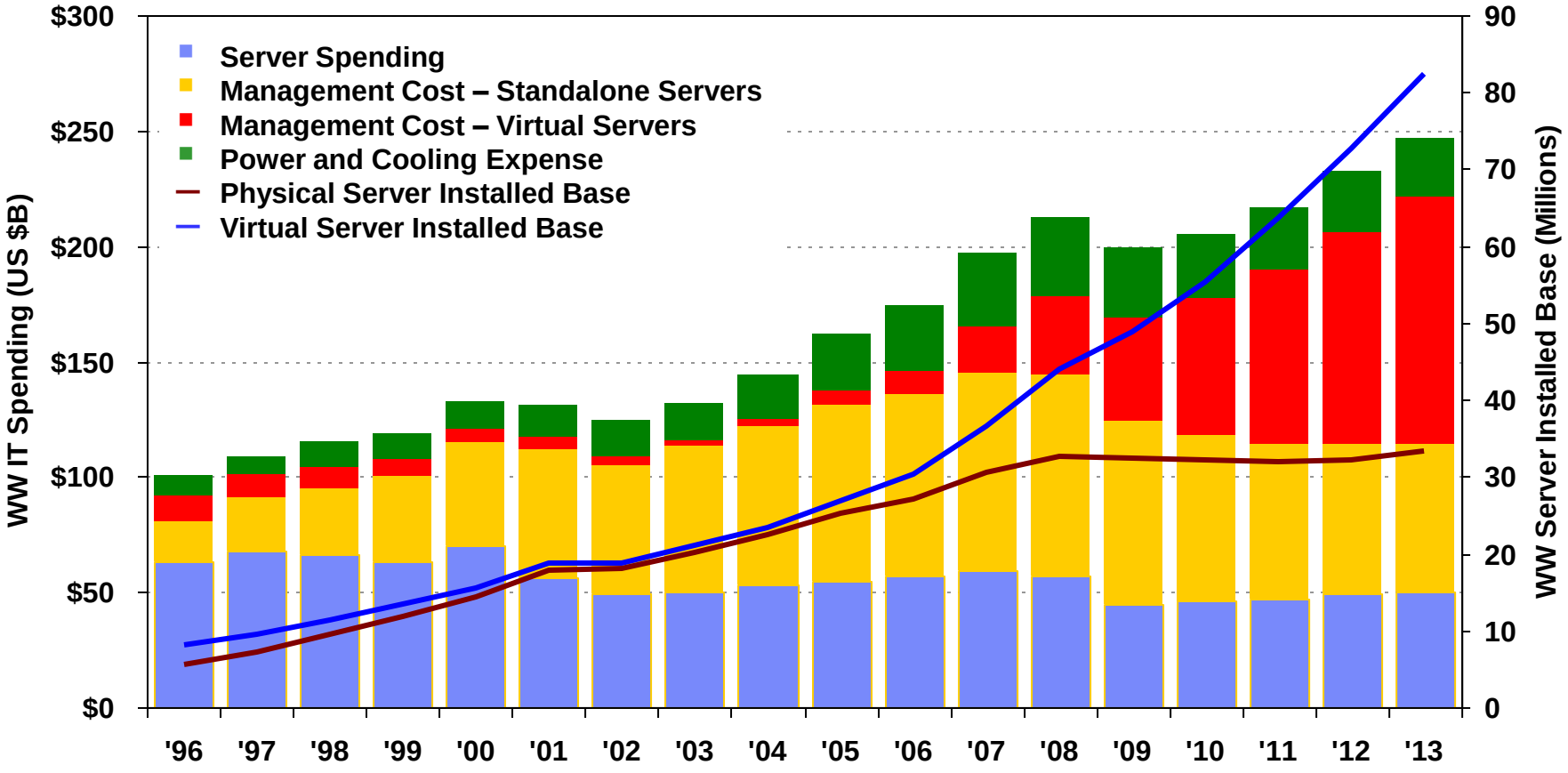
zEnterprise and System z Software Strategy and Direction

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.**

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

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:

CPU benchmark
63%

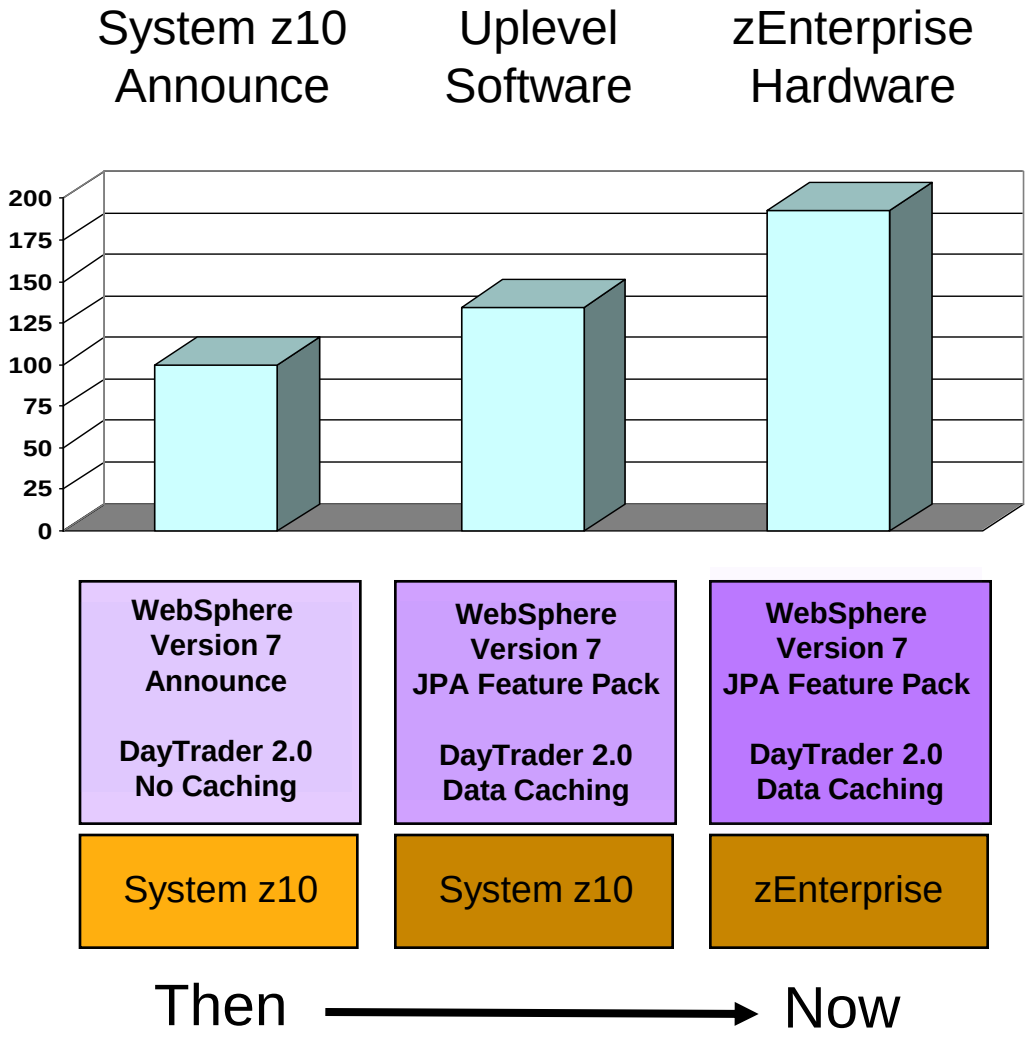
ILOG/CONfirm
45-62%

Multi-threaded
45%

WebSphere V7
up-to 93%

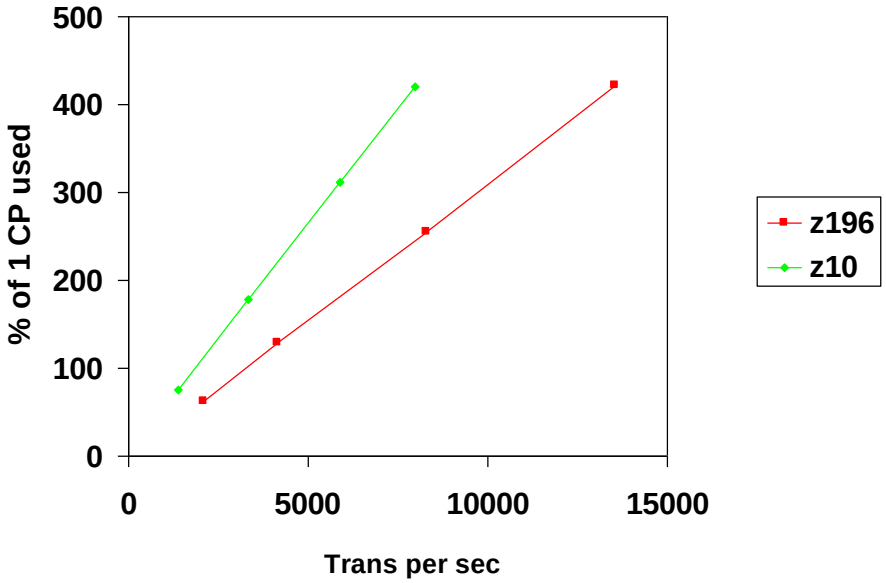
Extensive hardware and software collaboration with deep platform exploitation:

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

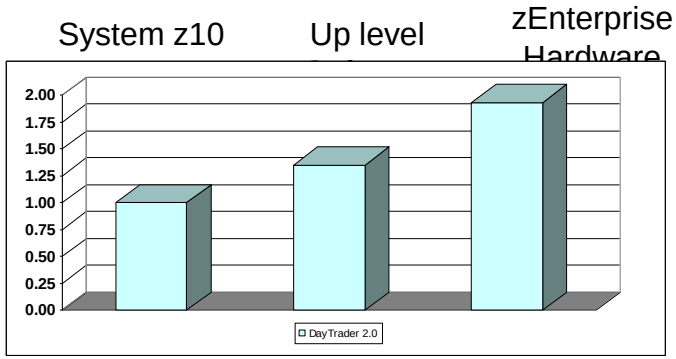


zEnterprise – The Platform for Web Services

CICS 73% throughput improvement over z10 for Web Services workloads



WebSphere 93% performance improvement via combined hardware and software improvements



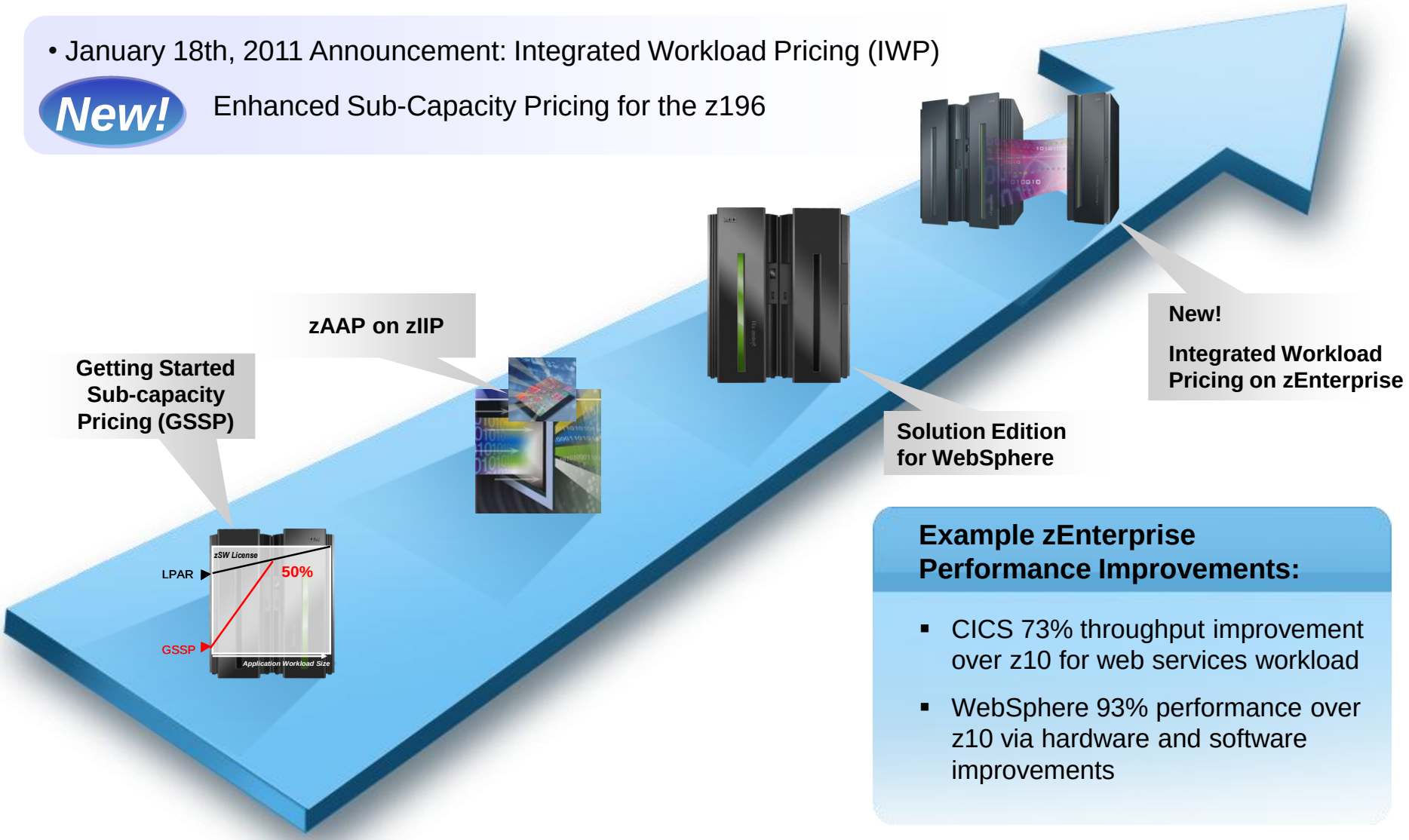
WebSphere Version 7 Announce No Caching	WebSphere Version 7.0.0.9 JPA Feature Pack OpenJPA Caching	WebSphere Version 7.0.0.9 JPA Feature Pack OpenJPA Caching
System z10	System z10	zEnterprise

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



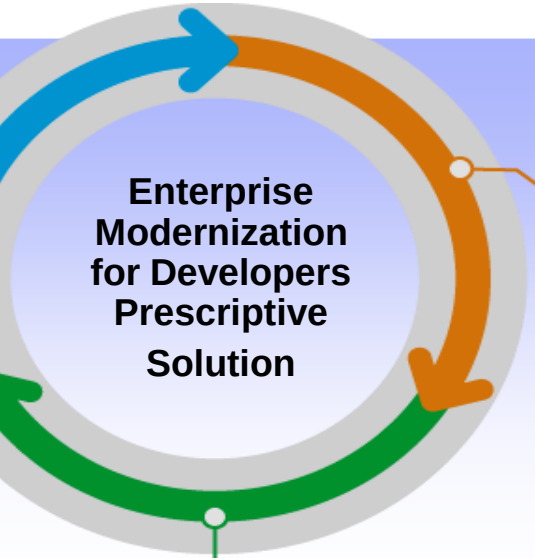
Example zEnterprise Performance Improvements:

- 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



Rational Team Concert for System z

Single integrated platform for managing delivery of multiplatform projects

Rational Developer for System z Unit Test

Run z/OS and z/OS middleware from IBM, but on an Intel® or Intel-compatible (x86) PC

Rational Developer for System z

Standard development and unit-test environment for z/OS, and Linux

Reduce risk and establish a working solution in 3 Weeks!

- ✓ 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
"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." Morgan Stanley DB2 Team	**"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."** Paulo Sahadi - Senior Production Manager, Information Management Division at Banco do Brasil	**"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."** Philipp Nowak, BMW DB2 Product Manager
"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"** Large Insurance Company - DB2 10 Beta Customer	**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".** Walter Janissen- ITERGO Informationstechnologie GmbH	**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"** Guenter Schinkel -Postbank Systems AG

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

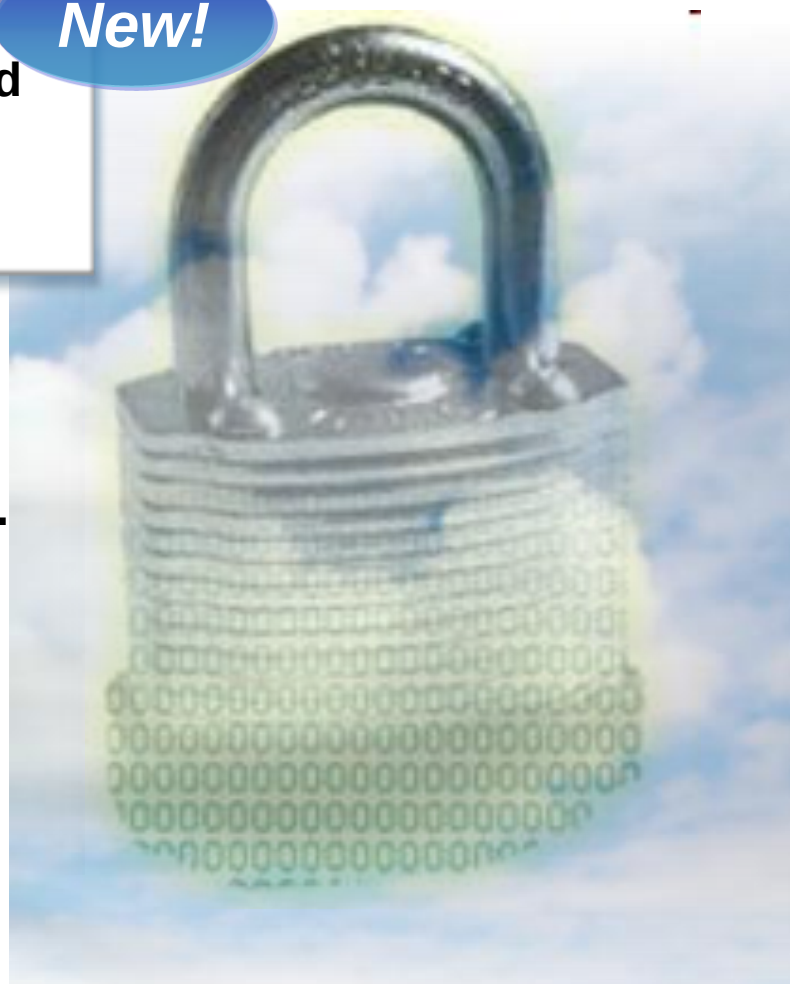
"IMS Callout, ODBM, and the SOAP Gateway allow us to keep data in distributed systems in sync with that in the legacy IMS systems, helping maintain inventory control."
– Steve Clanton, IT Transactional Services, Caterpillar

IMS 11*: Open* for enterprise-scale business

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

New!

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

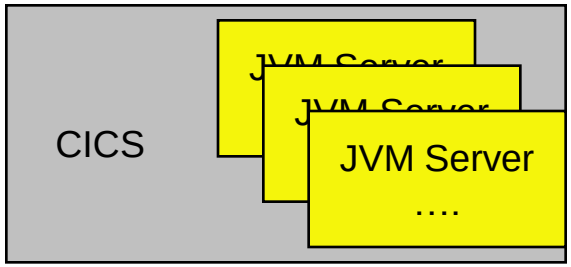


- **Offers** data privacy **by encrypting and decrypting data**
- Single tool **for both DB2 and IMS databases.**
- **Leverages the power of storage area networks (SANs) more safely while** complying with privacy and security regulations **that are in place or that are being enacted worldwide.**
- **Requires**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

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

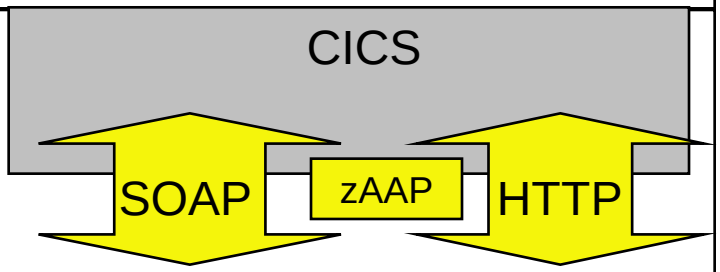
CICS TS V4.2

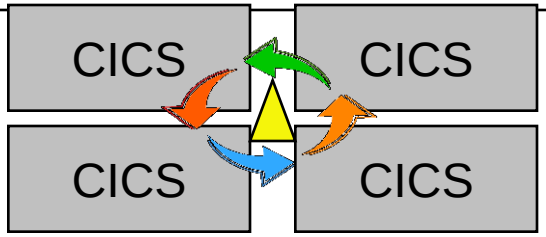
Improved visibility via business event enhancements – New system health and availability events, new event inclusion within a unit-of-work and improved management of event and application code



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

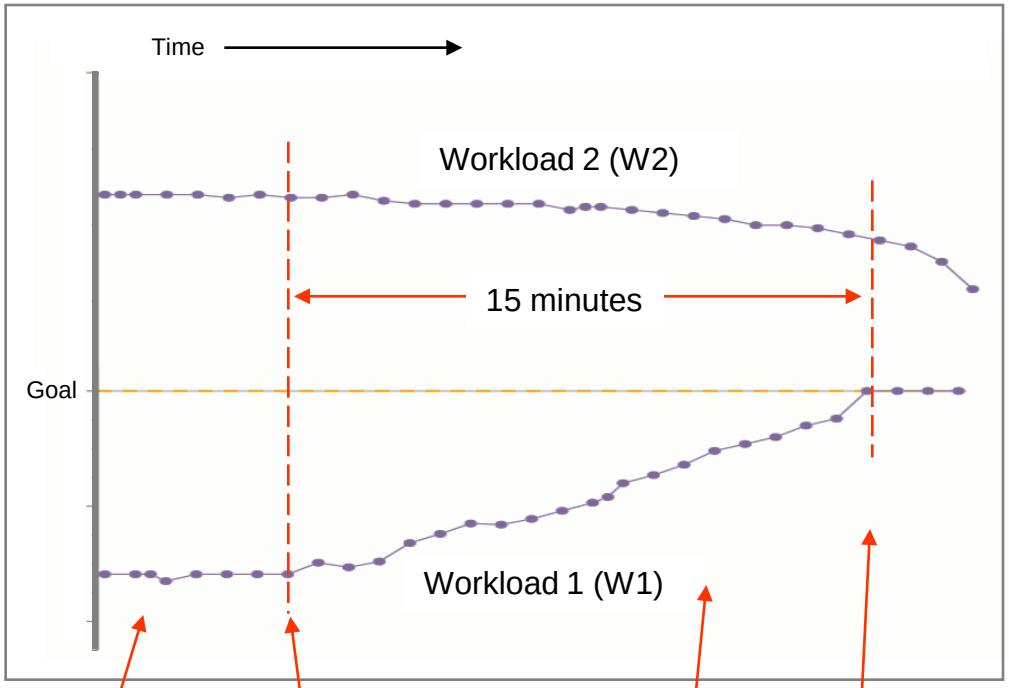
Expanding the use of the zEnterprise with zBX

- 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



- **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**

Source: IBM CPO Internal Study

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

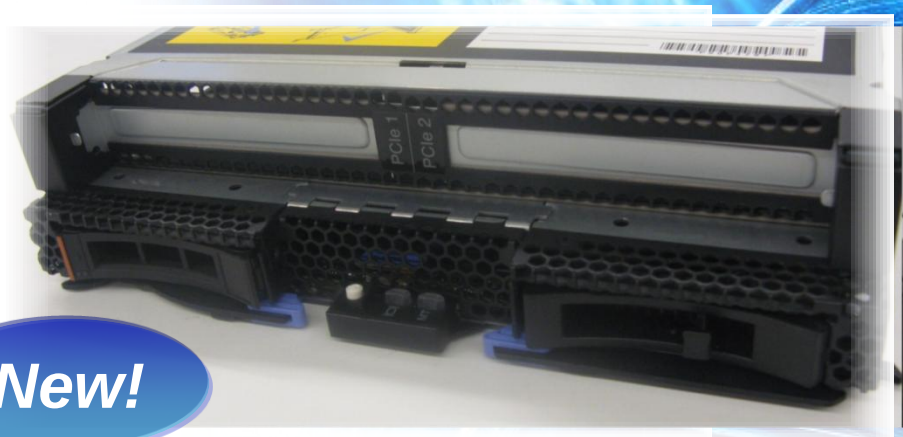
zManager Tasks (per Blade)	Elapsed Time	Labor Time
Add entitlement for a blade	**90 min**	**92 sec**
TOTAL TIME	1 hr 30 min	1 min 32 sec

97% reduction in labor time

Source: IBM CPO Internal Study

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.



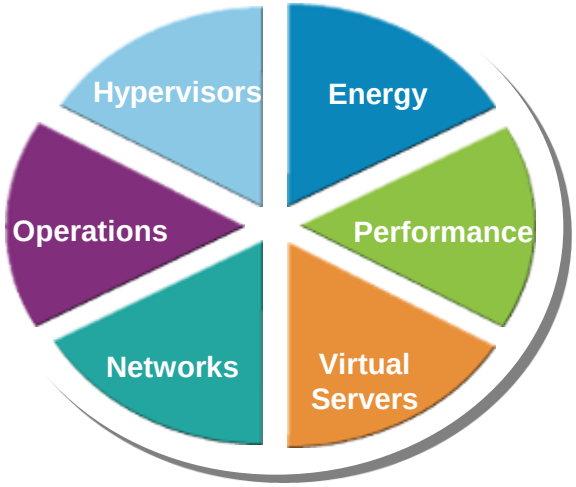
New!

- 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

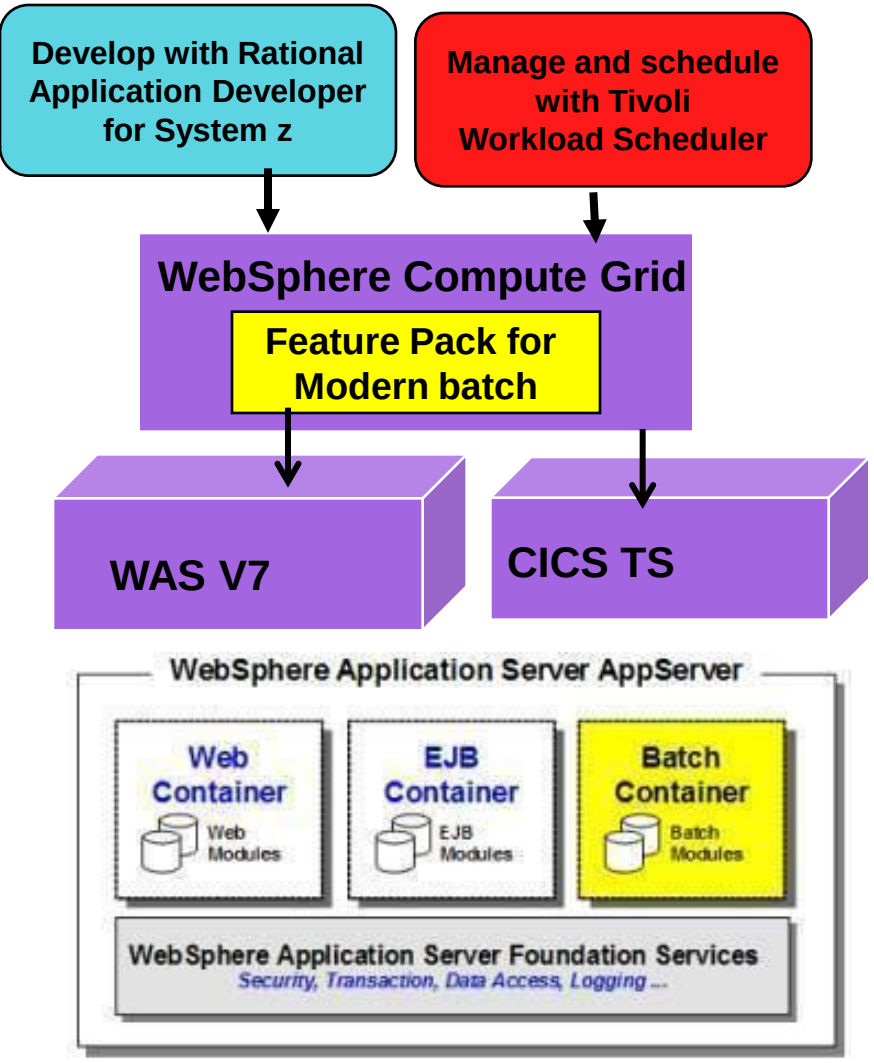
Delivering new

- **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**

Modernize batch applications for workload optimization

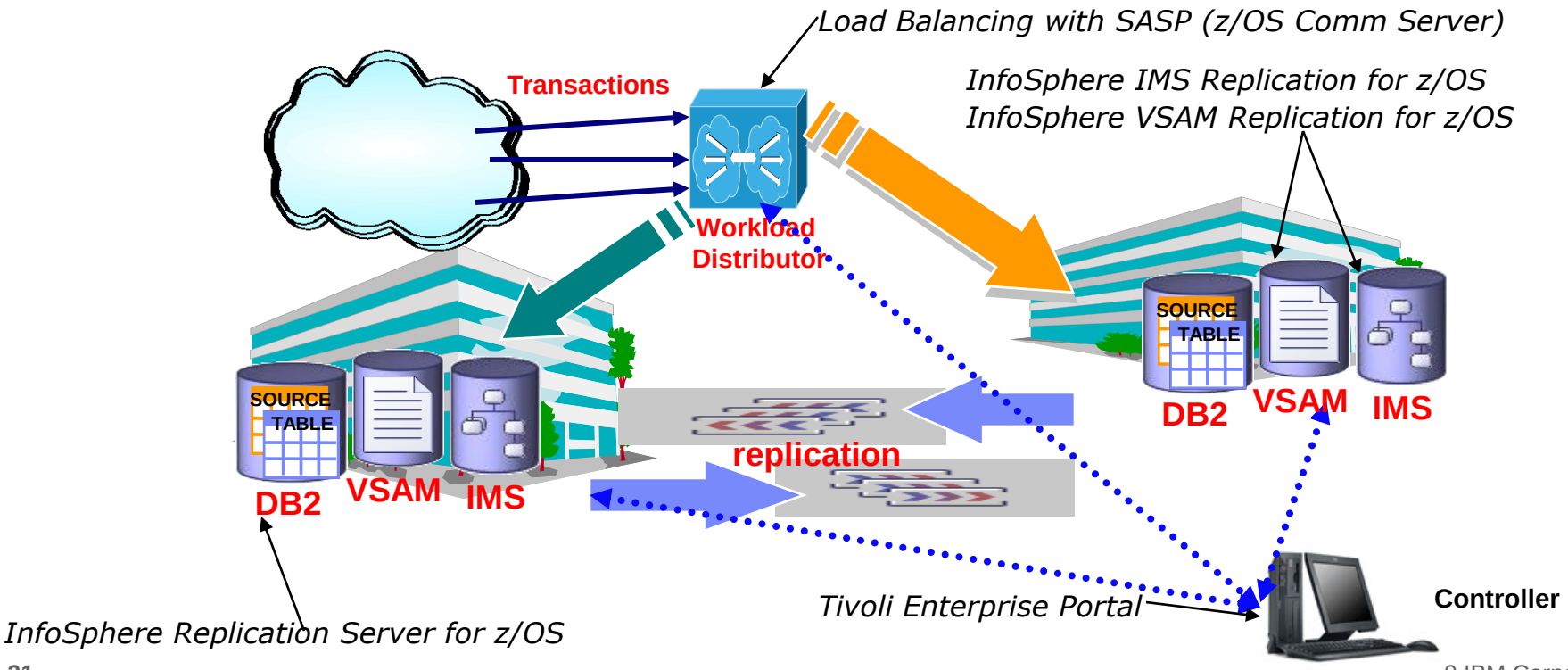


New!

- 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**



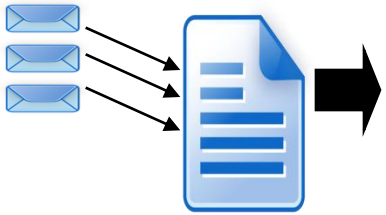
New!

NetView for z/OS v6

From event automation to feature-rich IP-stack management

1) Faster problem solving via consolidated log browsing

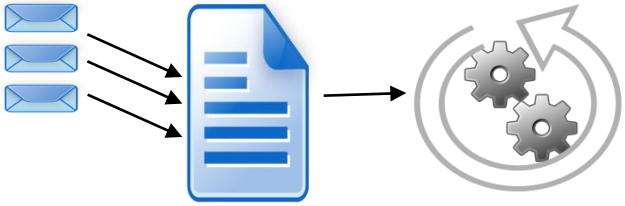
z/OS system and application log messages routed to an enhanced message log



Efficient problem diagnosis and resolution via single consolidated log message view

Approx 33% savings on issues requiring operator diagnostics of z/OS system and network messages

2) Enhanced automation via consolidated message logging

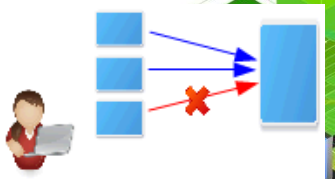


Enable easy integration with powerful NetView automation, proactively resolving issues without operator intervention

Approx 20 – 40% reduction to automate / resolve issues previously requiring operator intervention

3) Efficient diagnostics via enhanced packet tracing and analysis

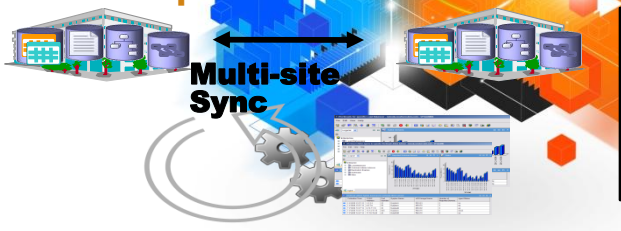
Capture session packet trace information, proactively analyze the data to present a connection analysis summary & identify areas of concern



Approx 50% savings on diagnostics of network communications issues

4) Extend enterprise resiliency via continuous operations

Provides core functionality, including communications, automation and visualization into the components of the GDPS Active/Active continuous availability solution



Enables resiliency of critical business operations via recovery time objective of approx one minute

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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DB2*	Optim		
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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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