





### Today's mainframe

Four Enterprise-wide Roles of the Mainframe

- Enterprise business resilience manager
- Enterprise security manager
- Enterprise workload manager
- Enterprise hub for data & SOA

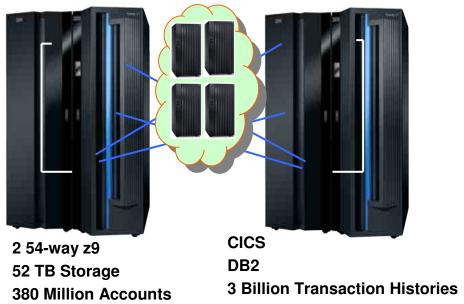
If data is the life blood of the business . . . then your data server is the heart of your SOA

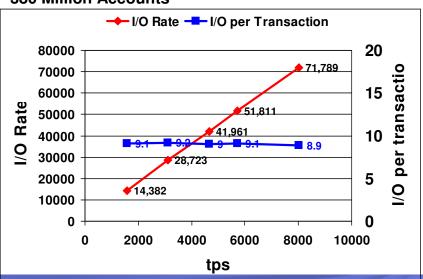


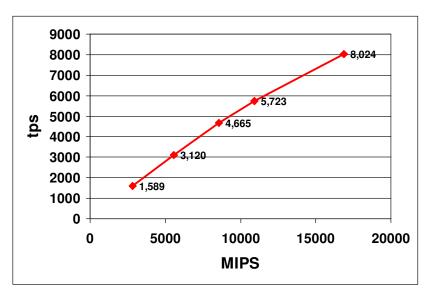




# FNS and IBM Deliver Record-breaking Banking Benchmark Performance







9,445 tps at 85% utilization

"FNS and IBM have delivered an outstanding core banking benchmark result which highlights FNS's ability to deliver a core banking platform that will attain high levels of availability, scalability and robustness for the largest banks in the world."

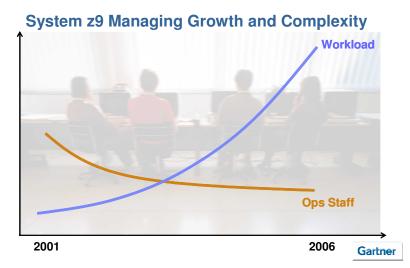
Tony Ward, CEO Financial Network Services



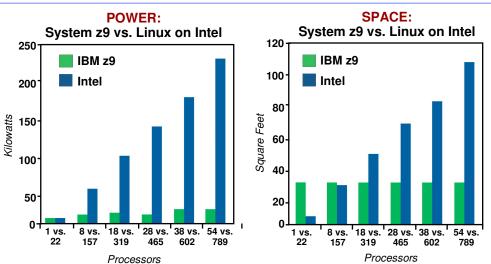
## Why System z Now?



Source: Tony Picardi, IDC Economist.com: Make it simple. October 28th, 2004 From The Economist print edition





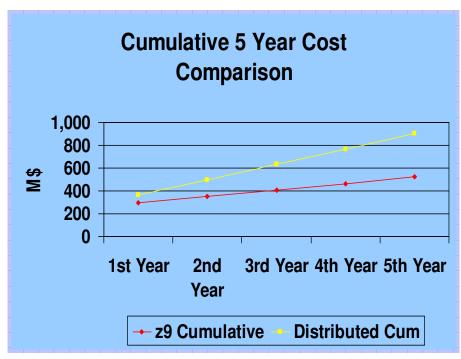


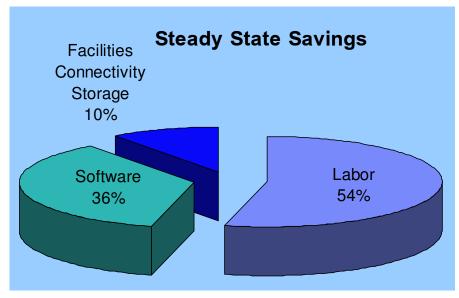
The Linux on Intel servers selected in this example are functionally eligible servers considered for consolidation to a System z running at low utilization such that the composite utilization is approximately 5%. The utilization rate assumed for System z EC is 90%. This is for illustration only actual power and space reductions, if any, will vary according to the actual servers selected for consolidation.



### IBM Consolidation to System z

- Performed TCO and consolidation assessment on IBM portfolio
  - Cross-IBM effort: System z, SW Migration Services, TCO Academy, Migration Factory
  - Analysis considers today's environment vs. "to be" environment





Identified substantial savings opportunity

- Annual Energy Usage reduced by 80%
- Total floor space reduced by 85%



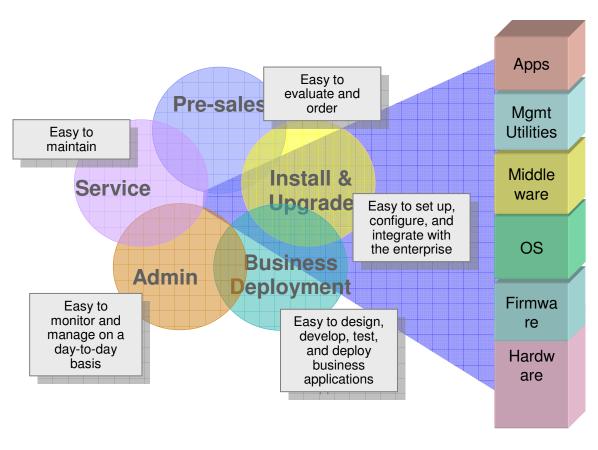
## The z Software Strategy

- Reinvigorate the System z Ecosystem:
  - Attract New System z Customers and Application Workloads
  - Retain and Grow Existing System z customers
  - Make the Mainframe Relevant to a new IT Generation
- Platform Modernization and Simplification are key:
  - Evolve to an SOA Server
    - Systematic Reengineering of the Software Stack
    - More Open Standards Compliant and Common Middleware
    - Integration with the z Platform for Added Functions
  - Deliver Extensive Data Management Services
    - Leading Edge Relational Function
    - Reinvigorated Data Warehousing Competitiveness
    - Autonomic Tooling to Augment Human Expertise
  - Make System z Easy to Install and Manage for Better TCO
    - New Faces of z
    - Simplified Labor Intensive Tasks
    - More End to End Management Capability from a z Central Point of Control





# zOS Simplification Scope: The Total Customer Experience



- All aspects of System z will be managed consistently.
- The management framework will be integrated – always there.
- Capabilities can grow with value-added extensions from IBM and 3rd parties.
- Basic management functions upwardly integrate into Tivoli enterprise management
- Backed by a Statement of Systems Integrity



# Linux and z/VM on System z Providing Value Propositions for Linux Workloads

# Security capabilities: ✓ Privacy ✓ Regulatory requirements Consolidation capabilities: ✓ Server, network, storage ✓ Staff and skills

Linux and

System z Virtualization

√zSeries qualities of service

✓ Identify management

- √ Common Criteria Certification
- √Ethical hacking
- √ HiperSockets™

# ✓ High availability✓ Disaster recovery✓ Serviceability

- ✓ Reliability
- ✓ HyperSwap™
- √XRC and PPRC

# Operational simplification capabilities:

- √ Virtualization
- √Simulation

8

- √Single point of control
- ✓ Large single system image
- ✓z/OS similarities and synergies
- √ Highly granular resource sharing

#### On demand infrastructure:

- ✓ Scale up and scale out
- ✓ Rapid server (de)commissioning
- ✓ Idle servers don't consume system resources

**Business resiliency capabilities:** 

#### **Proximity to data:**

✓ Applications and utilities

- ✓Increased transaction throughput
- √Shared data access
- ✓Integrated storage management
- ✓ HiperSockets



# z flexible deployment options for an SOA environment



**Business Process** 

#### WebSphere Process Server

For customers who want a higher level solution to design, automate and manage composite applications and operational business processes. <u>Built on WebSphere ESB.</u>

Increased capabilities / automation

**ESB** 

#### WebSphere ESB

A new product that delivers an Enterprise Service Bus. Provides Web Services connectivity and data transformation.

<u>Built on WebSphere Application Server.</u>

#### WebSphere Message Broker

A new version of our proven product that delivers an advanced Enterprise Service Bus. Provides universal connectivity and data transformation. <u>Built on WebSphere MQ.</u>

#### Application/Transaction Servers

WebSphere Application Server

A world-class J2EE foundation providing industry-leading levels of availability, scalability, and performance.

**CICS** 

IMS

#### WebSphere MQ

Provides reliable integration messaging to connect applications and Web services across more than 80 supported platform configurations.



## Websphere MQ VNext Summary

- WMQ V7 is a significant offering that will primarily address support of standardsbased messaging via the following features -
  - Fully integrated Publish/Subscribe capability and administration across all platforms
    - This will provide significant improvements in both consumability and performance of JMS and XMS and will demonstrate IBM's commitment to standards-based messaging.
    - Allied with the JCA support already delivered, this will position WMQ as the JMS provider of choice for both J2EE and non-J2EE environments
    - Native support (via the MQ API) of Publish/Subscribe will enable access from non-Java environments – such as CICS and IMS
- Additionally the following major features will be provided
  - Extended Message Properties will enable the flowing of additional non-user data to enable improved end-to-end transaction monitoring
  - SQL92 syntax support for enhanced message selection by properties that will provide both new features for non-Java applications and will provide enhanced performance for JMS and XMS applications
  - Improved Client performance for both MQ and JMS/XMS clients



### CICS Transaction Server for z/OS V3.2

### **Increased Ease of Integration**

# **Enhanced Application Transformation**

**Improved Operational Efficiency** 

- Maturing the Web Services capabilities and SOAP standards
- Wider support of other payload format (XOP & MTOM)
- Optimization of the HTTP Transport to give better performance, robustness and manageability
- Delivering a consistent approach between CICS systems for an IP environment.
- Conforming with WSDL 2.0
- More extensive Web Services support for COBOL data types
- Improved Application Deployment
- Exploitation of 64-bit storage for channels and containers.
   Used by Web services requests.
  - Enterprise wide workload management ARM correlator
  - CPSM Integrated install and definition & CPSM WUI enhancements
  - JDK 1.4.2 JVM management and PD improvements
  - Remove capacity restraints relating to Data
  - Continued enhancements to OTE enabling some File Control configurations and the MQ Bridge Adapter



# Key characteristics of IBM COBOL V4 The Business Value Proposition

Popular with the business community because:

#### **High performing**

- Supports thousands of Transactions Per Second (TPS) with optimised data handling
- Compiled programs process many times faster than interpretive programs

#### Scalable

 Multi-Threaded, large data size processing, leverages System z instruction set Popular with the technical community because:

#### **Ease of Use and maintenance**

COBOL uses Business—syntax, simplifying new development and maintenance

#### Ease of Application Development

 Built in support through Eclipse based WebSphere Developer for System z

#### Ease of Integration and SOA

 Java interoperability, WebSphere integration, Web Services infrastructure

#### In summary, IBM COBOL V4 delivers:

- High-performing data and business processing through Batch, CICS, IMS, and DB2 runtimes
- Integration to SOA infrastructures through key integrating points
- Requiring minimal changes to back level applications



## IBM Rational Developer for System z

### Enterprise Service Tools Web Services and XML

- SOA access to CICS V3.2 and IMS V9 COBOL applications
- Bottom-up/Top-down or meet-in-themiddle COBOL to XML mapping support
- Integrated COBOL XML converters, XML schemas, and WSDL generation

#### CICS BMS/ IMS MFS Map Support

- Visually create and modify BMS Map sets or IMS/MFS
- · Generates JCL
- Work with local or remote maps

### DB2 Stored Procedure for COBOL and PL/I

- Create DB2 stored procedures on z/OS in either COBOL or PL/I
- Build and catalog support for the DB2 stored procedure
- Debug z/OS based stored procedures from workstation

#### Web/J2ee Development

- Create Web Pages / JSF / Struts
- · J2ee/Java Development
- JCA Connectors
- Distributed debugger
- Web Services and Test environment

# IBM Rational Developer for System z

**z/OS Application Development** 

Enterprise Service Tools - Web Services and XML

**CICS BMS/ IMS MFS Map Support** 

**Host/Distributed SCM Integration** 

DB2 Stored Proc - COBOL / PL/I

**Rapid Appl Development Tool** 

Enterprise Service Tools – Service Flow Support

IBM Rational Application Developer

#### z/OS Application Development

- Connect to z/OS systems
- Work with z/OS resources like COBOL, PL/1, C, C++, JCL, etc.
- Interact with the Job Entry Subsystem (JES) to submit jobs, monitor jobs, and review job output
- Perform dataset management actions like allocating datasets and migrating datasets
- Perform typical edit, compile, and debug tasks on remote z/OS resources from the workstation
- Access VSAM datasets via integration with IBM File Manager
- Access IBM Fault analyzer reports for analyzing ABENDS and associating back to source code

#### **SCM Integration**

- · Access to host SCMs such as SCLM
- Framework for writing/deploying custom SCM integration code
- Support for storing zOS resources in distributed SCMs such as ClearCase

#### **Rapid Application Development**

- Ability to generate WSDL and CICS Cobol program to access DB2
- CRUD from UML and Database operations
- · Can be added to SFM flow

#### **CICS 3 Service Flow Support**

- Implements SOA and Web Services
- Service Flow Modeler is a tool to build service flows out of your existing Commarea and Terminal based CICS applications.

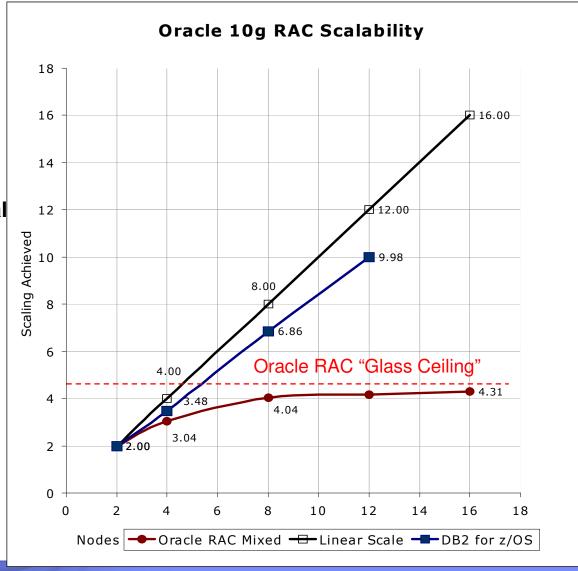


### **DB2** Scalability

- DB2 for z/OS provides nearlinear scalability with relatively little overhead as nodes are added
- With Oracle RAC, overhead increases rapidly as additional nodes are added and performance degrades after only 4 to 6 nodes

Oracle RAC source: "Scale-up versus scaleout using Oracle 10*g* with HP StorageWorks", Hewlett-Packard, 2005

DB2 for z/OS source: "Enterprise Data Base Clustering Solutions" ITG, October 2003





## DB2 for z/OS Technology Themes

- Extend the lead in transaction processing availability, scalability and performance
- Reduce cost of ownership and System z-specific skill needs
- Enable high-volume transaction processing for next wave of applications
- Improve data warehousing and OLTP reporting

DB2 9 for z/OS delivers on more than 225 requirements submitted by customers, business partners, and worldwide user group communities

Next DB2 release will continue driving these themes



# IMS: The Continuing Journey ... with IMS V10

# Easing Integration with New Technology for a Service Oriented Architecture

- Enhancing IMS XML and Web Services Connectivity
- Integrating Operations across Subsystems/Platforms

### Simplifying Installation and Management

- Defining Resources Dynamically
- Easing Operations Management
- Easing Systems Management

# Providing High Performance, Scalable, Available, Reliable and Secure Solutions

- Providing More Parallelism in DB Recovery Control
- Widening Bandwidth for Multiple Systems Coupling
- Enhancing Security





### New Tools to address TCO in 2007

### DBA Time = Money

- Managing application changes
- Tuning for performance
- Optimizing repetitive tasks
- Managing Complexity
- Complying with regulations and audit



#### Time savers

- DB2 Change Management Expert
  - Automates and simplifies the most time consuming DBA task
- Omegamon DB2 Performance Expert
  - Tunes DB2 systems
  - Finds performance problems
  - Eliminates bottlenecks
- DB2 Optimizer Expert
  - Optimizes query performance
- DB2 Utilities enhancements
  - V8 zIIP exploitation
  - vNext volume based utilities
- IMS Sysplex manager
  - Simplifies complex IMS sysplex management
- DB2 Thread Expert
  - Manages DB2 Threads
- DB2 Audit Management Expert & IMS Audit Management Expert
  - Enables fast auditing of DB2 and IMS users and data
- DB2 Regulatory Compliance Suite
  - Combines 4 tools, including Audit Expert into a single compliance offering



## Answering Three Key Business Continuity Questions

# 3. What actions do we take?

- System reconfiguration
- Data restore
- User identity provisioning
- System and application restart
- Infrastructure deployment





Best Practices and Services

Process Management

Service Management Platform
Software Delivery Service Delivery and Support

Development Operational Management

Optimized Infrastructure

## 1. What's happening with the intrastructure?

- Server monitoring
- Storage monitoring
- Net vork monitoring
- Data monitoring
- Application monitoring

#### Service Management Platform



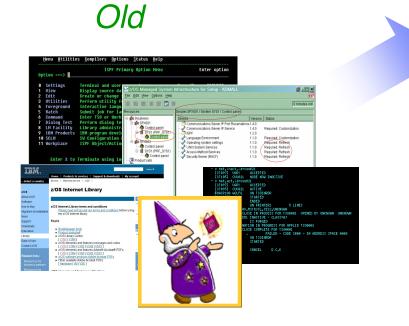
# 2. How does this relate to the business service?

- Dashboard
- Business service management
- Service level management
- Infras ructure and application discovery and mapping



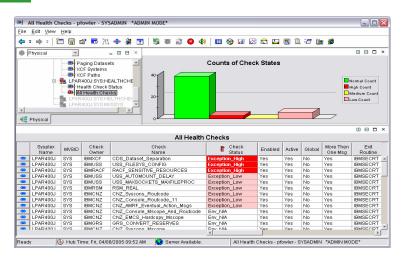
## Modernizing the "Face" of z/OS

### New



## 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



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



## Enhanced End-to-End Enterprise Management

**IBM Tivoli** Monitoring v6.2

**IBM Tivoli Performance** Analyzer v6.1

Service Level Reporting

No horse. Na Get. Colore force. Parcelone.

Executive Dashboard

**OMEGAMON** XE on z/OS v4.1.0

Web Server

Web Server

Web Server

**OMEGAMON** XE for DB2 PM & PE v4.1.0

**OMEGAMON XE for CICS** & IMS v4.1.0

Web App.

MO Mgr. 4

Web App.

**OMEGAMON XE for CICS** TG v4.1.0

A HQ Mg

**OMEGAMON** XE for Storage on z/OS v4.1.0

**OMEGAMON** XE for MF **Networks** v4.1.0

**OMEGAMON** XE for z/VM Linux v4.1.0

DB2

Oryptographic

**OMEGAMON** XE for Messaging

**IBM Tivoli Network** Manager IP Edition v3.7

**IBM Tivoli** Network Manager TN Edition v3.7

**IBM Tivoli** Netcool **OMNIbus** v7.2

**IBM Tivoli Service** Request Manager v6.2.1

System **Automation for** Multiplatforms v2.3

**System** Automation for z/OS v3.2 Composite **Application** Manager for **SOA v7.1** 

Composite **Application** Manager ISM v6.0.1

**NetView on** z/OS v5.3

MQ Mgr.

Web App.

Tivoli Storage Manager v5.5

NO Mgr.

WRIMB

Workload Scheduler 8.4; for Apps 8.4; z/OS 8.3

System **Automation** for IOM v2.1

A MO Mar

z/OS CICS Linux

MQ Mgr.

Tivoli **Decision** Support v1.8 v6.0.1

**IBM Tivoli Adv Catalog** Mgmt for z/OS v2.1

**IBM Tivoli Adv Audit for DFSMShsm** v2.1

**IBM Tivoli** Adv Reporting for **DFSMShsm** v2.1

IBM Tivoli Allocation Optimizer for z/OS v2.1

Usage and **Accounting** Manager v7.1



### **Consul Overview**

#### zSecure suite offers:

- Audit and monitoring
- Real-time alerts
- Policy enforcement
- RACF administration
- CICS interface

### InSight suite offers:

- User-focused monitoring and audit
- Exception reporting
- Dashboard
- Reports designed to assist in compliance efforts related to standards, laws and regulations
- Basic security event module
- Log management
- Reporting only, no remediation



### **Differentiators:**

- True heterogeneous audit and reporting solution encompassing z-based data and distributed platforms
- Significant intellectual capital in making best practice recommendations intended to assist in compliances efforts related to various standards, laws and regulations
- Easy start, bottoms up approach to monitoring and auditing events
- Comprehensive list of configuration settings that can be used for enabling particular endpoints to deliver logs / events to InSight.



## System z in Academia

# Our Goal: 20,000 additional mainframe educated students in marketplace by 2010

#### **Academic Initiative:**

- >27,000 students worldwide educated to date
   reported by professors
- School enrollments grew <u>900%</u> in 2 years,
   Over half outside of US
- 20 courses available to all schools
- Student Mainframe Contests
   4,500 students from 500 schools
- 6 University HUB systems actively sharing academic mainframe resources worldwide
- zNextGen community kicked off with SHARE/IBM
- Over 200 IBM mainframe ambassadors assisting schools



### What's next?

- Student Mainframe Contest
- Faculty Education Seminars ongoing
- More Majors and Certifications
- Faculty Awards
- Matching schools with clients



### Summary

- We are delivering a New Generation of Software on z
- SOA and z Together Extend and Leverage Decades of Massive Business Investments
- •The z Ecosystem Now Enables Leap Frogging to the Next Generation of Applications
- Simplification of IT Management is the Next Large
   Step
- Its All About the Economies of Scale and How z
   Capability and Quality of Service makes a Difference





