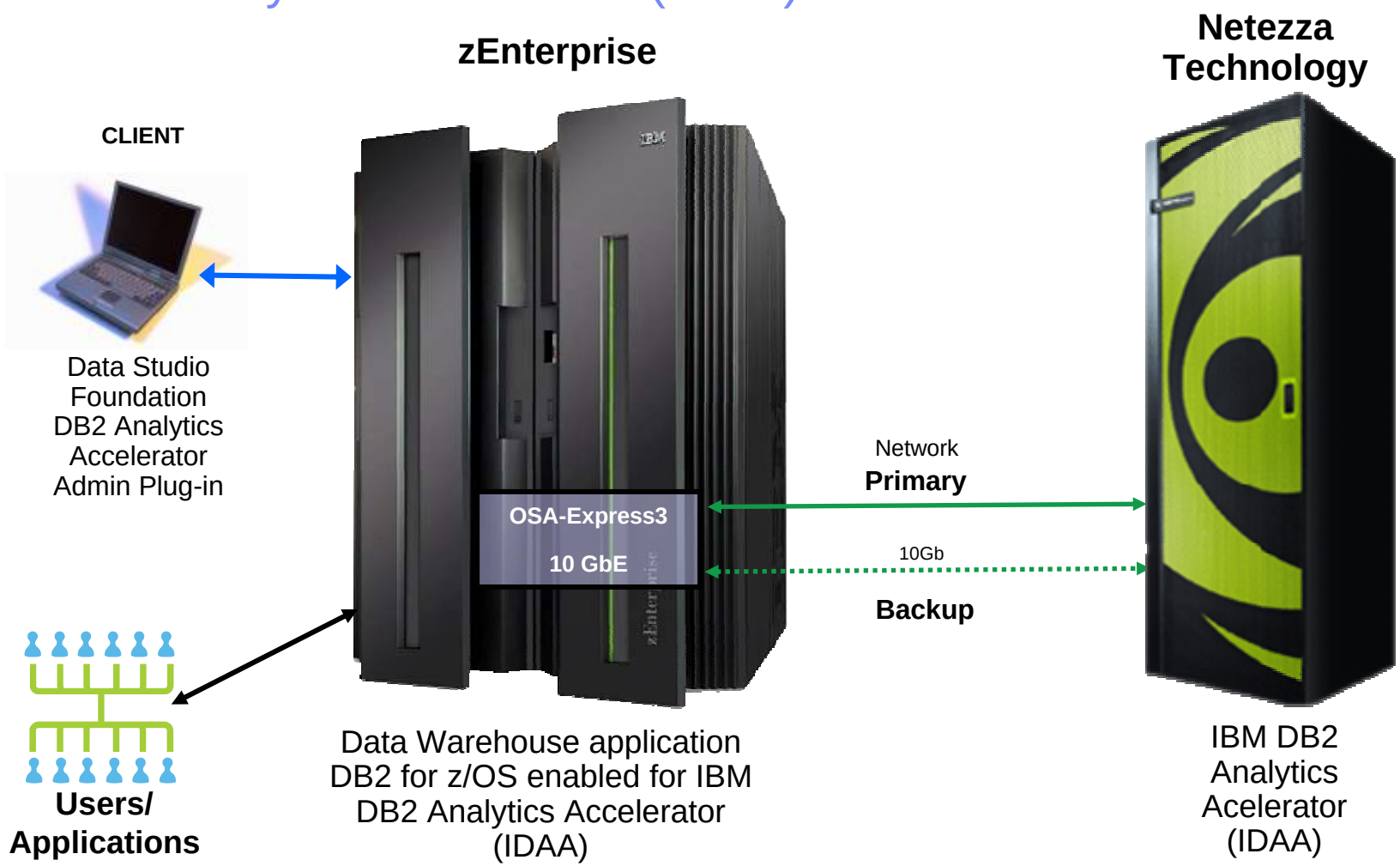
NLB Group

[Link to Nov 7th IBM Press Release]

zEnterprise Improves Client Performance/Functionality



Next Generation IBM Smart Analytics Optimizer: Powered by Netezza
IBM DB2 Analytics Accelerator (IDAA)

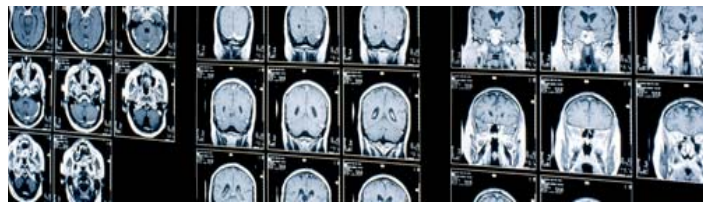


Use Case Scenarios – Enterprise Modernization

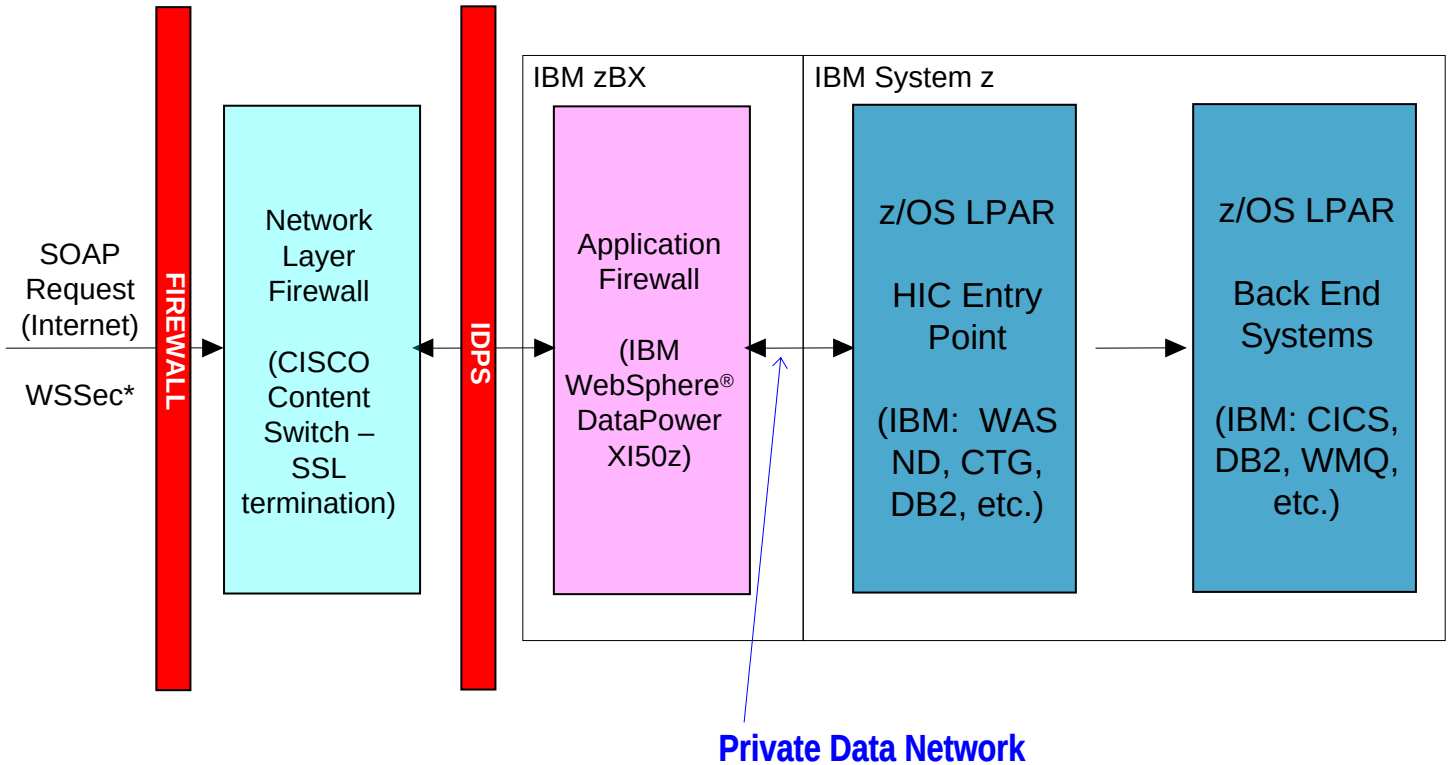
- Health Insurance Customer – DataPower® xI50z
- Smarter Banking® Showcase – DataPower xI50z
- Insurance Showcase – Service Oriented Architecture

Health Insurance Customer Scenario

- Environment prior to zEnterprise
  - Hub for health insurance claims
  - System z with z/OS, DB2, WAS, CICS®
  - DataPower XS40 used to secure access to system
- Challenges / Goals
  - High security requirements to protect sensitive data
  - Integration with state controlled health insurance applications
  - Integration with private health insurance agencies
  - Migrate existing solution without interruption to service
- Environment with zEnterprise
  - IBM zEnterprise 196 and zBX
  - IBM DataPower XI50z replaced XS40
  - IBM DataPower XI50z now acts as security gateway
- Benefits
  - XI50z deployment benefits from secure 10 Gbps IEDN
  - XI50z blades managed by Unified Resource Manager
  - Straight forward migration from XS40

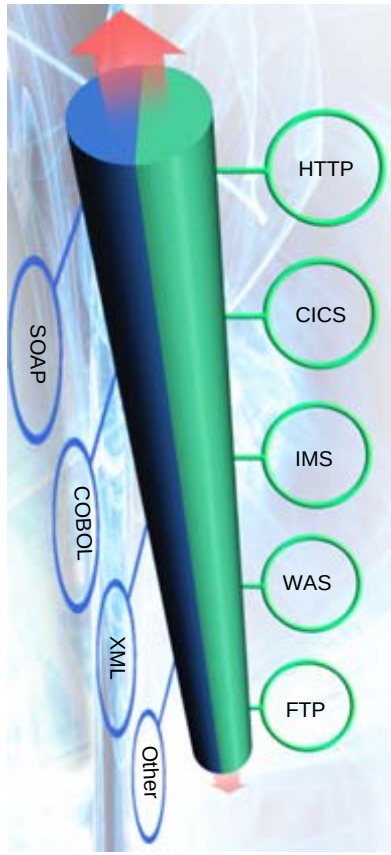


zEnterprise infrastructure for Health Insurance Client



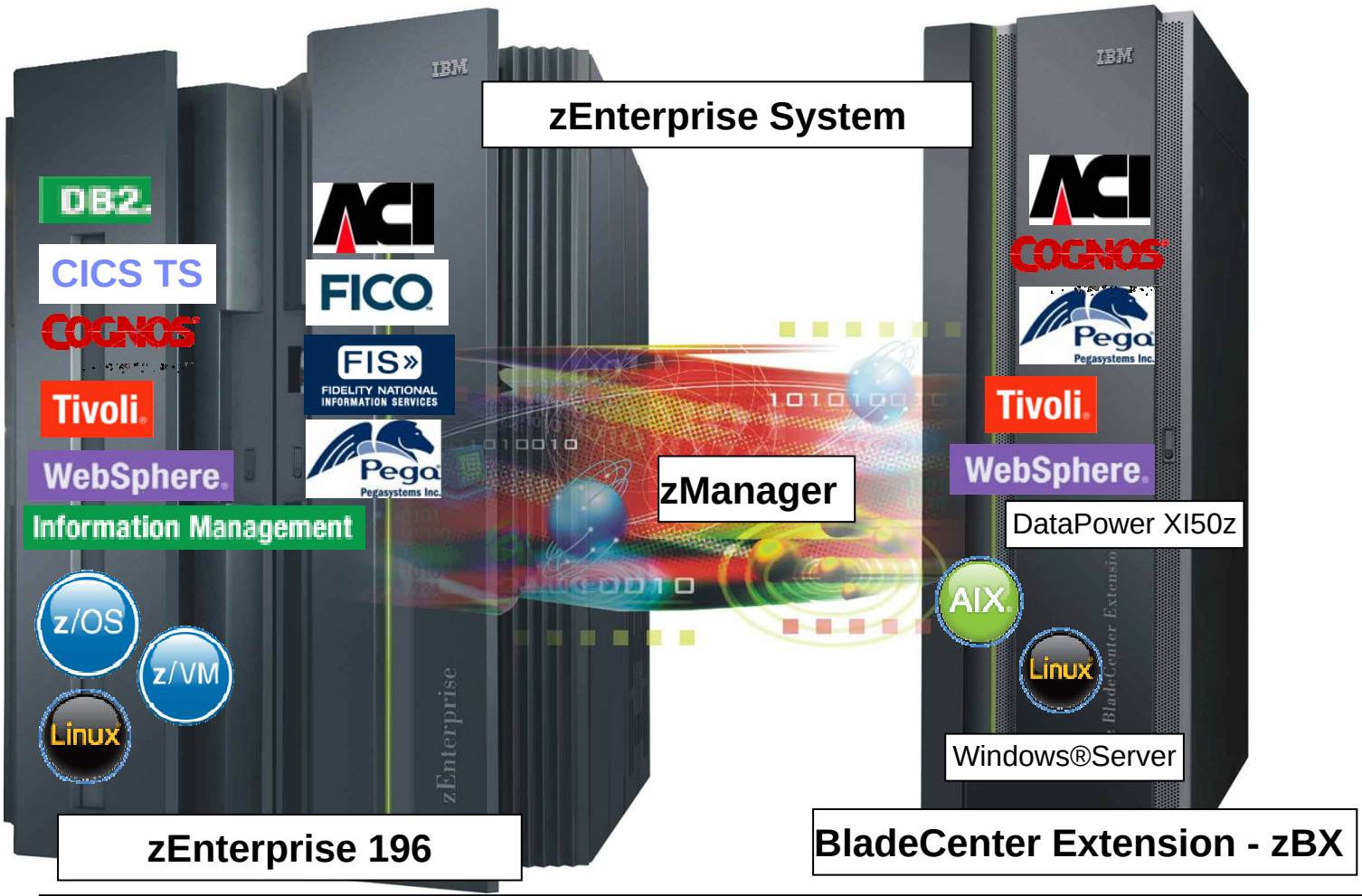
IBM Smarter Banking Showcase – DataPower XI50z implementation

- Environment prior to zEnterprise
  - CICS/DB2 core banking applications
  - Multi-channel architecture
  - New channel to provide service to selected business partners
- Challenges / Goals
  - Speed to market
  - Performance
  - Security
  - Compliance with Service Level Agreements
- Environment with zEnterprise
  - IBM zEnterprise 196 and zBX
  - IBM DataPower XI50z provides integration, optimization and security
- Benefits
  - Able to deploy services more quickly
  - XI50z deployment benefits from secure 10Gbps IEDN
  - XI50z blades managed by Unified Resource Manager



External Link to Video: [Discover the value of zEnterprise for hybrid computing in banking (IBM Smarter Banking Showcase)]

IBM Smarter Banking showcase demonstrates zEnterprise System is a cost effective hybrid computing foundation for improving business process development and integration and operational efficiency in banking



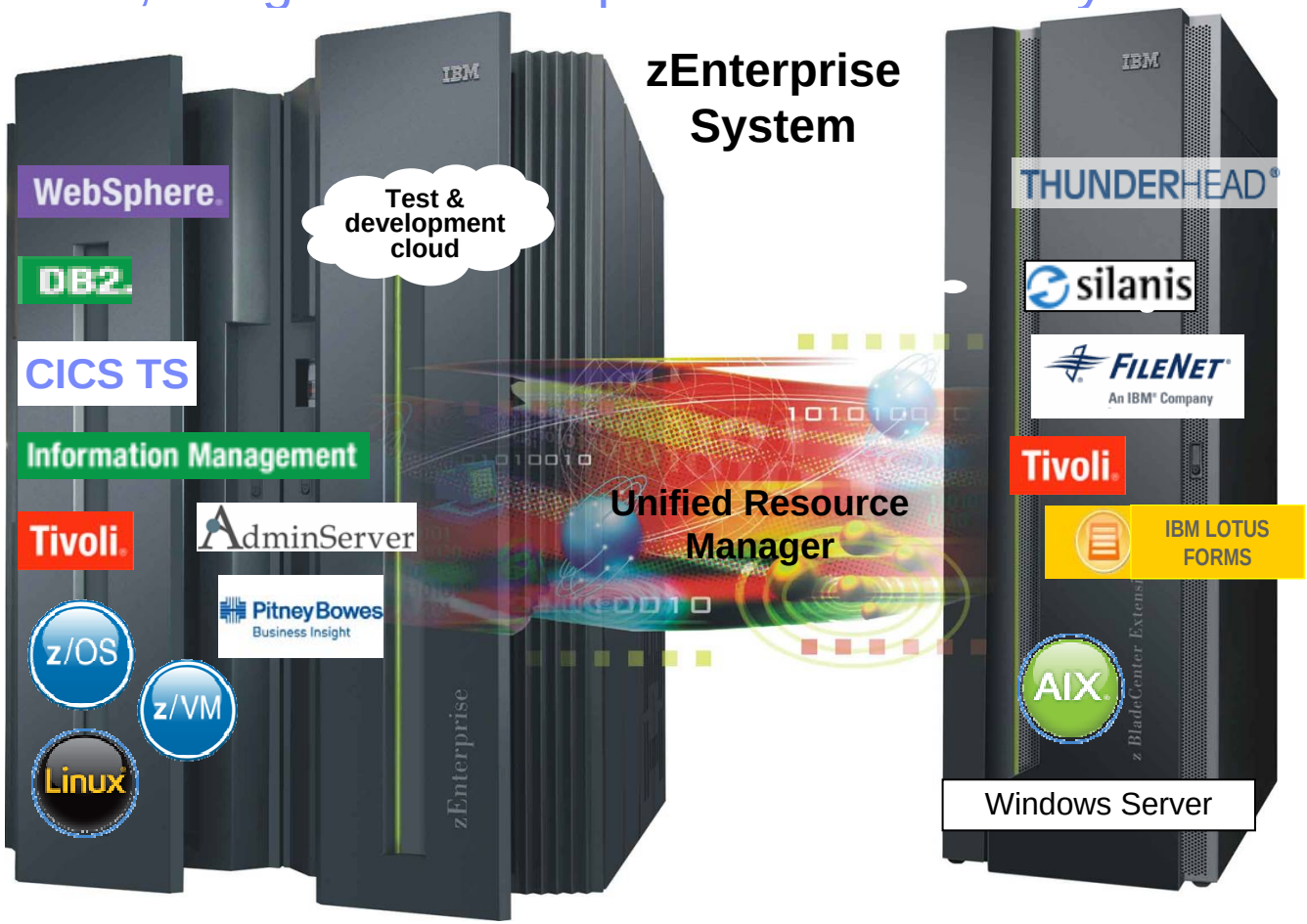
Significant management, performance, integration and cost benefits

IBM Life and Annuity Insurance Showcase

- Environment prior to zEnterprise
  - IBM System z10®
  - Applications from multiple vendors IBM System p® and System x
- Challenges / Goals
  - Reduce IT complexity to process sales transaction
  - Transactions require multiple steps and web services calls
  - Transactions flow through multiple external routers / switches
- Environment with zEnterprise
  - zEnterprise 196 with zBX
  - Applications moved to System x and POWER7 Blades
  - Test and development Cloud for WAS portal development
- Benefits
  - Improved response time
  - Increased business flexibility
  - Reduced operational complexity

External Link to Video: Enhance the value of Straight through Processing (STP) with zEnterprise Hybrid Computing (Insurance Showcase)

IBM Insurance showcase features the zEnterprise System as a cost effective hybrid computing foundation for improving business process development, integration and operational efficiency in insurance



Significant management, performance, integration and cost benefits