z9 Executive Software Briefing
Maximize Your Investments in Mainframe Software

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WW Vice President, z Software

November 2005

business on demand.

A Holistic Approach to System Design – System z9 Software
Designed to protect, manage and integrate your on demand environment

Business Integration

- J2EE 1.4 and Web services support
- Simplified deployment and management of WebSphere
- Secure data transfer between over 35 platforms
- zAAP execution for WebSphere Java Workloads
- SOA

System z9 Infrastructure Management

IT Service Management

- End-to-end infrastructure management
- Manage job scheduling resources across the network
- Improvements in
  - Automation
  - Network management
  - Charge back management
 - Parallel Sysplex systems management

Business Resiliency and Security

- Improved access to z/OS configuration files from other platforms
- Security software management
- Connect to identity data in multiple repositories
- Manage software assets

Platform Readiness

•Maximize business value with new versions of the middleware:
CICS TS V3, DB2 V8, IMS V9, WebSphere MQ V6, NetView® V5.2
•Exploiting the features of z/OS and z9109

Cost of Complexity

Spending (USB$)

Installed Base (M Units)
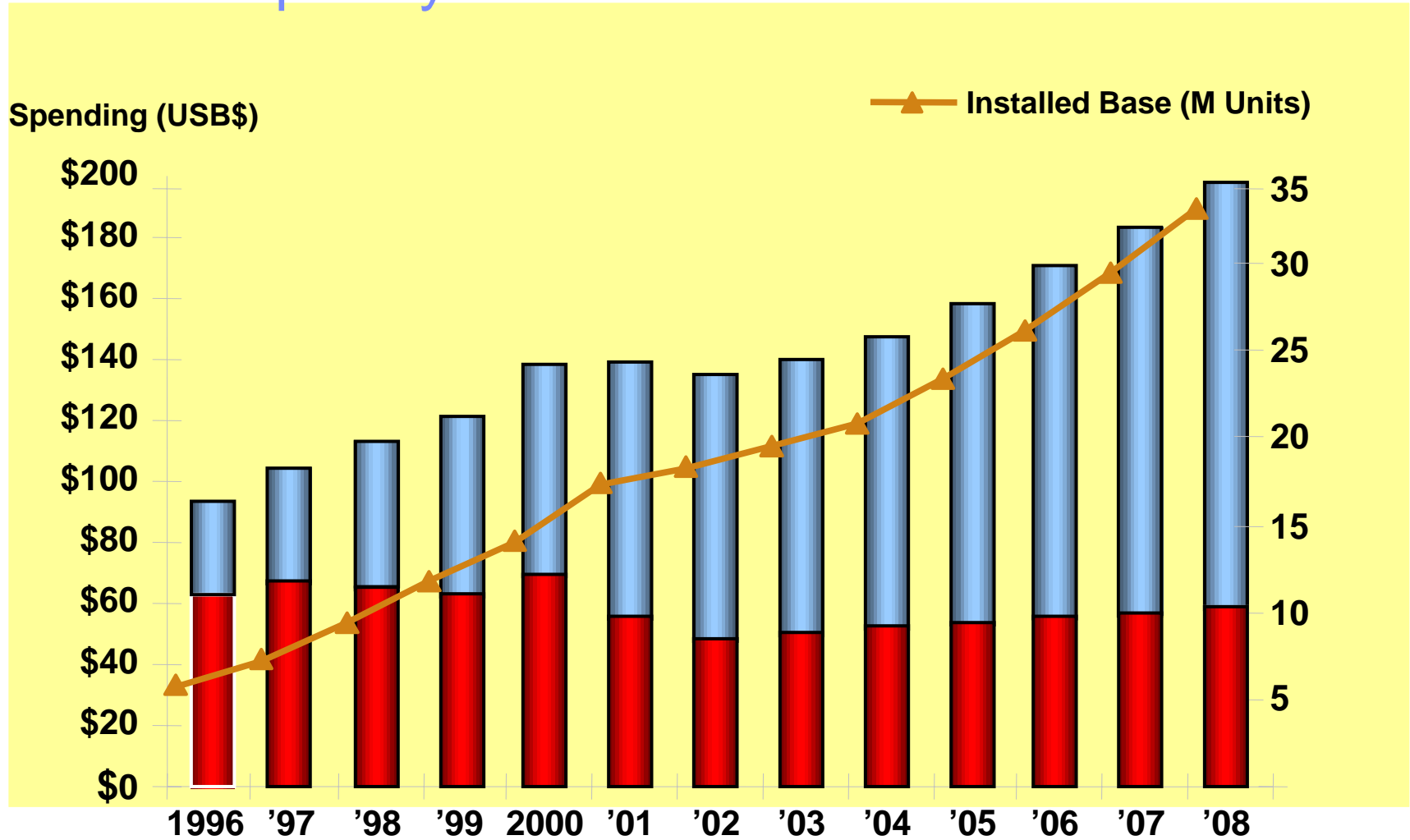
New server spending (USM$) 3% CAGR

Cost of mgmt. & admin. 10% CAGR

zSeries - The Mainframe for Mixed Commercial & e-business Workloads

- **Near-linear Scalability**   **Beyond 900,000+ Concurrent Users**
- **More Secure Transactions**   **>6000 SSL/sec vs. <200 SSL/sec**
- **"Mean Time Between Failure"**   **Measured in Decades vs. Months**
- **1/4 Network Equipment Costs**   **Logical versus Physical Trade Off**
- **1/25 Floor Space**   **400 Sq. Ft vs. 10,000 Sq. Ft**
- **1/20 Energy Requirement**   **$32/day vs. $600/day**
- **1/5 the Administration**   **< 5 People vs. > 25 People**
- **Highest Average Resource Utilization**   **>70% vs.. <15%**

Cost of Ownership:
The true costs of computing from a per user perspective
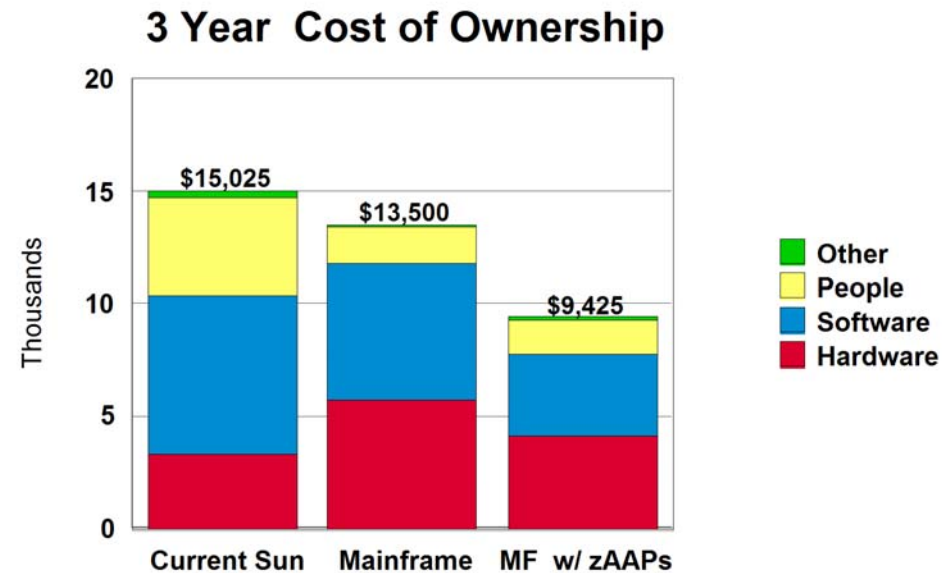
- Cost effectiveness weighed on TCO instead of TCA

- Mainframes utilization potential far outweighs non-mainframe options

- Visibility of costs on the mainframe vs. hidden costs for non-mainframe options

- Staffing on mainframes:

  ▸ 1 system programmer for 250 end users

  ▸ # of systems programmers per mainframe MIPS has fallen ten-fold in the past 7 years and is expected to halve in the next 5 years
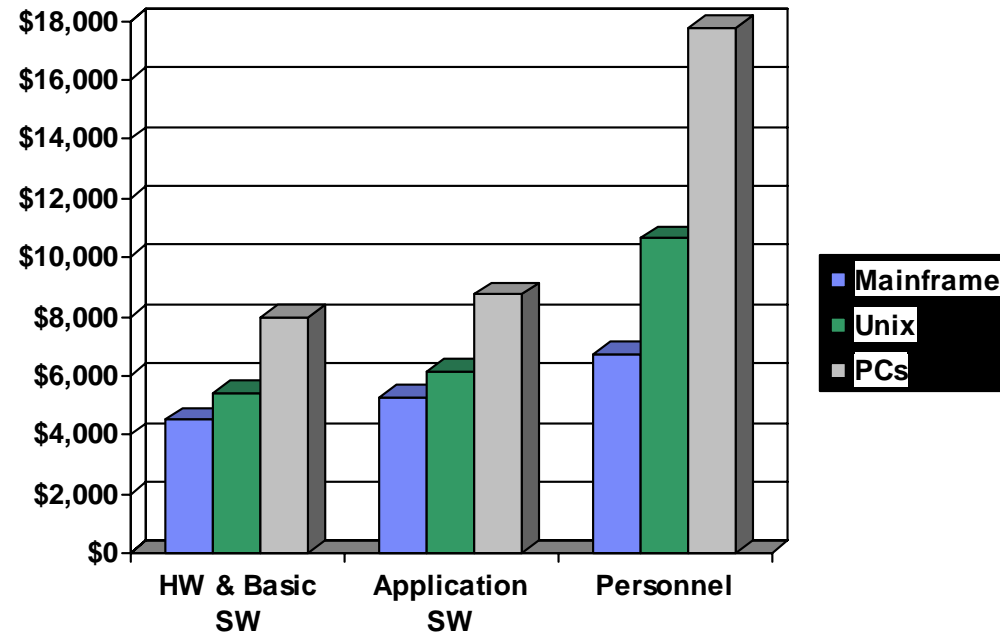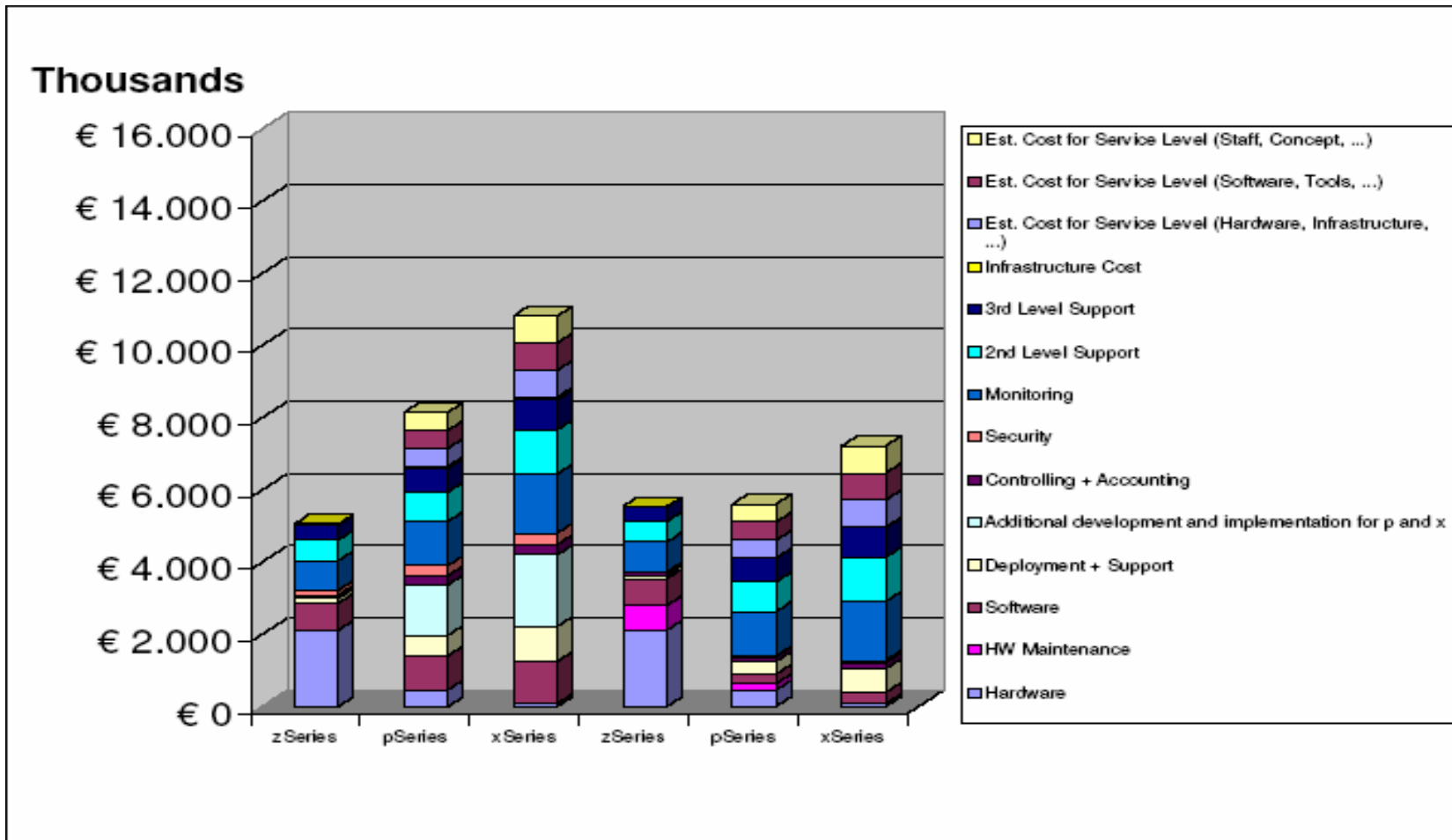

Arcati Research Note, Dinosaur Myth 2004 Update

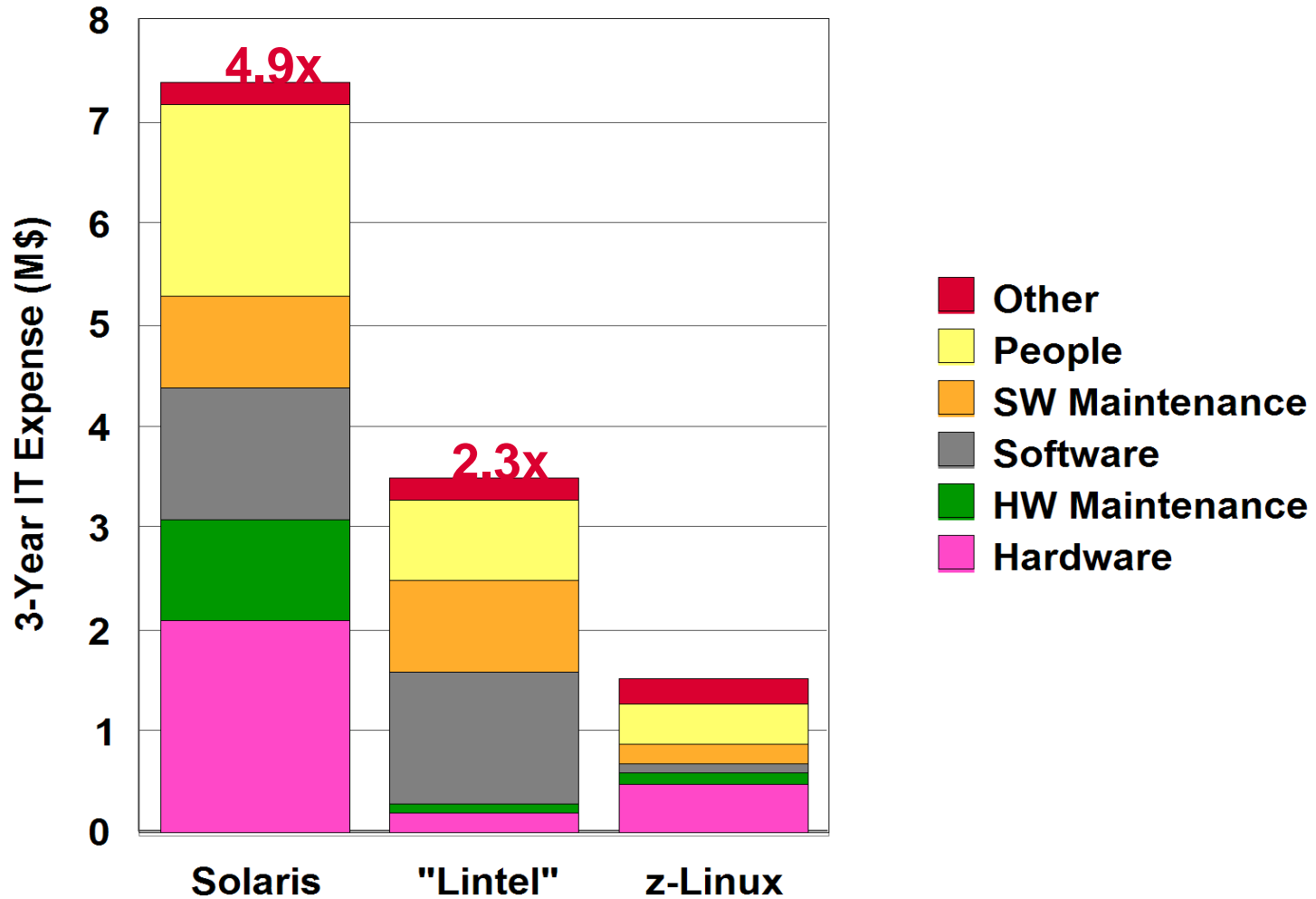# People costs are often *hidden* in distributed implementations

- In a recent typical study, a customer thought they only had 24 UNIX servers
  - ▸ But these were just the PRODUCTION servers
  - ▸ In addition they had 49 servers for Development, Test and Disaster Recovery
- They needed <u>44 people</u> to support these servers and $7M software
  - ▸ Running at only 20% utilization
- A comparable zSeries implementation would have required 20 engines
  - ▸ Requiring <u>16 people</u> to support
  - ▸ Using $6M software (over 3 years)
  - ▪ They thought the Solaris environment was 1/5 the cost of the mainframe…
    …but in fact the **zSeries TCO was 37% less**
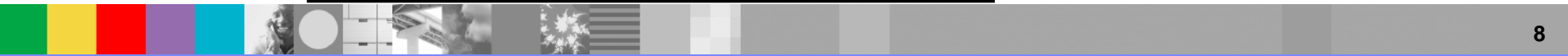
3 Year Cost of Ownership

Thousands

$15,025	Current Sun
$13,500	Mainframe
$9,425	MF w/ zAAPs

Legend:
- 🟩 Other
- 🟨 People
- 🟦 Software
- 🟥 Hardware

TCO Results Chart (GAD)

Web Trading Application Costs

3-Year IT Expense (M$)

4.9x

2.3x

Solaris   "Lintel"   z-Linux

Legend:
- Other
- People
- SW Maintenance
- Software
- HW Maintenance
- Hardware

Sun 3-year cost ~ 4.9 x z-Linux
**Lintel/Windows 3-year cost ~ 2.3 x z-Linux**

z/OS 1.7– IBM's Flagship Operating System

Simplifying z/OS management for new IT professionals while extending z/OS robust capabilities

- Simplifying z/OS management
  - ▶ Easier to configure with "best practices"
    - IBM Health Checker for z/OS built into z/OS 1.7
      - – Provides more checks and new front end
      - – Enables other z/OS products to check for "best practices"
  - ▶ Simplified networking with JES2 NJE support for TCP/IP (planned for 1Q06)
    - JES3 support planned for 2006*
  - ▶ Statement of Direction*- new user interface for z/OS:
    - IBM intends to provide a new user interface for z/OS management that will be designed to automate, eliminate, and simplify many z/OS management tasks
- Extending z/OS capabilities and qualities of service
  - ▶ Extending z/OS resiliency and security
    - May reduce the need to IPL with z/OS UNIX System Services dynamic service activation
    - Improved z/OS Digital Certificate life-cycle management (PKI services)
  - ▶ Further performance optimization for TCP/IP networking
    - TCP/IP Sysplex Load Balancing Advisor working with network devices
  - ▶ Improved function for business integration
    - Compatibility, easier porting with C/C++ enhancements
    - Simplified application security
      - – Support for new standards
      - – TLS support designed to be transparent to applications

* All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.
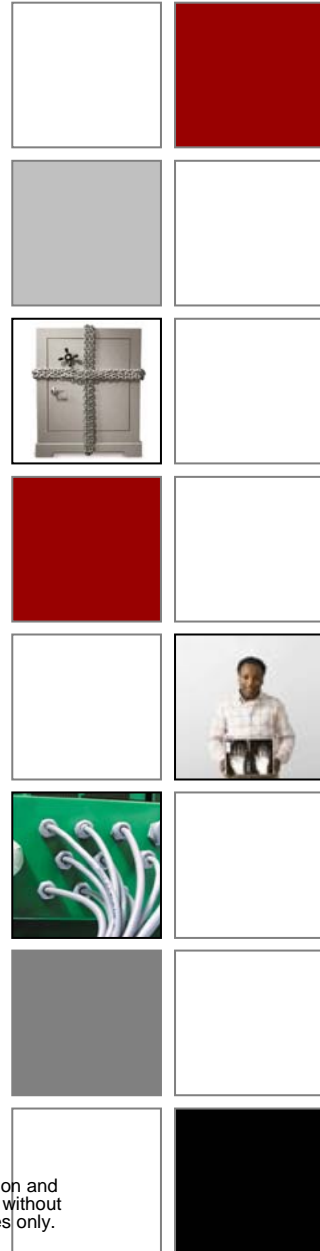
Customer value in DB2 V8

- *Availability* – *dramatic reduction in planned outages, increased protection against unplanned outages, reduced recovery time*
  - ▸ Alter databases on the fly without disruption in service : **Online Schema Evolution**
  - ▸ Reduce planned outages and move towards 24x7 operations: Improved online re-org & recovery: **Data Partitioned Secondary Indexes, Online Reorg**
  - ▸ Eliminate table outages, dramatically reduce planned outages: **Online check index**
  - ▸ Avoid disruptions and save time during backups and recoveries: **Point in Time Recovery**
- *Scalability & Performance* – *exploitation of V8 features offers orders of magnitude improvement in performance and ability to scale*
  - ▸ Breaking storage limits, & more efficient use of storage: **64 bit addressing**
  - ▸ *Save CPU and shorten elapsed time*: **Multirow operations (insert, fetch)**
  - ▸ Save up to 20% of CPU time in query environment: **Optimization**
  - ▸ Substantially increased scalability by lifting many limits lifted: **i.e. Partitions and Logs**
- *Skills & Productivity-* *Application programmers can develop on Unix/Windows for deployment on z; autonomic improvements reduce skills requirement*
  - ▸ Better integration with vendors (SAP): **Long name support**
  - ▸ Smoother porting (distributed & other db), ability to leverage non-zSeries skills
  - ▸ Combine data from WW operations into a single database: **UNICODE**
  - ▸ Reduce DBA effort and errors: **Automated space management**
  - ▸ **Plus Security**

Addressing Customer Requirements

DB2 for z/OS delivers on demand

✓ **Integration**
✓ **Scalability**
✓ **High Availability**
✓ **Flexible Growth**

DB2: Engineered for the Future ...

VNext GA +
24-36 Months

DB2 VNext +1

- **Autonomic Enhancements**
- **System tuning & performance**
- **Remote site failover**
- **zSeries System & Storage Integration**

V8 GA
+24-36
Months

DB2 V9

- **Web exploitation**
- **Leadership availability & scalability**
- **Platform specific skills reduction**
- **DW & OLTP Reporting Enhancements**

03/04

DB2 V8

- **64-bit Virtual Storage**
- **Online Schema Evolution**
- **Unicode Support**
- **More flexible SQL**
- **Improved security**
- **New Backup and Recover Tools**

03/01

DB2 V7

- **Scrollable Cursors**
- **Availability/ Online Improvements**
- **ODBC/JDBC**
- **Scalability Enhancements**

Customer value in CICS TS V3

- *Availability* – *enterprise-wide workload management, increased protection against unplanned outages, reduced recovery time*
  - ▶ Ability to manage the correlation and maintenance of system resources: **Single-point-of-control of multiple systems**

- *Scalability & Performance* – *exploitation of V3 features offers orders of magnitude improvement in performance and ability to scale*
  - ▶ SSL encryption/decryption exploits z990 hardware: **Increased throughput/reduced CPU consumption**
  - ▶ Improved CICS-to-CICS IP connectivity: **Ultra fast in-memory (HiperSocket) communication**
  - ▶ SOAP performance improvements: **Up to 20% reduction in CPU per transaction**
  - ▶ Open TCBs for all Threadsafe Applications: **Increased throughput by removing affinity to single TCB**
  - ▶ Support for C++ XPLINK applications: **High performance for C/C++**
  - ▶ HTTP/HTTPS concurrent session limits raised to 65,000: **CPU reduction for users of large networks**
  - ▶ **100X Scalability in Secure Transactions**

- *Skills & Productivity-* *CICS applications can now directly connect to Unix/Windows applications using a Service Oriented Architecture (SOA)*
  - ▶ Enhanced application transformation: **Improved support for integration tooling and Web Services standards**
  - ▶ COMMAREA restriction removed by Containers: **32K limit on program to program data lengths removed**

CICS Directions

CICS provides technologies for an On Demand world

- ✓ **Application Transformation**
- ✓ **Integration**
- ✓ **Operational Efficiency**

CICS ensures lasting value of applications in modern Enterprise solutions

1/02

CICS TS V2.2

- Support for EJB'S
- JDBC/SQLJ Access to DB2 Data
- JCICS access to VSAM data
- ECI over TCP/IP
- Integrated Translator for COBOL & PL/I

EJB support

12/03

CICS TS V2.3

- Performance improvements for Java programs
- Addition of CICS Web Support to the JCICS classes
- Interactive debugging for COBOL and Java applications
- SOAP for CICS
- Performance improvements in CICS-DB2® attachment

High Performance JAVA

03/05

CICS TS V3.1

- Web Services capabilities to extend apps to SOA
- Support for industry leading SSL protocol
- Optimised CICS data exchange capabilities
- New interfaces for Enterprise Management
- Leverage WD4Z for application tranformatoion and integration.
- Enhanced C/C++ programs performance

Web Services

next 24 Months

CICS TS V3.n

- CICS-to-CICS connectivity with an IP network
- Enhance Web Services capabilities
- Higher application parsing efficiency
- Extend Web Services support for COBOL data types
- Enterprise wide workload management
- Remove capacity restraints relating to data sources

SOA

Robust Capabilities Connected in an Open, Flexible Manner

IBM WebSphere Integration Reference Architecture

Development Services

Business Innovation & Optimization Services

Interaction Services

Process Services

Information Services

Connectivity Services

Partner Services

Business Application Services

Application and Information Assets

Infrastructure Management Services

Modular product portfolio built on open standards

Functionally rich, adopted incrementally

Simple to develop, deploy and manage

Integrated role-based tools for development & administration

…delivering **the value of SOA, today**

Is re-writing COBOL logic appropriate?

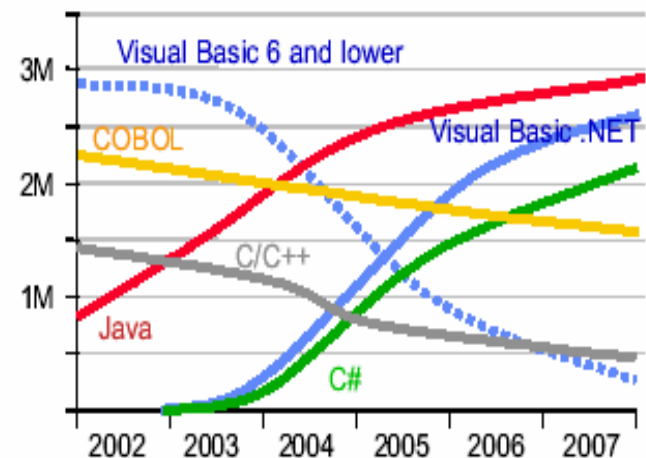- **Significant business intelligence exists in legacy**
  - ▸ "200 Billion lines of COBOL code in existence" *eWeek*
  - ▸ "5 Billion lines of COBOL code added yearly" *Bill Ulrich, TSG Inc.*
  - ▸ "Between 850K and 1.3 Million COBOL developers" *IDC*
  - ▸ "Majority of customer data still on mainframes" *Computerworld*
  - ▸ "Replacement costs $20 Trillion" *eWeek*

- **Rewriting - is it an option.....**
  - ▸ How long will it take? (lose strategic benefit)
  - ▸ Who will do it?
    (Who has the business knowledge?)
  - ▸ Can you certify accuracy of your business model?
  - ▸ How much will it cost?
  - ▸ Risk?
  - ▸ Longer path lengths

Developers
From an estimated worldwide market size of 7 million "professional" developers

Visual Basic 6 and lower
3M
COBOL
Visual Basic .NET
2M
C/C++
1M
Java
C#
2002 2003 2004 2005 2006 2007

M = million

Gartner

Enabling a robust, flexible SOA runtime environment

While maximizing the value of existing assets   *Fully SOA capable!*

WebSphere Application Server V6

March 2005

- Extend existing Java assets with support for Web Services standards and standards-based messaging
- Help ensure 24x7 availability of business-critical applications with clustering and high availability
- Build and deploy Web Services quickly and easily with rapid development and deployment features
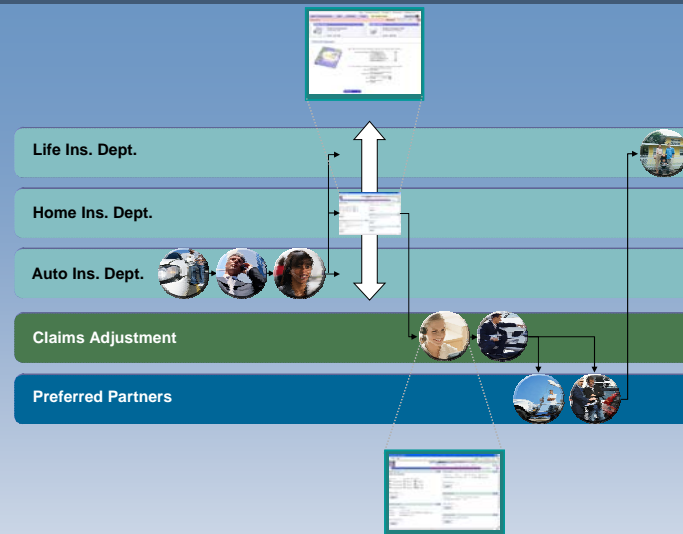
WebSphere Application Server V6.0.2 Preview

- SDK 1.4.2 included in WAS runtime – easier packaging and serviceability
- Tighter integration with WebSphere MQ and improved IJP support
- Enabling government standards for products to acquire federal government standards certification:
  - FIPS140-2
  - IPV6
  - Certified at a Common Criteria Evaluated Assurance Level (EAL4)
- Ease-of-use and serviceability enhancements
- Security enhancements.

WebSphere MQ V6.0 Extended Security Edition

- Featured as a SOD in April 2005 Announcement of WebSphere MQ V6.0
- End-to-end application level security for WebSphere MQ environment
- Enables enterprise-wide, remote management of security policies
- Upgrade from standard WebSphere MQ without changes to existing production MQ environment.
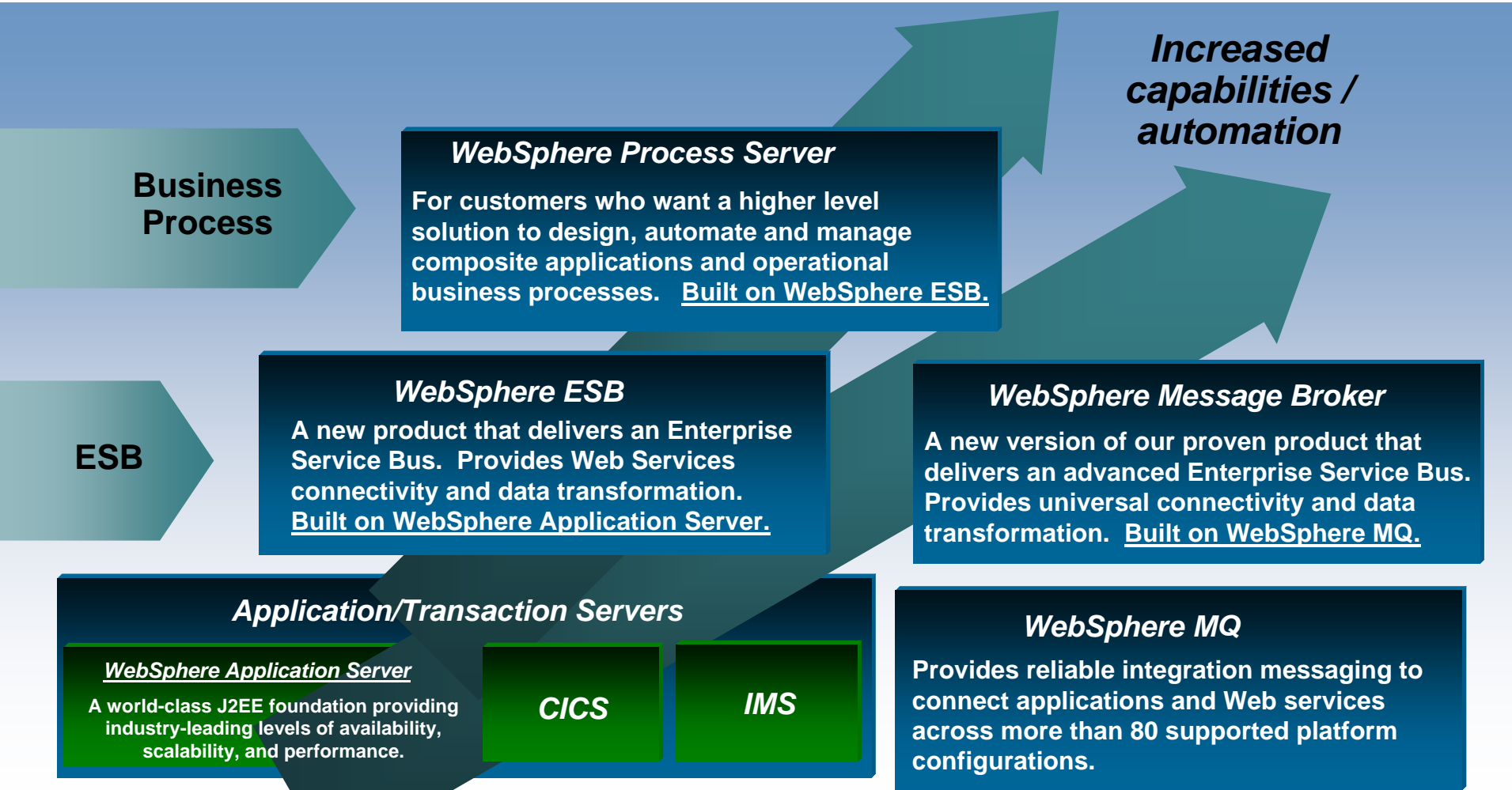
Planned Availability Year-End 2005

Life Ins. Dept.

Home Ins. Dept.

Auto Ins. Dept.

Claims Adjustment

Preferred Partners

#1 in market share for Application Server software

Computing
WebSphere tops
Network Computing
App Server Reviews
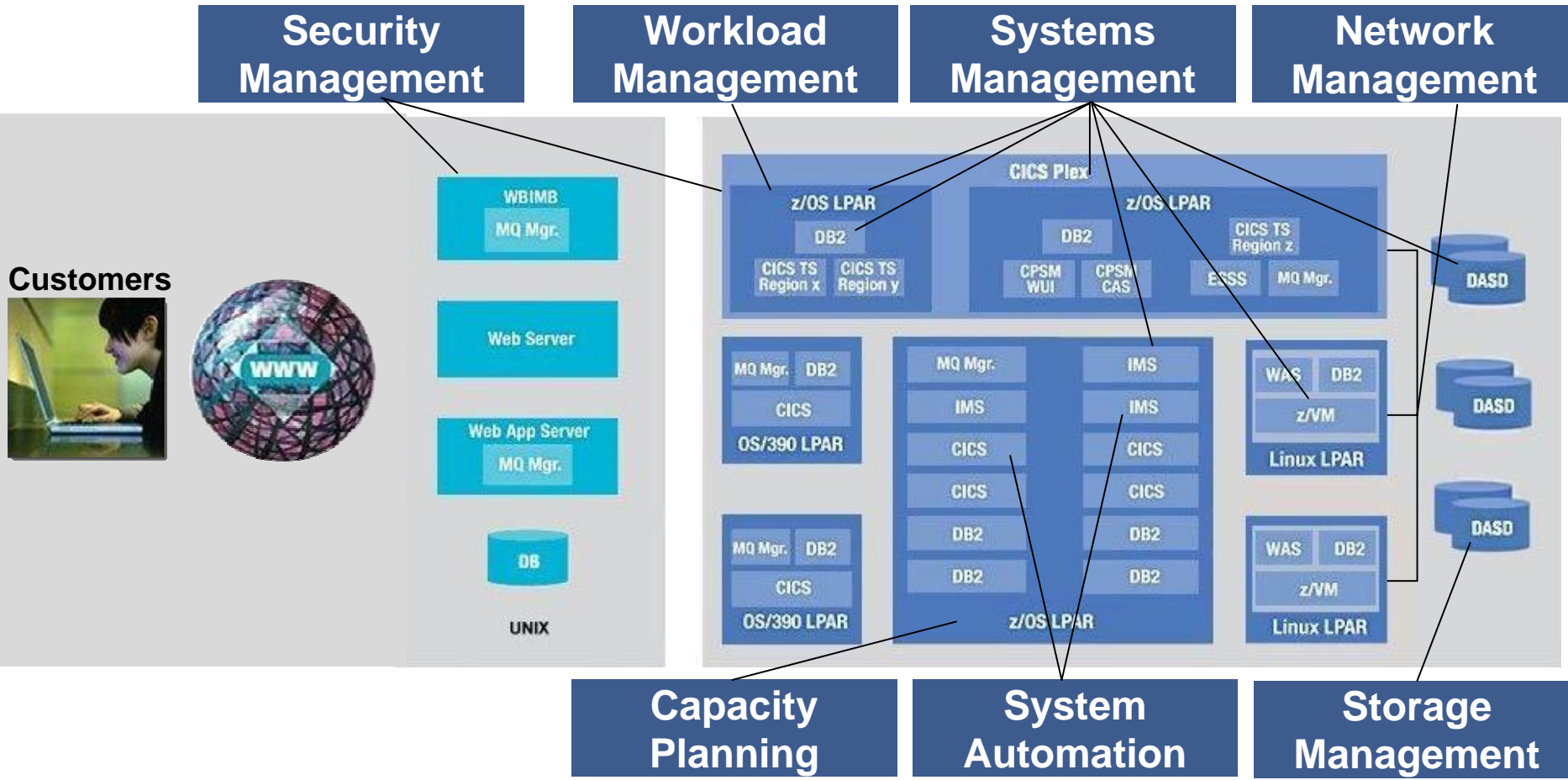
IBM WebSphere Application Server comes out on top

35+ years of maturity and innovation in transaction and data systems

z flexible deployment options for an SOA environment

Deploy

Increased capabilities / automation

Business Process

WebSphere Process Server

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

ESB

WebSphere ESB

A new product that delivers an Enterprise Service Bus. Provides Web Services connectivity and data transformation. **Built on WebSphere Application Server.**

WebSphere Message Broker

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

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.

zSeries Infrastructure Management

Continually adjust the end-to-end infrastructure to deliver high-performance in a volatile business climate

Security Management

Workload Management

Systems Management

Network Management

Capacity Planning

System Automation

Storage Management

zSeries Infrastructure Management – **Security Management**

Complete zSeries security management solution, including administration, integrity auditing, and intrusion detection and management

- **Vanguard Administrator** simplify and enhance RACF security management

- **Vanguard Analyzer** assists with security system snapshots or full-scale zSeries security audits

- **Vanguard Enforcer** manages and enforcing security policy in z/OS and RACF

- **Vanguard Advisor** provides Event Detection, Analysis and Reporting capabilities for the z/OS and RACF

- **Vanguard Security Center** offers browser-based RACF and DB2 security administration on z/OS

- **IBM Tivoli Security Administrator for RACF** provides low cost, rapidly deployable RACF management solution

Portfolio Review and Analysis
"PRA" - a study for IBM zSeries customers

> helps understand the potential impact of processing growth on future software budgets by developing predictive costs models.

> provides you with a comparison of your current portfolio cost structure with those of other zSeries/S390 customers.

> analyzes your software portfolio to identify redundant or underutilized software products.

> identifies product alternatives and their cost/ benefit impact.

> provides you with negotiation leverage with incumbent product vendors.

> provides you with the latest Software Asset Management tips to help proactively manage your zSeries/S390 software portfolio

http://www-3.ibm.com/software/solutions/softwaremigration/sps.html

Or contact Linda Beckner at (614) 659-7192 or at Becknel@us.ibm.com.

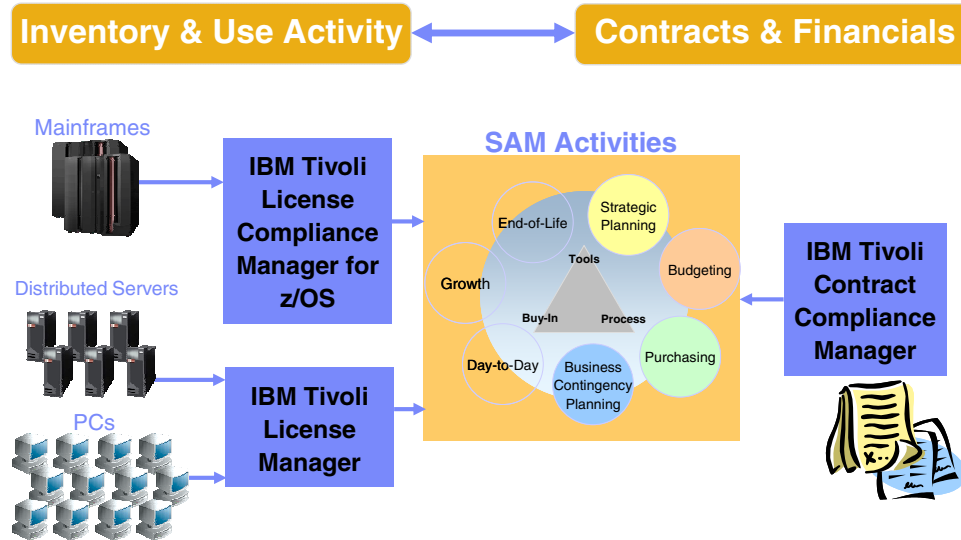# Tivoli End-to-End Software Asset Management

Business Issues

- Software costs are difficult to "control"

- Potential for unexpected expensive software contract compliance audit penalties

- Hard to find key "software product use activity" information needed for effective software asset management

- Difficult to shift software spending to align with business needs

Business Value

- Tivoli end-to-end software asset management solutions help you control software costs and contract compliance exposure to free up funds for priority projects

- Helps organizations demonstrate adherence to stringent accounting standards (Sarbanes-Oxley

IBM Tivoli License Compliance Manager for z/OS
IBM Tivoli License Manager
IBM Tivoli Contract Compliance Manager

Inventory & Use Activity ⟷ **Contracts & Financials**

Mainframes

IBM Tivoli License Compliance Manager for z/OS

Distributed Servers

PCs

IBM Tivoli License Manager

SAM Activities

End-of-Life
Strategic Planning
Tools
Growth
Budgeting
Buy-In
Process
Day-to-Day
Business Contingency Planning
Purchasing

IBM Tivoli Contract Compliance Manager

Software Asset Management Value

Boise Cascade

SAM Actions

Cost Reduction

- **We were able to eliminate several products and optional add-ons to other products that had little or no use."**

Cost Management

- **"By understanding what we have, where we have it and who is using it, we have been able to manage our hardware planning more effectively."**

- **"We can make decisions on how many versions of software we want to maintain."**

- **"We identify and re-bill our internal customers for expansive "must have" product that only they are using."**
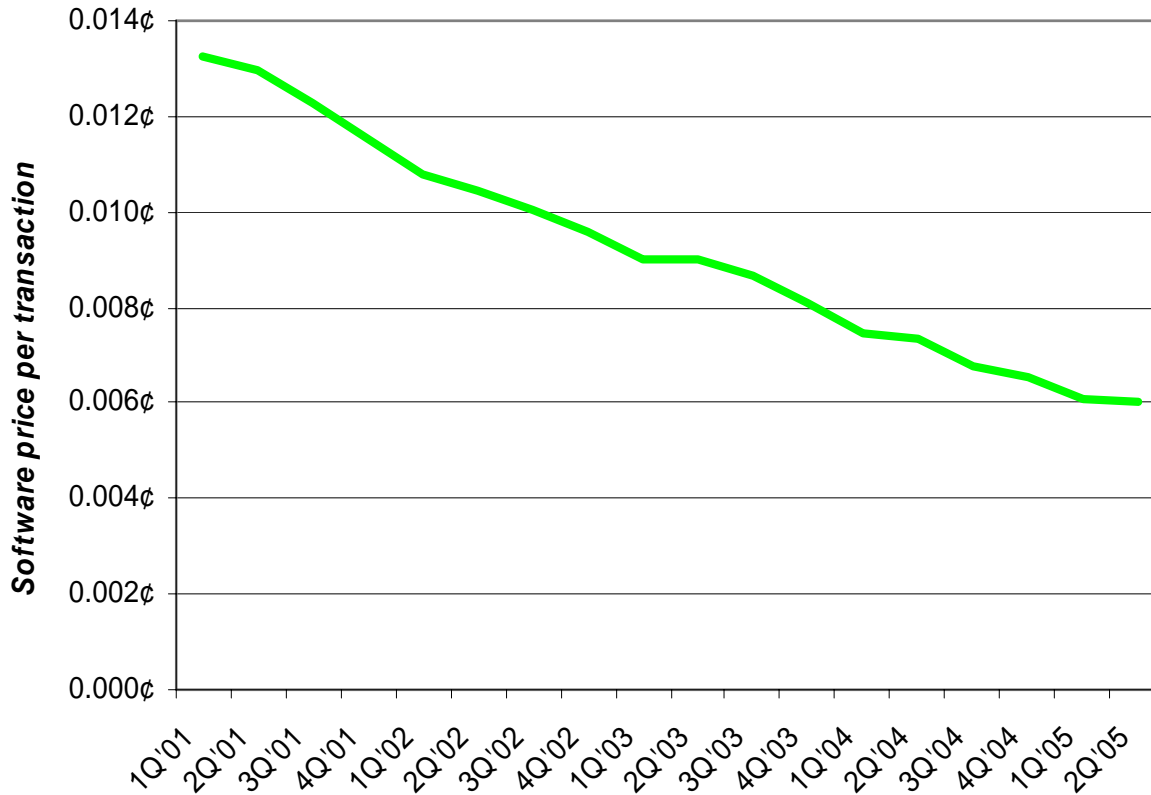
SAM Results

Software Cost Reduction with MIPS Growth

- **"Our actual mainframe ISV expenses were 24% less than 5 years ago and we now have a lot more processing."**

Decrease in average zSeries IBM SW price/transaction YTY for the last 54 months

Key factors behind this decrease:

- sub-capacity pricing
- consolidation to fewer, bigger boxes
- improved price slopes and OS pricing
- organic growth allowing move up the
    software pricing curves
- 'Tech Dividend' for newer zSeries machines
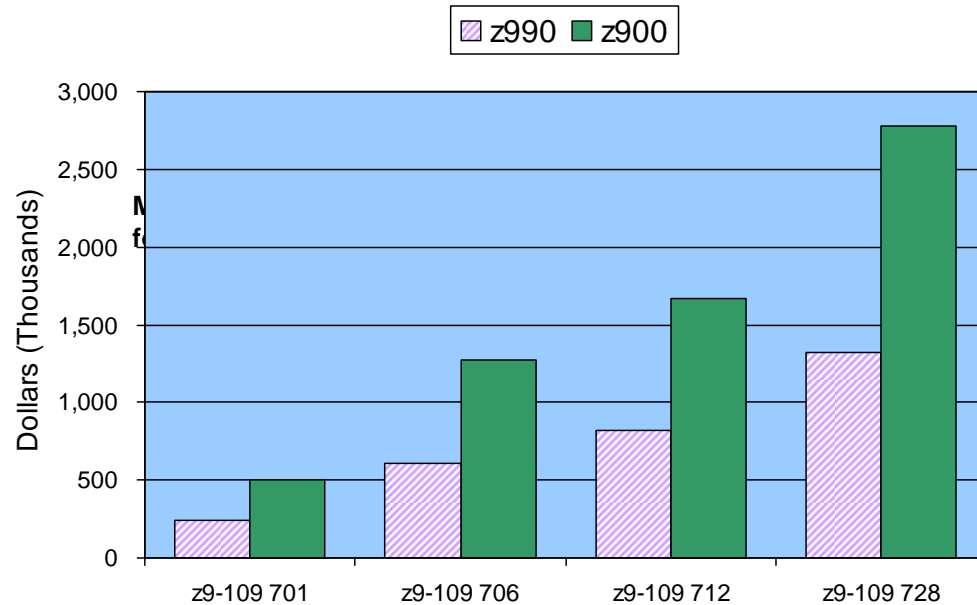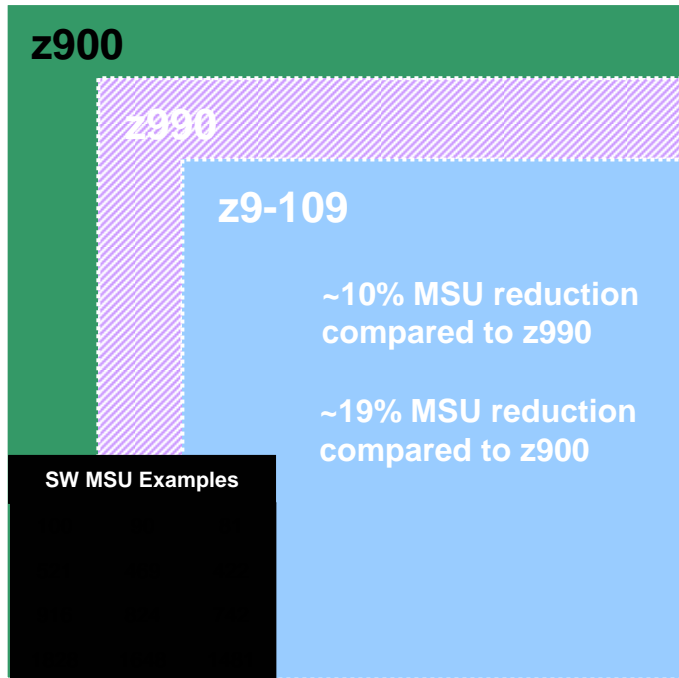- ZELC & NALC
- specialty engines (zAAPs, IFLs)

Inflation-adjusted IBM software price per transaction in cents

Source: IBM SWG Finance
Data is WW customer revenue only (not IGS)
Data includes specialty engines
'Highway conditions .. mileage may vary'

Generation to Generation Software Savings

The announced MSUs for SW pricing purposes on z9-109 and z990 servers are designed to offer improved software price/performance.

Example

z900

z990

z9-109

~10% MSU reduction compared to z990

~19% MSU reduction compared to z900

SW MSU Examples

z990   z900

Dollars (Thousands)

3,000
2,500
2,000
1,500
1,000
500
0

z9-109 701   z9-109 706   z9-109 712   z9-109 728

* Sample Software Stack Includes: z/OS Base plus features, DB2 v8, CICS v2, IMS v9, MQ v5

24

zSeries Center of Excellence Services Offering - zCoE

■ Integrated IBM services offering to ensure clients success by improving skills, processes, and practices to support the design, development, deployment and management of solutions in the zSeries environment.

zCoE Services Offering delivers:
- Assessment of client solutions to help ensure success
- Single point of contact across IBM Brands
- Best Practices across IBM Technologies
- Skills transfer to clients' or partners' design, development and operations staff
- Expertise to ensure successful adoption of new techno

- Offerings include:
  - Project Management
  - Architectural Design Reviews
  - Security Solutions
  - Installation and Configuration
  - Application Development and Test
  - Deployment and Production Operations
  - Capacity Planning
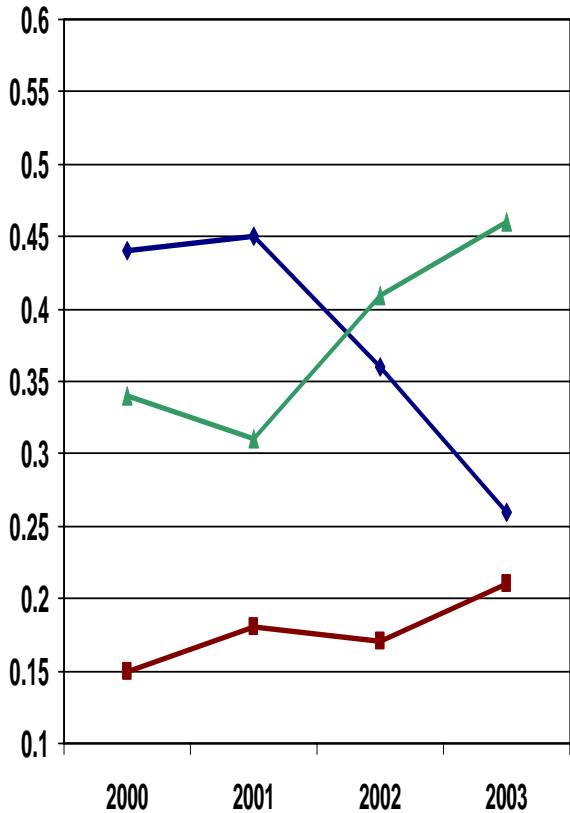 - Performance Monitoring and Tuning
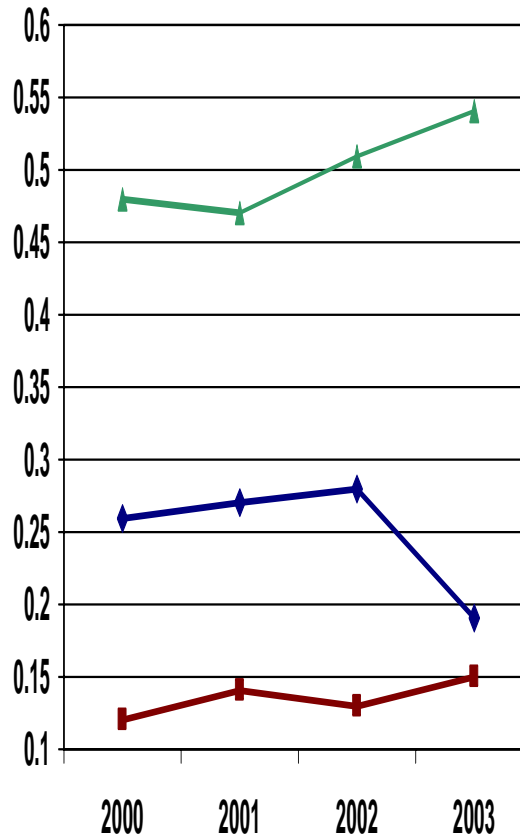 - Premium Support

Contact: Brian Senn/Austin/IBM

http://www.ibm.com/servers/eserver/zseries/about/charter/offerings.html

IBM Global Services

STG Services

SWG Services

Cost Of Ownership Trends

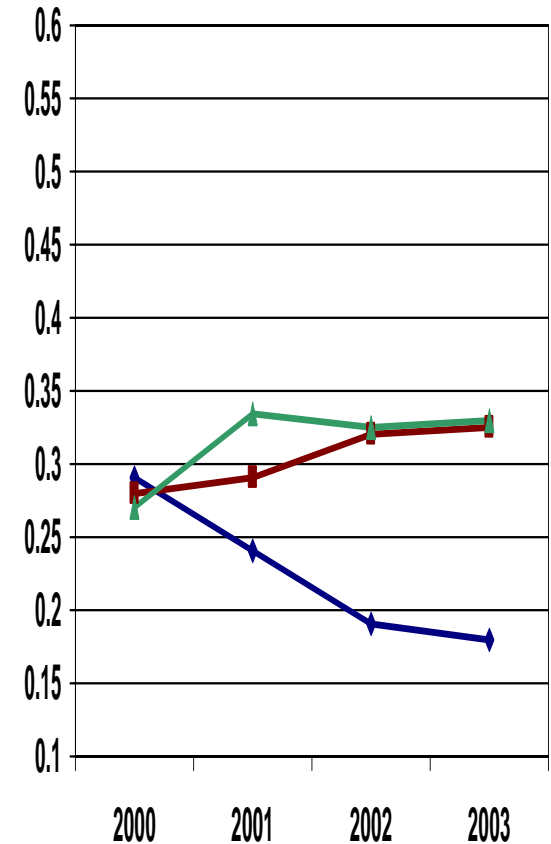### UNIX

INTEL

Mainframe

% Personnel
% Hardware
% Software

Meta Group Survey Data

Summary

- We are improving TCO on zSeries

- We are investing in and delivering new technologies on z Software and Hardware.

- We are exploiting the Integration of the z System to deliver new Value

- We have affordable and competitive tools to solve customer ISV concerns.

- We are increasing investment in z technical skills.

Where To Find More Information

Internet –
www.ibm.com/software/zseries

The Mainstream –
www.ibm.com/software/zseries/mainstream

Oct 25: Optimizing your performance with DB2-UDB for z/OS Version 8

Nov 3: IMS Integration Updated for Services Oriented Architecture (SOA) with the latest in IMS Tooling

Nov 8: Discover true end-to-end zSeries management with the newest releases of OMEGAMON XE for z/OS, IMS, DB2, Storage, and Networks

Nov 17: DB2 and IMS Tools Update: Continuing to help re-define TCO in terms of value

Nov 22: DB2 UDB for z/OS and Oracle RAC: The Value of DB2

A complete list of On Demand webcasts and teleconferences

Roadshows 2005

August – November: Best Practices for automating and managing today's data Centers

September – October: Technology Update - Business Integration Solutions for zSeries

October – November: zSeries COBOL Application Development and CICS Technical Update

October – December: "WebSphere® Live for SOA"