



System z Software Strategy and Technology Update

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WW Vice President, z Software

October, 2007

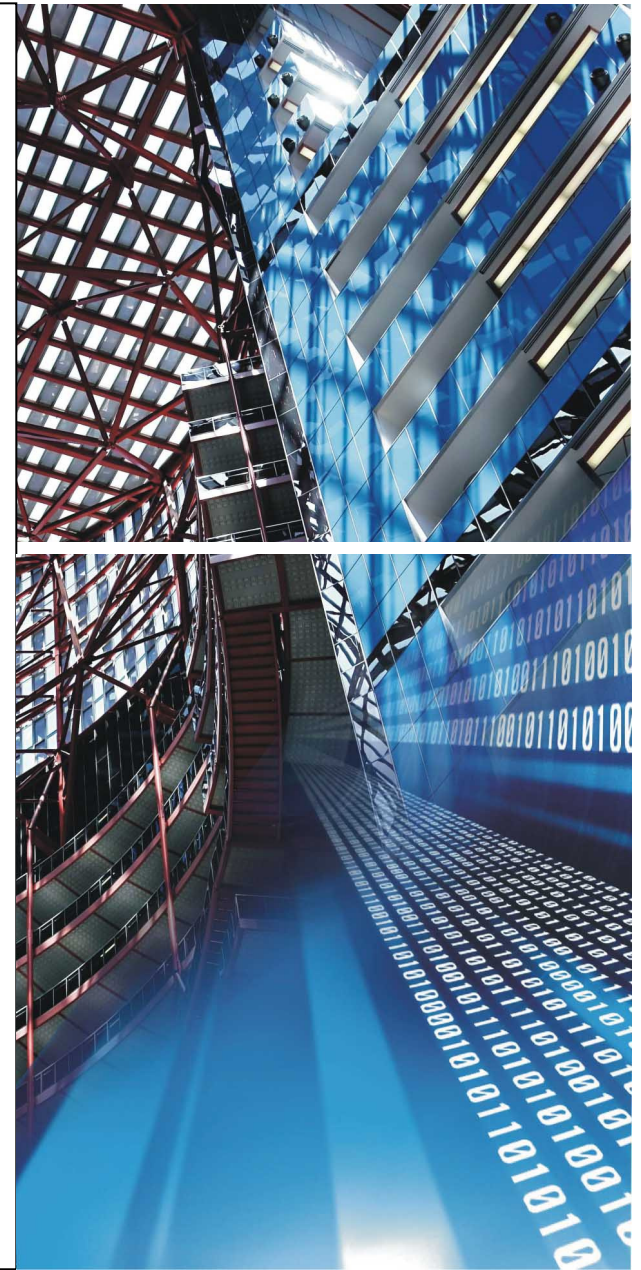
Today's mainframe

Four Enterprise-wide Roles of the Mainframe

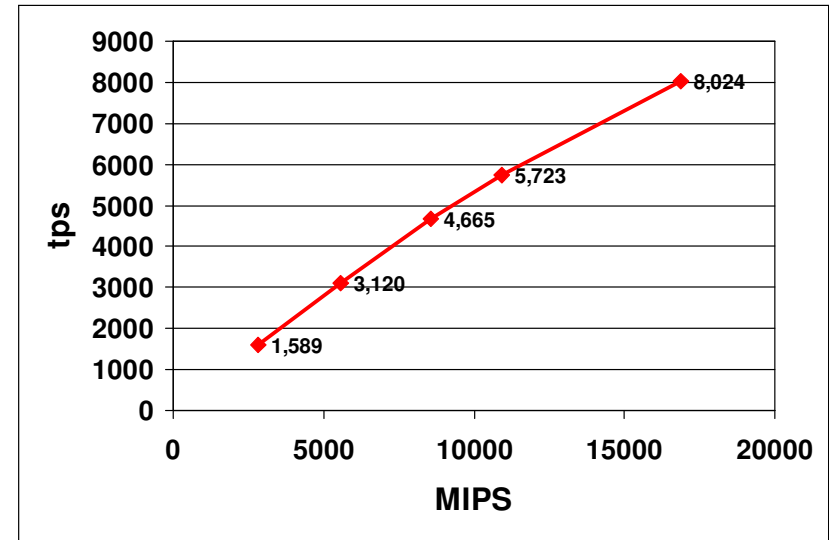
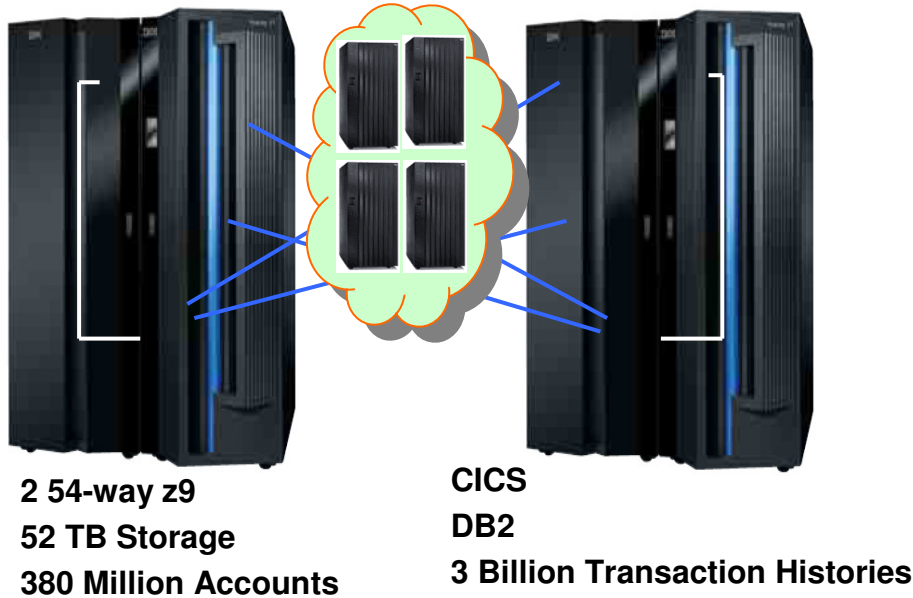
- Enterprise business resilience manager
- Enterprise security manager
- Enterprise workload manager
- Enterprise hub for data & SOA

If data is the life blood of the business . . .

then your data server is the heart of your SOA



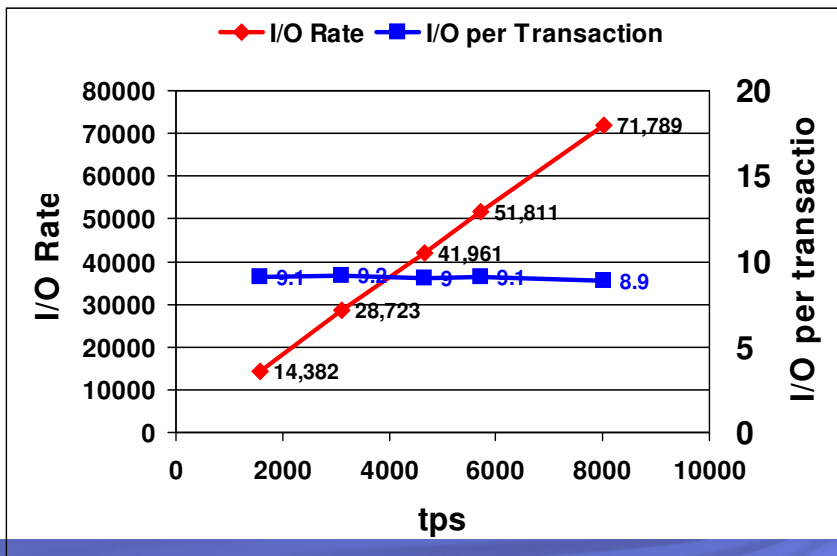
FNS and IBM Deliver Record-breaking Banking Benchmark Performance



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?

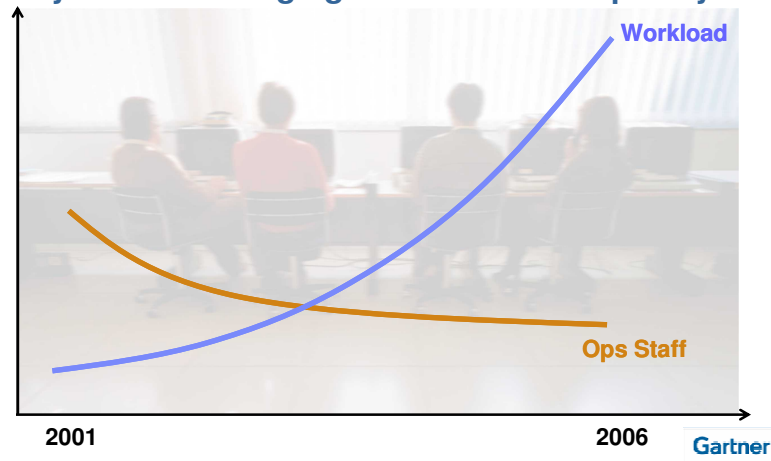
New HW / SW spending



Cost of management & administration

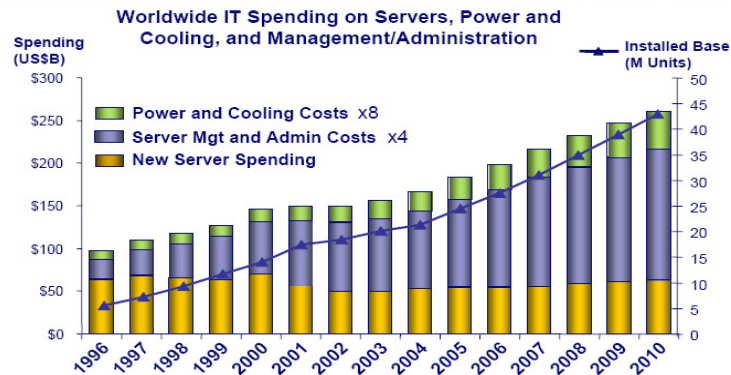
Source: Tony Picardi, IDC
Economist.com: Make it simple. October 28th, 2004
From The Economist print edition

System z9 Managing Growth and Complexity



Worldwide Server Market:

Cost of Management Ramps Dramatically

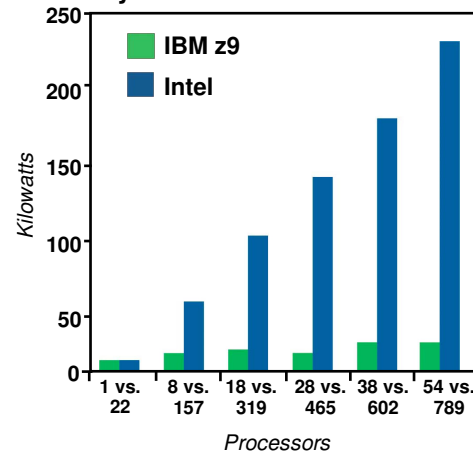


Many Servers, Much Capacity, Low Utilization = \$140B unutilized server assets

Source: IDC, 2006

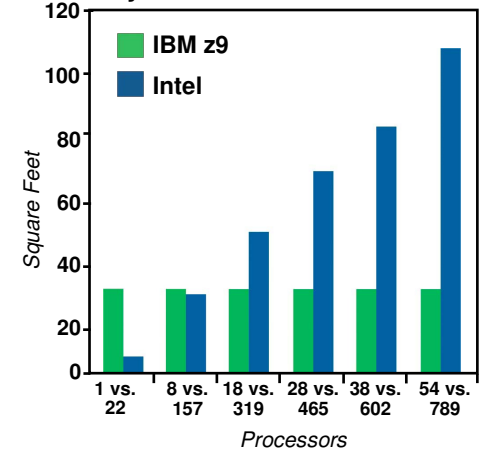
POWER:

System z9 vs. Linux on Intel



SPACE:

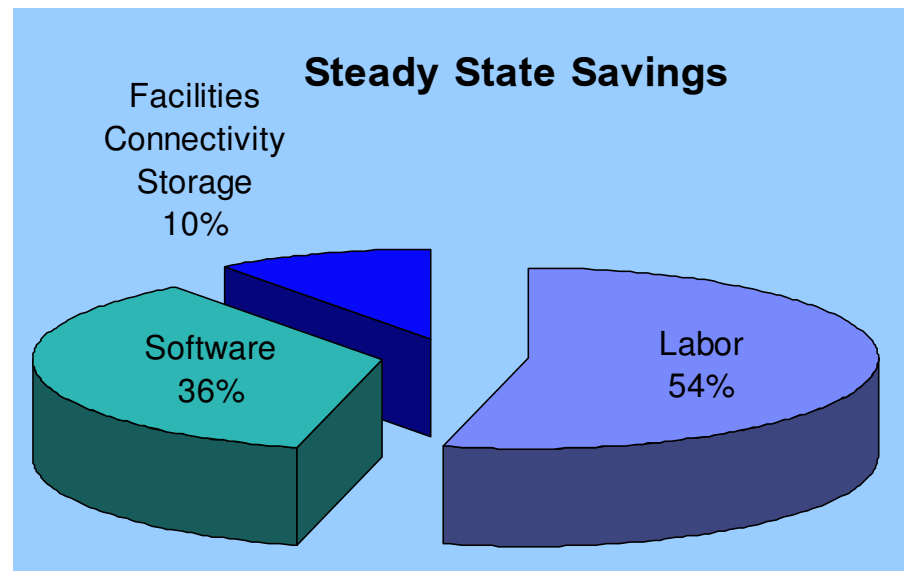
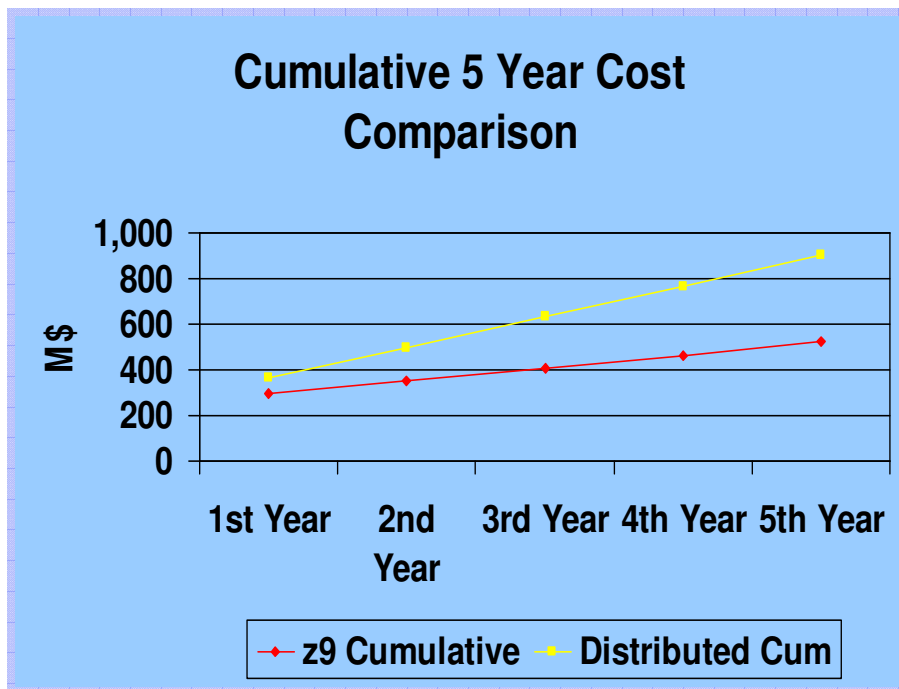
System z9 vs. Linux on Intel



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

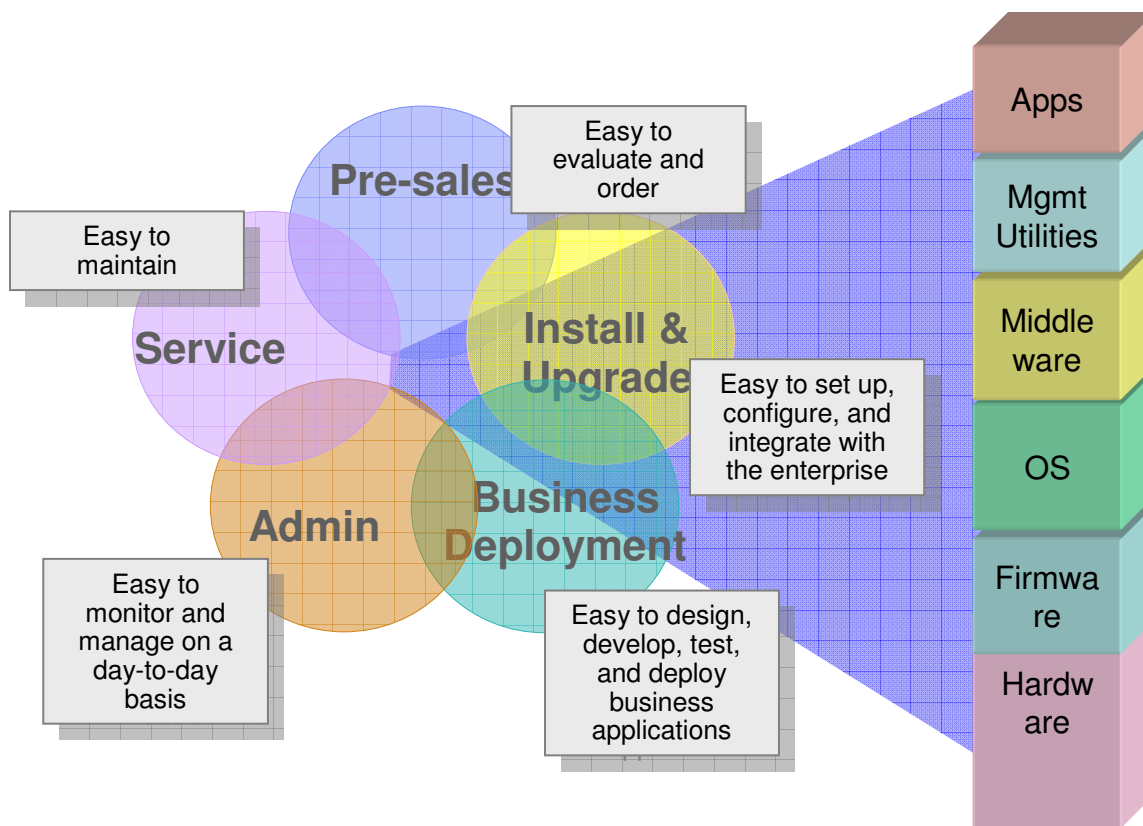
- **Annual Energy Usage reduced by 80%**
- **Total floor space reduced by 85%**

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

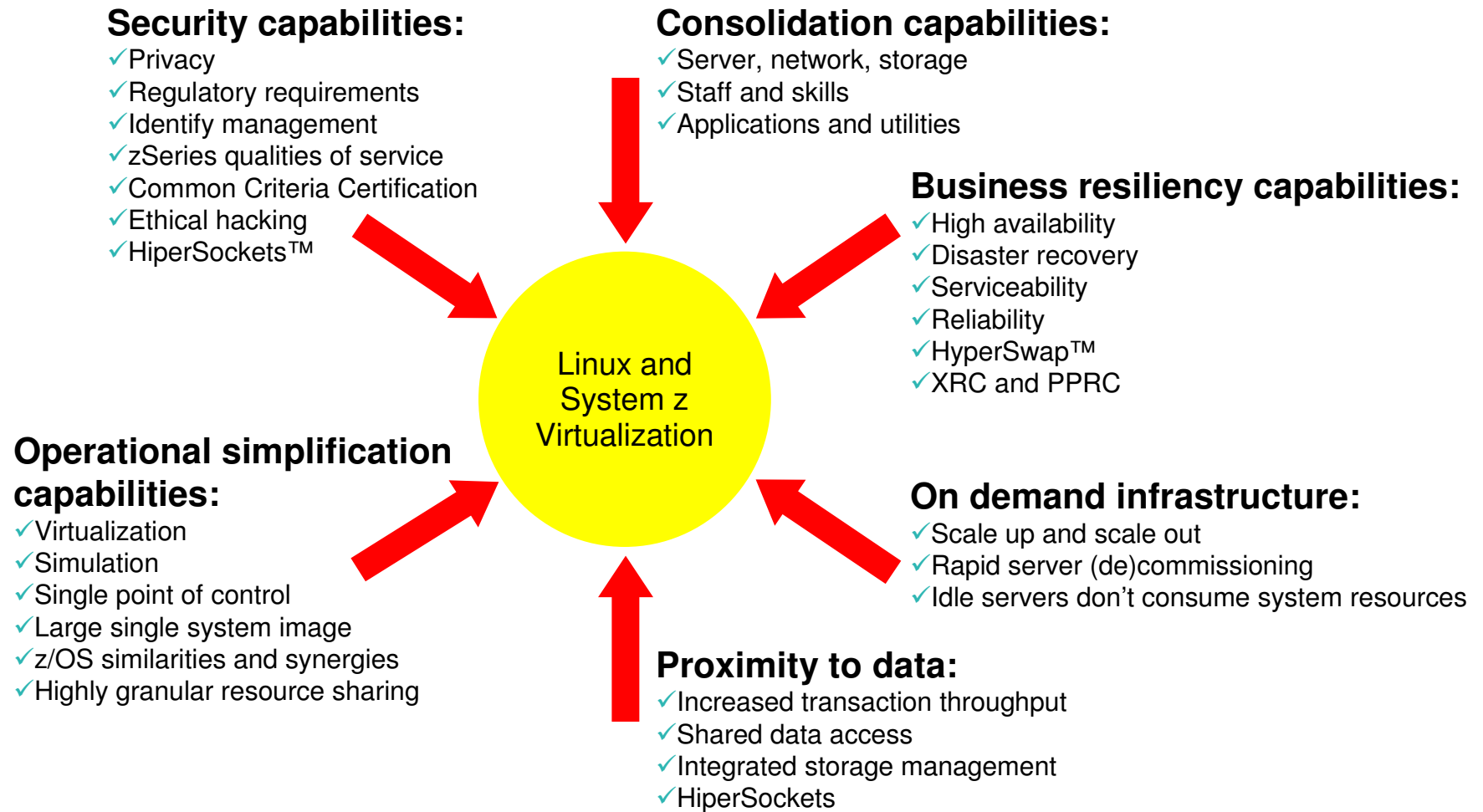
zOS Simplification Scope: *The Total Customer Experience*



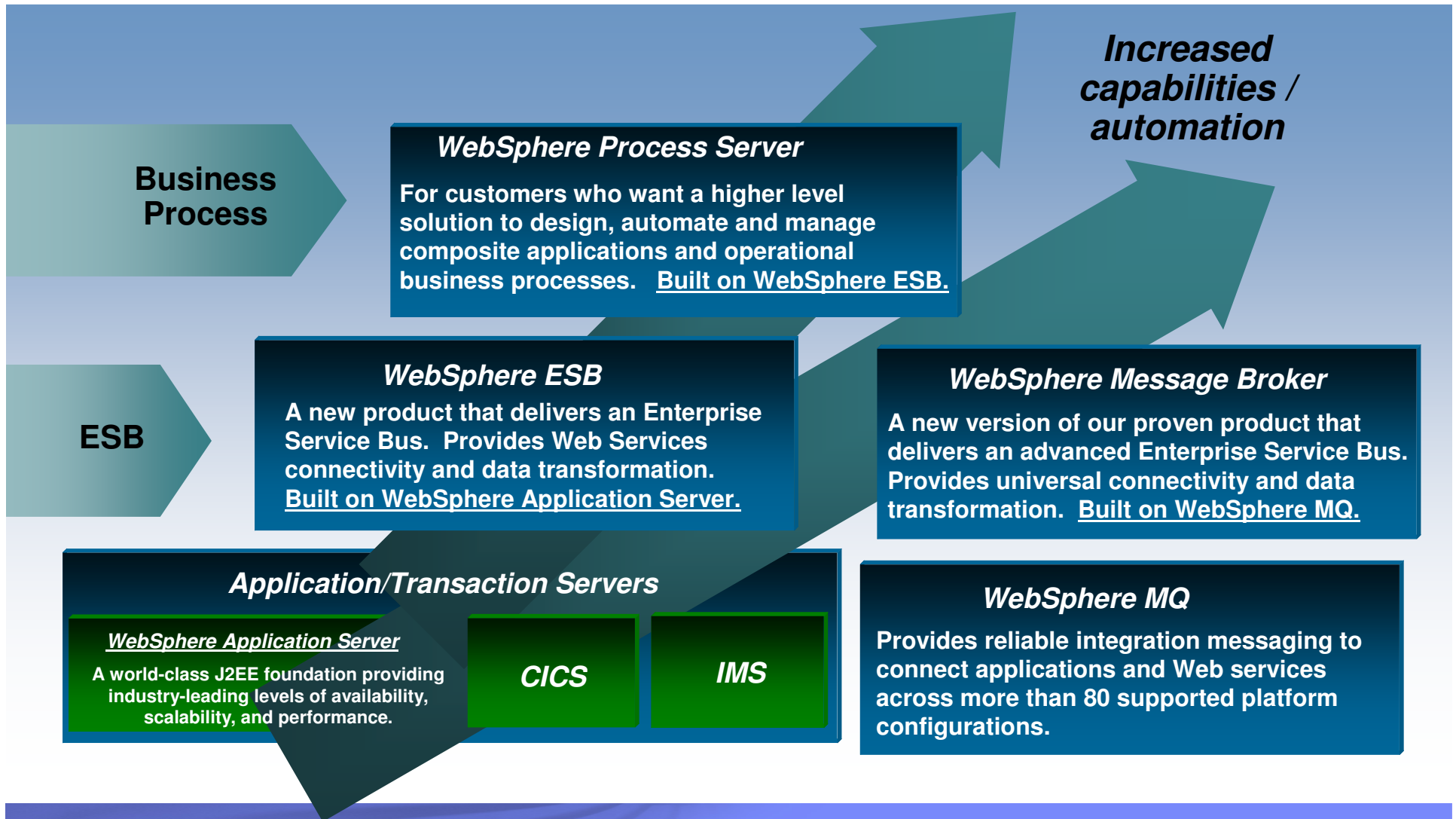
- All aspects of System z will be managed consistently.
- The management framework will be integrated – always there.
- Capabilities can grow with value-added extensions from IBM and 3rd parties.
- Basic management functions upwardly integrate into Tivoli enterprise management
- Backed by a Statement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

Linux and z/VM on System z

Providing Value Propositions for Linux Workloads



z flexible deployment options for an SOA environment



Websphere MQ VNext Summary

- WMQ V7 is a significant offering that will primarily address support of standards-based 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

- 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.

Enhanced Application Transformation

- 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.

Improved Operational Efficiency

- 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

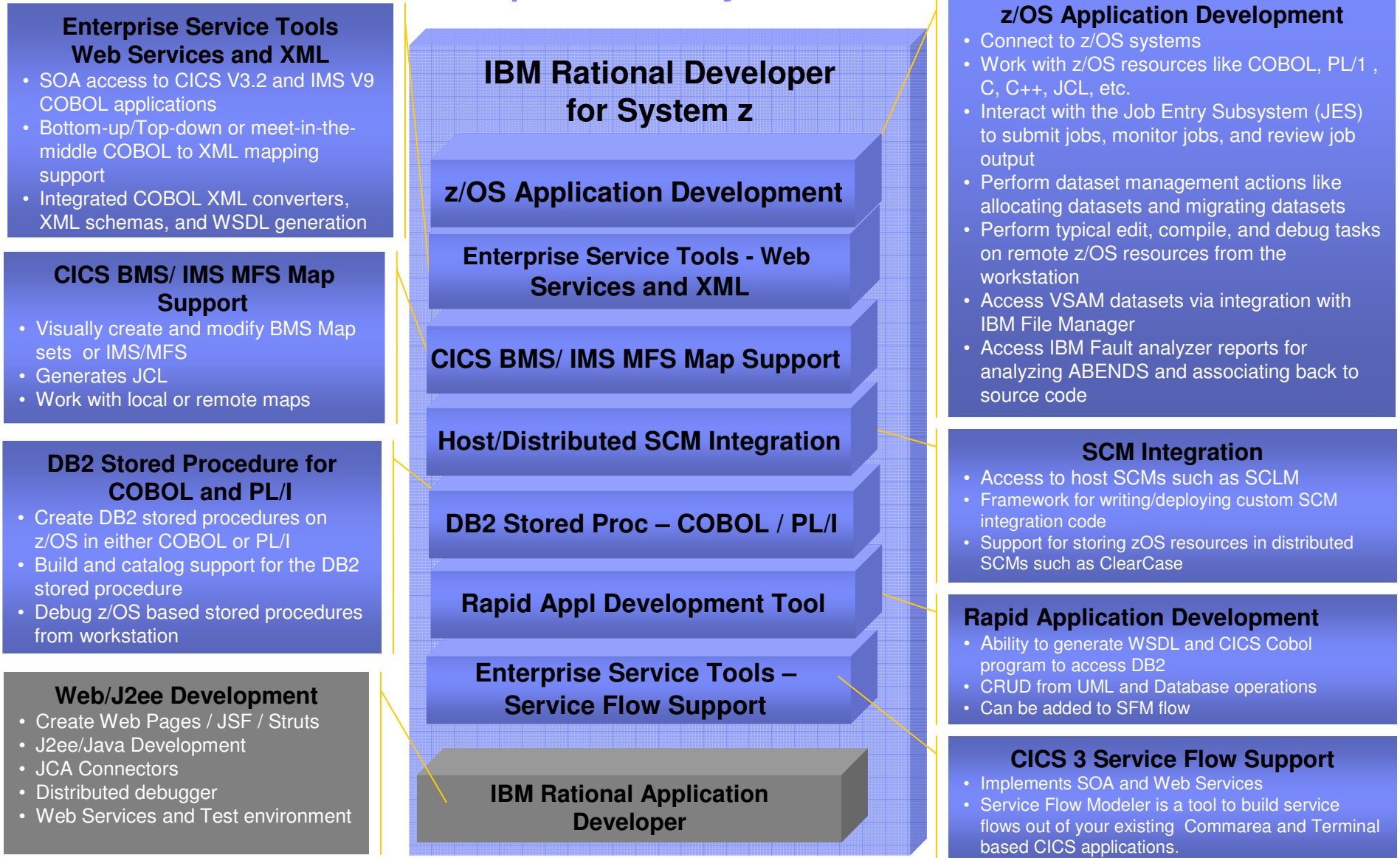
The Business Value Proposition

- 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

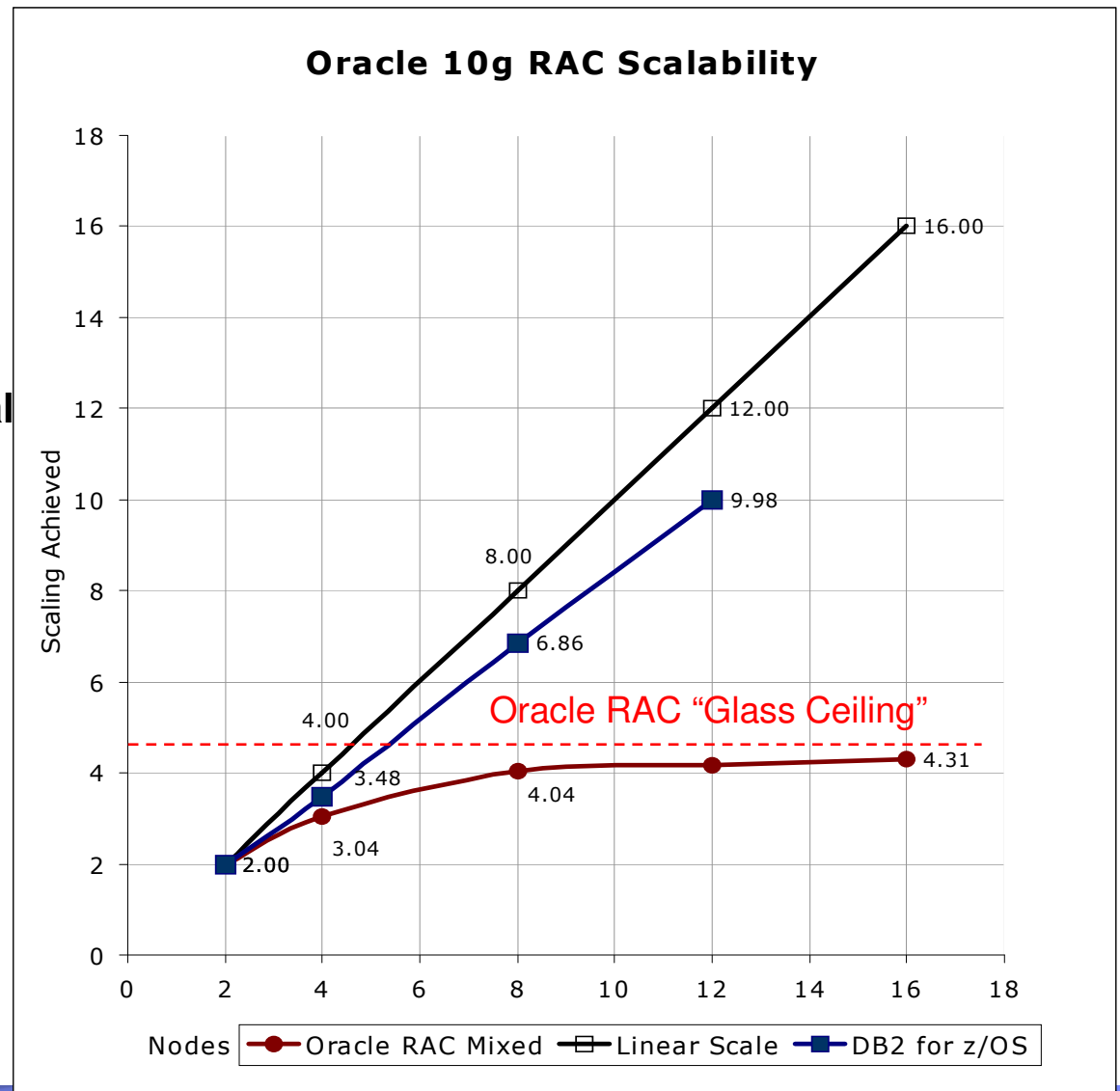


DB2 Scalability

- **DB2 for z/OS provides near-linear 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 scale-out using Oracle 10g 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

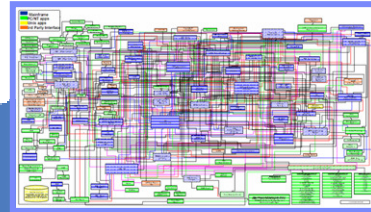
- Managing application changes
- Tuning for performance
- Optimizing repetitive tasks
- Managing Complexity
- Complying with regulations and audit



■ 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

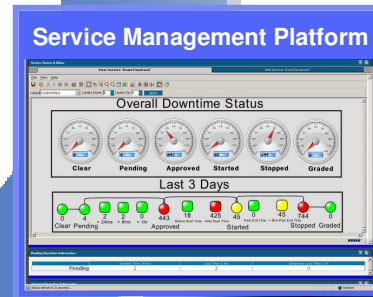
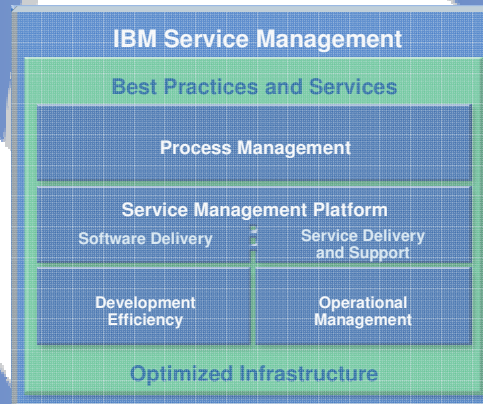


1. What's happening with the infrastructure?

- Server monitoring
- Storage monitoring
- Network monitoring
- Data monitoring
- Application monitoring

3. What actions do we take?

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



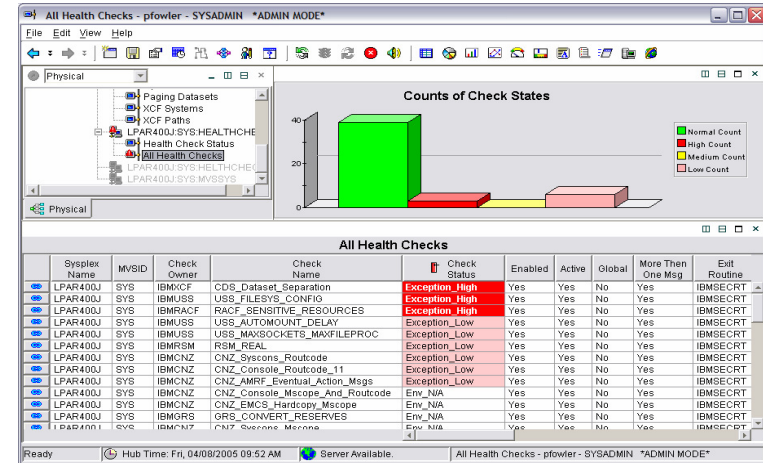
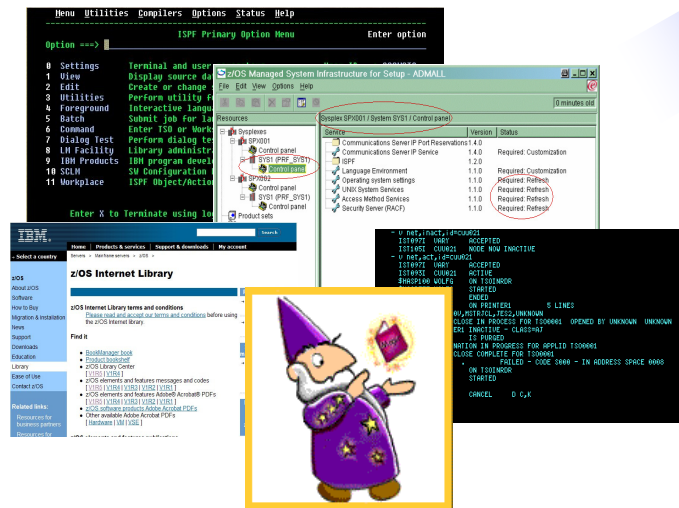
2. How does this relate to the business service?

- Dashboard
- Business service management
- Service level management
- Infrastructure and application discovery and mapping

New

Modernizing the “Face” of z/OS

Old

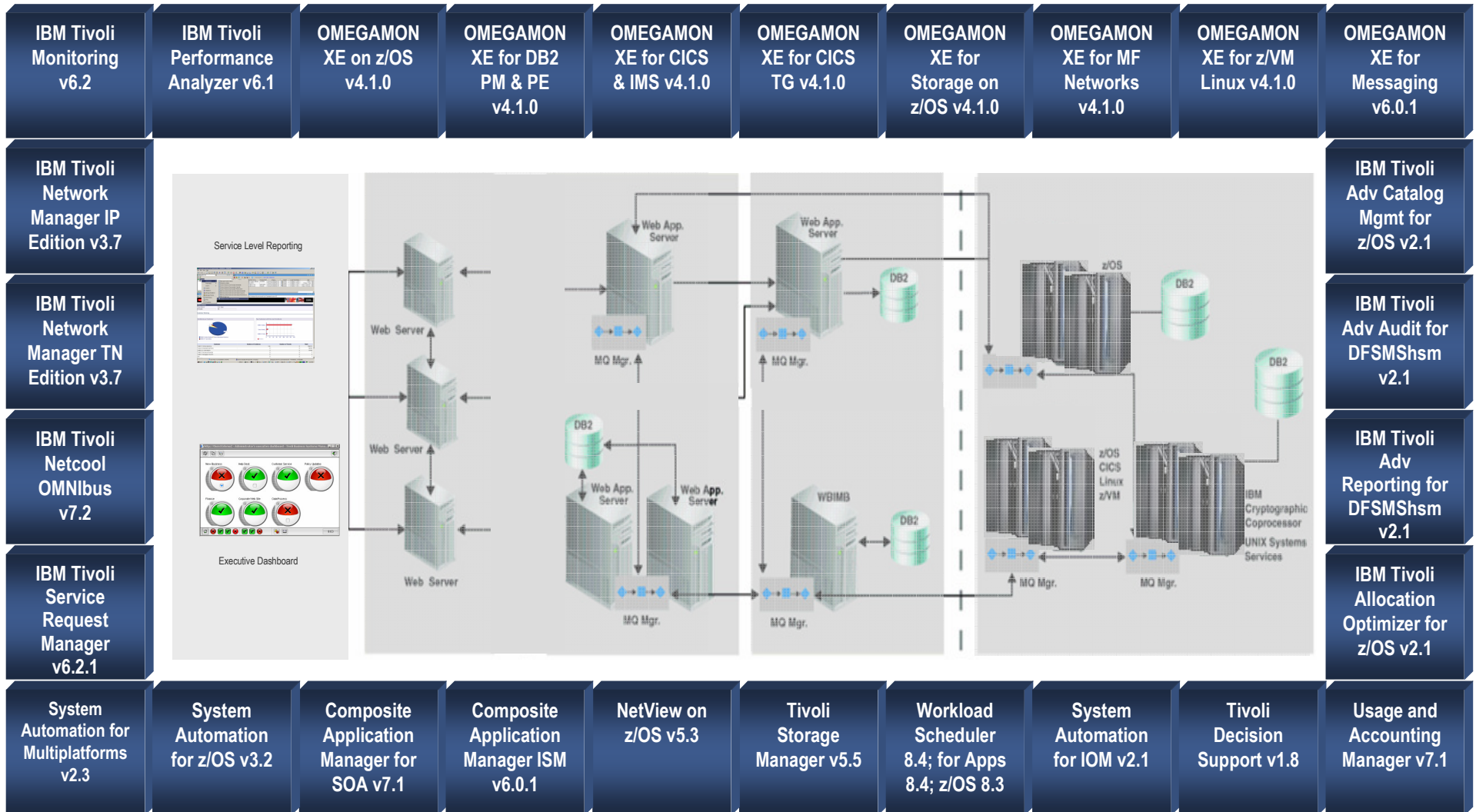


Expert-friendly, long learning curve for people new to platform

- 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 z/OS

Enhanced End-to-End Enterprise Management



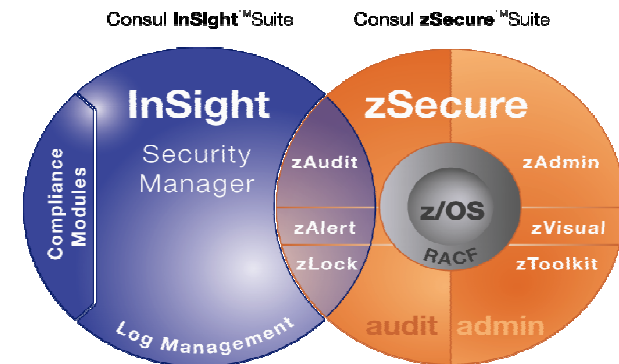
Consul Overview

■ 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 compliance 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 900% 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



Thank you.

