System z Premier Executive Event

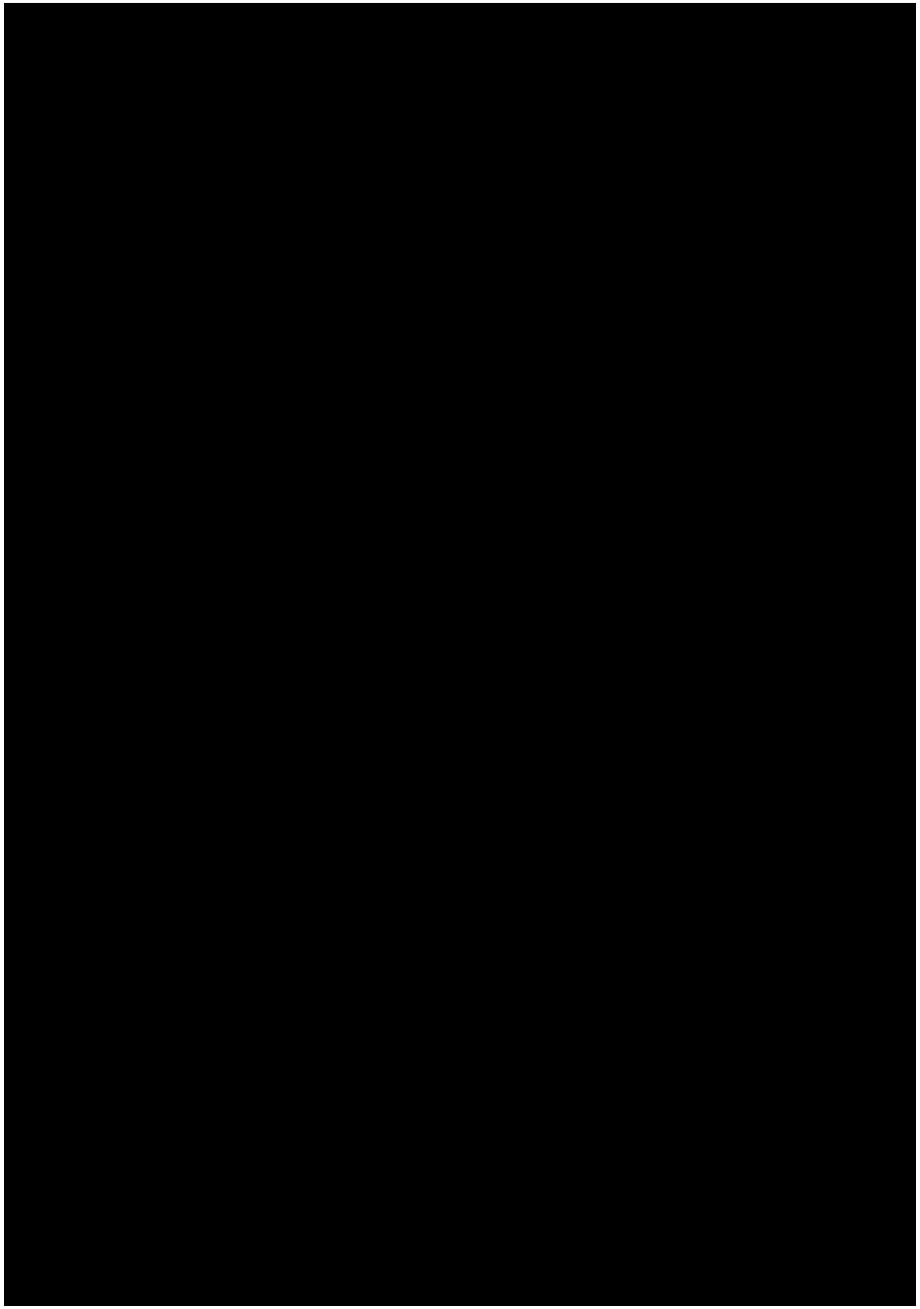
IBM

zEnterprise and System z Software Strategy and Direction

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

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; zLinux**
  - **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**



Smarter Software…

Knows and acts

Turn information into insight

Adapts

Increase agility

Connects

Connect & collaborate

Delivers

Enable business service and product innovation

Optimizes

Drive enterprise operations effectiveness and efficiency

Protects

Manage risk, security, and compliance

A New Release of z/OS Improves Performance and Ease of Use

z/OS Version 1 Release 12

Increased performance for enterprise applications

Increased availability for mission critical workloads

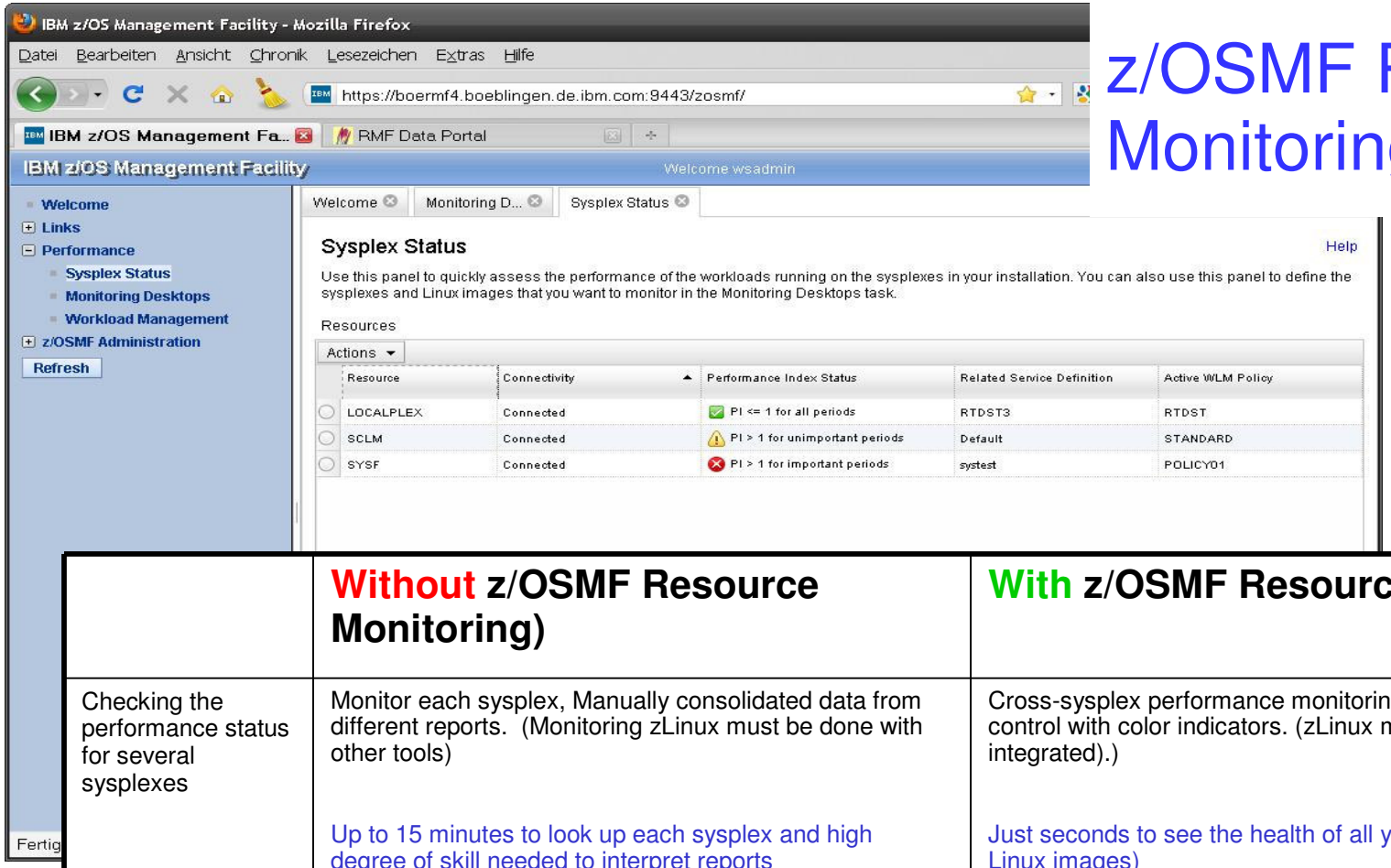
Improved ease of use with new user interfaces and automation

Centralized support for integrated computing, featuring

up to 30 to 50% performance improvement for XML validation workloads

up to 40% performance improvement for VSAM-based online and batch workloads

z/OSMF Resource Monitoring ***Benefits***



	Without z/OSMF Resource Monitoring)	**With z/OSMF Resource Monitoring**
Checking the performance status for several sysplexes	Monitor each sysplex, Manually consolidated data from different reports. (Monitoring zLinux must be done with other tools) Up to 15 minutes to look up each sysplex and high degree of skill needed to interpret reports	Cross-sysplex performance monitoring from a single point of control with color indicators. (zLinux monitor features fully integrated).) Just seconds to see the health of all your sysplexes (and Linux images)
Explore & compare the processor usage of specifics jobs	Report layouts fixed as viewed - one at a time. Limited customization and filtering. Manually consolidated data from different sources A long time, depending on data and correlations required. Generating reports may not possible.	Monitoring is customizable. Specific metrics can be added. Multiple views are started in parallel Advanced filtering features allow sophisticated analysis. About 5 minutes to set up a custom monitoring desktop, 3 key clicks to view real-time statistics

IBM System z and System z Software

Improve business performance real-time analysis for faster insights

MDM and Cognos for z/OS

SPSS Predictive Analytics for Linux on System z

Smart Analytics System 9600

Improve change management control facilities

CICS Deployment Assistance for z/OS

Drive enterprise operations effectiveness & efficiency through Integrated Service Management

Tivoli Access Manager Family

Tivoli zSecure Manager for RACF z/VM

Tivoli Application Management for z

Tivoli Application Resilience for z

Tivoli Asset and Financial Management for z

Simplify multiplatform application development and deployment

C/C++ Compilers
Enterprise PL/1 for z/OS
zPDT

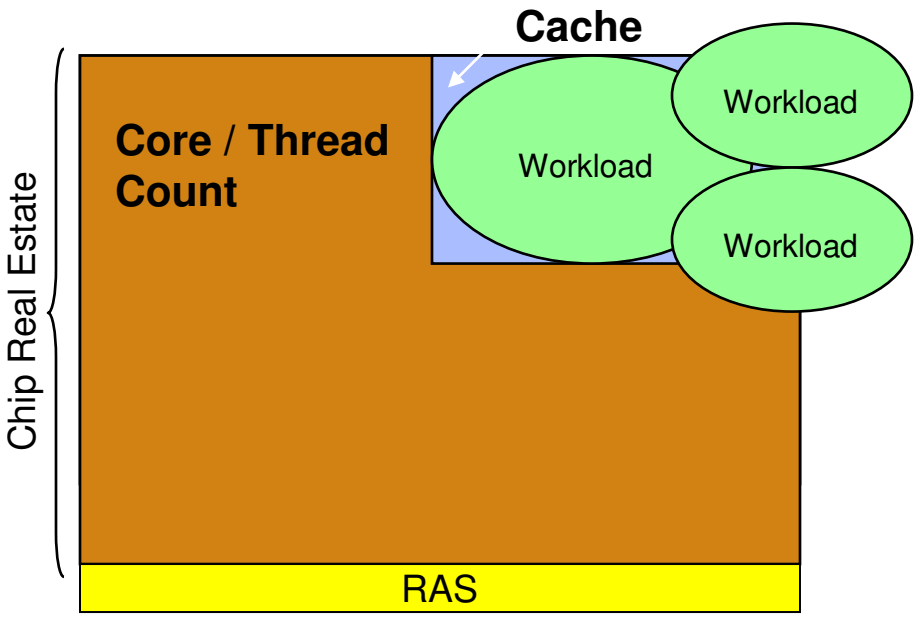
Empower people, boost productivity and collaborate

Lotus Sametime

Unified Lotus Quickr for WebSphere Portal

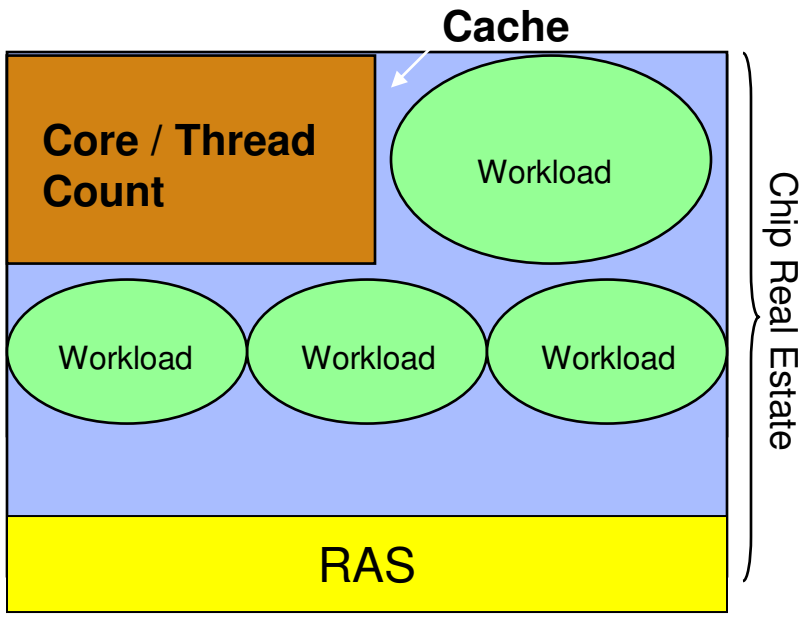
Chip Design Affects Virtualization Capabilities

Replicated Server Chip Design



- **Mixed workloads stress cache usage, requiring more context switches**
- **Working sets may be too large to fit in cache**
- **Full processor speed is not realized due to cache misses**

Consolidated Server Chip Design



- **System z cache is able to contain more working sets**
- **zEnterprise 5.2 GHz Processor speed is optimized by increased cache efficiency**
- **Shared caches enable efficient dispatching of mixed-workload tasks with high processor utilzation**
- **Comprehensive Remote Access Service (RAS) design supports putting more workload in a single processor**

Note: System representations are not to scale, proportions may vary based on generation of chip and model

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%

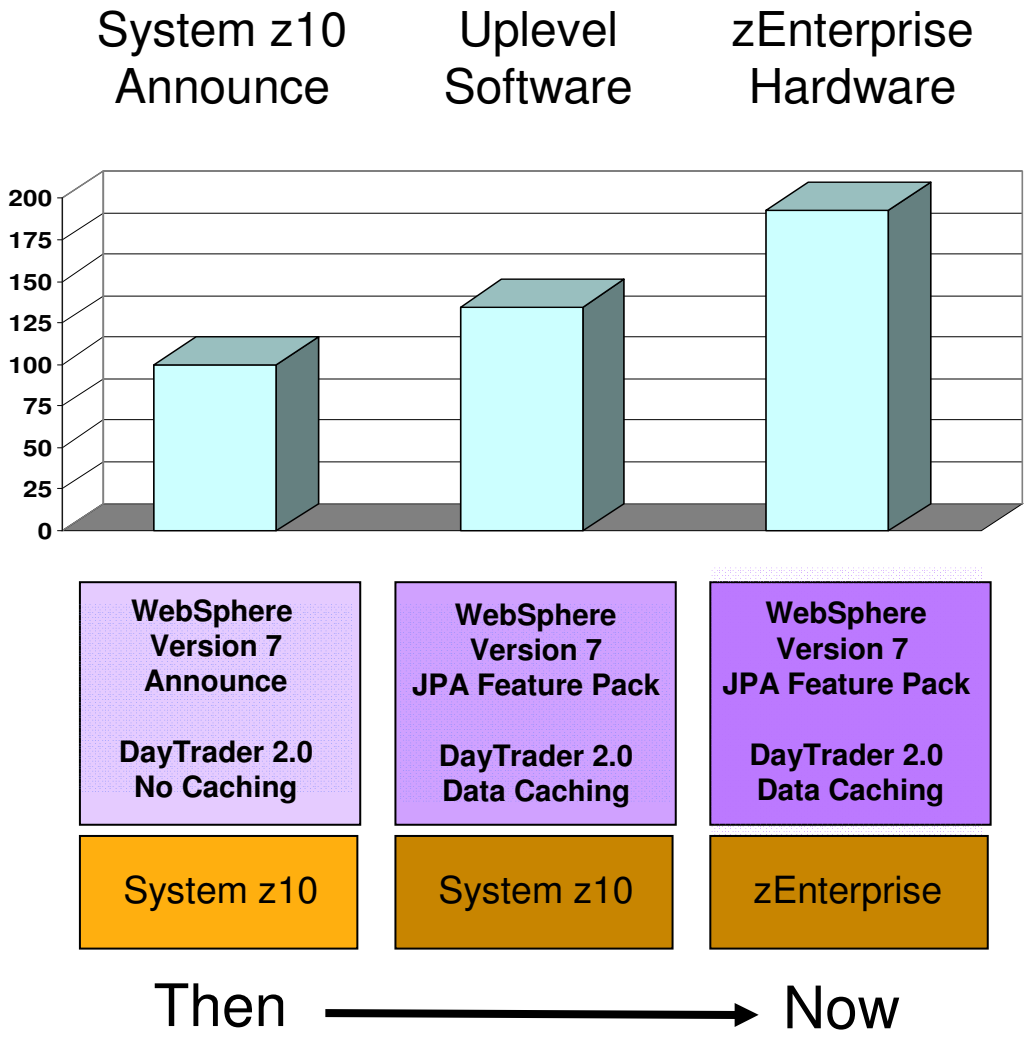
ILOG/CONfirm
45-62%

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

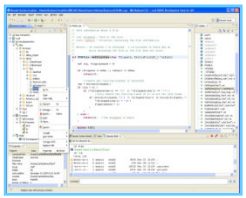


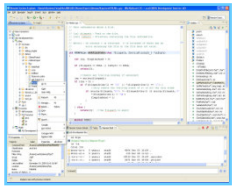
Multi-platform Development and Deployment on zEnterprise
Easily extending workloads across all platforms

Before: Platform dependent tools


z/OS

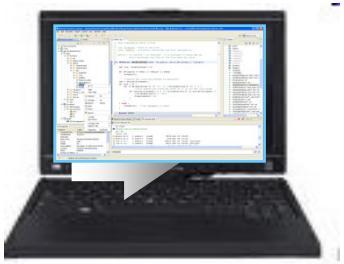

z/VM®


AIX


Linux

Separate tools for each platform

After: Multi-platform tools



z/OS z/VM AIX Linux

Eclipse-based IDE with modern GUI for application development CICS and IMS™ development <u>across</u> platforms

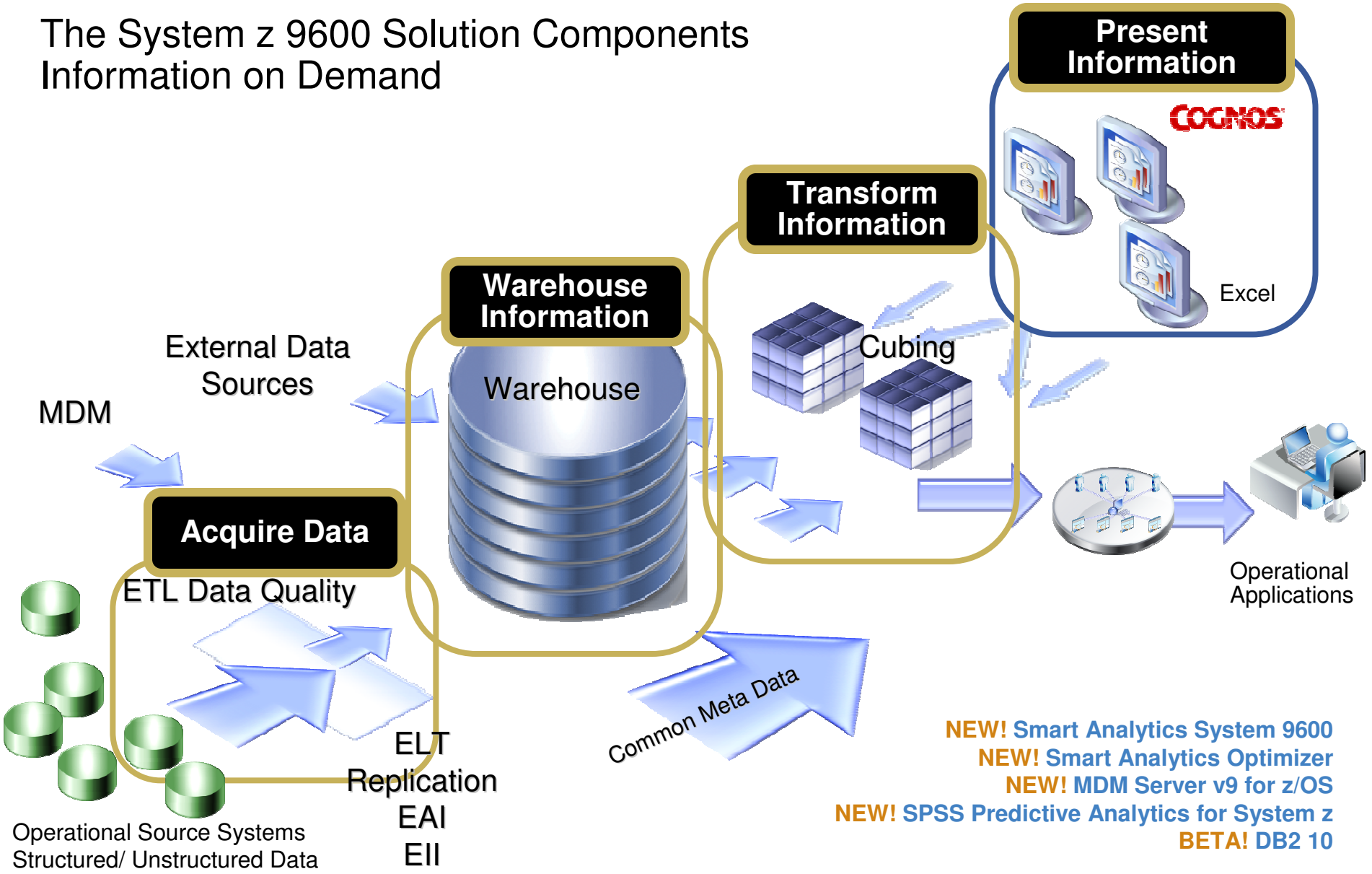
- Liberate developers to rapidly prototype new applications
- Develop and test System z applications anywhere, anytime
- Free up mainframe development MIPS for production capacity
- Eliminate costly delays by reducing dependencies on operations staff

DB2 for z/OS

	DB2	DB2 9	DB2 10
	▪ Deep synergy with System z ▪ Hardware compression ▪ Consolidation	▪ Significant Utility CPU savings ▪ Compress indexes, save 50% disk ▪ More CPU on specialty engines	▪ Additional savings in DB2 Batch & OLTP CPU ▪ On-the-fly data Compression ▪ Temporal data support ▪ Skip-level migration
	▪ Unmatched availability ▪ Unparalleled security ▪ Industry leading reliability ▪ Near-linear scalability	▪ Flexible context and role security ▪ Expanded online schema changes ▪ Volume level backup & recovery	▪ Ten times more concurrent users ▪ More online schema changes ▪ More granular access control
	▪ Optimized for SOA ▪ Flexible development ▪ Warehousing capabilities	▪ Seamless integration of XML and relational data ▪ Improved SQL ▪ Partition by growth ▪ OLAP expressions	▪ Enhanced query parallelism ▪ More SQL compatibility ▪ Improved pureXML™ and SQL PL

Beta Announced: Feb 9, 2010

The System z 9600 Solution Components
Information on Demand



NEW! Smart Analytics System 9600
NEW! Smart Analytics Optimizer
NEW! MDM Server v9 for z/OS
NEW! SPSS Predictive Analytics for System z
BETA! DB2 10

IBM Smart Analytics Optimizer

Capitalizing on the best of relational and columnar databases

Workload optimized, appliance-like, add-on, that enables the integration of business insights into operational processes to drive winning strategies.

- **Performance**
- **Integration**
- **Self-managed workloads**
- **Transparency**
- **Simplified administration**

Up to **80X** performance increase in specific queries

Empower People, Boost Productivity and Collaborate

*Connect and scale **150K+** employees, customers, and partners worldwide 24x7*

- **End-to-end Enterprise Content Management (ECM) integration in Team Places with enterprise grade reliability on Linux on zEnterprise**
- **ECM management providing imaging, digital asset management, Web content management and content integration on a multi-tier architecture**
- **24X7 presence, chat and online meetings supported on Linux on zEnterprise**
- **Expanded support of client platforms and mobile devices**

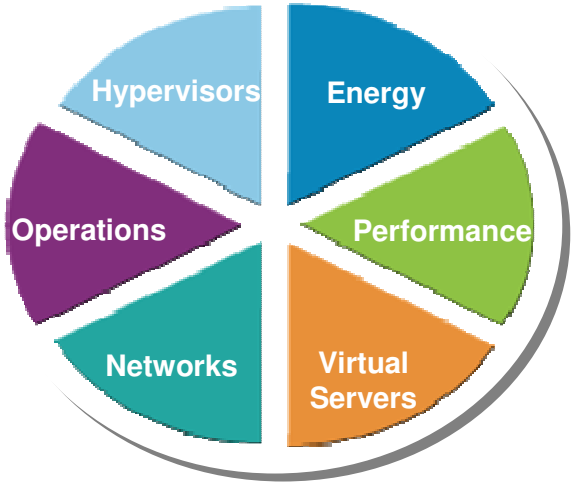
NEW! Lotus® Quickr 8.5 for WebSphere Portal
NEW! Lotus Sametime 8.5.1*
Lotus Connections, Lotus Notes® and Domino®, WebSphere Portal
Other ECM solutions - IBM FileNet and IBM Content Manager solutions

Planned capability. IBM plans are subject to change

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



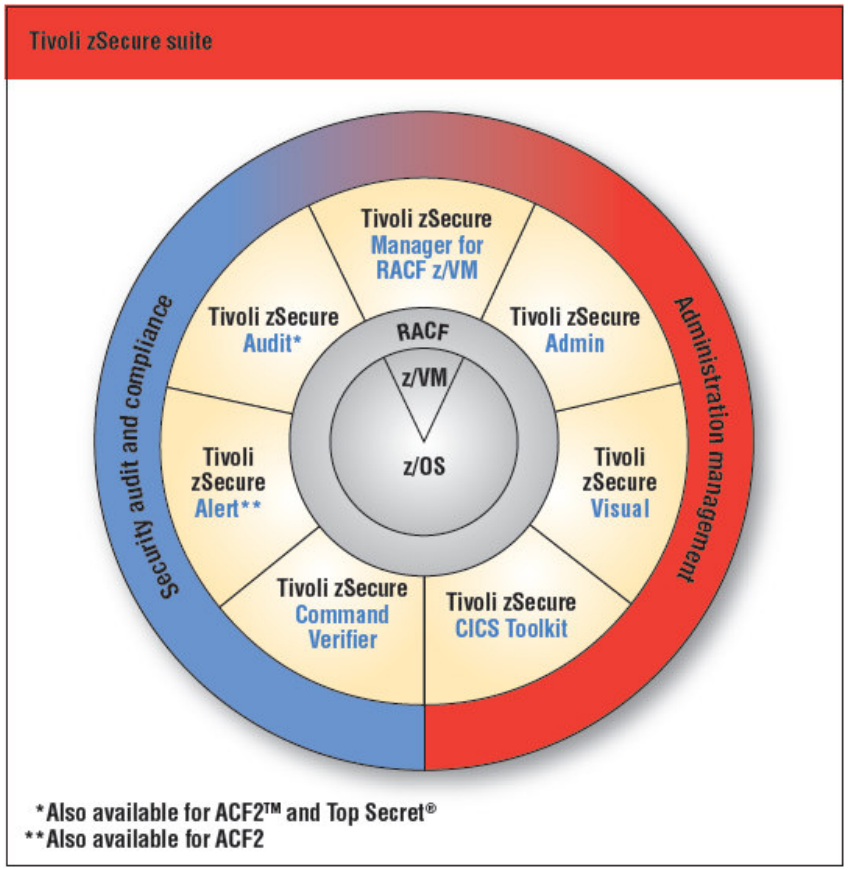
Tivoli and Integrated Service Management

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

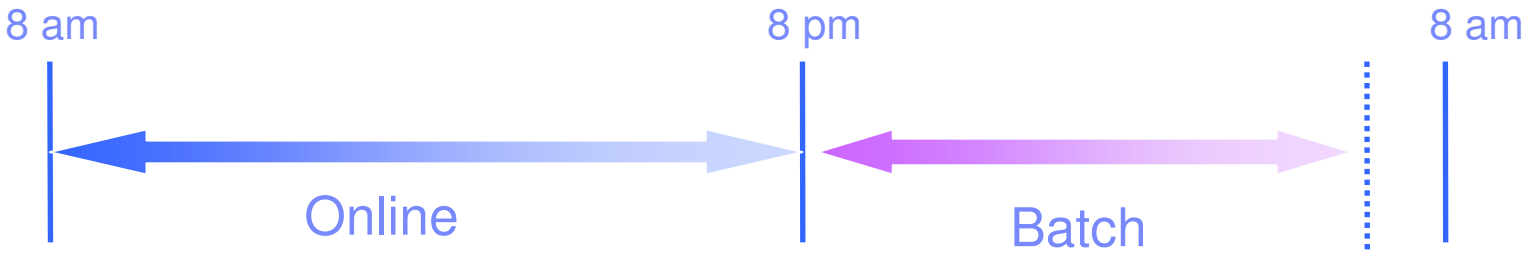
Manage Risk, Security, and Compliance

- **New capability to report and analyze security events associated with Linux on System z**
- **New capability to easily enroll and manage federated user access for zEnterprise and Linux on System z**

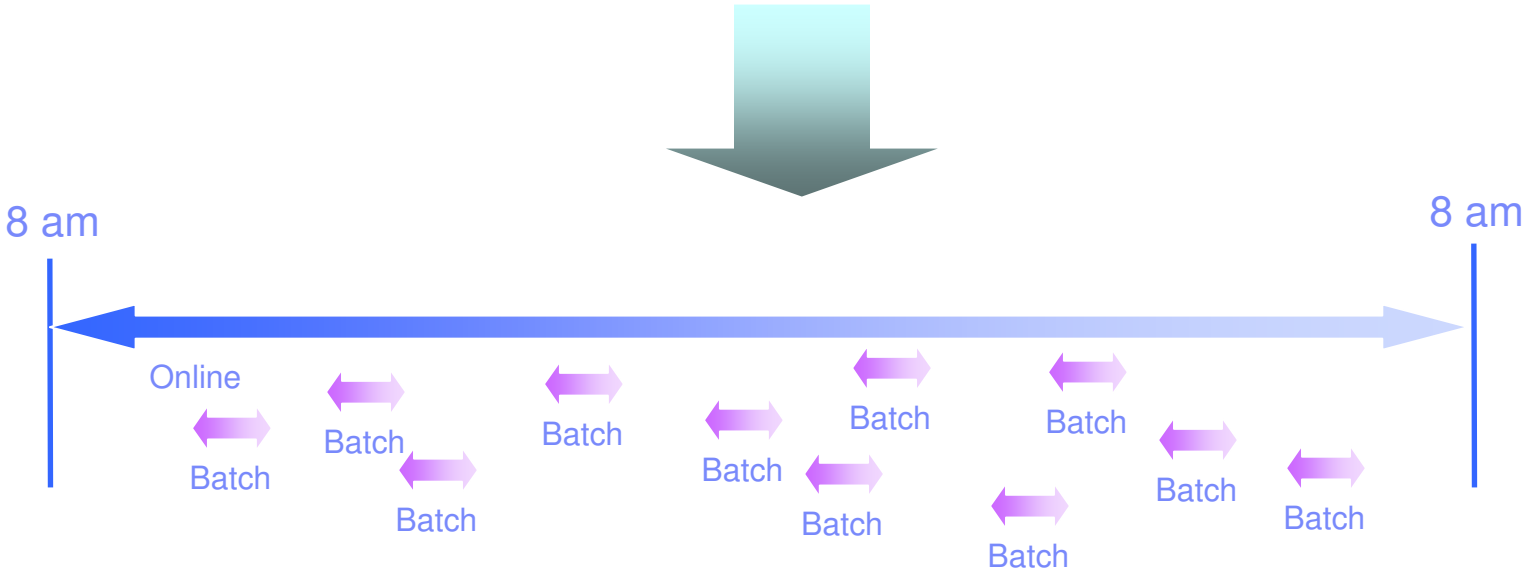


NEW! Tivoli Security for zEnterprise
NEW! Tivoli zSecure Manager for RACF z/VM
NEW! Tivoli Federated Identity Manager for z/OS
Tivoli Security Management for z/OS, Tivoli zSecure suite
Tivoli Identity and Access Assurance

Continuous Batch Processing



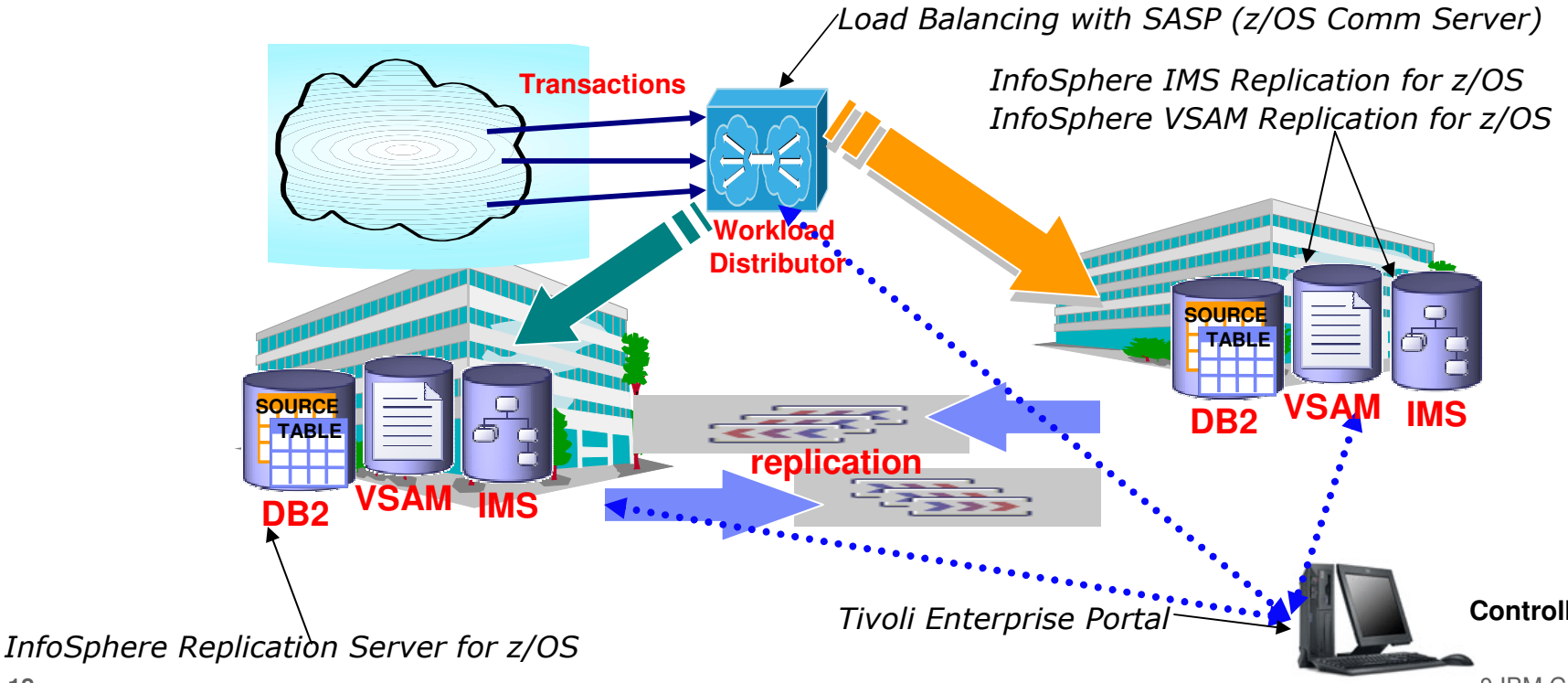
Current Batch Processing Technique



Going forward, Batch Processing Techniques

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**



Comprehensive IBM Software leveraging the strengths of zEnterprise

IBM Software

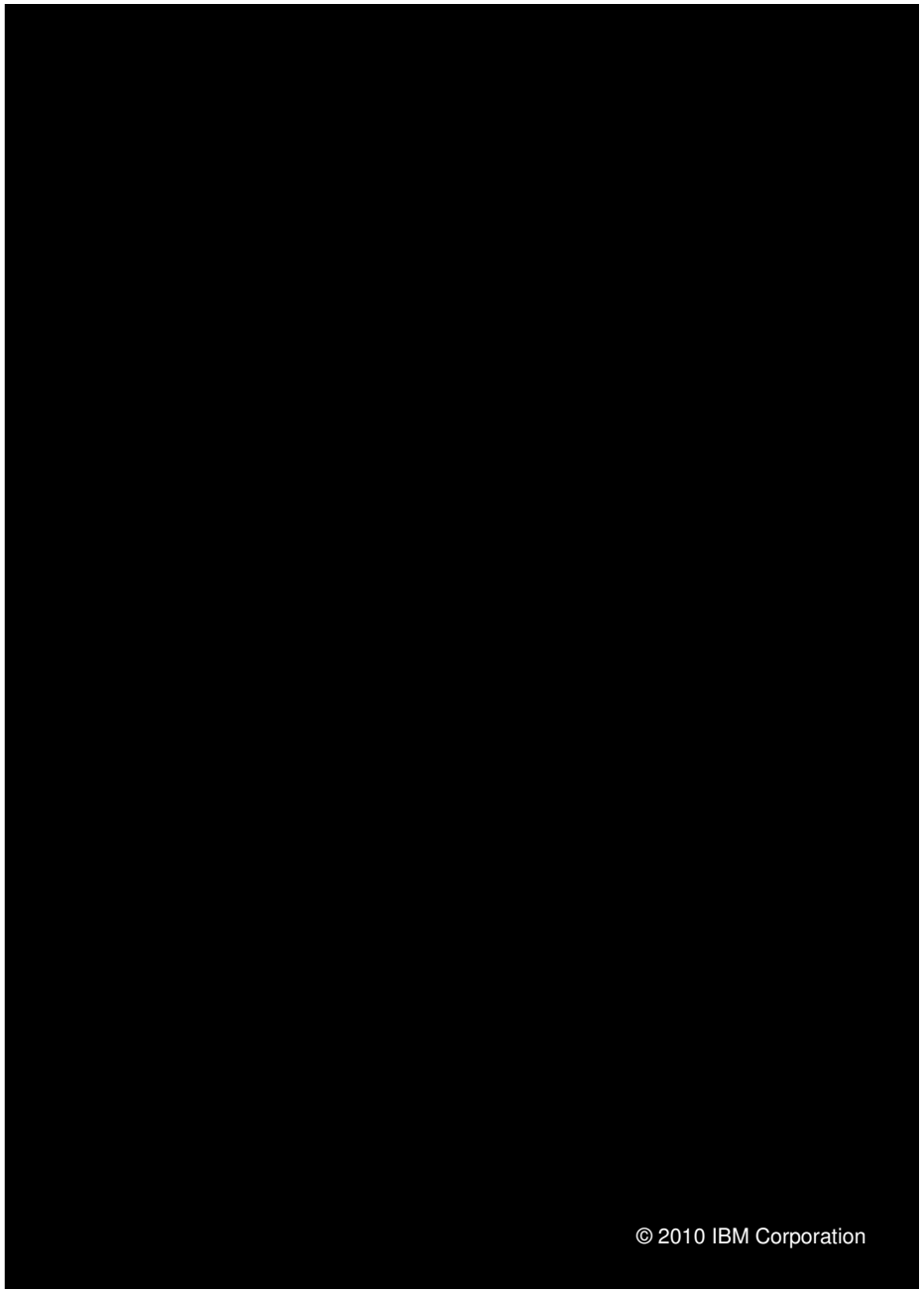
Strong information management platform built for business workloads	*Visibility, control, security, and automation from System z across your business*	*Application infrastructure, connectivity and dynamic business processes*	*Application Development Tools and Software Delivery Platform*	*Productivity and Collaboration*
DB2, IMS, FileNet, InfoSphere Warehouse, InfoSphere MDM Server, Cognos, SPSS, Optim	IBM Service Management on System z, TSAM, System Automation and NetView® for z/OS, TWSz, OMEGAMON	WAS, CICS, BPM, WMQ, ESB, DataPower, ILOG, Lombardi	Compilers (C/C++, PL/I, COBOL), RDz, RTCz	Portal, Connections, Notes Domino, Sametime
NEW! Smart Analytics System 9600 NEW! Smart Analytics Optimizer NEW! SPSS Predictive Analytics for System NEW! IMS 11, IMS Enterprise Suite BETA! DB2 10 BETA! InfoSphere MDM Server 9 for z/OS BETA! Cognos 8 BI for z/OS	NEW! Tivoli Security for zEnterprise NEW! Tivoli Access Manager Family NEW! Tivoli zSecure Manager for RACF z/VM NEW! Tivoli Application Management for zEnterprise NEW! Tivoli Application Resilience for zEnterprise NEW! Tivoli Asset and Financial Management for zEnterprise	NEW! WebSphere Application Server Feature Pack for Dynamic Scripting NEW! CICS Deployment Assistance for z/OS ENHANCED! Business Monitor for z/OS	NEW! Rational Developer for System z Unit Test NEW! z/OS XL C/C++ NEW! Enterprise PL/I for z/OS NEW! Eclipse EGL Development Tools project	NEW! Lotus Quickr 8.5 for WebSphere Portal NEW! Lotus Sametime 8.5.1

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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Domino*			

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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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