

IBM System z for a smarter planet

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General Manager System z

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SHARE in Seattle



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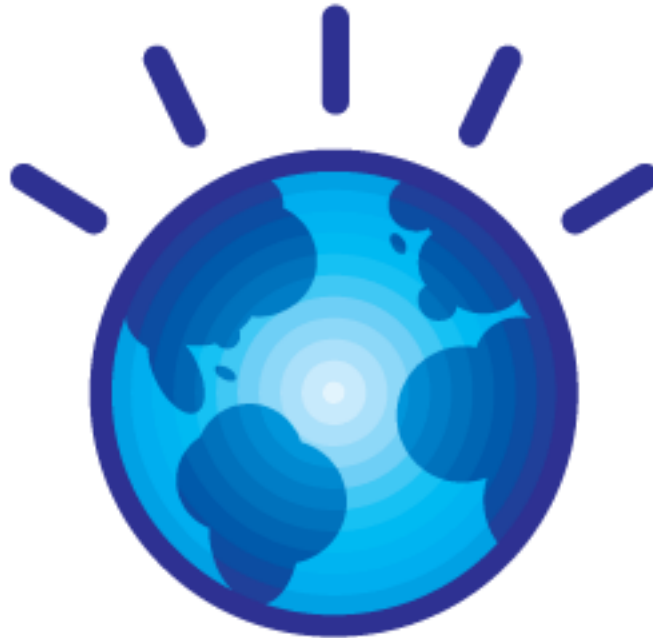
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A Smarter Planet...

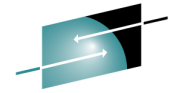


...requires smarter systems

The grand challenge of a smarter planet

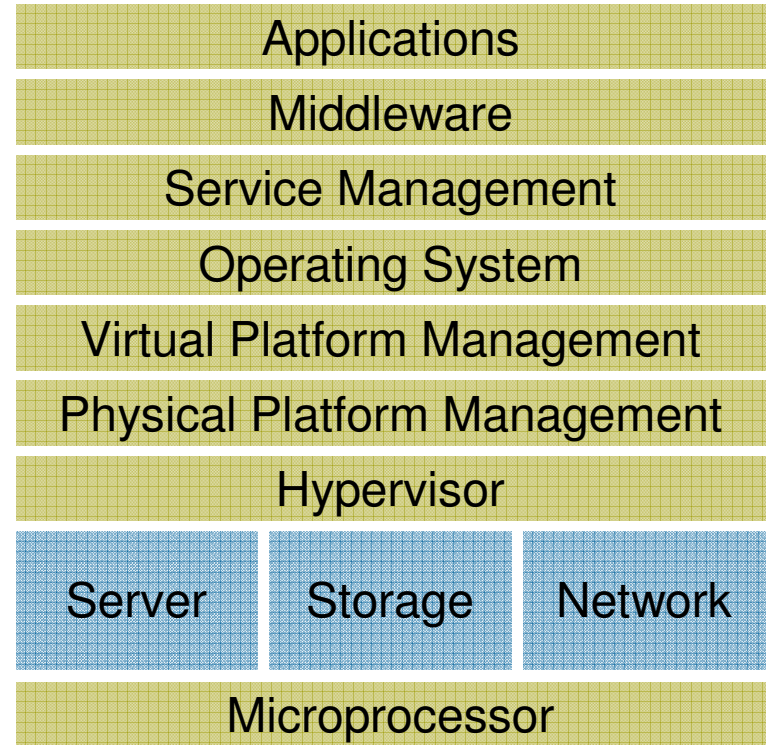
- ▶ Massive concurrent scale
- ▶ Unprecedented data and a need for real-time analytics
- ▶ Security and privacy
- ▶ Energy consumption that's out of control
- ▶ Need to sense and respond

Innovation, integration and optimization at every level



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Technology · Connections · Results

IBM®







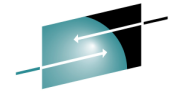
Focused, collaborative innovation

A “complete systems” approach

Intelligent performance

To deliver...

-  The breadth necessary to optimize modern workloads
-  Leadership offerings in each class of technology
-  Unmatched ability to manage, integrate and govern in today's mixed environments
-  A spectrum of delivery models to maximize client flexibility



Today's IBM System z is ...

- The world's most trusted transaction processing and data server for business critical applications
- The world's most cost-efficient platform for data center consolidation and virtualization
- The world's most dependable and scalable Hardware and Middleware platform for new business applications
- A thoroughly modern application environment for traditional and Cloud delivery models



The Mainframe Charter:

Continuing the commitment to *Client Value, Community, Innovation*



Superior value for today's critical workloads

Flexible delivery models

zFutures Roadmap

System z delivers unmatched value for today's critical workloads



A comprehensive portfolio for business intelligence and data warehousing:

Information Management on System z®

A large portfolio of leading applications growing ISV support:

Business Applications on System z

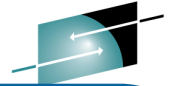
Industry-leading virtualization, management and qualities of service:

IT Optimization and Consolidation on System z

The premier platform for modernizing and optimizing IT service delivery:

Enterprise Modernization with System z



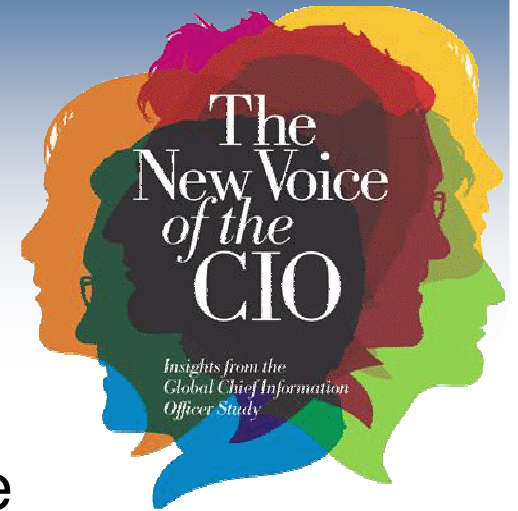


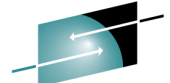
1. Information Management

IBM: 2009 CIO survey results

CIOs select their ten most important visionary plan elements.

- 3/4s of CIOs anticipate moving to a strongly centralized, shared infrastructure to improve economies of scale
- 83% say Business Intelligence & analytics - is their top focus area
 - *Improving reliability & security of critical information assets*
 - *Making sure data is readily available to relevant users*





1. Information Management *System z Success*

- Integrates and connects all lines of a business.
- Single, central view of business offers consistent, accurate and up-to-date information.
- Eliminates redundant replication/data movement processes.
- Allows immediate alerts to key decision makers, to ensure business success.



- ✓ Access to previously inaccessible reports
- ✓ Simplified architecture
- ✓ Scale out to more complex architecture
- ✓ 400X the output of the previous system

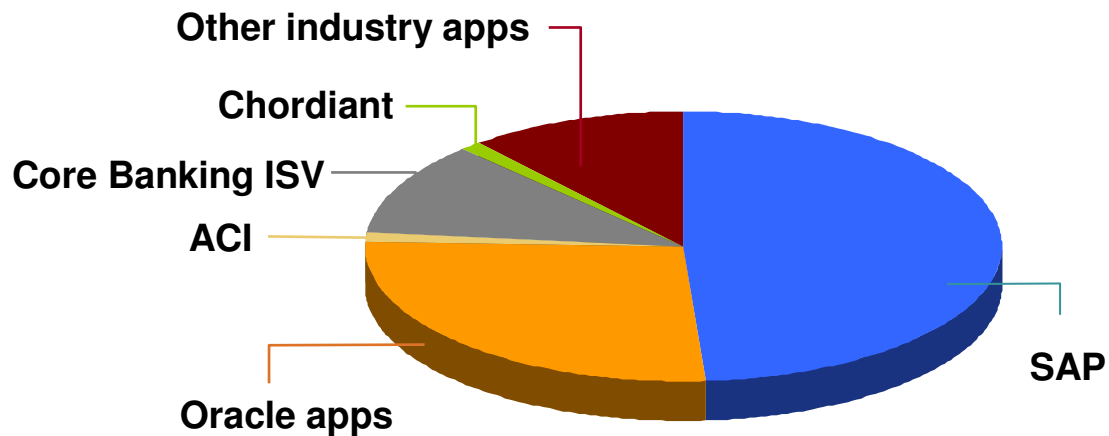


- ✓ Quick and easy access to data
- ✓ Transforms data into useful information
- ✓ Faster access to consolidated information
- ✓ Data governance strengths of z

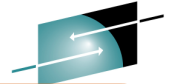


2. Business Applications

Key business applications



- ✓ **Reduce cost**
- ✓ **Improve service & agility**
- ✓ **Manage risk**



2. Business Applications

System z Success

- Highest commercial workload throughput.
- Fast time to market for new products through support of Open Standards.
- Highest level of systems and application availability.
- Robust application choice.



- ✓ Development cycle reduced (64 days to <1 day)
- ✓ Launched 168 new products in 6 months
- ✓ Immediate \$120M+ in new revenue
- ✓ Received \$3B in new deposits
- ✓ Rapid 1.7-year ROI



Banco Pastor

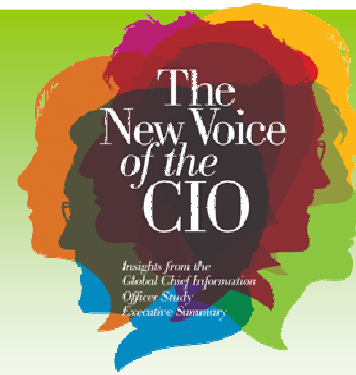
- ✓ Reduced costs 30%
- ✓ Increased scalability and performance
- ✓ Equivalent to nearly 1,500 x86 servers
- ✓ 85% smaller footprint
- ✓ Up to 85% lower energy costs



3. IT Optimization & Consolidation

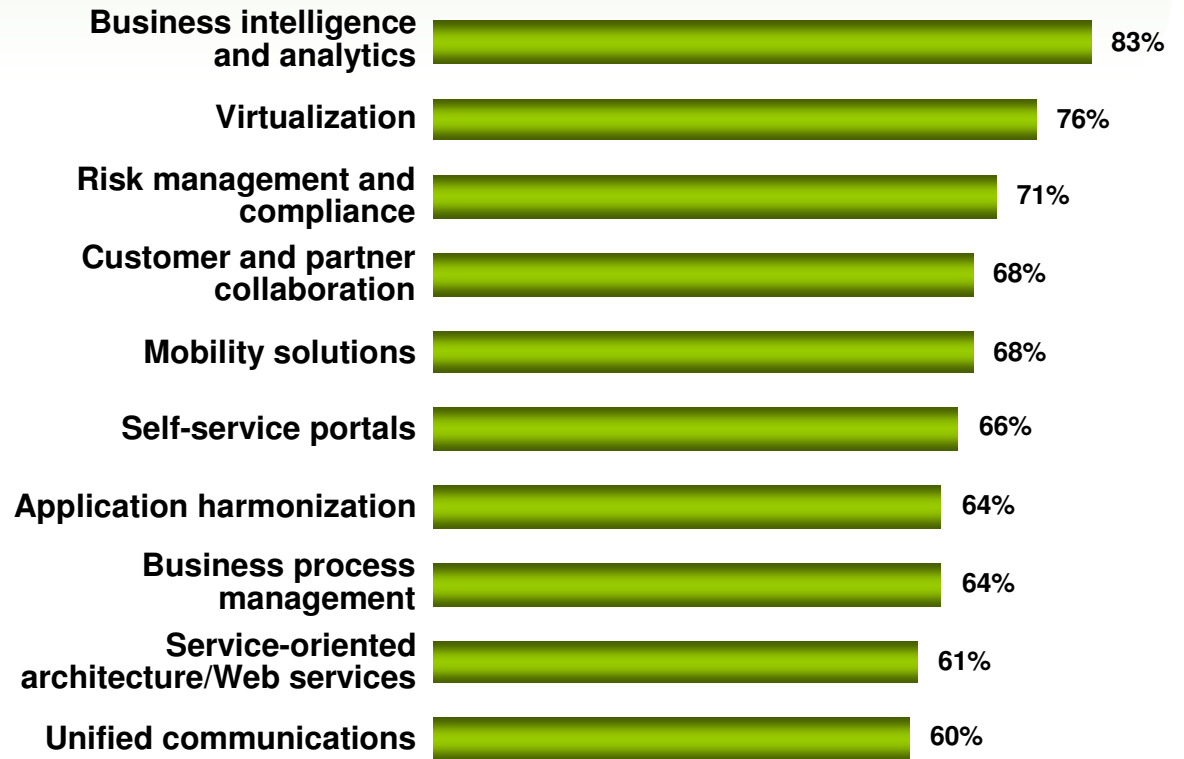
IBM: 2009 CIO survey results

CIOs select their ten most important visionary plan elements.



76%

of CIOs cited “implementing a virtualized computing environment” as part of their visionary plans to enhance competitiveness.



Note: CIOs were asked to select all applicable answers to the question, “What kind of visionary plans do you have for enhanced competitiveness?”



3. IT Optimization & Consolidation

System z Success

- “Do more with less” – consolidate more servers and more data results in savings.
- Spend less on disaster recovery and business continuance.
- Meet business demands now by dynamically adding system resources.
- Provide superior levels of business agility and staff productivity.



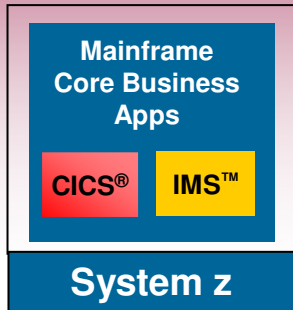
- ✓ Explosive Internet growth of China supported
- ✓ Migrated distributed servers to a Linux® on System z
- ✓ Huge performance improvement
- ✓ Environmentally efficient data center

Handelsbanken

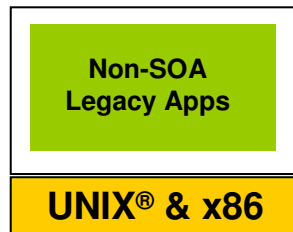
- ✓ Lower costs through consolidation
- ✓ Improved scalability, performance
- ✓ Greener IT infrastructure
- ✓ Disaster recovery ensures cross country operations

4. Enterprise Modernization

Static Business Assets



- Application upgrade compatibility
- Leverage Modern Capabilities for SOA Enablement

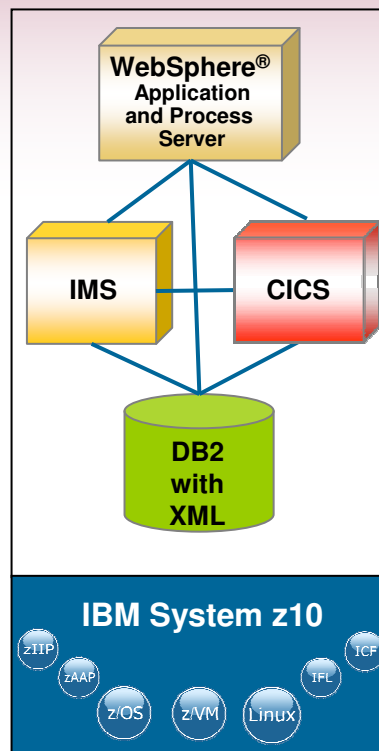


- Client Server
- 4GL, C, early Java™, etc
- IBM Migration Factory provides transformation services



- IBM Tooling and Services to Minimize transformation costs
- Preserve investments in core business logic
- Reduced risk over Rip and Replace approaches

SMART SOA Foundation



- Rules-based
- Event-driven
- Transactions as a service
- Modern Interfaces

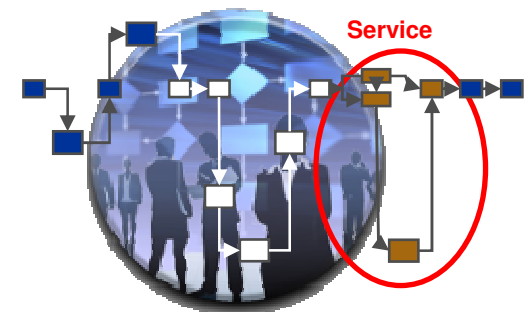


- IT and LOB Teaming
- Natural Language and Visual Orchestration
- Business Rules abstracted from Application logic
- Dynamic Business Networks

Optimized Assets, Skills, and Infrastructure

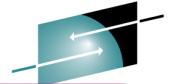


- **Five times lower cost** through reuse of existing assets
- **Increase flexibility** by revitalizing existing applications
- **Boost productivity** and accelerate innovation with modern skills
- **Maximize business** agility by bridging organizational silos



SOA Enterprise Service Bus on System z for:

- Improved Performance and Scalability
- Higher Quality of Service
- Transaction Integrity



4. Enterprise Modernization *System z Success*

- Comprehensive and competitive modernization solutions.
- Increase flexibility and investment by revitalizing existing applications.
- Boost productivity and accelerate innovation with modern skills.
- Adapt dynamically through the modernization lifecycle through virtualization.



New York State
Department of Taxation and Finance

- ✓ Cross-agency integration (single view)
- ✓ SOA solution leveraged existing assets
- ✓ Delivers faster execution
- ✓ Easily adaptable and fast to implement
- ✓ Open to new technologies

System z Solution Editions: *Unmatched value, competitively priced*

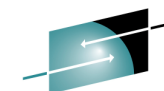
- **Special package pricing for our most popular new workloads**
 - z10™ HW (standalone footprint or isolated LPAR)
 - Prepaid HW maintenance
 - Comprehensive middleware stack (including S&S)
 - Services and Storage (as needed)

Competitive acquisition prices,
leadership TCO

- *Enterprise Linux Server*
- *Data Warehousing*
- *SAP*
- *WebSphere*
- *Security*
- *GDPS®*
- *App. Development*
- *ACI & Chordiant*
- *Cloud Computing*



TCO comparison of real customer cases



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Scenarios	Cost of Distributed vs. z	Distributed Cost Ratio	Migration Cost
Green Field Cases			
- Banking Benchmark	\$43.3M vs. \$18.2M	2.4x	No migration
Offloading Cases			
- Asian financial company	\$119.0M vs. \$53.0M	2.2x	6.0M
- Asian insurance company	\$25.1M vs. \$16.3M	1.5x	2.1M
- NA financial services	\$58.9M vs. \$34.0M	1.4x	5.0M
- European financial	\$17.9M vs. \$4.9M	3.7x	4.7M
- US County government	\$8.1M vs. \$4.7M	1.7x	2.9M
Offload Studies			
- European agency	€386.0M vs. €204.0M	1.9x	6.3M
- Restaurant chain	\$56.3M vs. \$23.3M	2.4x	10.0M
- Asian healthcare	\$15.1M vs. \$8.9M	1.7x	4.8M
- Asian bank	\$31.6M vs. \$23.5M	1.3x	6.0M
- US utility	\$13.4M vs. \$6.2M	2.2x	1.9M
- US manufacturer	\$64.0M vs. \$43.3M	1.5x	12.2M
Data Warehouse Offload			
- NA financial company	\$22.4M vs. \$14.7M	1.5x	0.9M

Cloud computing is a delivery option for workloads And system z is the premiere foundation



Security
EAL5 LPAR security
certification and hardware
cryptographic features



Virtualization
1000's of virtualized
systems in a single
frame, deployed in
minutes

Availability
Failures measured in
decades with hot
swappable
components



Efficiency
1/4 network, 1/25th floor space,
1/20 energy, 1/5 administration



Scalability
Ability to meet massive demands
from users and data



Linux and System z are the foundation for Oildex - a line of business processing software as a service for the energy industry:

- Servicing 8200 of the world's leading energy and gas corporations
- Processing \$136 Billion in transaction detail annually
- Deliver 24/7 operations with 99.5% application availability

System z private cloud computing solutions

Late in 2009, IBM announced two new cloud computing offerings:



Smart Analytics Cloud

... a cloud computing solution for the delivery of business intelligence & analytics optimized for the large enterprise client.



Solution Edition for Cloud Computing

... a cloud computing foundation solution that can be customized by the client for a wide range of cloud workloads.

Smart analytics cloud in the IBM Corporation



*Our commitment to informed decision making led us to consider private cloud delivery of Cognos via System z, which is the enabling foundation that makes possible **+\$20M savings over 5 years.***

-- IBM CIO Office

- **Blue Insight:** IBM's deployment is the world's largest private cloud computing environment for business intelligence and analytics that will empower IBMers from around the world with information and business insight to make smarter decisions – no matter where the data resides
- **IBM Smart Analytics Cloud:** a services based solution offering to enable large enterprise clients to build their own private cloud environment with easily consumable business intelligence services, system and software

IBM Blue Insight results:

- Consolidating +20 multi-product, departmental BI deployments to Cognos® 8 BI on System z
- Realizing value from +60 data sources across IBM representing +1PB of data
- Deploying private cloud self service to support +200,000 named users across our global workforce (120K by mid-year 2010, expanding to 200K by 2011)
- 56% cost savings per user (grows with volume)
 - \$7,775,767 - Infrastructure cost savings realized with z10 technology
 - \$2,558,525 - Business Intelligence Competency Center (BICC) cost savings;
- Elasticity in a shared server model supporting SLAs for diverse tenants; Speed to value and reduced capital spend (26 weeks to 2 weeks)

“What IBM has done is come up with a perfect application for a private cloud.”

-- John Webster, CNET, Nov. 18, 2009

National Business Center adopts System z for cloud



Business challenge:

NBC, a service provider to the Department of the Interior wanted a more efficient IT infrastructure in order to remain competitive in bidding situations.

Solution:

NBC has standardized on IBM's mainframe environment as its "strategic-enterprise-server-environment-of-the-future", deployed as a cloud solution

Benefits:

- NBC can realize greater efficiency thanks to greater utilization, better integration, and simplified management than it could realize if using a distributed computing architecture
- NBC is creating a cloud environment that will enable the organization to expand the kinds of services – and the quality of services – that it can offer to its clients

Source: Clabby Analytics Case Study: The Department of the Interior's National Business Center – Using System z as a Strategic Enterprise Cloud Platform

“The lesson to be learned at NBC is that mainframes offer greater computing efficiencies than distributed computing architectures.”

— Clabby Analytics

Solution components:

- IBM System z and z/VM®
- Linux on System z
- IBM WebSphere SOA environment
- IBM Tivoli service automation & management products



Enhancing the portfolio of cloud computing capability



- Secure, self-service cloud management hardware appliance
- Unmatched IBM middleware management (apply maintenance, federate cells, etc., not black box)
- Dispenses hardened WAS patterns into a pool/cloud of virtualized hardware running a supported hypervisor (z/VM, PowerVM, or VMware ESX).
- Enables consistent & repeatable deployment of application environments based on patterns
- Integrates with existing infrastructure through programmable REST APIs



***Introducing WebSphere CloudBurst
Appliance for z/VM****

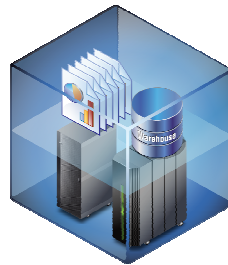
System z – Optimized for multiple workloads



IBM Smart Analytics Optimizer

(Statement of Direction)

An integrated business intelligence solution to deliver accelerated and accurate business insight



System z today

The gold standard of enterprise computing with unrivalled integration from the server to the application that delivers unrivalled throughput and performance, service qualities, and cost leadership



System zFuture

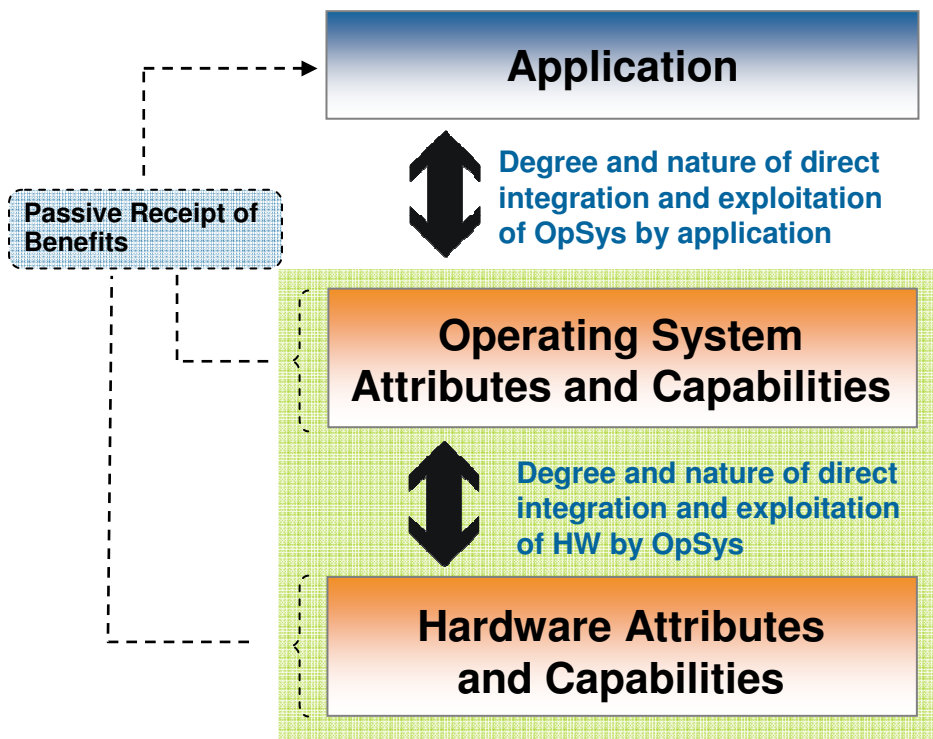
Introducing the “First of a kind” workload optimized technology for the deployment of end-to-end solutions across a System z governed and integrated heterogeneous environment



System z today – Tight integration across the stack



We need to understand that there are benefits from the hardware design, benefits from the operating system design, *and benefits from the integration between the two*



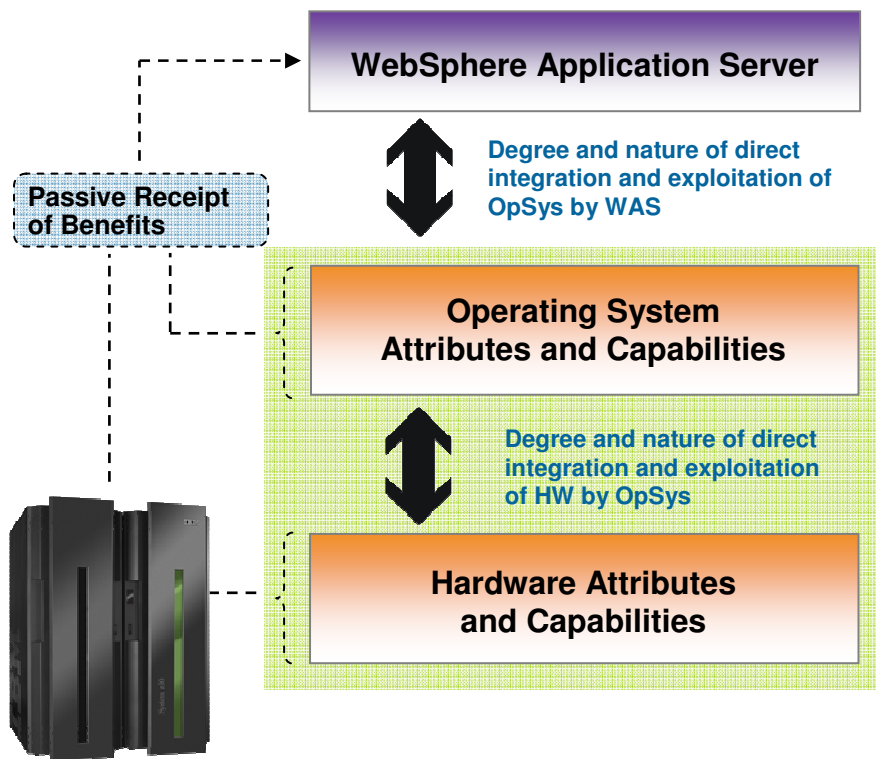
Passive Exploitation:

benefits that derive simply by running on the platform

Active Exploitation:

direct exploitation of platform qualities and attributes by the application

Passive exploitation delivers value of System z



Hardware

- Inherent maturity and stability of design
- Redundancy and flexible updates
- Balanced design offers very high throughput
- Mature and proven virtualization through LPAR

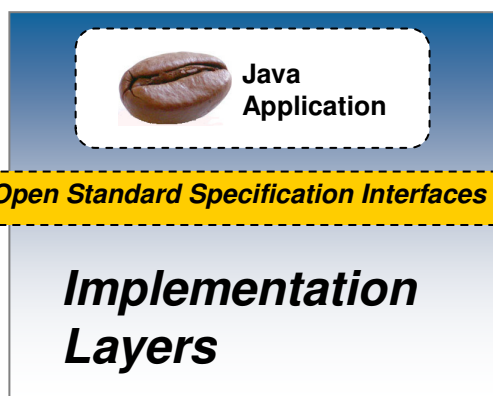
Operating System

- Tight integration with server hardware design
- Extremely mature architecture
- Storage protection
- Workload Manager (WLM)
- Intelligent Resource Director (IRD)
- Local TCP optimization
- Mature systems management tools
- Proven disaster recovery capabilities

Active exploitation of System z unique capabilities: Example – WebSphere Application Server on z/OS

1. Exploitation of SMP/E
2. Exploitation of JES and common z/OS® facilities
3. Exploitation of zAAP specialty engines
4. Exploitation of **WLM** ← We'll focus heavily on WLM exploitation because that's at the heart of the "Why WAS z/OS" question
5. Exploitation of RRS
6. Exploitation of SAF and Crypto
7. Exploitation of SMF
8. Exploitation of z/OS exclusive Cross Memory Communications

These are all z/OS value attributes



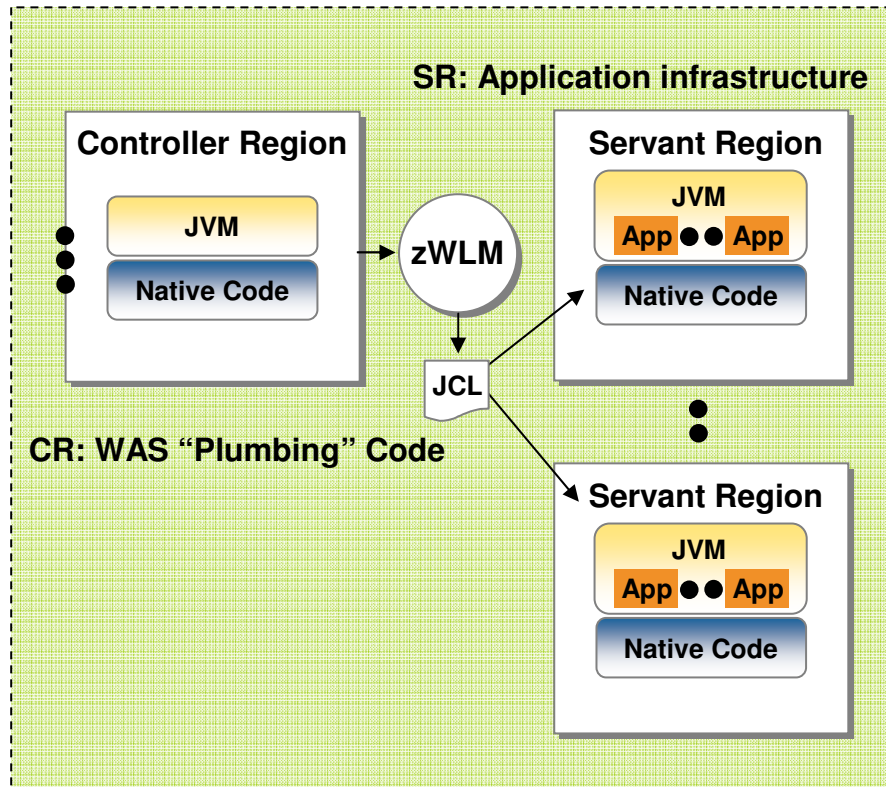
*WebSphere is WebSphere up here.
It's all based on accepted standards.*

*Exploitation taking place below the
open standard interface line.*

WAS on z/OS: Exploitation of WLM



The key is the controller / servant architecture



Intelligent Dynamic Capacity Expansion

- Vertical scaling capability
- WLM can start additional servant regions if it sees unmet goals

Intelligent Workload Flow Control

- Inbound work is queued and held
- Selected based on importance and arrival
- A "pull" model that prevents overwhelming an application JVM

Intelligent Management of Mixed Work in Server

- Sophisticated Work Prioritization
- Transaction assigned a priority classification
- Workload assigned to servants based on priority
- WLM manages resources to meet priority needs

Intelligent Workload Routing Advice

- WAS z/OS using WLM to determine where best to route certain kinds of work

WLM only on z/OS ... No other platform has this level of workload management sophistication

WAS extracts huge benefits through active exploitation of WLM

The future starts NOW

Our Vision:

Deliver the best of all worlds, Mainframe, UNIX, x86 and single function processors, integrated in a single system for ultimate flexibility and simplicity to optimize service, risk and cost across multiple heterogeneous workloads.



A New Approach:

Introducing the “First of a kind” workload optimized technology for the deployment of end-to-end solutions across a System z managed and integrated heterogeneous environment.

An example of workload-optimized systems: *Statement of direction** – *The IBM Smart Analytics Optimizer*



An integrated business intelligence solution to deliver accelerated and accurate business insight

Benefits of a Smart Analytics Optimize

- Current data delivers accurate business insight
- z/OS and DB2 controls and secures critical data
- Reduced administration costs
- Optimizes technology usage to deliver:
 - **The right level of service**
 - **With lower risk**
 - **At reduced cost**

zFuture: Re-defining Integration and management to optimize IT Service delivery across heterogeneous platforms



Integration and central management by System z



zFuture: the world's premier workload-optimized platform for enterprise applications

- Reduces the complexity typically associated with heterogeneous multi-tier environments.
- Extends System z qualities of service to heterogeneous platforms
- Lowers cost of deploying new and existing workloads
- Delivers IT service aligned to business processes

***Deploy end-to-end solutions across heterogeneous platforms
Optimize technologies on a best fit basis
The service you need with reduced risk at the right price***

System z – A smarter system for a smarter planet

The Gold Standard in Enterprise computing



- ✓ An ideal platform for critical business workloads
- ✓ The premiere foundation for Cloud computing
- ✓ Delivering unrivalled integration across the stack
- ✓ A strategic future through workload optimized systems

