IBM System z9 and eServer zSeries

Big Job? Big Iron!

IBM System z9/zSeries:
Leadership for Today's Applications

Can your system do this?

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Presentation Objectives:

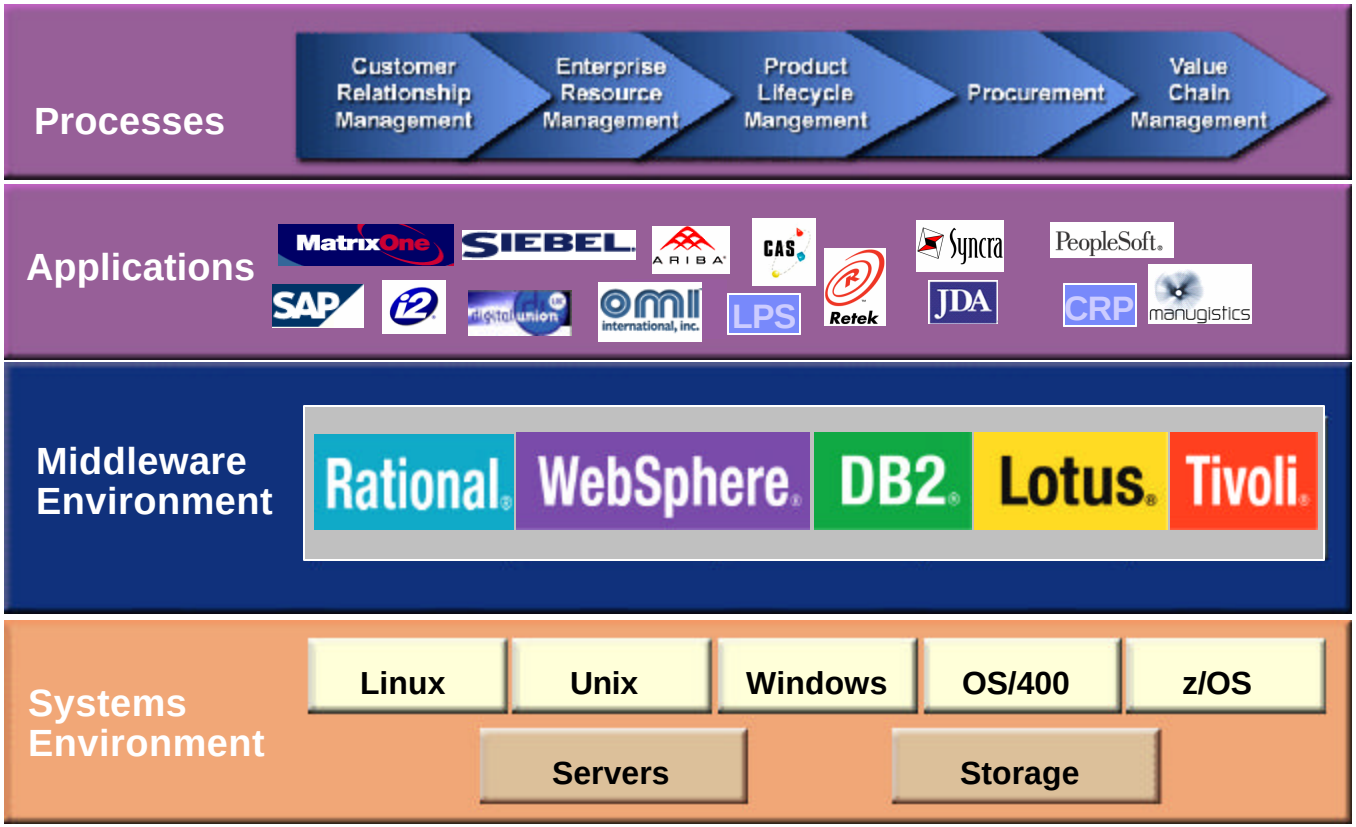
IBM System The z9: It's time to take another look!

1. **To show how the IBM System z9 and eServer zSeries plays a key role in IBM's SOA and on demand strategy, and how it can be, and should be, an integral part of your organization's strategy as well**

2. **To articulate why the System z9 and eServer zSeries capabilities make it a leader, delivering true competitive advantage for web services based applications that are available today**

3. **To reiterate how IBM is ready to help**

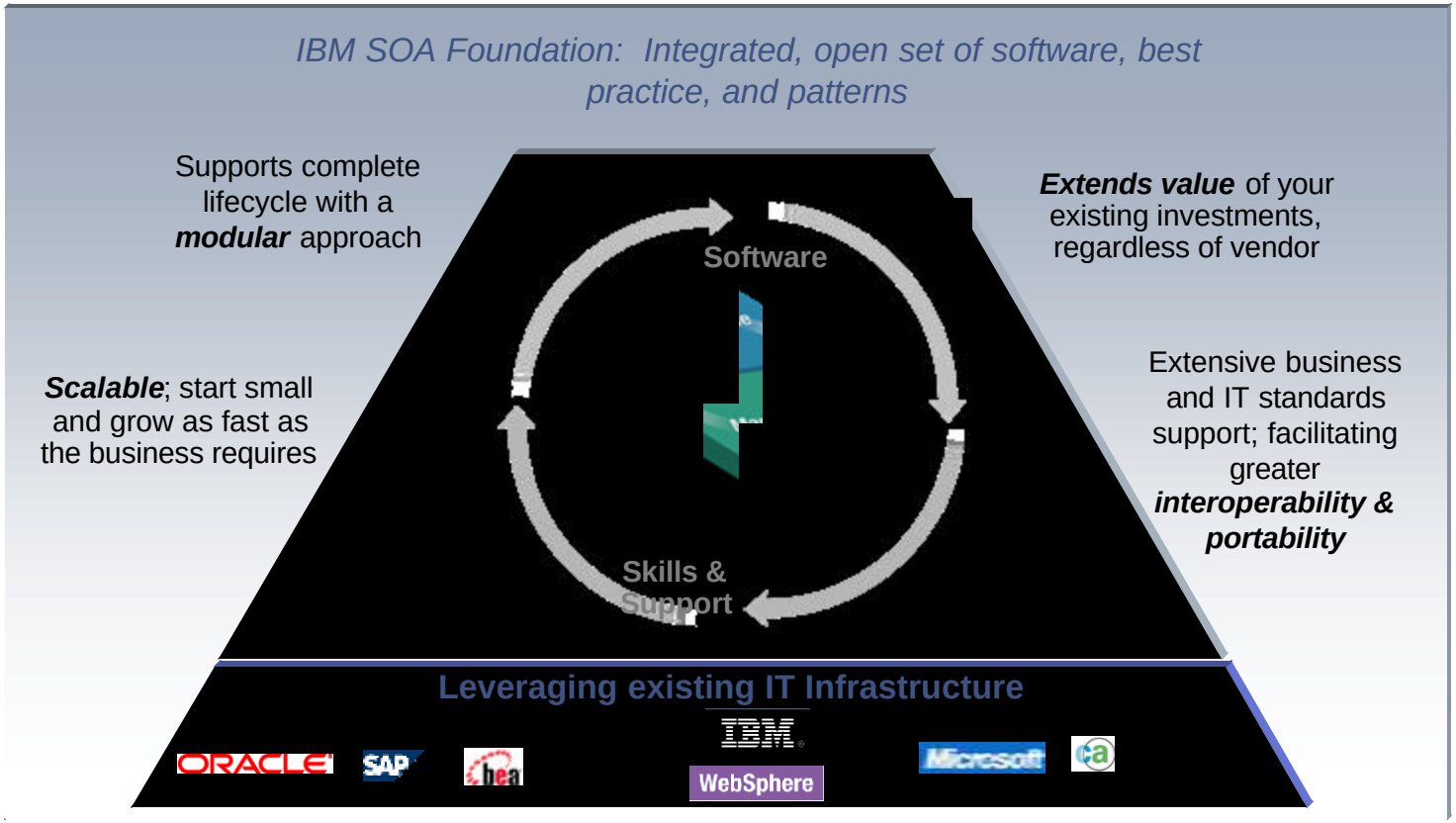
On demand is all about integration…



….and System z9/zSeries is the integration leader.

Introducing the IBM Service Oriented Architecture (SOA) Foundation

Provides What You Need to Get Started with SOA



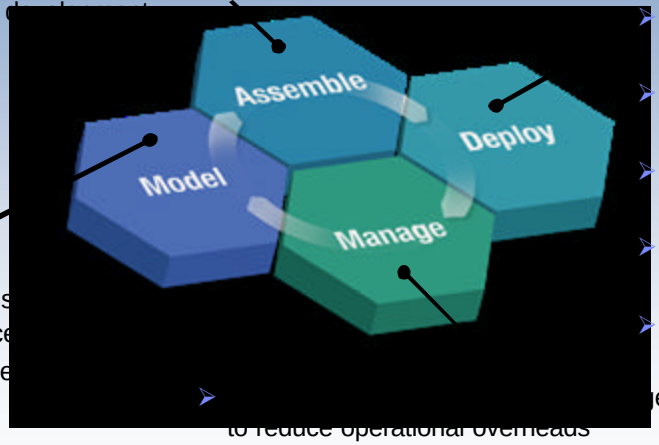
Business Integration

Improve business flexibility with SOA on System z9

Enhance application and skills reuse through service orientation

IBM can help you build a service oriented architecture around your core zSeries applications

- Improve cooperation between your mainframe and client-server application teams using open integration technologies and common tools
- Program z9 (WAS, CICS, IMS and DB2) with the latest Eclipse-based
  workbench
- Analyze your applications
  reusable business service
- Trace usage patterns / se
- Model service flow



- Automatically generate web-interfaces for core CICS and IMS applications
- Create state-of-the art user interfaces without deep programming skills
- Integrate multiple core and new applications within the same workspace
- Compose business level web services from existing CICS, IMS and TPF transactions
- Retain mainframe availability, scalability, security and recoverability
- Connect applications right across your enterprise, across all platforms
- Minimize network delays by co-hosting new applications on z9
- ement tools

to reduce operational overheads

Choose SOA from IBM to maximize the benefits of flexibility, asset reuse, security, availability and recoverability.

Bank of Montreal *integrating assets for increased operational efficiency and customer satisfaction*

Challenge

Integrate sales and CRM systems and processes, while eliminating silo applications and increasing customer satisfaction

Solution

To replace its legacy teller system, BMO selected a solution from IBM that provides a mission-critical, high-volume financial transaction application for more than 10,000 tellers and sales staff

Solution for BMO includes:

- *WebSphere Application Server for z/OS*
- *WebSphere Studio Application Developer IE*
- *CICS Transaction Gateway*
- *CICS Transaction Server*
- *zSeries 990*

BMO Financial Group

Business benefits

- Eliminates duplication and drives consistency for the personal banking line of business
- Enhanced operational efficiency and a high-availability environment

Technology benefits

- Web services for more than 300 types of financial transaction processes that can be reused across multiple channels
- For better reporting and isolation of system problems, the solution included an operational (audit) log of transactions.
- Proximity to back-end, which provides memory-to-memory transfer of data, eliminating any network connectivity issues

Bank of Montreal Business Solution Needs

- Modernize/integrate Teller application to participate in SOA and web services (SOA)
- Integrate vertical silo with Siebel CRM (zSeries vs. distributed)
- Increase customer loyalty, satisfaction through increased insight into customer
  - Understand client
  - Identify next opportunity
  - Referrals
- Componentize to facilitate reuse
  - Expand to self service
  - Support multiple channels
- Provide high quality of service and consistent response time and performance for unpredictable workload volumes (Workload Manager, Resource Recovery Services, Parallel Sysplex)
- Minimize network overhead (Local memory calls, Load balancing, OSA express)
- Drive high availability, reliability and business resiliency (zSeries)
- Need for disaster recovery (CBU)
- High availability and failover (Sysplex, CBU)
- Audit requirements (zSeries tools)
- SSL encryption required for security of information (zSeries Crypto)
-

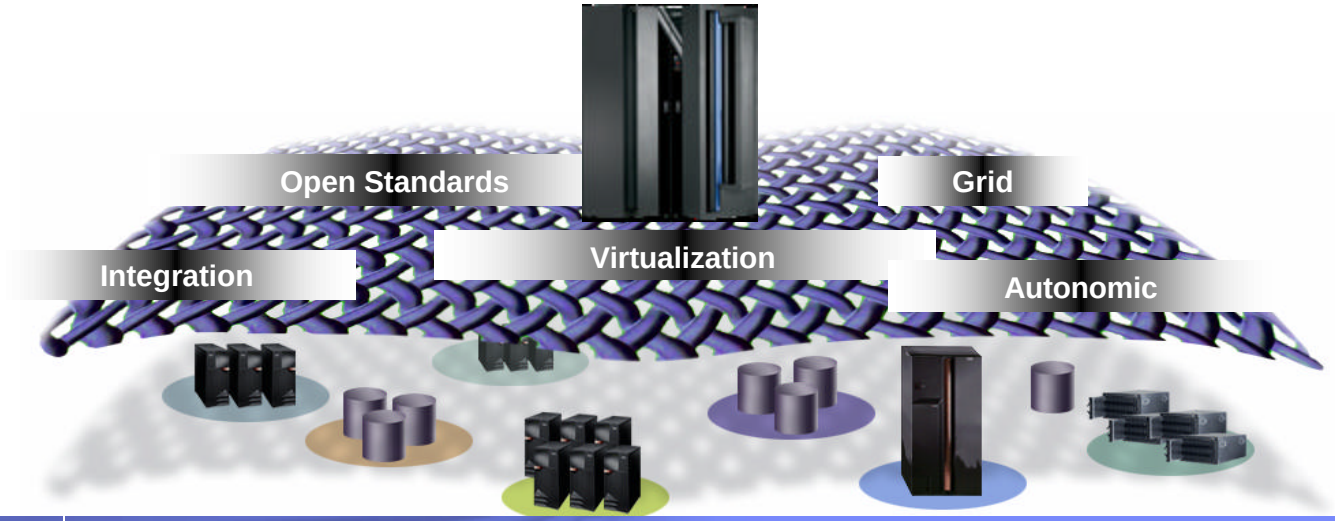
The on demand Operating Environment

*Think of it as a **Global Fabric…***
…and zSeries enables a higher grade of fabric

Designed for integration
Most powerful virtualization
Most complete autonomics in the marketplace

Specialized role for System z9/zSeries across the fabric as a hub for Business Resiliency & Security, Intelligent Workload Management, Business Integration

IBM System z9:Meeting business needs today, providing a foundation for the future



IBM System z9 109 Raises the Bar

Performance, Capacity and Scalability

- 35% Faster Uni Processor, 95% more server capacity, 80% more bandwidth than z990
- Up to 54 processors
- Up to 512 GB memory
- Up to 60 LPARs
- 30+ of the 54 new instructions for WAS, JAVA and Linux
- More and faster 2.7 GB STIs (16 per book)
- 336 FICON Express2 features
- Modified Indirect Data Address Word (MIDAW) Facility (Fuller exploitation of FICON bandwidth)
  - Increased I/O throughput
  - Reduction in response times and channel busy
- Multiple Subchannel Sets per LCSS
- 63.75K subchannels for set-0 (increase of 768)
- Hipersockets support for IPv6
- OSA-Express2 1000BASE-T

Higher availability, reliability and Disaster Recovery

- Enhanced book availability
- Flexible memory option
- Enhanced driver maintenance
- Redundant I/O interconnect across books
- Hot pluggable/maintainable MBA/STI fanout cards
- Dynamic oscillator switchover
- GDPS enhancements
  - Higher availability for new workloads
  - Preview Server Time protocol (STP) (Alternative to Sysplex Timer extending GDPS distance)

Better Security

- CPACF Enhanced with AES, PRNG and SHA -256
- Configurable Crypto Express2

IFL, zAAP, ICF improvements

- Price performance improvement (More capacity at the same price)
- Managed as separate physical pools with PR/SM (zAAPs now have a separate weight from CPs)
- CBU supported

Improvements for Linux for zSeries

- N_Port ID Virtualization (Share FCP across LPARs)
- OSA-Express2 OSN (better CCL connection to z/OS, NCP instruction offload to OSA)
- Re-IPL without operator intervention
- Enhanced performance assist for z/VM guests
- Size guests for peak
- Efficient for overcommitted memory
- QDIO interrupt passed directly to guest
- Enhanced buffer management
- New HW instructions
- Host Page Management Assist (HPMA) (lock and unlock page frames)
- VLAN management (GARP VLAN Registration Protocol-GVRP)

*This statement represents IBM's current intentions. IBM development plans are subject to change or withdrawal without further notice.

Replicated

Consolidated/Integrated

Application Characteristics that are optimal for zSeries and System z9

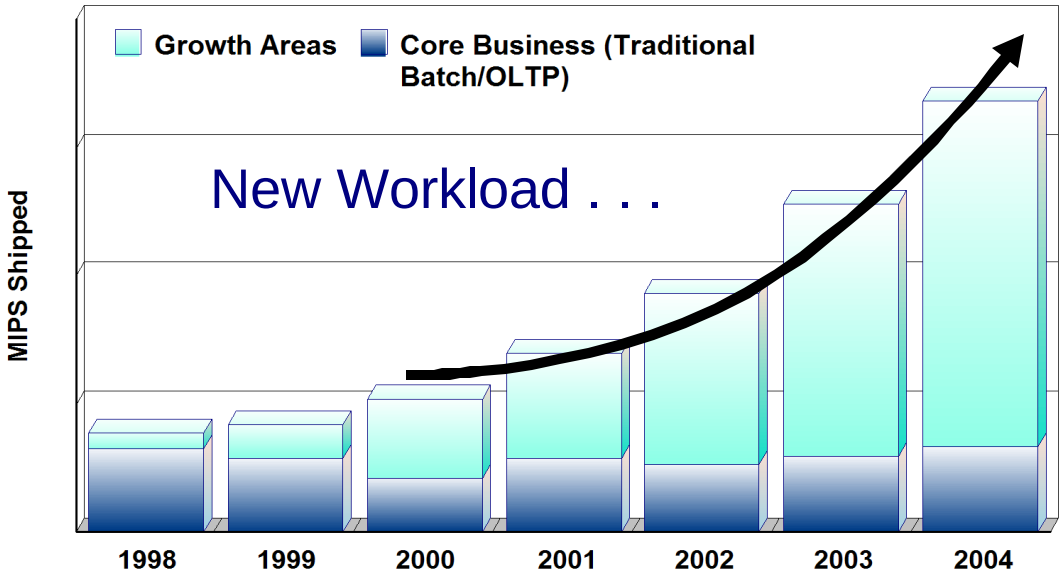
- Mixed workloads that require integration with other transactions or data (RRS, large L1 and L2 cache, Type 2 driver local calls)
- High volume, high transaction rates, large number of users, unpredictable web workload (WLM)
- Heavy I/O content, large amounts of data (High I/O bandwidth, large L1 and L2 cache, HW compression and sort assist)
- High availability requirement (What “z” stands for)
- Bullet proof, rock solid security (SAF)
- High business resiliency and disaster recovery requirement (GDPS)
- Ability to scale near linearly (Parallel Sysplex)
- Ability to run at higher utilization (WLM, PR/SM virtualization)
- Mission critical web application (most robust QoS)
- Application modernization exposing current applications to the web (HATS, connectors, WAS, WebSphere Developer for z/OS)
- New J2EE applications with new expanded functionality and flexibility (WAS)
- SLA requirements (WLM)
- Server "sprawl" - Too many servers (Linux for zSeries)
- Consolidation of “lots of little” (Linux for zSeries)
- Cost reduction requirements (TCO, lower incremental costs, IFLs, zAAPs)
- Requirement for large SSL volume (Crypto, 18,000 SSL transactions per second)
- Master workflow for horizontal integration (WBISF)

WebSphere software

zSeries/System z9 Growth Continues

IBM @server zSeries and the new IBM System z9

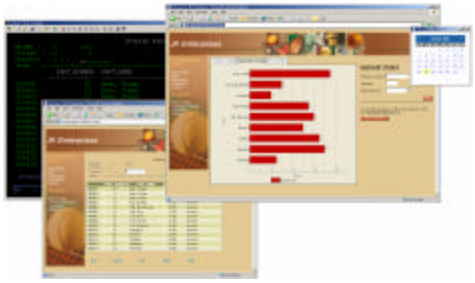
Supporting core business and new applications

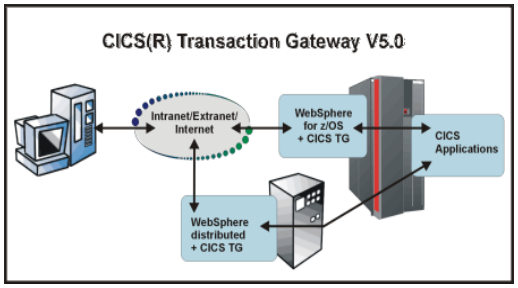


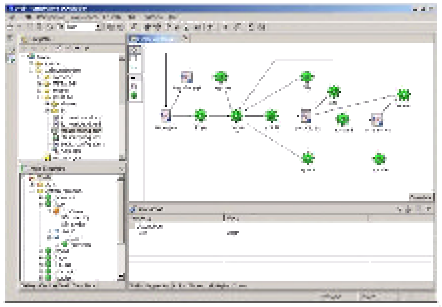
Linux + e-business Solutions + Enterprise Applications + Server Consolidation + Business Continuity + Core Business

Transforming and reusing your existing IT assets

Improve - Transform User Experience	Adapt - Transform Connections	Innovate - Transform Application Architecture
Improve the user interface and workflow of mission-critical applications to reduce training costs, increase end-user productivity and extend reach to new users	Adapt application interfaces to enable participation in e-business workflows with less cost and risk than a replacement approach	Innovate by componentizing mission-critical applications to enable core processes to be independently modernized and flexibly integrated – on demand



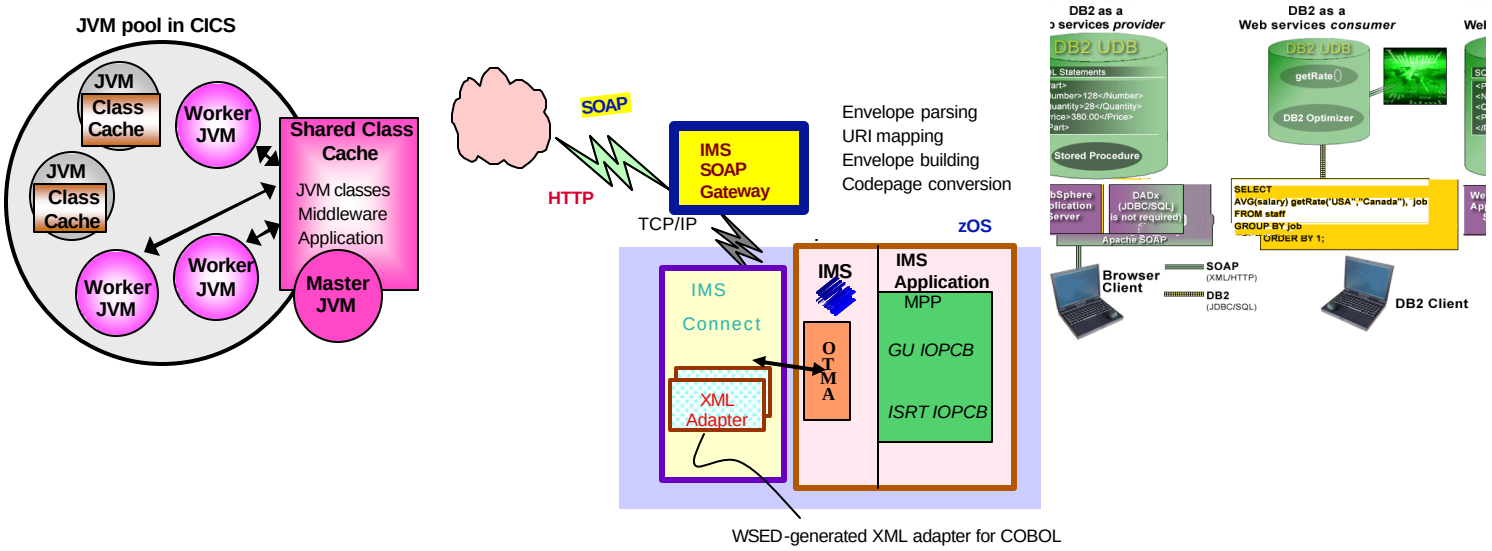




No Charge zSeries Integration Architecture Workshop (zIAW)

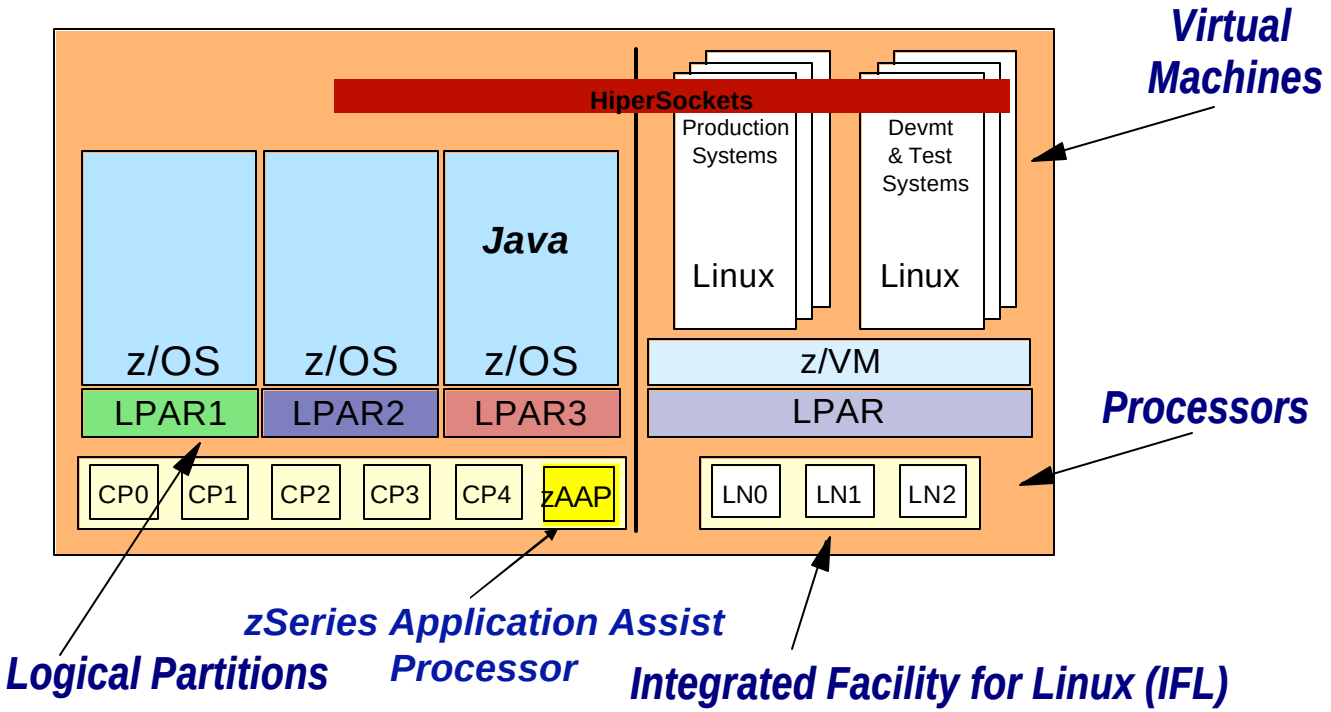
SOA enablement for CICS, IMS and DB2

- IBM incorporating Java support directly into CICS, IMS and DB2 subsystems
- Exploitation of zAAPs for lower cost
- CICS, IMS and DB2 exploit serially reusable JVM minimizing garbage collection and JVM initialization overhead
- WebServices, SOAP and XML support also available with CICS, IMS and DB2
- WebSphere Developer for zSeries for modernizing COBOL/PLI applications for SOA participation



WebSphere, Linux, Enterprise Applications on zSeries/System z9 in a SOA Environment

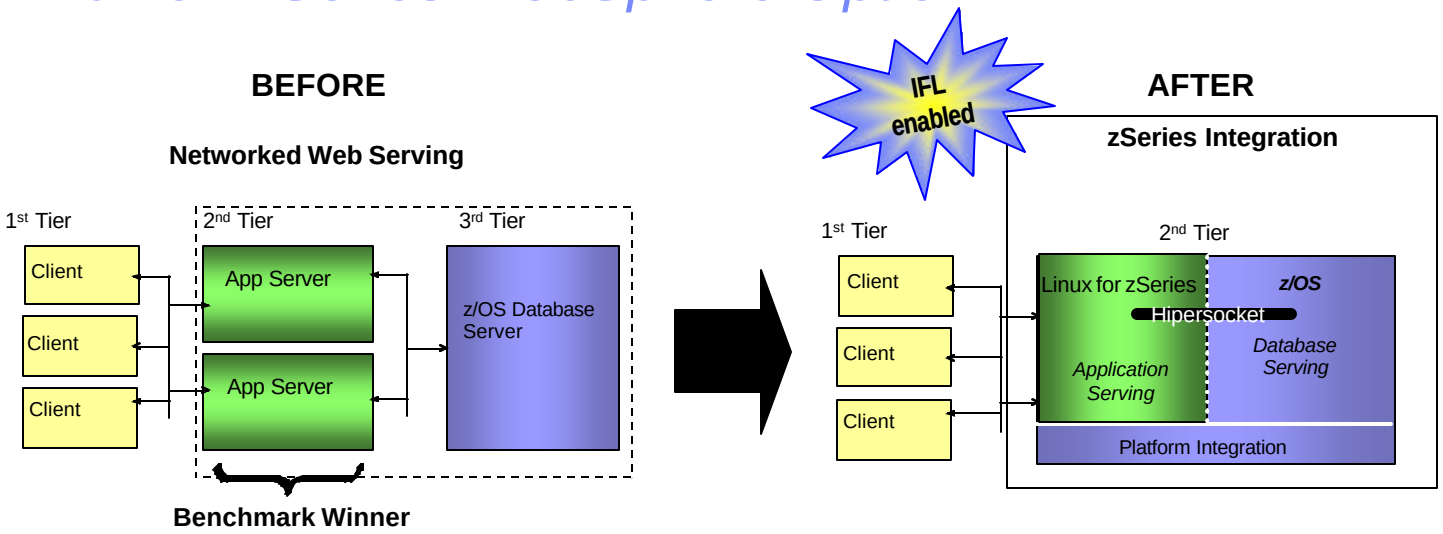
Sample IBM eServer zSeries™ and System z9™ Configuration with zAAPs and IFLs



FCP channels for connectivity to FCP and SCSI devices

- Full fabric switch support

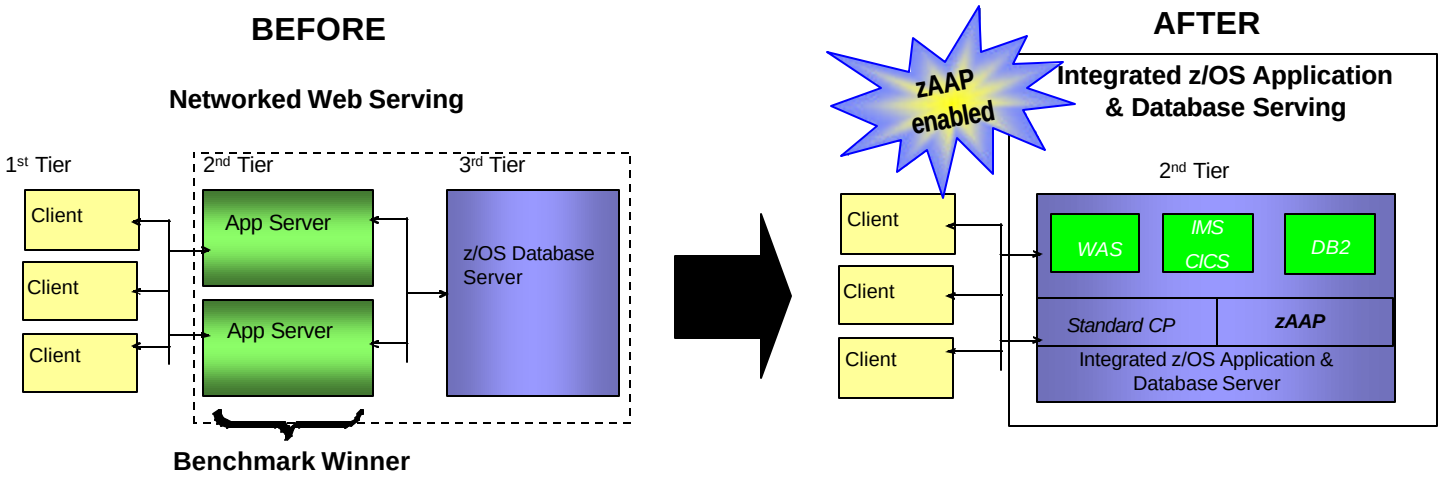
Linux on zSeries WebSphere Option



Advantages of consolidating your application and data serving on zSeries/System z9

✓Security	Fewer points of intrusion	Better Production Value
✓Resilience	Fewer points of failure	
✓Performance	Avoid network latency	
✓Operations	Fewer parts to manage	
✓Environmentals	Less hardware	

Simplify and improve TCO by integration – z/OS w/zAAP

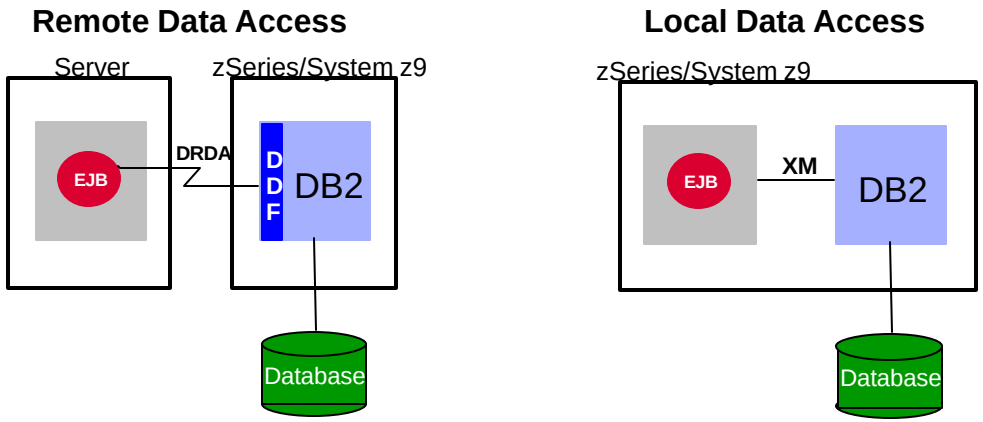


Advantages of consolidating your application and data serving on zSeries/System z9

✓Security	Fewer points of intrusion
✓Resilience	Fewer points of failure
✓Auditability	Consistent identity
✓Performance	Avoid network latency
✓Utilization	Efficient use of resources
✓Scalability	Batch and transaction processing
✓Operations	Fewer parts to manage
✓Simplification	Problem determination/diagnosis
✓Transaction Integrity	Automatic recovery/rollback
✓Environmentals	Less hardware

Best Production Value

Fewer Tiers Can Provide Better Application Performance

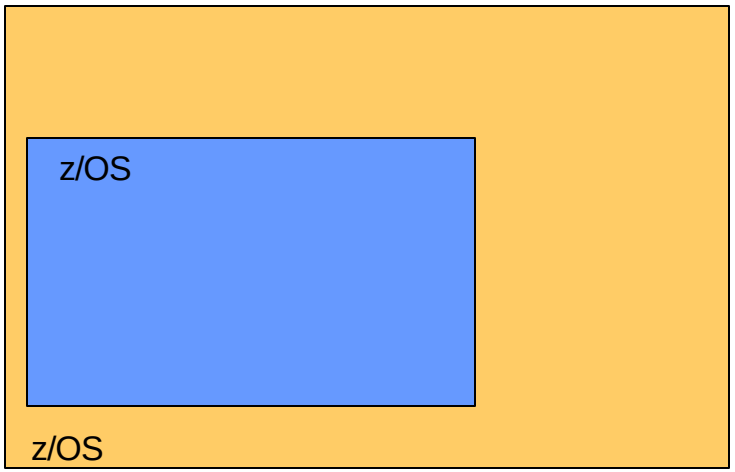


Recent WSC benchmark of a real customer application showed the benefits of running the business process logic on z/OS WebSphere.

- **Average CPU time per EJB transaction was reduced by over 77%**
- **Number of bytes of data transferred per EJB transaction was reduced by 99%**

What about security?

- **Putting WebSphere in the same LPAR as CICS, IMS or DB2 provides more options for passing a user identity to the backend server.**
- **This is due to the specialized function found in Type 2 connectors.**
- **Benefits include:**
  - More Granular Security.
  - Better Auditing.
  - Fewer passwords exposed.



zSeries/System z9

WebSphere leverages zSeries/System z9 Availability

Single System ***Clustering in a Box*** ***Parallel Sysplex*** ***GDPS***

- Continuous availability for applications
- Disaster recovery

WebSphere Family of Products on both z/OS and Linux for zSeries/System z9

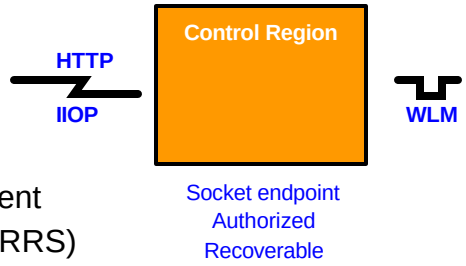
- **WebSphere Application Server V6.0.2**
  - Common code base between z/OS and Multiplatform
  - J2EE 1.4 and extensions, Web Services, SOA
- **WebSphere Business Integration Server Foundation v5.1 (WBISF) and WebSphere Process Server V6**
  - BPEL4WS and rules based choreographed workflow
  - Process/People integration with full compensation
- **WebSphere MQ Family**
  - Basic messaging, transformation, routing and data integration
- **WebSphere Portal V5.1**
  - A single point of personalized interaction and integration with applications, content, processes and people
- **Information Integration and Management Solutions**
  - WebSphere Information Integrator with Classic Federation
  - WebSphere Data Integration Suite (Formerly Ascential ProfileStage, QualityStage, DataStage, AuditStage, MetaStage)
- **Other WebSphere Products and Tools**
  - HATS, WD4z, RAD, WebSphere Studio Asset Analyzer, WebSphere Studio Workload Simulator, WebSphere Studio Application Monitor, Tivoli OMEGAMON, WBI Modeler, WBI Monitor

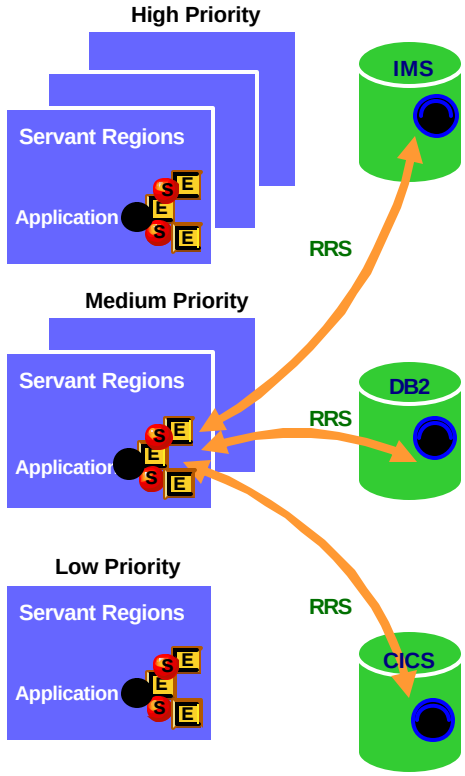
WebSphere software

WebSphere Application Server for z/OS - a transactional engine for e-business on demand

Merges the best of 30 years of mission critical transaction monitors and the J2EE programming model

- Automatic scalability (WLM)
- Isolation
- Availability
- Manageability
- Consistency
- Security (SAF)
- Resource management
- Two phase commit (RRS)

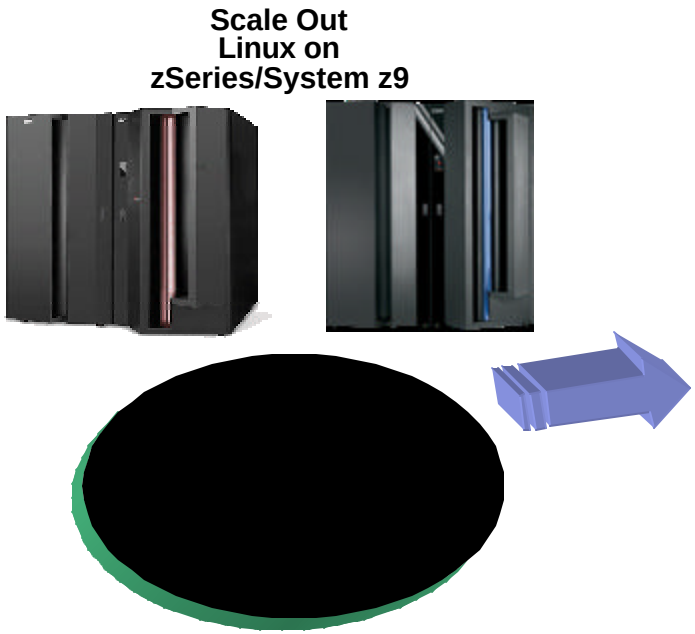




Common code base between z/OS and Multiplatform
Using common terminology, topology, programming and systems management model

Infrastructure Simplification with Linux on zSeries/System z9

Moving beyond server consolidation to support on demand business



- **High performance transaction processing**
- **I/O Intensive workloads**
- **High resiliency and security**
- **Unpredictable and highly variable workload spikes**
- **Light to moderately loaded servers sharing resources**
- **Rapid provisioning and re-provisioning**
- **Hipersockets connection to z/OS**
- **Advanced virtualization function for management and control**

Sharing resources can help boost efficiency and responsiveness

Reducing IT complexity can help businesses achieve greater cost effectiveness

IBM eServer zSeries, Linux, middleware, and services can help streamline IT infrastructures

Enterprise Applications, Informational and Collaboration Solutions on zSeries/System z9

- **Get a high performance data serving environment with IBM System z9 and DB2 V8**
  - Major enhancements
  - 64-bit
- **ERP, CRM and SCM solutions (SAP, Siebel, PeopleSoft and Lawson with zSeries as the database server)**
  - Hybrid solutions, SAP applications on Linux for zSeries
  - Componentization, J2EE, on demand, web services, SOA focus provide more potential for integrating WebSphere, Lotus, DB2 and Tivoli
- **Informational Solutions from IBM and Business Partners (IBI WebFocus, Siebel)**
  - Data Warehouse, Data Marts on Linux for zSeries
  - Content Management Solutions
  - OLAP, Mining and Reporting Solutions
- **Lotus Domino Collaboration solutions**
  - z/OS or Linux for zSeries server consolidation
  - Domino V7 3Q05 with focus on performance, scale and administration
  - More J2EE and web services support for SOA

Summary:

The IBM System z9: It's time to take another look!

1. **On demand = integration = mainframe**
   - ✓ zSeries and System z9 set the standard for integration
   - ✓ Integration for better performance, tighter security, higher availability and lower cost

2. **Achievable today**
   - ✓ Bank of Montreal example
   - ✓ The functions, the tools and the supporting middleware are all available on zSeries/System z9
   - ✓ WebSphere common code for ease of migration and common skills
   - ✓ More affordable Java, XML and Web Services with zAAPs
   - ✓ Many on one distributed consolidation with shared resources on Linux for zSeries/System z9
   - ✓ Robust platform for Enterprise Applications, Informational and Collaboration Solutions

3. **IBM is ready to help**
   - ✓ zSeries Integration Architecture Workshop (zIAW)
   - ✓ Transforming and reusing your existing IT assets

Acronym Reference

- AES…..Advanced Encryption Standard
- BPEL4WS…..Business Process Execution Language for Web Services
- CBU…..Capacity Backup
- CP…..Control Processor
- CPACF…..CP Assist for Cryptographic Function
- CRM…..Customer Relationship Management
- GDPS…..Geographically Dispersed Parallel Sysplex
- HATS…..Host Access Transformation Server
- IFL…..Integrated Facility for Linux
- OLAP…..Online Analytical Processing
- OSA…..Open Systems Adapter
- PRNG…..Pseudo Random Number Generation
- PR/SM…..Processor Resource/Systems Manager
- QoS…..Quality of Service
- RAD…..Rational Application Developer
- RAS…..Reliability, Availability and Serviceability
- RRS…..Resource Recovery Services
- SAF…..System Authorization Facility
- SHA…..Secure Hash Algorithm
- SOA…..Service Oriented Architecture
- TCO…..Total Cost of Ownership
- WAS…..WebSphere Application Server
- WBI…..WebSphere Business Integration
- WD4z…..WebSphere Developer for zSeries/z9
- WLM…..Workload Manager
- zAAP…..zSeries/z9 Application Assist Processor
- zIAW…..zSeries/z9 Integration Architecture Workshop

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Notes:

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