



System z Promoting Strategic Growth

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DFSMSdfp	IBMLink	REXX	z10
DFSMSshsm	IMS	RMF	z/Architecture*
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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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Operational issues have IT at a break point

Costs & Service Delivery



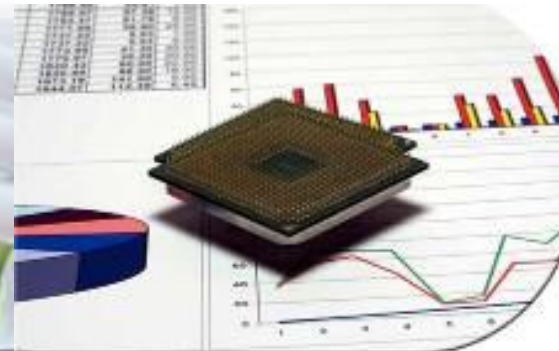
Business Resiliency & Security



Energy Efficiency



Changing application models



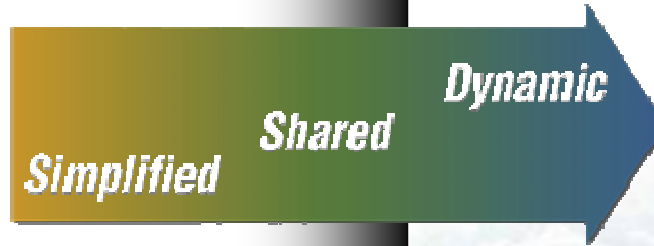
Addressing these issues requires a new strategy for the data center

The New Enterprise Data Center

An evolutionary new model for efficient IT service delivery



Fragmented, inefficient islands of computing



Efficient, dynamic and responsive

Initiatives

Consolidation and Virtualization

Energy Efficiency

Business Resilience and Security

Service Management

Information Infrastructure

Introducing the IBM System z10 Business Class (z10 BC)

Simplified



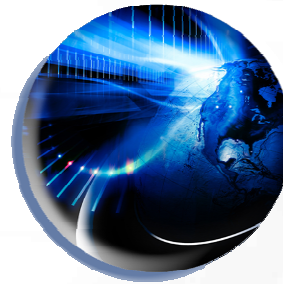
- Operational superiority through extreme virtualization and leading management
- Robustness through leadership security and availability
- Save more by adding further virtualized applications

Shared



- Processors, memory and channels can be shared across all the applications
- Hundreds of applications can share resources on IBM System z[®] simultaneously

Dynamic



- Enabling service providers to meet new business needs*
- Automated provisioning and management optimize for high value services
 - Services can be added or deleted on the fly
 - Applications can be integrated with centralized enterprise-wide real time data



***An ideal platform
for the Cornerstone
of the New
Enterprise Data
Center***

IBM System z10 BC – Designed to Maximize your IT Competitive Advantage

1



Lower the running costs of existing IT

Reduce the operating costs of existing workloads with the improved price performance and technology driven dividends of a new z10 BC enterprise server.

2



Manage growth, complexity, and risk

Scalable products and solutions you can trust to more easily and securely manage the complex world of IT *while lowering your cost per user.*

3



Go green and save

Cut costs and “go green” with leadership energy-efficient hardware, consolidation and virtualization capabilities on a z10 BC.

4



Maximize your competitive advantage with innovation

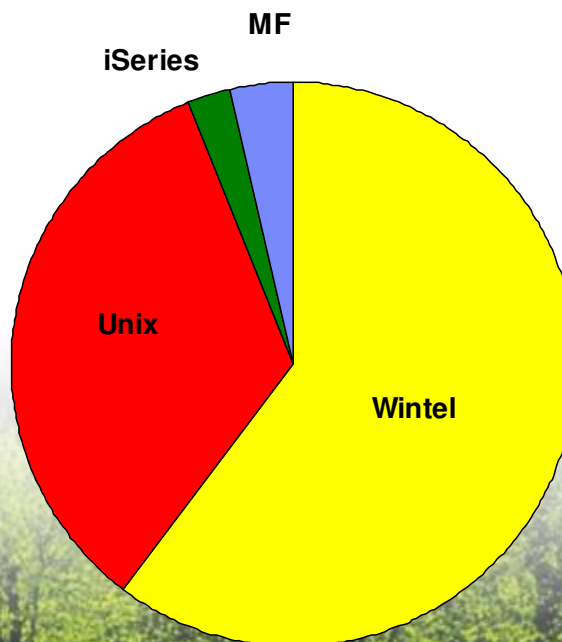
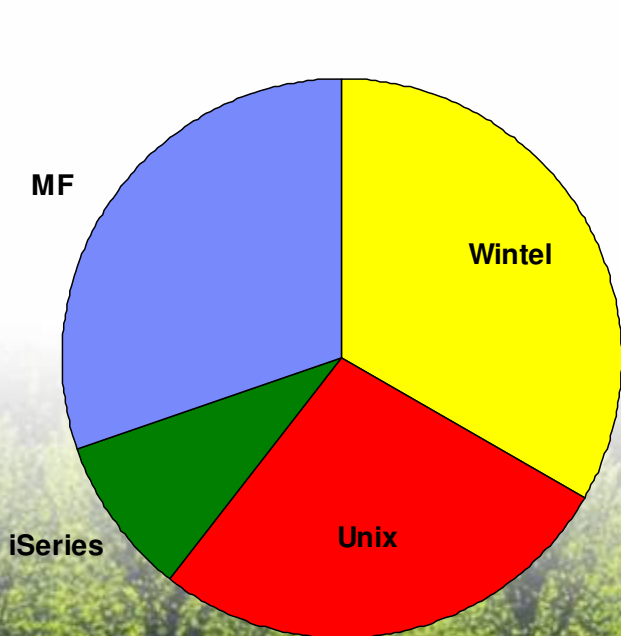
Technology that makes innovation real in your business and sets you apart from the competition.

Enjoy the great Environmental Savings potential of System z10

System z10 BC can help you dramatically improve your Carbon Footprint

Used Capacity

Power Draw




Ratio

Watts/Used RIP	
Wintel	16.7
UNIX	11.4
iSeries	2.6
MF	1.1

...and we see these results every time!

Environmental costs may not be large relative to hardware and software, unless that next inexpensive blade requires a new building!



Source: Scorpion Study results 2007-8 which reflect z install base and do not yet include z10

* All performance information was determined in a controlled environment. Actual results may vary.

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

IBM System z10 Business Class

Smart, Cool, Affordable

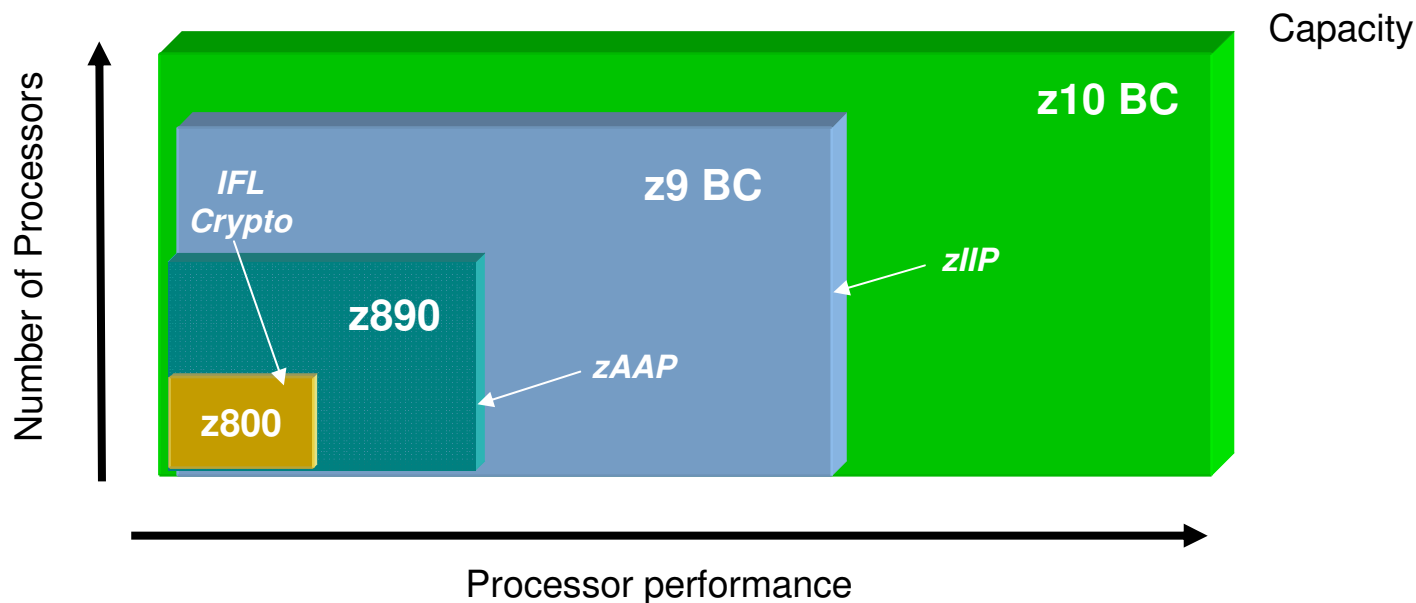
- **Smart** technologies enable you to quickly respond to changing requirements
 - **Cool**: Dramatically reduce energy costs compared to distributed server alternatives
 - **Affordable**: A state-of-the-art platform that can help you save through upgrades & consolidation
- ▶ **Up to 50% more performance at half the price for incremental Linux workloads ⁽¹⁾**



1. Specialty engines and associated memory on z10BC are priced 50% and 60% less, respectively, compared to the z9BC. “incremental” refers to the addition or expansion of IFLs on new or upgraded z10BC. 50% performance gain based on multi-core performance improvement as measured by IBM for 5 IFL cores. 40% for single cores. ICFs excluded.

z10 BC delivers new levels of performance

- **Up to 10 3.5 GHZ z10 Quad-core processors**
 - ▶ Up to 5 processors for z/OS
 - ▶ Up to 10 IFL's for large scale Linux consolidation
- **40-50% more performance than the highly acclaimed z9BC¹**



1. 40% for uni-processor applications, 50% for 5-processors

The Smart and Affordable platform for new workloads

- Why put new workloads on z?
 - ▶ Efficiencies through co-location of applications and data
 - ▶ Huge economies of scale
 - ▶ Legendary Quality of Service
- Announcing Lower prices for new workloads:
 - ▶ IFL, zIIP and zAAP reduced by 50% ¹
 - z10 BC Only
 - ▶ Memory prices reduced by over 60% ²
 - For memory purchased with a new Specialty Engine
 - Valid on z10 EC *and* z10 BC



- (1) Based on US list price, May vary in other countries. Internal Coupling Engines excluded,
- (2) Up to 16GB DRAM per specialty engine

The New Face of z/OS

Simplifying and Modernizing the Mainframe for IT Professionals



Helping to reduce z/OS complexity

- Make it easier to develop experts
- Eliminate, automate, and simplify complex tasks
- Modernize the “face” of z/OS
 - ▶ Maintain current “faces” for experienced users
- Leverage mainframe’s centralized management



Fill the pipeline with new talent:

- Academic initiative
- z/OS Basic Skills Information Center for new and experienced users
- IBM Education Assistant (IEA)
 - ▶ Online education on z/OS performance, tuning, and best practices tips.

z/OS Version 1 Release 10 - Highlights

... **scalability for data consolidation and performance for large amounts of data**

- HiperDispatch for intelligent dispatching of work for optimized performance¹
- Up to 1 TB of real memory² and 64 processors (zIIPs, zAAPs, and CPs)³ per LPAR
- Extended Address Volume (EAV) capability for large storage volumes, improved storage management^{4,5}
- Large (1 MB) pages expected to reduce memory management overhead for exploiting applications³
- Support for Hardware Decimal Floating Point high performance computing for commercial workloads³

... **availability**

- Auto-IPL, reduced need to IPL, tracking memory usage
- Basic HyperSwap™ – for high availability disk³
- Continued Parallel Sysplex® enhancements

.... **centralized security**

- RACF password phrases of up to 100 mixed case characters
- Integration with IBM Tivoli® Directory Server and other Tivoli products – working toward single sign on
- Latest cryptographic algorithms, PKI Service updates

... **connectivity to data**

- Policy-based networking helps create a network responsive to your application needs¹
- Automatic intrusion defense capabilities*,⁴
- IPv6 standards RFCs 4301-4305, 4308

... **virtualization, autonomics, centralized mgmnt**

- Capacity Provisioning Manager – Dynamically allocate/deallocate resources on IBM System z10™*
- Integration with IBM Integrated Removable Media Manager - centralized tape management
- New Print Services Facility – can integrate large volumes of diverse print objects efficiently and with integrity¹
- CICS Explorer SOD*

....**improved economics for accessing/ handling data**

- Additional XML exploitation of specialty engines³
- zIIP-assisted z/OS Global Mirror (XRC)³
- zIIP-assisted HiperSockets for large messages
- IBM Scalable Architecture for Financial Reporting (GBS) enabled for zIIP

(1) available with z/OS V1.7 + maintenance

(2) available with z/OS V1.8 + maintenance, 1 TB w/ z10 E56 and E64 only

(3) available with z/OS V1.9 + maintenance

(4) available with z/OS V1.10

(5) with appropriate storage

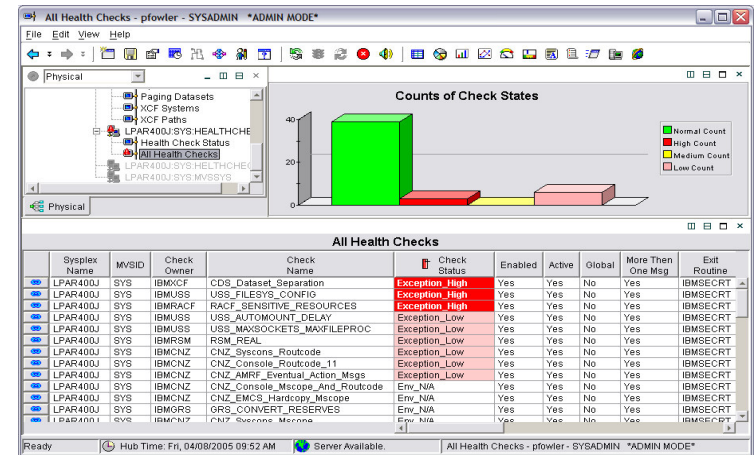
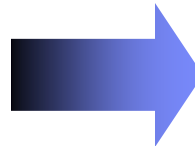
z/VM Version 5.4 Enhancements

- **Enhanced scalability and constraint relief**
 - ▶ Virtual memory performance enhancements
 - ▶ Expanded shared memory addressability
 - ▶ Nondisruptive dynamic memory upgrade
- **Virtualization enhancements for Linux and other guests**
 - ▶ Increased flexibility with support for z/VM-mode partitions
 - ▶ Dynamic virtual processor management
 - ▶ Dumping Linux guests to SCSI disks
- **Networking virtualization**
 - ▶ More efficient transmission of network data
 - ▶ Enhanced physical connectivity by exploiting all OSA-Express3 ports
 - ▶ Enhanced connectivity with TCP/IP Layer 2 support
 - ▶ Enhanced ease of use in network management
 - ▶ TELNET server and client IPv6 support
- **Security**
 - ▶ Enhanced z/VM SSL server now CMS-based
 - ▶ LDAP upgrade and RACF password change logging
 - ▶ V5.3 Common Criteria Certification
- **Systems management**
 - ▶ Enhanced management functions for Linux and other virtual images
 - ▶ Enhanced Directory manager (DirMaint)
 - ▶ Enhanced Performance Toolkit for VM
- **Installation, service, and packaging changes**
 - ▶ Installation of Linux on System z from the HMC
 - ▶ Installation and service enhancements
 - ▶ Withdrawal of distribution medium
 - ▶ Changes to the z/VM System Delivery Offering (SDO)
 - ▶ Withdrawal of support for TCP/IP for z/VM functions
 - ▶ z/VM V5.4 Information Center
- **Application enablement**
 - ▶ Updated C/C++ for z/VM compiler

z/OS Management Simplification Strategy

Today

Tomorrow



Expert-friendly, long learning curve for people new to platform

- Multiple, inconsistent UIs – no central system management portal
- Many interfaces foreign to those new to platform
- Manual tasks requiring extensive documentation
- Years of z/OS experience

- ✓ **Central** z/OS management portal
- ✓ **Simplified, automated** task-oriented mgmt interface, with integrated user assistance
- ✓ **Modern** look & feel; more familiar to those new to platform
- ✓ Focus on **customer goals**
- ✓ **Optional** for those who prefer traditional interfaces
- ✓ Months of training

Simplifying mainframe management – today!

■ System health and monitoring:

- ▶ Modern monitoring console
- ▶ Automatic health checking

■ Installation, configuration, and maintenance:

- ▶ On-line ordering and inventory management
- ▶ Automated on-line service acquisition
- ▶ Shortened release to release migrations
- ▶ Single view of enterprise devices
- ▶ Consistent user experience with hardware configuration

■ Other simplification management:

- ▶ Workload management
- ▶ Network management
- ▶ Security management

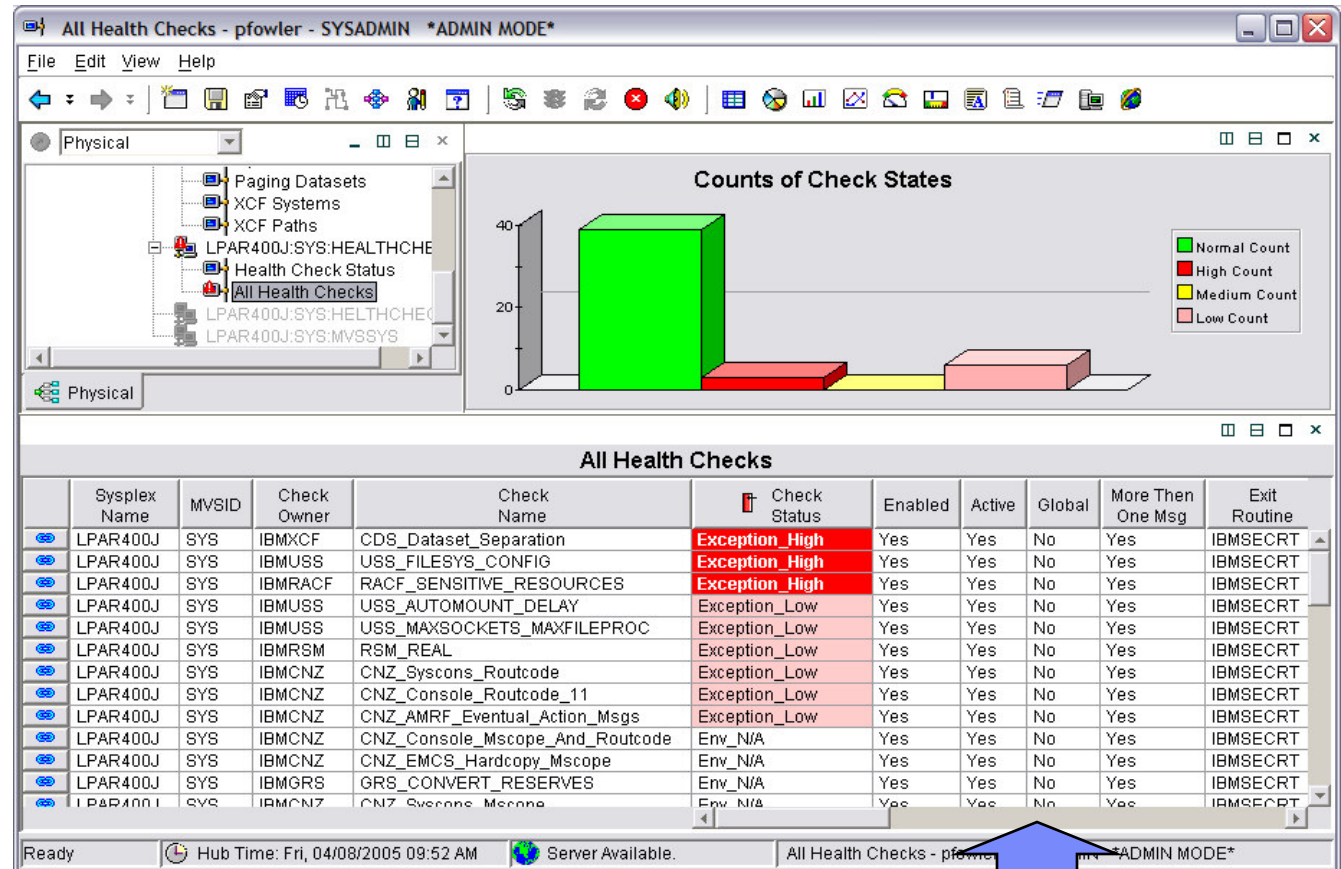


Simplifying diagnosis and problem avoidance – IBM Health Checker for z/OS

The Health Checker examines configuration values for deviations from best practices.

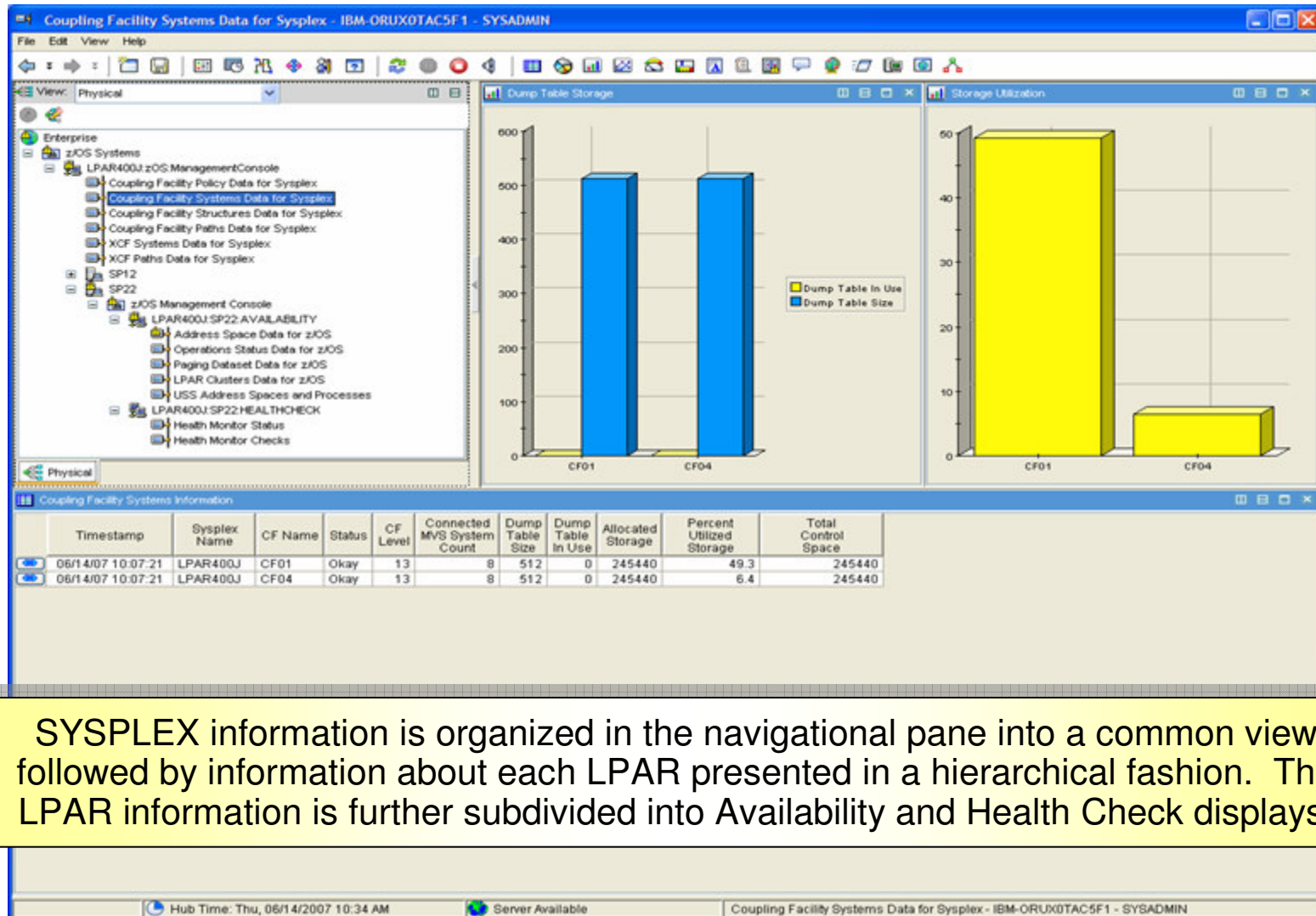
Health check exceptions are highlighted in the zMC.

IT staff can open a report for details and recommended corrective actions.



Health Checker integration is a unique feature of the IBM OMEGAMON® z/OS Management Console (zMC)

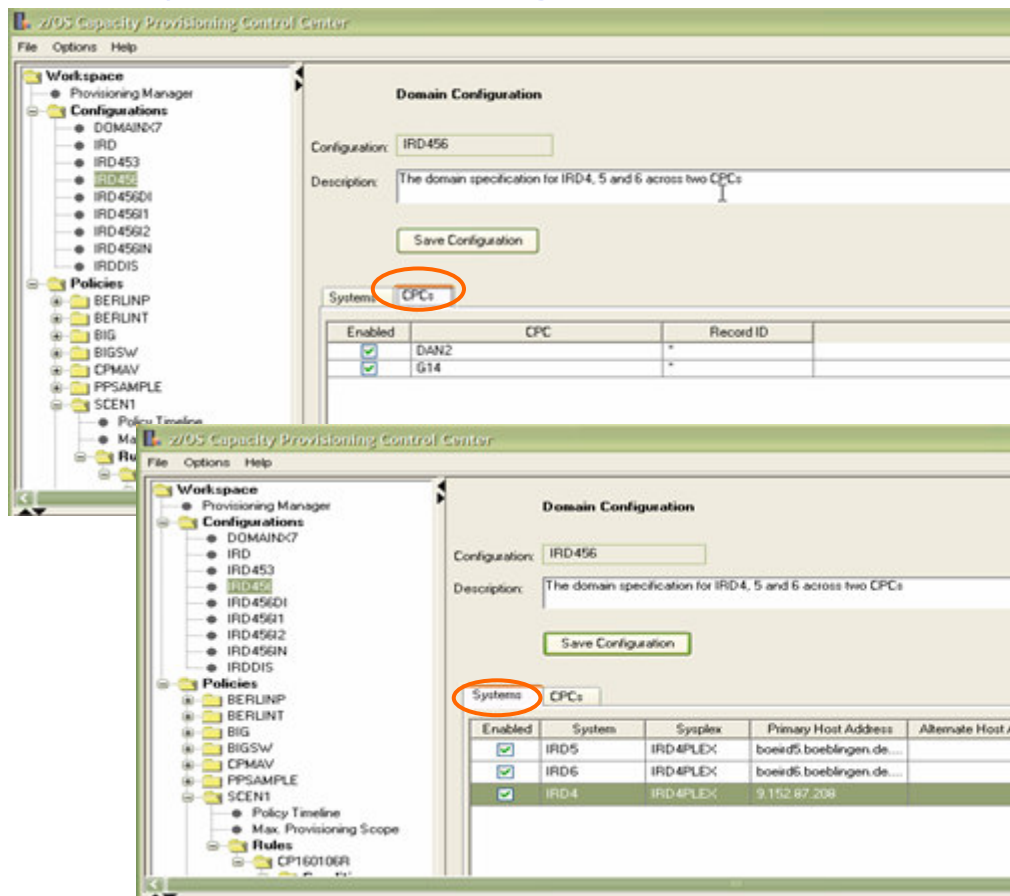
zMC: One window into multiple sysplexes



SYSPLEX information is organized in the navigational pane into a common view followed by information about each LPAR presented in a hierarchical fashion. The LPAR information is further subdivided into Availability and Health Check displays.

Capacity Provisioning for IBM System z10

Capacity Provisioning Control Center



Capabilities

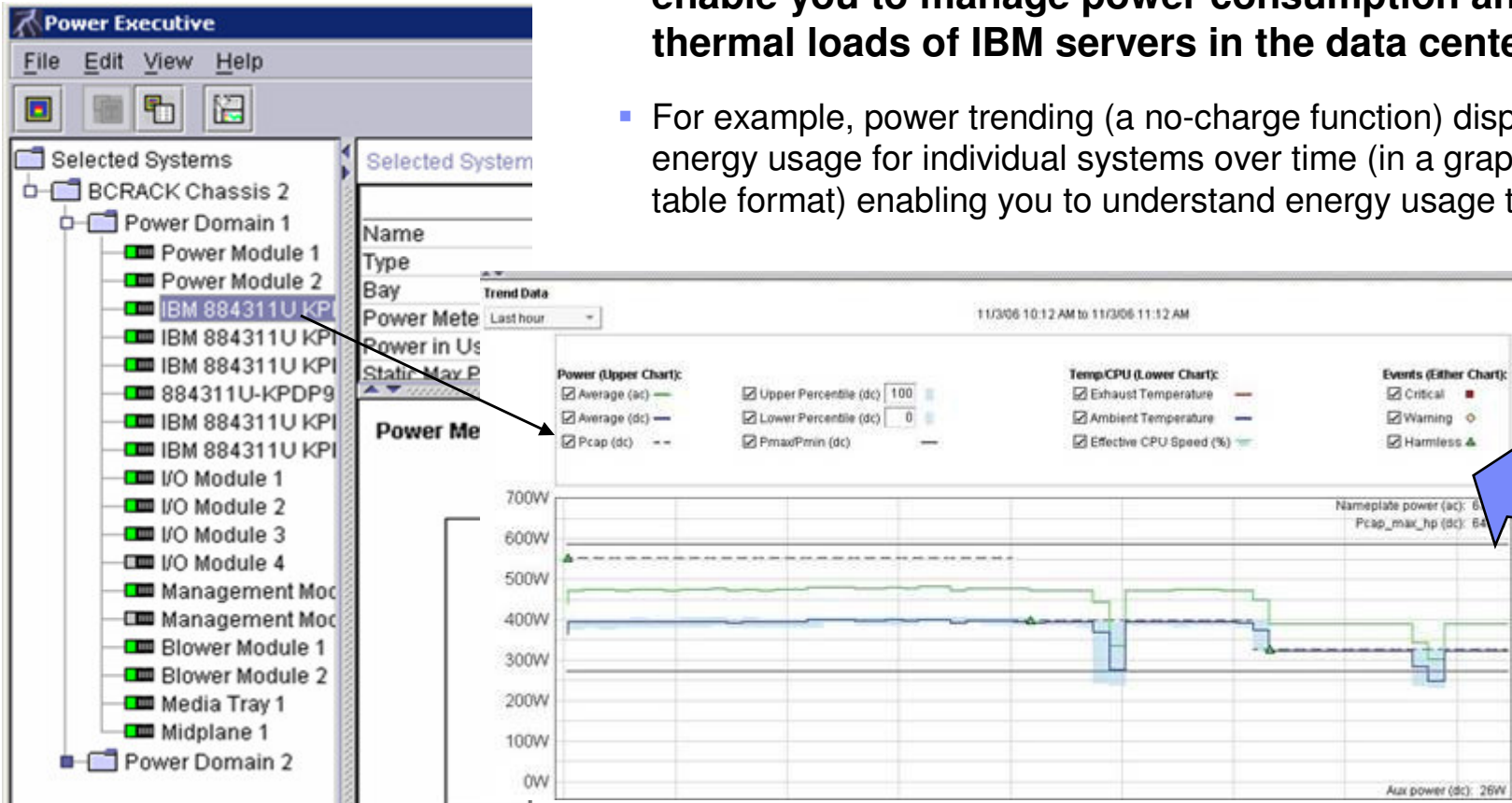
- Designed to manage temporary processor resources on System z10™
 - ▶ Number of zAAPs
 - ▶ Number of zIIPs
 - ▶ General purpose capacity (i.e. effective processor speeds) for subcapacity processors
- Capacity Provisioning actions can be initiated:
 - ▶ Manually through Capacity Provisioning Manager commands at the z/OS console
 - ▶ Via user defined policy at specified schedules
 - ▶ Via user defined policy by observing workloads on z/OS

<http://www-03.ibm.com/servers/eserver/zseries/zos/wlm/cp/>

Simplified energy management

IBM Systems Director Active Energy Manager

- **IBM Systems Director Active Energy Manager helps enable you to manage power consumption and thermal loads of IBM servers in the data center**
- For example, power trending (a no-charge function) displays energy usage for individual systems over time (in a graph or table format) enabling you to understand energy usage trends.



Simplifying security management

IBM Tivoli zSecure*

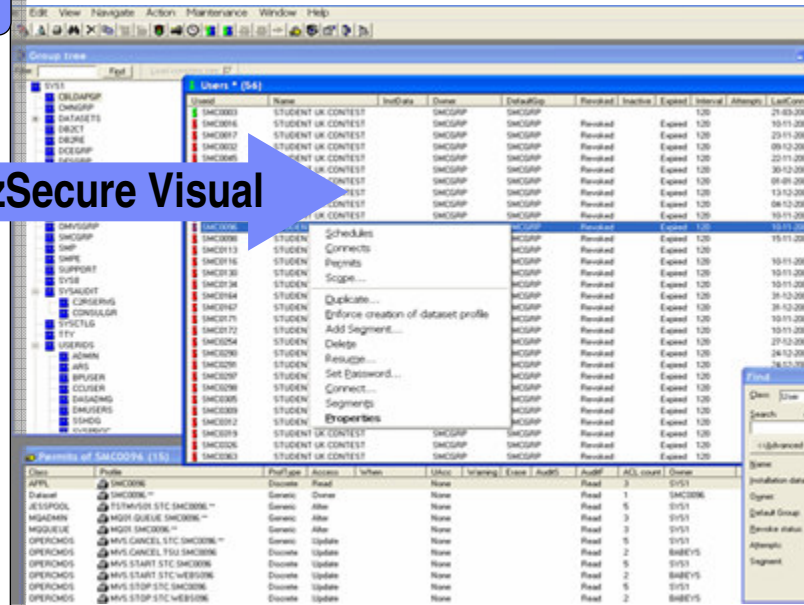
Security Administration and Provisioning Products:

- zSecure Admin enhances user management
- zSecure Visual Reduces the need for scarce, RACF-trained expertise. Uses a Microsoft® Windows®-based GUI for RACF administration
- zSecure CICS Toolkit for simplified CICS® security management

Audit, monitoring, compliance Products:

- zSecure Audit** provides event detection, analysis & reporting and system integrity audit & analysis
- zSecure Alert*** provides intrusion detection and alerting
- zSecure Command Verifier offers automated security monitoring

zSecure Visual



Additional programming improvements:

- **Health Checker for z/OS** helps check on RACF configuration settings (1.7 and 1.8)
- **RACF user and group administration in Java** (1.9)
- **SYSREXX** can help automate RACF admin and operator tasks (1.8 (Web del.), 1.9 (native))
- **Tivoli Directory Server (LDAP)** provides simplified access, lookup, updates to RACF backend (1.8)

** Also available for ACF2(TM) and Top Secret (R)

** Also available for ACF2

Rational Developer for System z - Simplified application development

Example: Correcting an error in COBOL source file

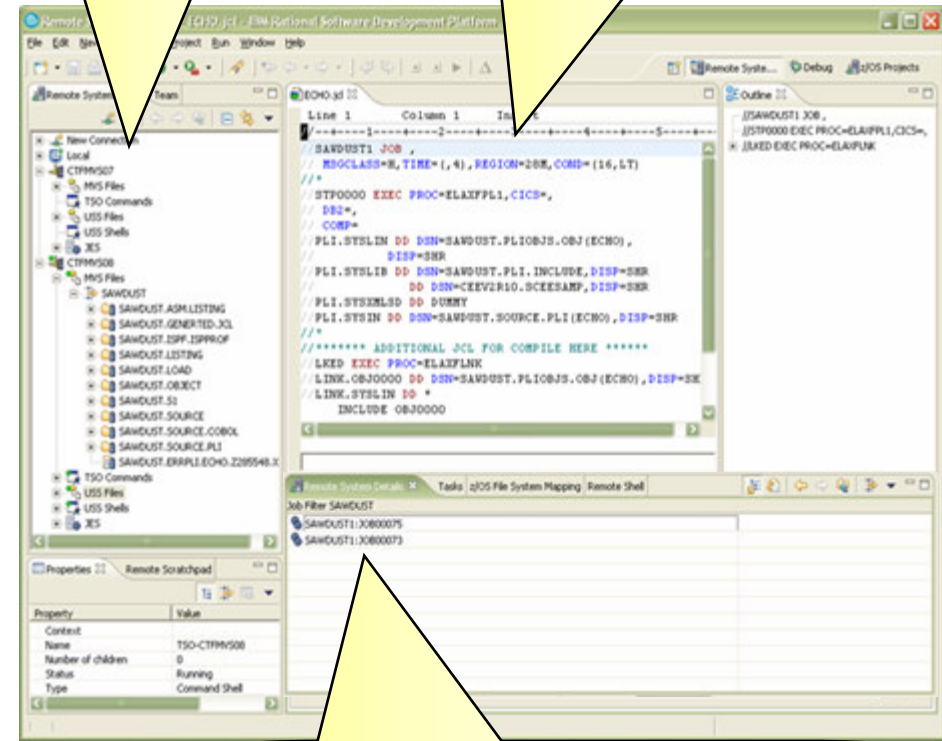
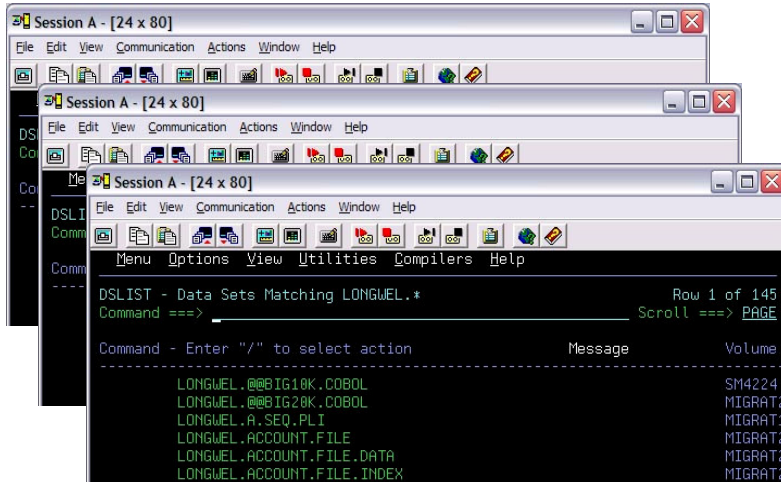
Currently:

- Start 3270 emulator
- Logon to the z/OS system
- Navigate to the data set and member using ISPF
- Select the member for editing
- Locate the line in the source code
- Change the source code and save the member
- Switch to the JCL that is used to submit and schedule the compile job
- Submit the JCL job
- Switch to SDSF to monitor the job and review the output
- Repeat 5-9 until program runs correctly

With Rational (WebSphere) Developer for System z:

z/OS data set and file navigator

Configurable source editor; write code, check syntax, submit compile job...all from one location



JES view for browsing job output

IBM System Storage Leadership

- Industry-leading information infrastructure for mainframe environments
- Broadest, integrated portfolio so clients can work with one vendor
- Leading innovator of information encryption, secure key management and access control technology
- Leading storage virtualization vendor
- Able to virtualize storage across multiple vendor technologies, including EMC, HP and Hitachi
- Best enterprise disk TCO, with flexible warranties
- Leading disk (SVC) and tape (TS7700, TS1130) performance
- Open standards support, ensures architecture flexibility and leverages existing client investment
- Leading storage software and archiving
- Leader in WW storage services



* Sources: Various external consultant reports

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

Enterprise Disk Systems for Business Critical Applications

- Client value
 - ▶ Support for both distributed platforms and System z
 - ▶ Highest availability for System z workloads
 - ▶ Highest performance for System z workloads
 - ▶ Highest scalability for System z workloads
- New reasons to buy
 - ▶ Recent announcements include
 - High Performance FICON for System z *
 - z/OS Metro/Global Mirror Incremental Resync *
 - z/OS Basic HyperSwap support
 - 450 GB fibre channel drives
 - Extended Address Volumes
 - z/OS Global Mirror Multiple Reader
 - Extended Distance FICON
 - z/OS Global Mirror enabled for zIIP



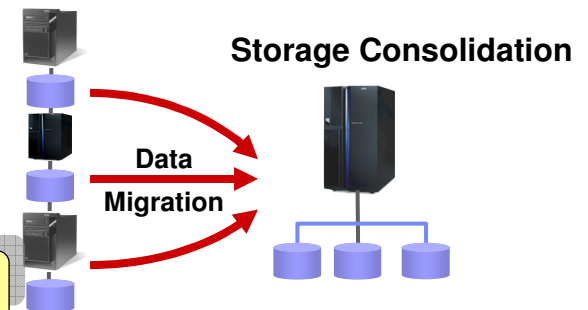
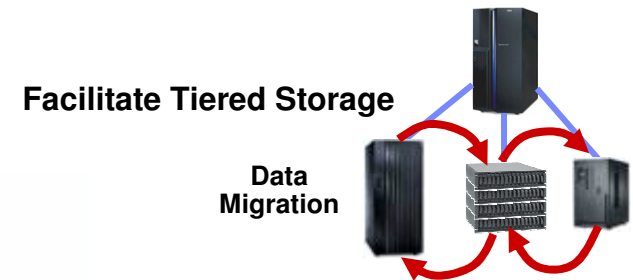
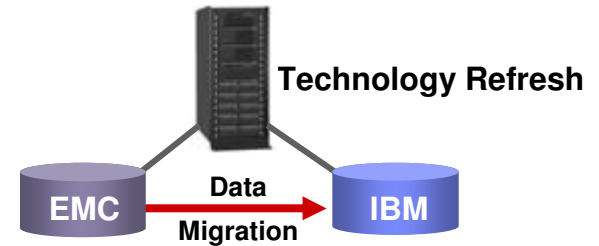
Dynamically move data, without business interruption, regardless of hardware, platform, or distance

IBM Global Services – IBM Data Mobility Services for System z

The most powerful, comprehensive solution for z/OS data migration

1. Enables non-disruptive, on-line migrations
2. Migrates data at the volume or data set level
3. Supports multi-vendor storage subsystems
4. Automates planning process
5. Available as a service or as a software asset

- **Softek z/OS Dataset Migration Facility (zDMF)**
 - ▶ Non-disruptive data set level migration
- **Softek Transparent Data Migration Facility (TDMF)**
 - ▶ Non-disruptive volume-level migration
- **Softek Data Mobility Console for z/OS (DMCzOS)**
 - ▶ Automated assessment and migration planning



<http://www-935.ibm.com/services/us/index.wss/offerfamily/gts/a1028144>

Enhanced Software Leveraging the z10 BC

Next-generation business intelligence for System z

Cognos 8 BI for Linux on System z
InfoSphere Warehouse for System z

Complete solutions for people, process and information

Smart SOA on System z
WebSphere Portal for Linux & z/OS

Accelerating innovation on System z

Rational Application Development and Delivery



Visibility, automation and control for System z and the enterprise

Tivoli Service Management Center for System z

Optimized for z10 BC performance, quality of service and total cost of ownership

Rational®

WebSphere®

Information Management

Lotus®

Tivoli®

Information On Demand

More Information On Demand Capabilities Coming in Q4'08

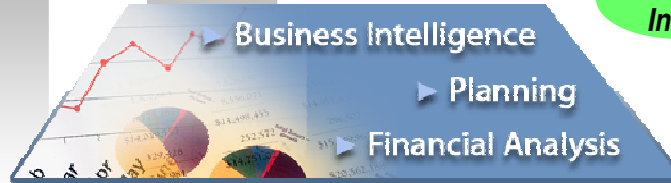
Customer & Product Profitability *Financial Risk Insight* *Workforce Optimization* *Dynamic Supply Chain* *Multi-channel Marketing*

Business Optimization

Better Business Outcomes

Information Agenda

2008



Updated In Q4

Business Intelligence & Performance Management

Cognos 8 BI for Linux on System z

Information Integration, Warehousing & Management

2008



Coming In Q4

InfoSphere Warehouse on System z
Information Server for System z
InfoSphere MDM Server for System z
IMS SOA Integration Suite

Flexible Architecture for Leveraging Existing Investments

2007



Coming In Q4

Data Management Enterprise Content Management

DB2 9 for z/OS
IMS 11
Content Management for System z
Optim for System z

WebSphere: The SOA Runtime Platform of Choice

New Innovations shaping today's agile businesses



Innovative, performance-based SOA Foundation – WebSphere Application Server V7

Virtualization & consolidation for greater efficiency – Open Source Consolidation Package

Simplification for faster time to market – CICS Explorer



Delivering managed file & application integration – WebSphere MQ File Transfer Edition for z/OS

Greater Empowerment with Web 2.0 & Mashups – CICS ATOM Feeds SupportPac



CICS applications as a premier event source – CICS Events SupportPac

Runtime supporting Linux on System z – WebSphere Business Events

Summary “At a Glance” – Accelerating Software Innovation on System z



- ✓ *Extend value of existing enterprise assets and skills*
- ✓ *Drive innovation with technology advancements*
- ✓ *Improve team collaboration and responsiveness*
- ✓ *Enable business flexibility and change across the software lifecycle*



Rational software

New & Enhanced Capabilities

Rational Asset Analyzer v5.5

Gain business intelligence and technical analysis of application systems

Understand Assets

Rational Business Developer v7.5.1 Rational Developer for System z v7.5

Rational Host Access Transformation Services v7.5

Leverage “EGL” to accelerate Web 2.0 and SOA development on System z; increase productivity and skills flexibility for COBOL and PL/I developers

Drive Innovation

Rational Team Concert for System z v1.0.1

Rational ClearCase, ClearQuest & BuildForge v7.1

Deploy common team infrastructure and tooling to improve collaboration and governance; Increasing productivity & reduced errors per build and release cycle

Enable Flexibility

IBM Tivoli Service Management Center for System z

Integrated solutions to manage your enterprise end-to-end

New on z!

Tivoli

Process Management

IBM Tivoli Service Request Manager

IBM Tivoli Change & Release Management

IBM Tivoli Business Continuity Process Manager

IBM Tivoli Business Service Manager

Change & Configuration Management

IBM Tivoli Application Dependency Discovery Manager

IBM Tivoli Change and Configuration Management Database

IBM Tivoli Service Request Manager

Operations Management

IBM Tivoli Netview for z/OS, OMEGAMON, IBM Tivoli Composite Application Manager

*IBM Tivoli System Automation
IBM Tivoli Workload Automation*

*IBM Tivoli Usage & Accounting Manager
IBM Tivoli DS z/OS*

*IBM Tivoli Identify Mgr
IBM Tivoli Access Mgr
zSecure
RACF, SIEM*

Student Portal: Connecting with students



Contests	Gaming	Events
<p>Win great prizes! Test your skills.</p> <ul style="list-style-type: none"> → ACM-ICPC → Great Minds → System i winners → Mainframe winners 	<p>Challenge yourself Have while learning.</p> <ul style="list-style-type: none"> → Second Life: Open Encounters → CODESTATION → Code Invaders → DB2 Gaming 	<p>Connect and learn Attend events near you, at no charge.</p> <ul style="list-style-type: none"> → IBM on campus → Technical briefings (no charge)

- **Certification and mastery test discounts**
- **Student Opportunity System**
If completed classes, labs, workshops or projects, participated in contests, or passed an IBM Certification or Mastery test... then post your resume.
- **Student Software Catalog**
Download software development tools that can help with education.
** Available in the U.S. and Canada only*
- **Contests**
- **Gaming**
- **Events** (IBM Campus visit schedule, developerWorks®)

www.ibm.com/university/students

A Worldwide Community of IBM Volunteers

- 26 roundtable events held
- Introduce Large Systems Thinking – Why teach IBM Enterprise Systems
- Validate the demand for students educated in Large Systems Thinking
- Show faculty how to leverage IBM Academic Initiative
- Provide industry input for Large Systems education programs

Become a System z Ambassador

- Conduct a guest lecture
- Provide “hands on” training or assistance
- Conduct Mainframe Community Roundtables on Campus
 - ▶ Introduce Large Systems Thinking – Why teach mainframes and Enterprise Computing
 - ▶ Validate the demand for students educated in Large Systems Thinking
 - ▶ Provide industry input for Large Systems education programs

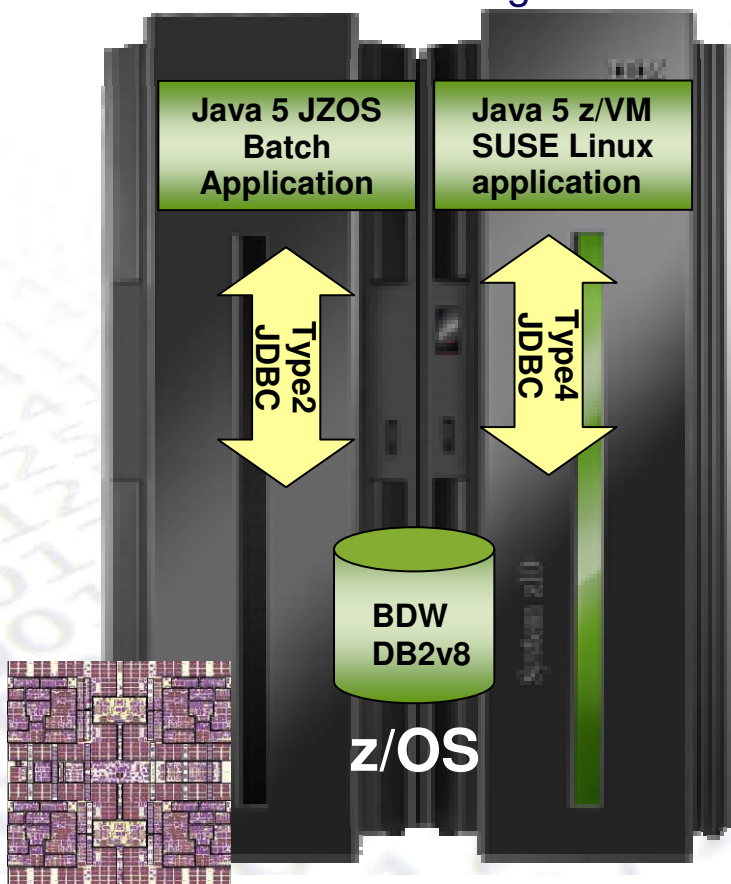


Questions?
Mainframe Skills Help Desk
(zskills@us.ibm.com)

A Peek into the Future - Financial Analytics

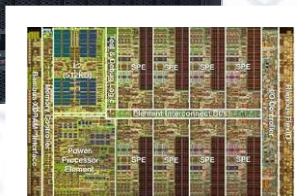
System z

Financial Portfolio
Data Serving
Workload Management



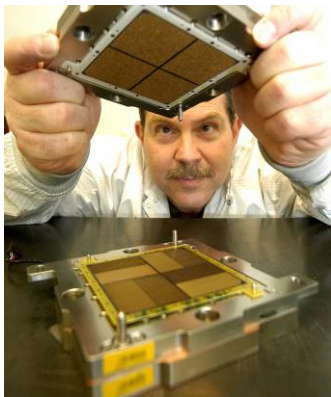
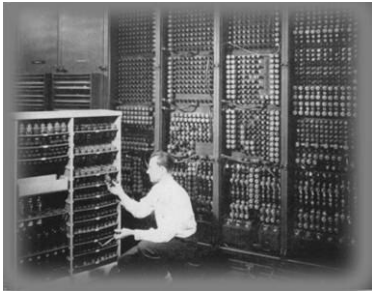
Cell BE Blade System

European Options
Pricing



**Commercial and Compute-intensive;
best of both worlds**

Summary: IBM's commitment to the mainframe



- **IBM is investing in mainframe simplification and modernization:**
- **Advanced technology with accelerators**
- **New Enterprise Data Centre**
 - ▶ **Simplified, Shared, Dynamic**
- **System Management:** making z/OS systems easy to set up, operate, and administer
- **Application Development:** delivering a modern, easy to use development environment.
- **IBM is partnering with businesses, clients, and colleges to build the pool of mainframe-skilled IT professionals:**
 - ▶ **IBM Destination z**
 - ▶ **IBM Academic Initiative for System z**
 - ▶ **z/OS Basic Skills Information Centre**