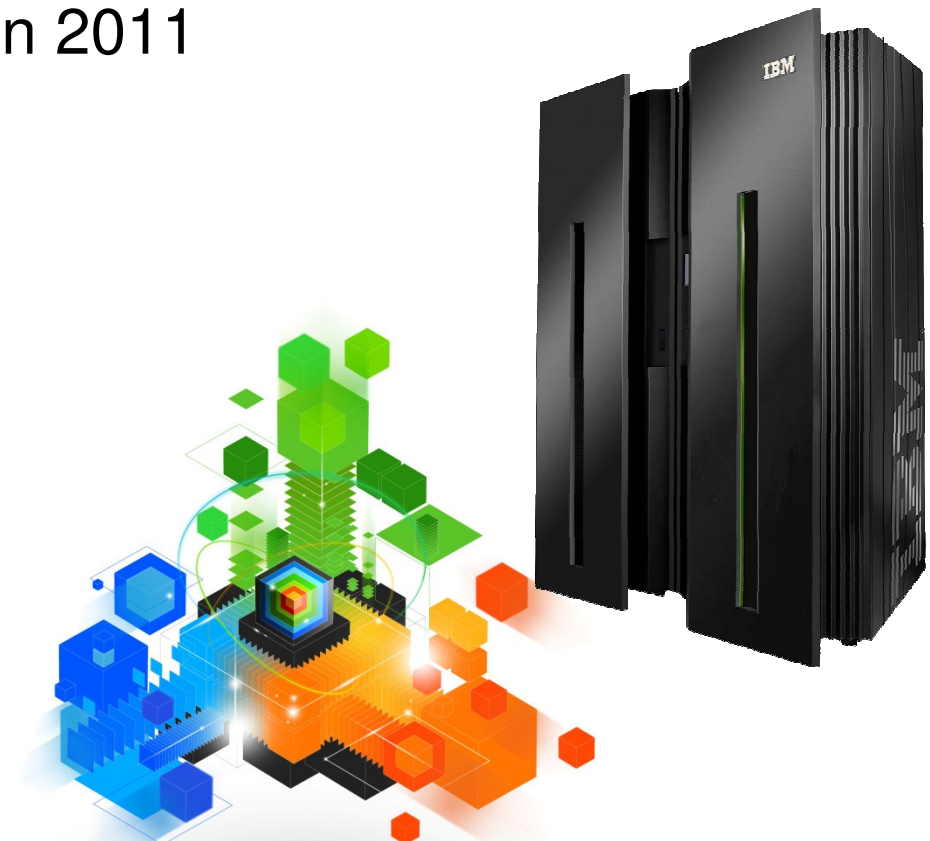




zEnterprise and System z Software Strategy and Direction

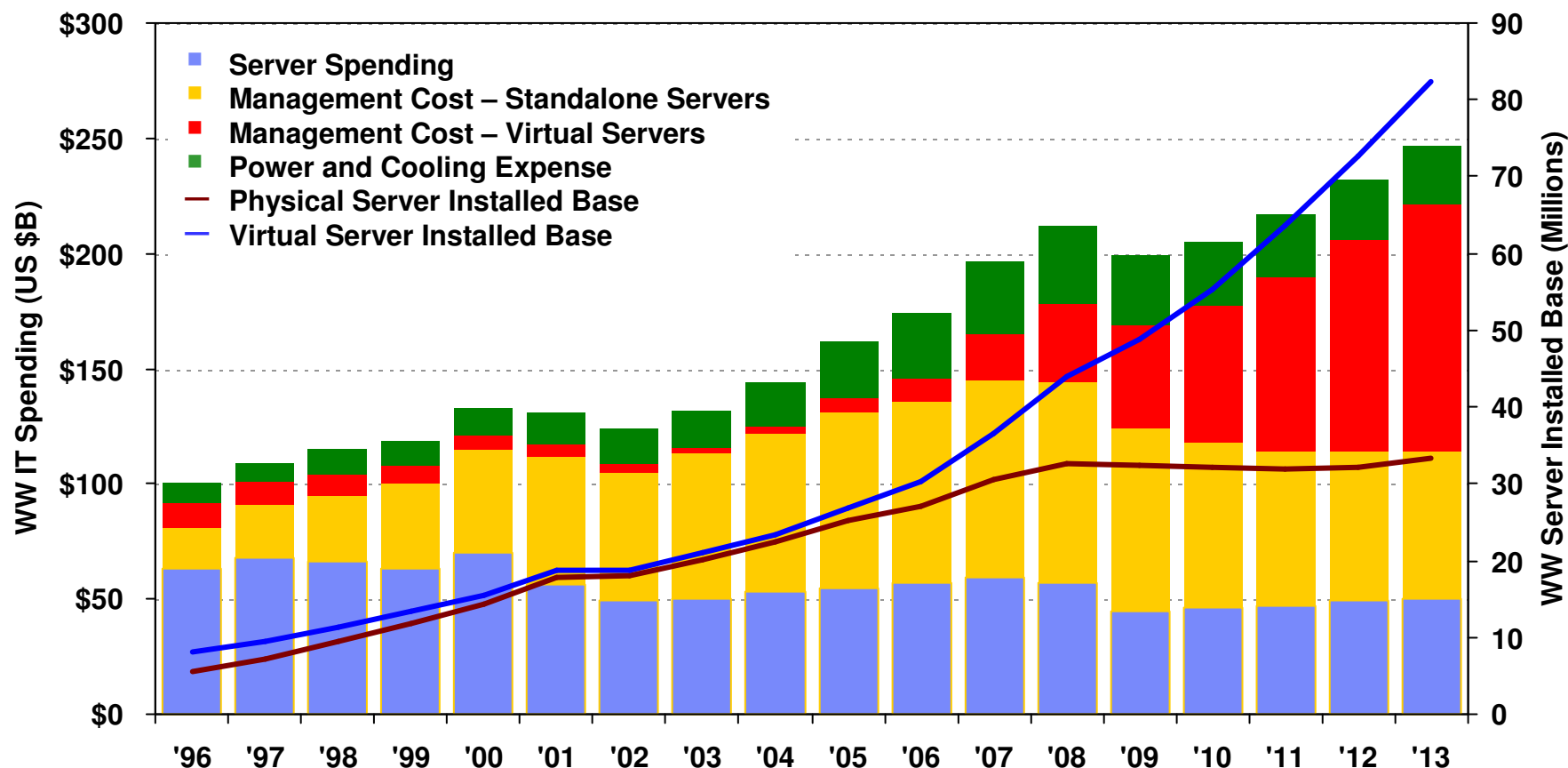
Evolving Software Capabilities in 2011

Ray Jones
Vice President,
Worldwide System z Software
IBM Software Group



New economic model for the datacenter

Management costs shift to virtualized servers



Source: IDC – “Three Data Centers – One Vision?”, March 2010

System z Software Strategy

- **Capitalize on Traditional System z Strengths**
 - **Batch and Transaction processing, Data Serving, Highest Quality of Service**
 - **Optimize to the evolving System z Hardware design point**
- **Extend Value Proposition to New and Mixed Workloads**
 - **Systematic re-engineering of the software stack**
 - **Integrate with Modern Application Development Environments**
 - **Deliver extensive Data Management services**
 - **Leverage the wave of workload consolidation**
 - **Simplify System z – make it easier to install and manage for better TCO**
 - **New faces of z**
 - **End-to-end management from a z central point of control**
- **Continue to grow the System z Ecosystem**
 - **Attract new System z customers and ISV application workloads**
 - **Enable new Hybrid and Cloud environments**
 - **Make System z relevant to the new IT generation**

z/OS and z/OS Management Facility R13* ...

..... *get more value from your workloads with improved performance, programming, and operations.*

z/OS V1.13 plans enhancements designed to:

- **Shorten batch windows using JCL improvements in JES2 environments.**
- **Simplify application programming with a new z/OS base component, z/OS Batch Runtime environment, designed to enable COBOL and Java to interoperate for DB2 with transactional integrity**
- **Get early warning of certain system issues before they become obvious to help you act quickly and decisively with updated z/OS Predictive Failure Analysis and Runtime Diagnostics functions.**
- **Improve I/O performance for z/OS UNIX workloads in a Parallel Sysplex using direct I/O with fully-shared zFS file systems, and improve zFS availability with a new zFS internal restart function.**
- **Provide more options you can use to secure your data with newer, faster, and more scalable encryption and security capabilities incorporated in IBM Tivoli Directory Server for z/OS (LDAP), RACF, z/OS System SSL, and z/OS PKI Services.**
- **Improve system responsiveness with less-disruptive DFSMSHsm journal and control data set (CDS) backups.**

.... *become more responsive and efficient with built-in expert guidance to reduce time to perform tasks*

The z/OS Management Facility V1.13 is planned to offer enhancements that:

- **Clone z/OS images and deploy software more easily and consistently, using a new z/OS Management Facility (z/OSMF) software deployment task.**
- **Define new storage volumes to SMS quickly and easily using a single UI, and a new z/OSMF disk management task.**
- **More easily maintain highly secure network connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server.**
- **Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-based applications.**



IBM Compilers Exploit System z for Maximum Performance

- Compilers exploit new hardware instructions introduced by System z
- Code generated by the compilers is highly tuned for System z
- Boost in performance of applications running on System z



z/OS XL C/C++

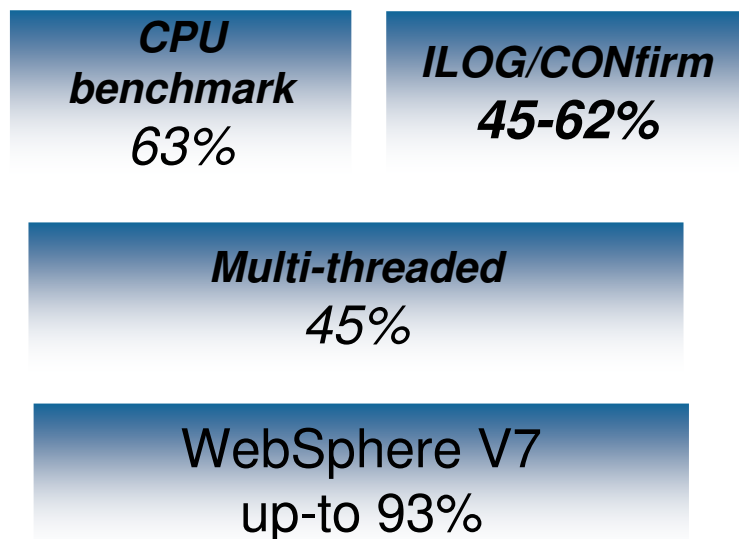
Enterprise COBOL for z/OS

Enterprise PL/I for z/OS

135 new / changed instructions

Java and WAS Performance with zEnterprise

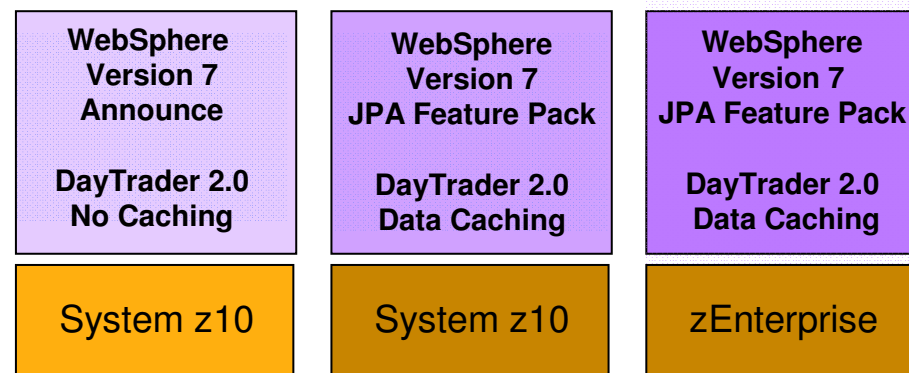
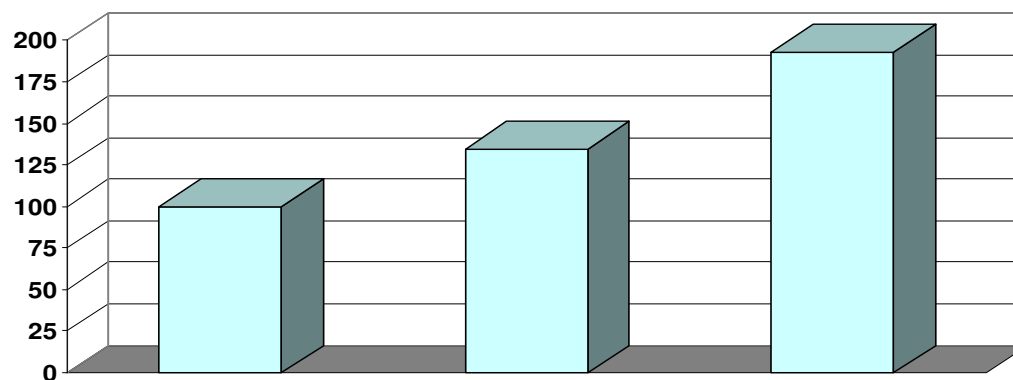
World class per-thread performance yields outstanding results:



Extensive hardware and software collaboration with deep platform exploitation:

- New out of order pipeline design
- 70+ instructions
- Java runtime environment general optimizations

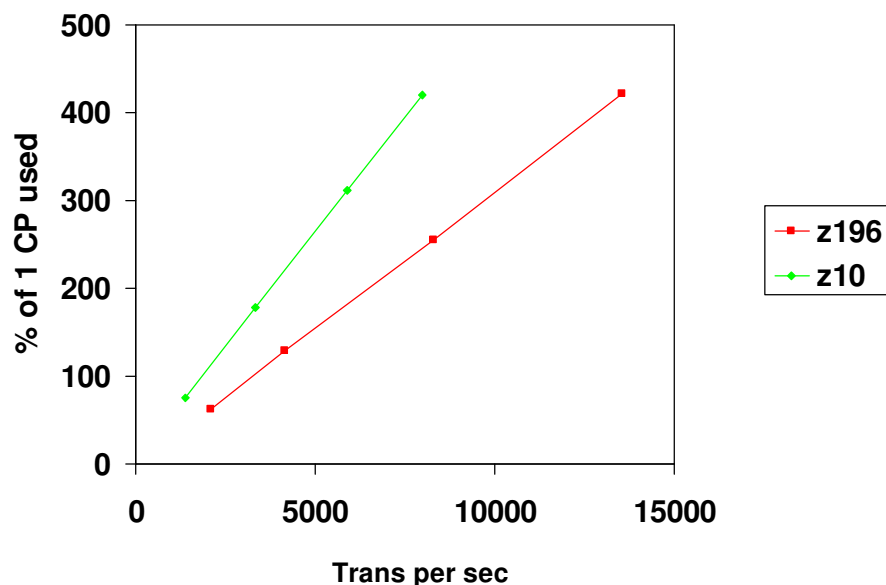
System z10 Announce Uplevel Software zEnterprise Hardware



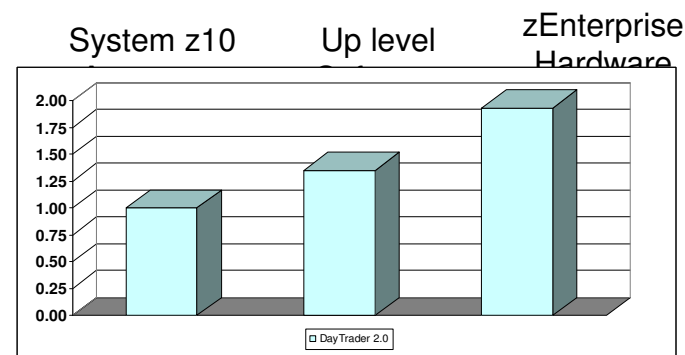
Then → Now

Performance on zEnterprise zEnterprise – The Platform for Web Services

CICS 73% throughput improvement over z10 for Web Services workloads



WebSphere 93% performance improvement via combined hardware and software improvements



WebSphere Version 7 Announce No Caching	WebSphere Version 7.0.0.9 JPA Feature Pack OpenJPA Caching	WebSphere Version 7.0.0.9 JPA Feature Pack OpenJPA Caching
System z10	System z10	zEnterprise

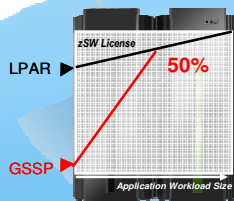
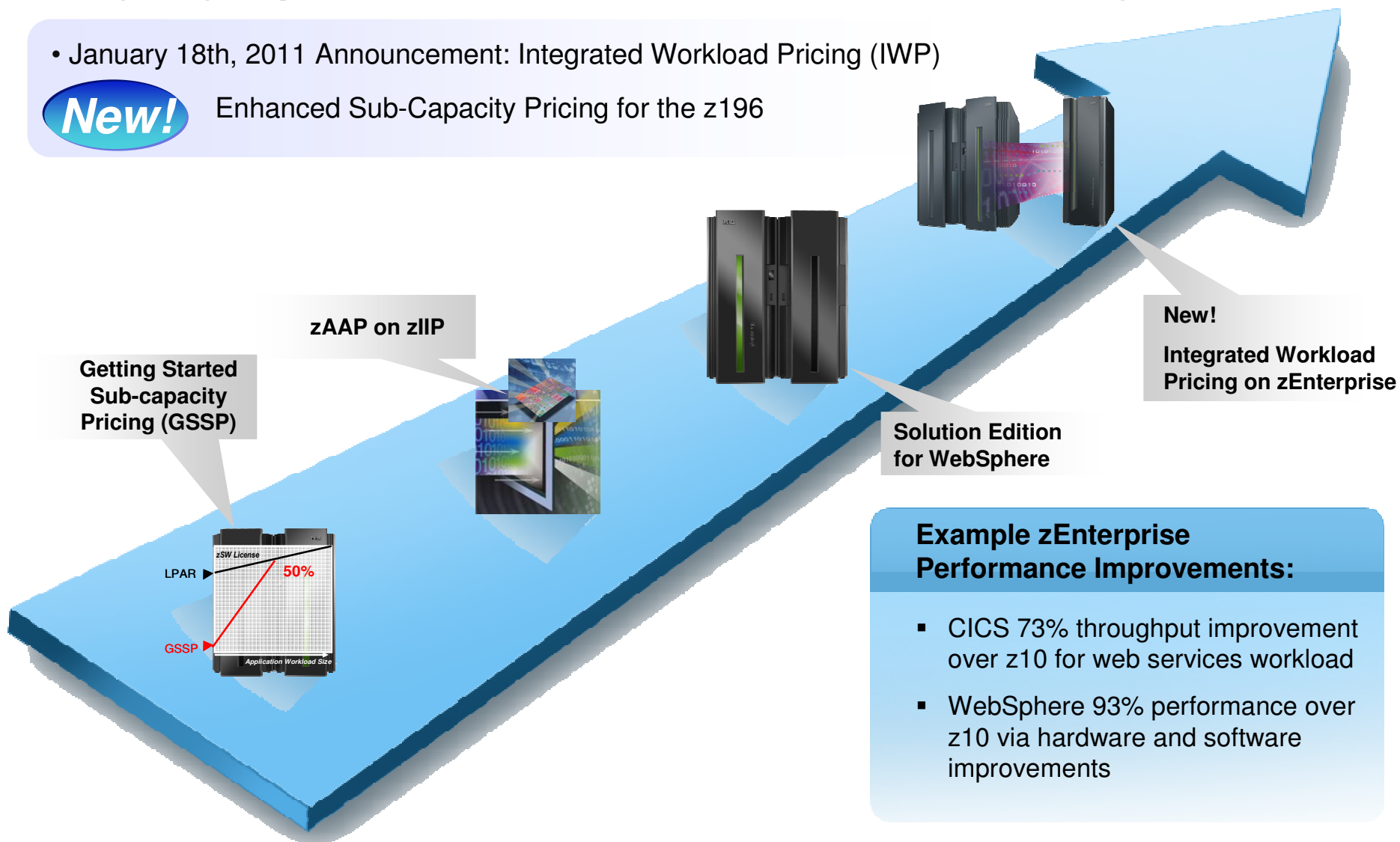
Improved Economics for WebSphere on zEnterprise

▪ Ongoing Improvement in the Price/Performance via Integration

- January 18th, 2011 Announcement: Integrated Workload Pricing (IWP)

New!

Enhanced Sub-Capacity Pricing for the z196



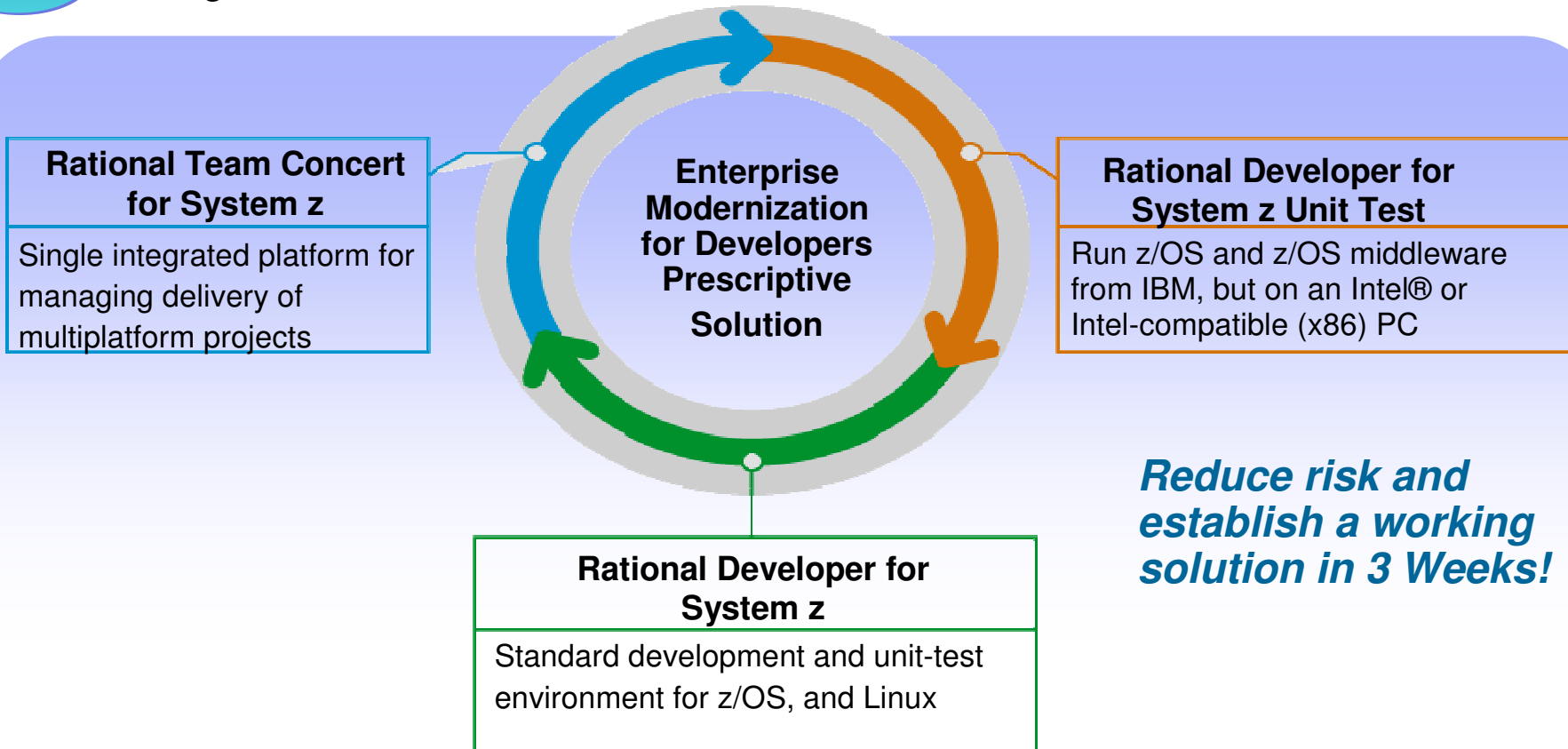
Example zEnterprise Performance Improvements:

- CICS 73% throughput improvement over z10 for web services workload
- WebSphere 93% performance over z10 via hardware and software improvements

Enterprise Modernization for Developers Prescriptive Solution Service Offering

New!

Establishing a modern, integrated, and collaborative application lifecycle management infrastructure








- ✓ Establish a modern, high-productivity development platform
- ✓ Simplify initial install and configuration via specific project plan and check lists
- ✓ Common use case scenarios & integrations.
- ✓ Implements a field-tested usage model, targeting a small, focused team of developers to ensure successful deployment

DB2 10

Customers seeing reduced costs, simplified workloads through proven technology



Reduced Costs	Simplified Workloads	Proven Technology
<p>“Based on the performance metrics from our controlled test environment, we see a significant amount of CPU and Elapsed time savings. This release has many features that will help bring down our operating costs.”</p> <p></p> <p>Morgan Stanley DB2 Team</p>	<p>“With DB2 10 able to handle 5-10 times as many threads as the previous version, the upgrade will immediately give the bank some much-needed room for future workload growth while simultaneously reducing their data sharing overhead.”</p> <p></p> <p>Paulo Sahadi - Senior Production Manager, Information Management Division at Banco do Brasil</p>	<p>“Every single SQL statement we have tested has been better or the same as our current optimal paths – we have yet to see any significant access path regression. We had to spend a lot of time tuning SQL with DB2 9, but we expect that to disappear when we upgrade to DB2 10.”</p> <p></p> <p>Philipp Nowak, BMW DB2 Product Manager</p>
<p>“The new temporal functionality in DB210 for z/OS will allow us to drastically simplify our date-related queries. In addition, we’ll be able to reduce our storage costs by using cheaper storage for inactive rows and reduce our processing cost by having DB2 handle data movement more efficiently than the custom code we’ve written to do the same work in the past”</p> <p>Large Insurance Company - DB2 10 Beta Customer</p>	<p>The biggest improvement for us was the enhancement regarding SAVE DATA support. We force customers to run their CPU-intensive queries in batch and in prior releases they failed after running for hours just because the table already existed and there were minor differences in the column definition”.</p> <p>Walter Janissen- ITERGO Informationstechnologie GmbH</p> <p></p>	<p>The new audit capabilities in DB2 10 will allow tables to be audited as soon as they are created, which is an obvious benefit for the business and will reduce costs and simplify our processes”</p> <p>Guenther Schinkel -Postbank Systems AG</p> <p></p>

For more customer references visit

<http://www-01.ibm.com/software/data/db2/zos/testimonials.html>

IMS: Powering the World's Large Enterprises



IBM Announces IMS 12 Beta (QPP)

Reduced Costs

Up to **10%** out of the box MIPS savings
Up to **30%** savings on network support

Improved Productivity

Up to **50%** faster deployment of IMS resource definitions and changes

Improved Performance

Database logging up to **2x** faster

.....and much more...

2 billion production transactions running daily

Great new offer!

IMS 11 customers can get IBM Mashup Center Version 2 for free

*"IMS Callout, ODBM, and the SOAP Gateway allow us to keep data in distributed systems in sync with that in the legacy IMS systems, helping maintain inventory control."
– Steve Clanton, IT Transactional Services, Caterpillar*

IMS 11: Open for enterprise-scale business



Superior Data Encryption with IBM InfoSphere Guardium Data Encryption for DB2 and IMS Databases

Protect sensitive and private data for DB2 and IMS with data encryption for both IBM DB2 Database for z/OS and IBM IMS databases

New!

- Offers **data privacy** by encrypting and decrypting data
- **Single tool** for both DB2 and IMS databases.
- Leverages the power of storage area networks (SANs) more safely while **complying with privacy and security regulations** that are in place or that are being enacted worldwide.
- Requires **no changes to applications** and supports all DB2 and IMS databases

<http://www-01.ibm.com/software/data/db2imstools/db2tools/ibmencrypt/>

CICS TS V4.2

Improved visibility via business event

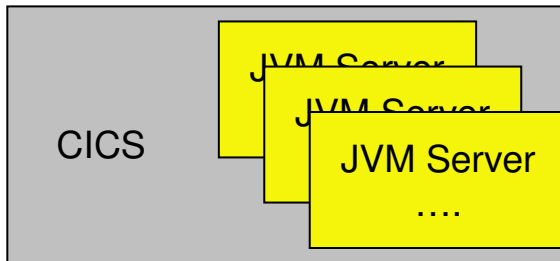
enhancements – New system health and availability events, new event inclusion within a unit-of-work and improved management of event and application code

CICS
Events



Apps, Resources,
Systems

Decision
Engine

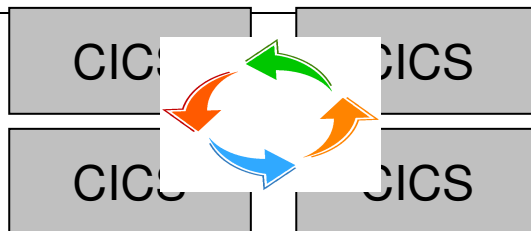
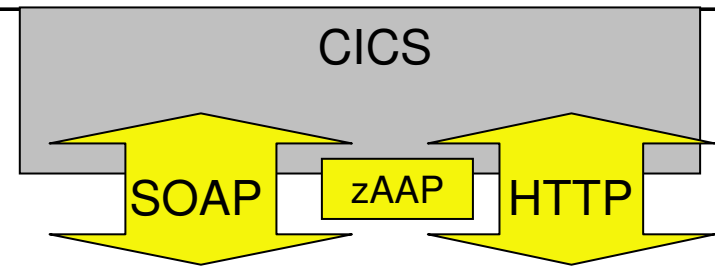


Transaction volume and performance

improvements via improved support for Java – New JVM multi-threading, New 64 bit support, enhanced web services for Java applications

Better connectivity with improved web services

support (SOAP and HTTP) – New web services internal processing consistent with WAS, portions of processing now zAAP eligible, and improved HTTP connection management



Improved management of transactions and workload

within a CICSplex – New transaction tracking, new workload balancing capabilities, storage constraint relief, VSAM performance improvements, more multi-threading and improved password security

Expanding the use of the zEnterprise with zBX



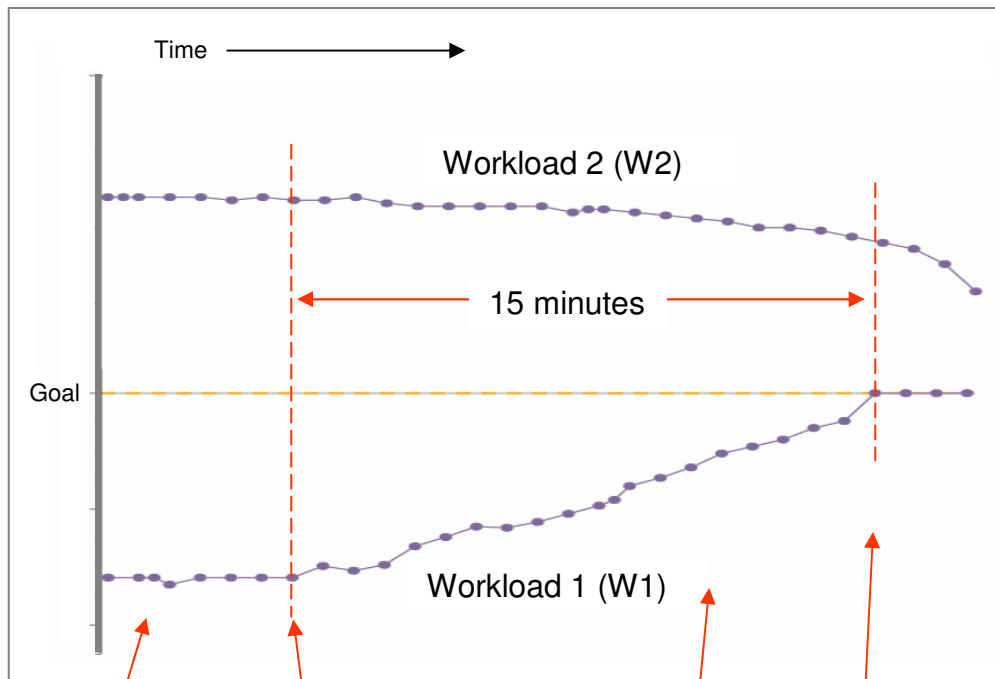
- **Versatility:** zBX now supports POWER7, DataPower XI50z, and IBM Smart Analytics Optimizer blades customizable per customer (up to 112 total blades)
- **Integration:** Integrated with the Unified Resource Manager (zManager) for hardware and firmware management and monitoring .
- **Modernization:** Advanced business analytics and XML acceleration for XML parsing, Schema/WSDL validation and XSLT processing.
- **Technology:** advanced hardware security, embedded cryptographic acceleration, and advanced BladeCenter networking infrastructure

The zEnterprise BladeCenter Extension unites modern analytics applications that are hosted on distributed, open systems with System z's heritage in processing massive amounts of data with legendary security and reliability.”

Tony Iams, Senior VP and Senior Analyst, Ideas International

Performance Manager Lab Test

Automatic Allocation Of CPU Resource



1. No performance management. W1 is underperforming, and W2 is overperforming.

2. Performance Manager is turned on. zManager detects W1 is underperforming.

3. Over time, zManager adjusts CPU resources, taking from W2 and giving to W1.

4. W1 reaches performance goal.

- **zManager monitors virtual machine performance and automatically adjusts CPU resources as needed**
- **Considers priority and performance relative to service level agreement goals**
- **Reduces the need to over-provision CPU resources**

Hypervisor Setup And Configuration Lab Test Do-It-Yourself vs. zManager

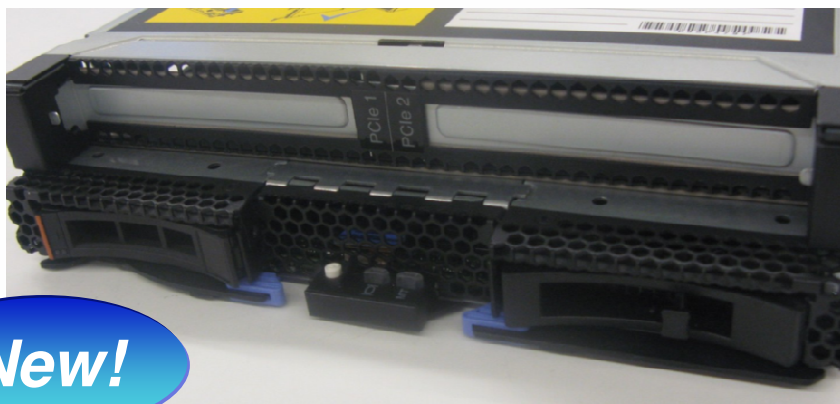
DIY Tasks (per Blade)	Elapsed Time	Labor Time
Initial communication setup & education	6 min 26 sec	6 min 26 sec
Boot VIOS disc & install (creates LPAR for VIOS automatically)	37 min 59 sec	36 min
Configure VIOS networking	2 min 49 sec	2 min 49 sec
Create new storage pool for LPARs	35 sec	35 sec
Install VIOS service fixpacks	61 min 5 sec	20 sec
TOTAL TIME	1 hr 48 min 52 sec	46 min 10 sec

zManager Tasks (per Blade)	Elapsed Time	Labor Time
Add entitlement for a blade	90 min	92 sec
TOTAL TIME	1 hr 30 min	1 min 32 sec

97% reduction
in labor time

IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise

Simplify, govern, and enhance the security of XML and IT services by providing connectivity, gateway functions, data transformation, protocol bridging, and intelligent load distribution.



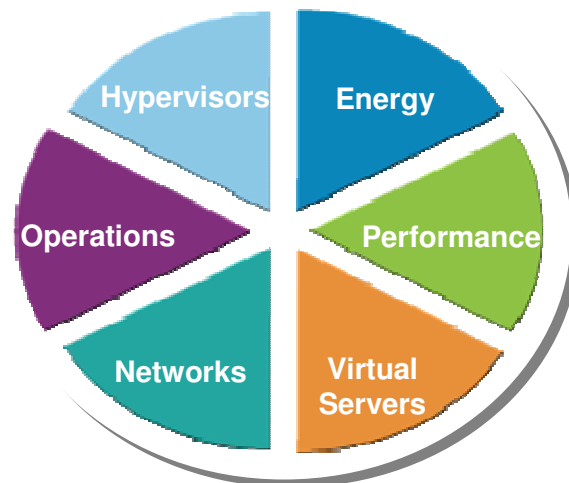
New!

- **Improved support:** Monitoring of hardware with “call home” for current/expected problems and support by System z Service Support Representative.
- **Security:** VLAN support provides enforced isolation of network traffic with secure private networks. And integration with RACF® security.
- **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 environment from a single console. Time coordination with System z. Consistent change management with Unified Resource Manager.

Extending zEnterprise Unified Resource Manager with Integrated Service Management

IBM zEnterprise Unified Resource Manager

- Workload-based resource allocation and provisioning for zEnterprise
- Physical and Virtual Resource Management
- Goal Oriented Management of zEnterprise resources (Availability, Performance, Energy, Security)
- Faster transaction processing with reduced network latency
- Operational Controls for Hardware/Firmware
- Service and Support for Hardware/Firmware
- Hardware configuration management



Tivoli and Integrated Service Management

Visibility, Control and Automation for Applications, Transactions, Databases, all Datacenter Resources

- Integrated Operational Dashboards to monitor and manage service impacting events
- Key Performance Indicators (KPI) applied to Business Services for impact analysis
- Heterogeneous data in ONE
- Business Service Modeling for planning
- Contextual Correlation to reduce Mean time to repair (MTTR)
- Establish and automate service level agreement (SLA) tracking

Control and Compliance on zEnterprise for robust Security

*Unleash the potential of zEnterprise with **Enterprise Security Hub** across production systems and consolidated virtual system workloads*

Delivering new

- **Simplified security administration to act on multiple profiles and systems to synchronize security, reduce complexity and improve productivity**
- **Extended ease-of-use, monitoring, auditing, and alerts, including UNIX sockets and daily snapshots, to improve automated compliance and audit reporting**
- **Exploiting new zEnterprise and RACF capabilities**



IBM can save customers up to 70% in auditing overhead on mainframe

New!

IBM Security zSecure suite V1.12

Manage the DFSMSHsm environment

Tivoli Advanced Reporting and Management for DFSMSHsm

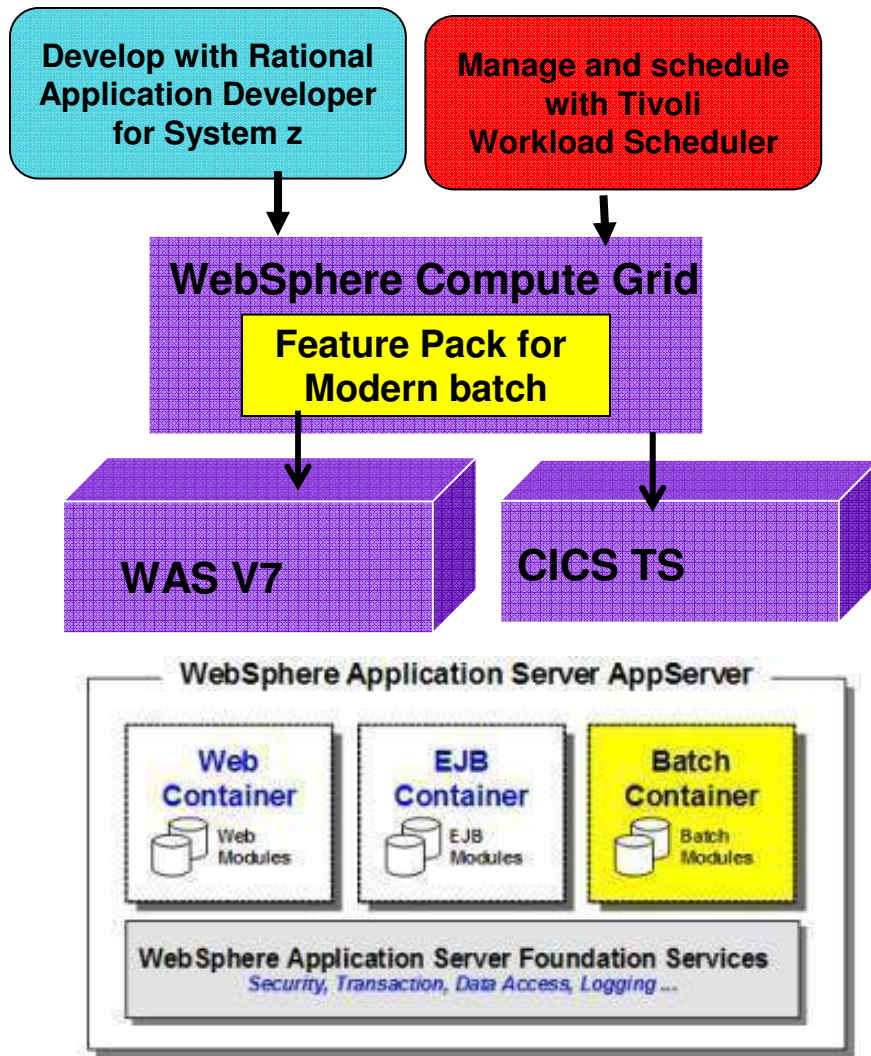
Facilitate a healthy DFSMSHsm™ environment,
improving productivity and resource utilization

New!

- **Administration enhancements** to provide the user with critical information about HSM activity and work from within the product.
- **Improved productivity and resource performance** by reorganizing any or all DFSMSHsm Control Data Sets while the started tasks are active without disrupting operations.
- **Improved productivity and minimize down time** with capability to rename, move, or enlarge any DFSMSHsm CDSs without scheduling application downtime.
- **Maximize efficiency and control cost** with new reports that show what it costs for a DFSMSHsm task to do successful and unsuccessful work.

Modernize batch applications for workload optimization

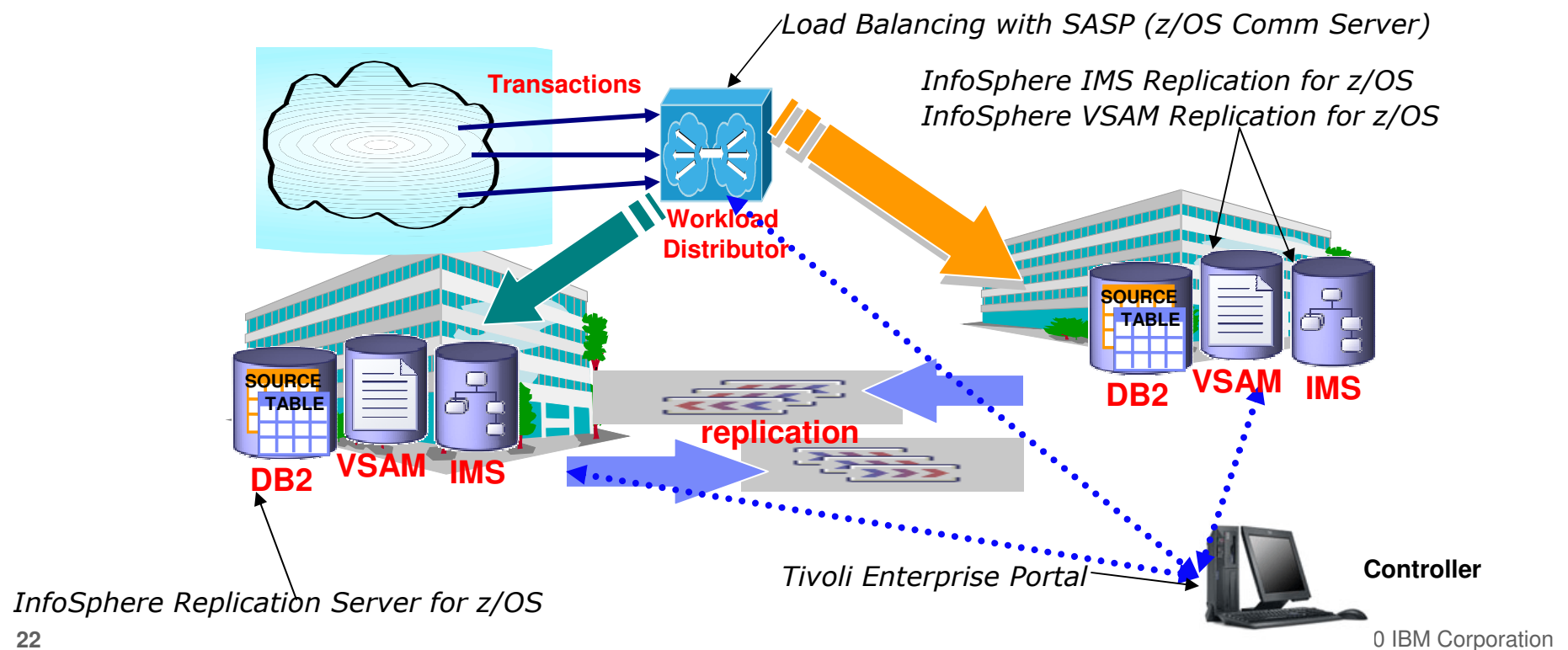
New!



- **Enterprise scheduling of web services with new executors by leveraging Tivoli Workload Scheduler (TWS) 8.5.1.1 and TWSz 8.5.1 SPE**
- **Modernize CICS with new ability to schedule and manage Java job steps with CICS TS SupportPac CN11 for WebSphere Compute Grid**
- **Simplify file conversion for faster processing with WebSphere MQ File Transfer Edition**
- **Easy to use offering tools and operational controls for Batch workload execution supporting a Java Batch programming model with WebSphere Application Server V7 Feature Pack for Modern Batch**
- **Extends business flexibility, simplification, and growth of mission-critical applications and data with IMS 12 Beta**
- **Easy development of new batch applications using enhanced creation wizards and zJCL editing with Rational Developer for System z v8.0**

Active/Active – What is it ?

- Two or more sites, separated by *unlimited* distances, running the same applications and having the same data to provide cross-site workload balancing and Continuous Availability / Disaster Recovery
- Paradigm shift: failover model => near continuous availability model
- Reduction in recovery time from hours to minutes as a design point



IBM System z Software

*Seamlessly integrated with
zEnterprise for optimal cost savings
and performance*

We are delivering a new generation of integrated hardware and software

- Scales without complexity and delivers business process aligned infrastructure in a heterogeneous environment
- Provides real-time advanced analytics
- Unifies multiplatform development and team collaboration to work as a single, integrated service delivery platform
- Exploits the advantages of integrated service management
- Extends the value of Linux on System z with collaborative tools

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CICS*	Lotus*	System z10	
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Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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