# Software Strategy and Direction for System z – Improving Total Cost of Ownership

*Dot Alexander*

*Vice President, Americas System z Software Sales*

# Agenda

- Background  - New Business Demands Placed on I/T
- IBM Strategy for the System z EcoSystem
- Addressing TCO/TCA
- Q&A

# A New Era for Business

24x7

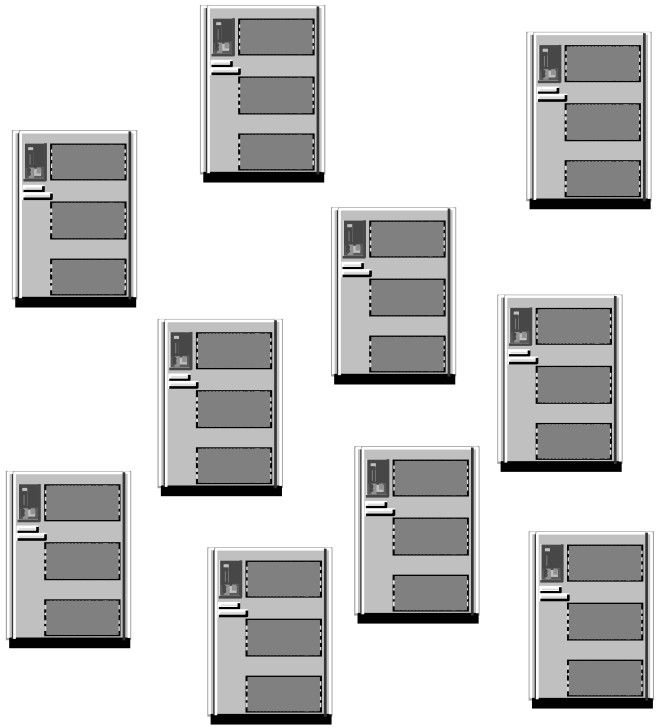
Global

Highly networked


# But what's been happening within Customer's I/T?

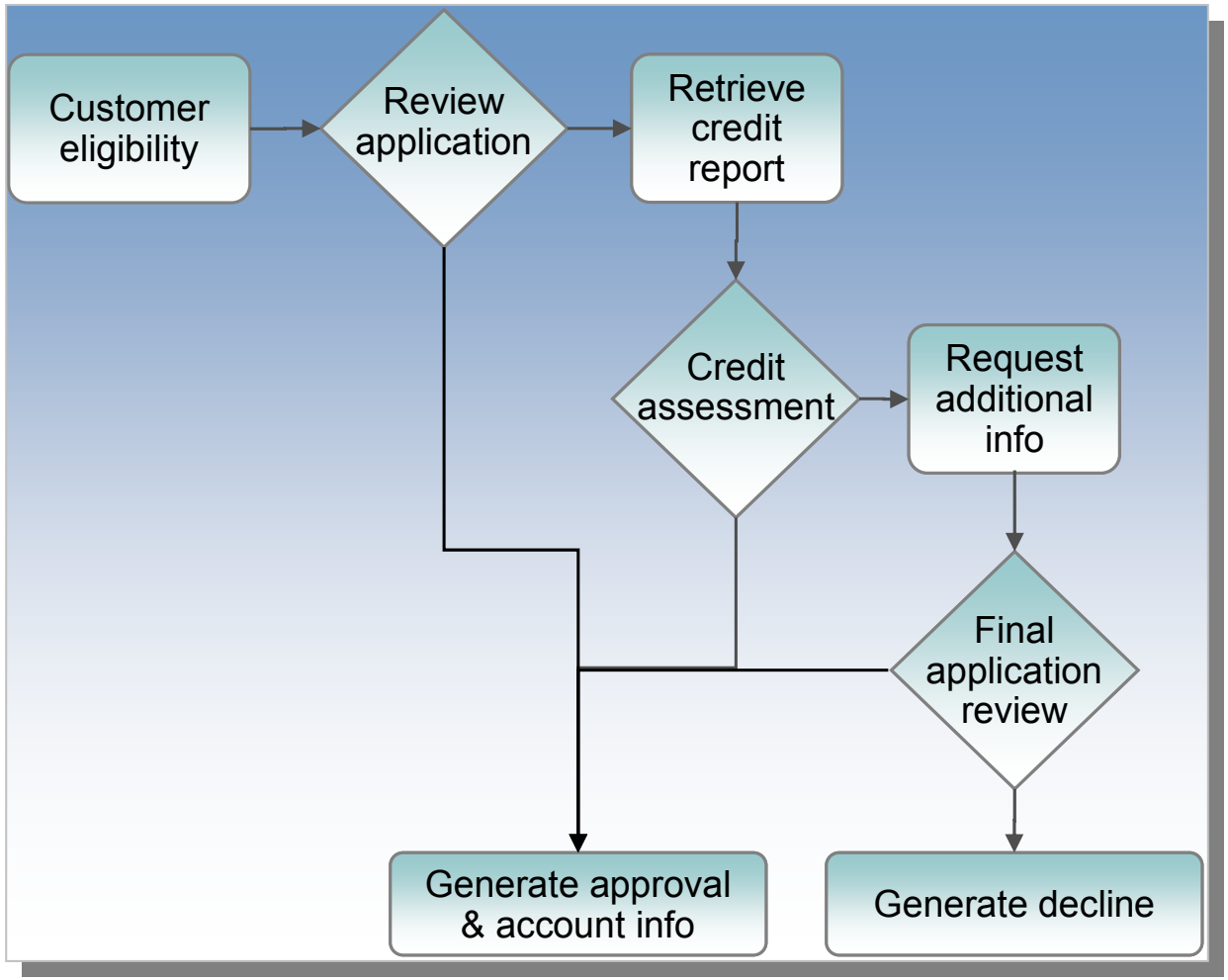
**MF = "Stabilized"**

**Distributed = "New Investment"**



**Why?**

# Legacy Application Programs Follow Business Process Flow

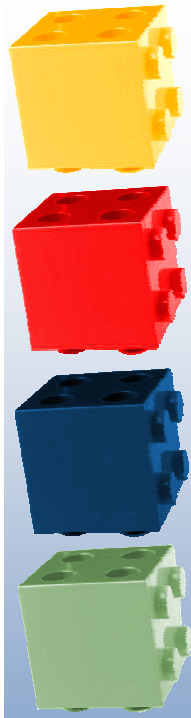



- Tested
- Locked Down
- Tuned
- Secured

AND

- Tough to Change
- Complex
- Inflexible
- Not Documented
- Stabilized

# SOA - Rendering applications as services… and delivering as changeable workflows…



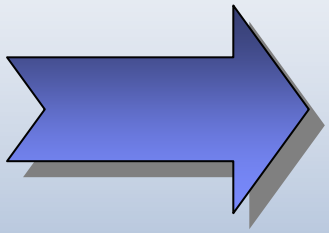
**Determine Customer Eligibility**

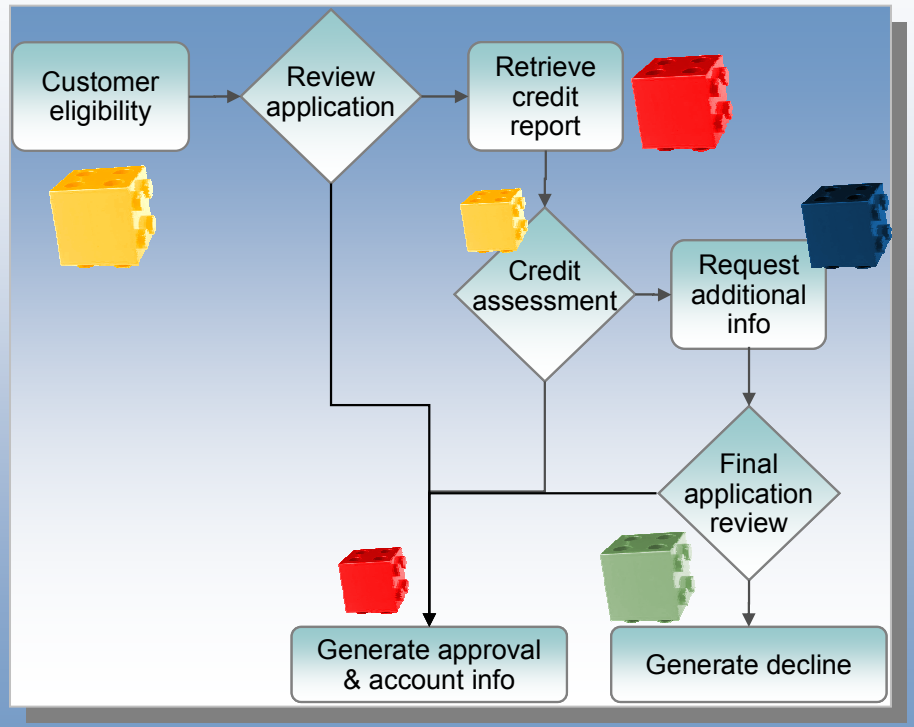
**Retrieve Credit Report**

**Request additional info**

**Generate decline**

Etc….






Business Process is implemented by integrating services

# 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 High Value Tools to Support Evolving Business Needs
    - Enable Modernization of Existing Assets
    - Build On Ramps for New High Value Business Assets
  - 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

# Mainframe Charter

**Innovation**

***Provide leadership in innovation to enhance the use of IBM eServer System z to support increasingly integrated and flexible business processes for the on demand business.***

**Value**

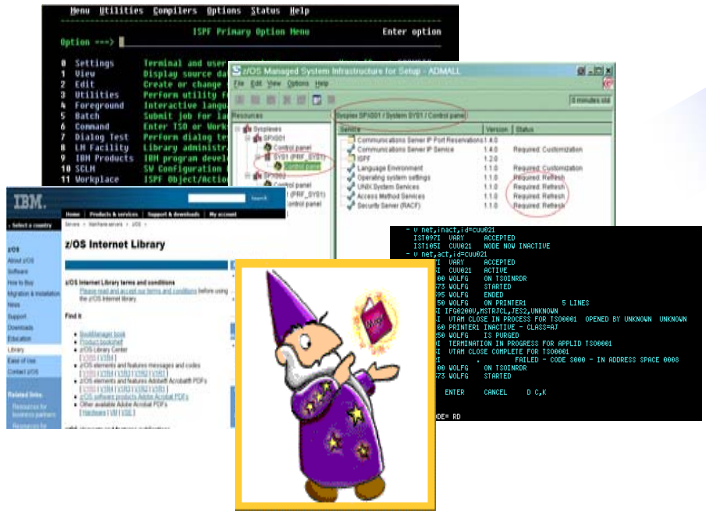
***Enhance the value proposition and lower the cost of computing of System z solutions in a way that is compelling, clear, and consistent.***

**Community**

***Support programs designed to foster vitality in the System z community, helping to promote a strong application portfolio and world-class support services.***

# Modernizing the “Face” of z/OS

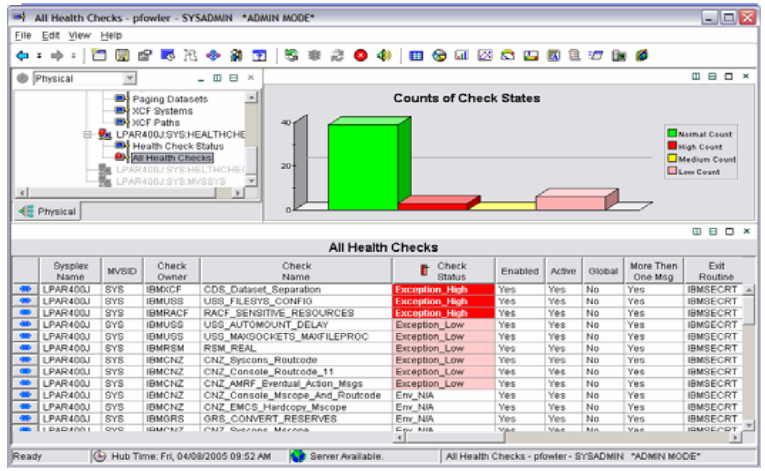
## *Old*




**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

## *New*




✓***Modern*** look & feel; more familiar to those new to platform

✓Focus on ***customer goals***

✓***Optional*** for those who prefer traditional interfaces

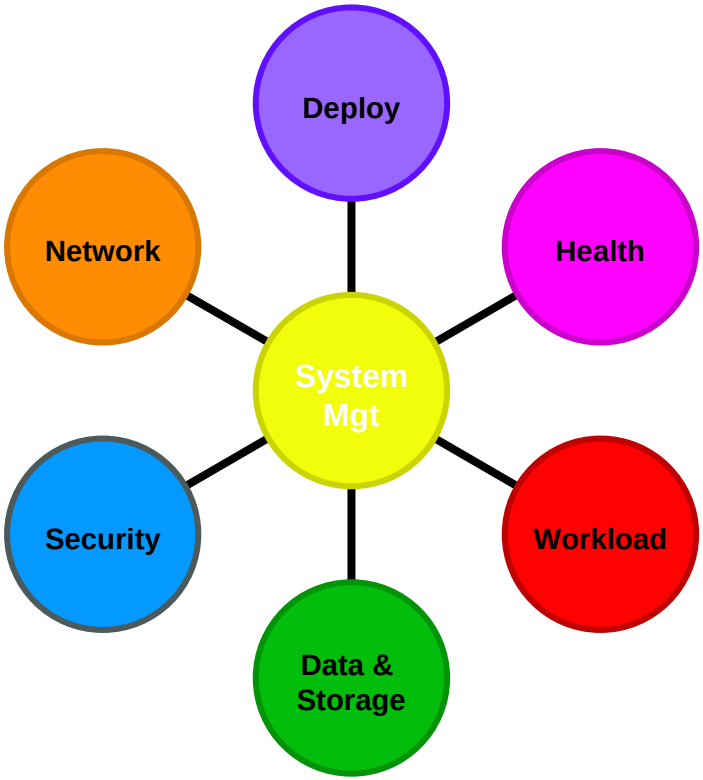
✓***Simplified***, ***automated*** task-oriented mgmt interface, with integrated user assistance

✓***Central*** z/OS management portal

# z/OS Management Focus Areas

**Goals**

- **Eliminate, or automate z/OS administrative and operational tasks**
- **Simplify the tasks that remain with a modern, easy to learn and useful interface**



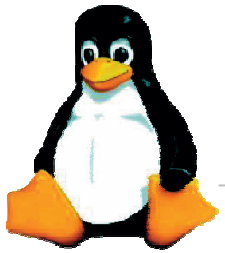

**Assist customers with the following tasks:**

- **Deployment: Plan, order, install, migrate, configure, update OS, SW products, HW devices:**
  - Migrate to new releases and deploy “on demand” features
- **Health and availability management:**
  - Detect, diagnose, recover from – and prevent - z/OS problems.
- **Data and storage management:**
  - Deploy new storage devices; migrate data
  - Establish storage management policies that meet business goals.
- **Workload management:**
  - Define workload management policies and track policy execution
  - Monitor and control system activity: business applications, batch jobs, UNIX®processes, and other forms of work
- **Network management:**
  - Monitor, configure and administer network connections, servers, and security. Focus: IP and SNA over IP
- **Security management:**
  - Configure z/OS security and help protect resources and information from unauthorized use

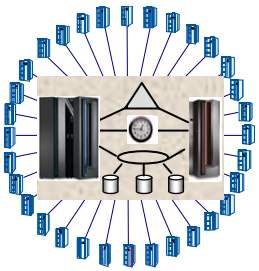
# Mainframe Innovation: Specialty Engines

zIIP 2006


zAAP 2004



IFL 2001

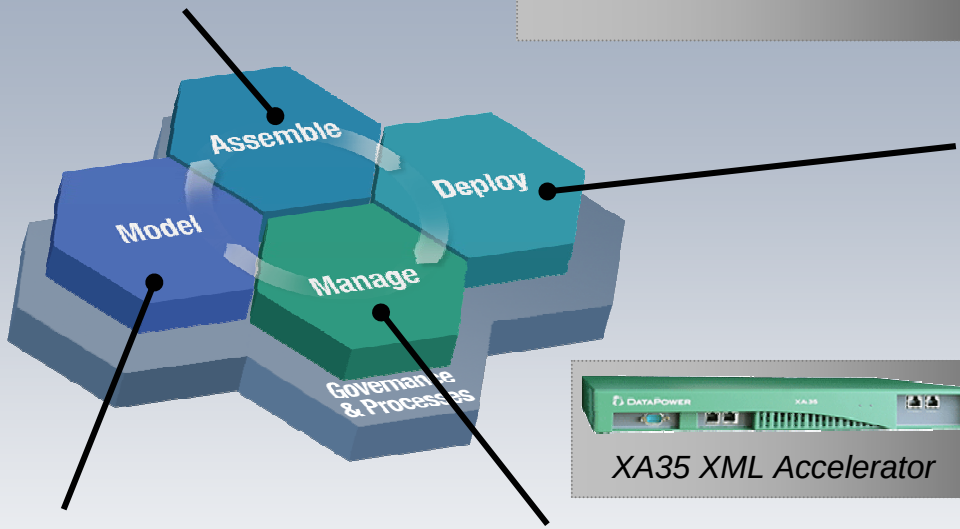


ICF 1997

# DataPower Product line – Today

## XML Appliances Continue SOA Foundation Enhancements

WebSphere Integration Developer
Rational Application Developer




*XI50 XML Message Handling*

**Process:**
- WebSphere Process Server
- WebSphere ESB & Message Broker
- WebSphere Partner Gateway & Adapters

**People:**
- WebSphere Portal
- WebSphere Everyplace Deployment
- Workplace Collaboration Services

**Information:**
- WebSphere Information Integrator



*XA35 XML Accelerator*

**Application Infrastructure:**
- WebSphere Application Server & XD

WebSphere Business Modeler
Rational Software Architect

WebSphere Business Monitor
Tivoli Composite Application Manager

***DataPower does***
*B2B XML Security Policy Enforcement*

\+

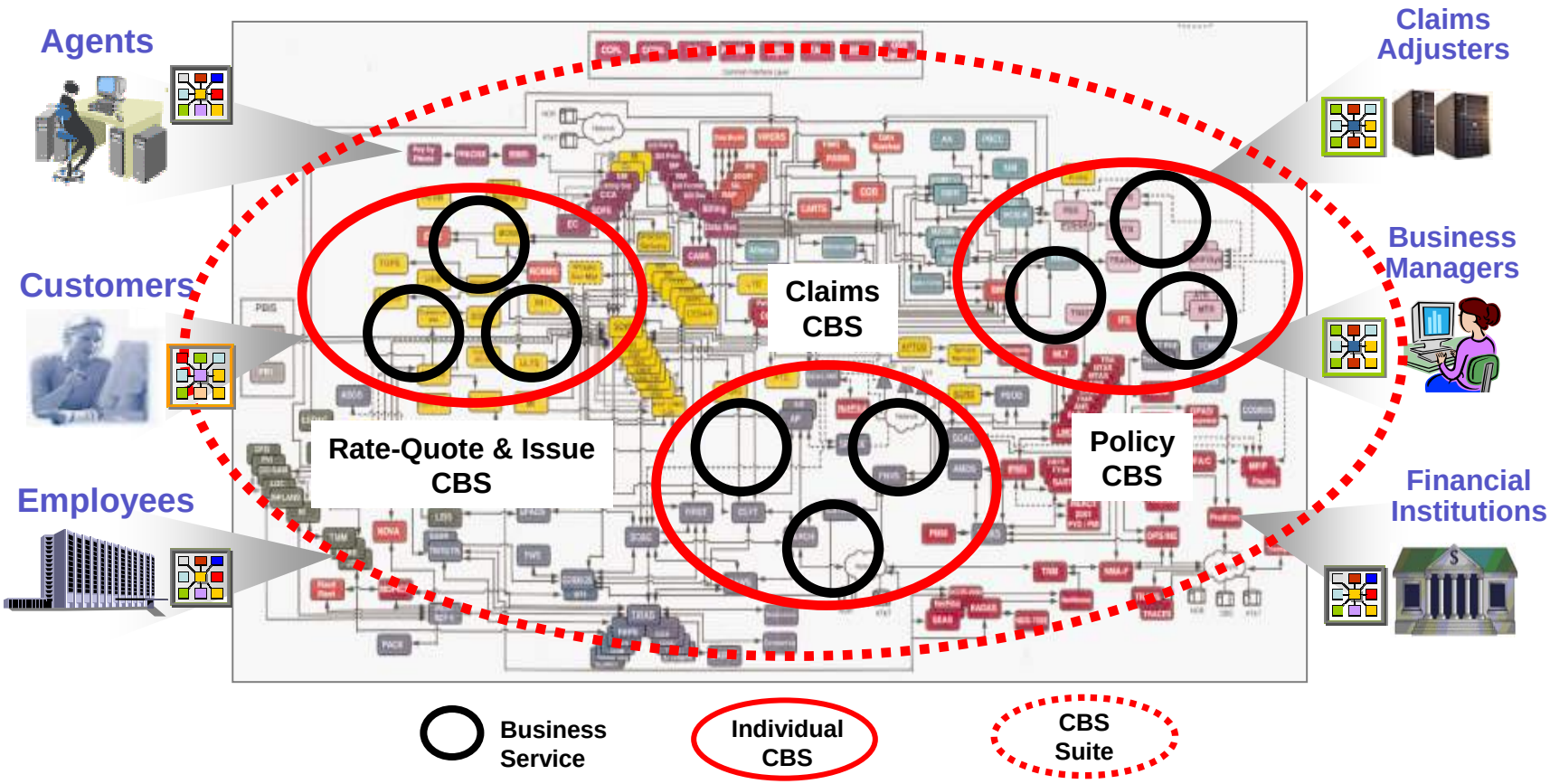
**Tivoli Federated Identity Manager**
**Tivoli Access Manager for e-business**

Tivoli. software ***does***

***SOA Security Management***
- *Policy Management*
- *Federated Identity Management*
- *Auditing and Compliance for SOA*
- *User Provisioning*

# SOA Promises to Un-Bundle the "IT Hairball"

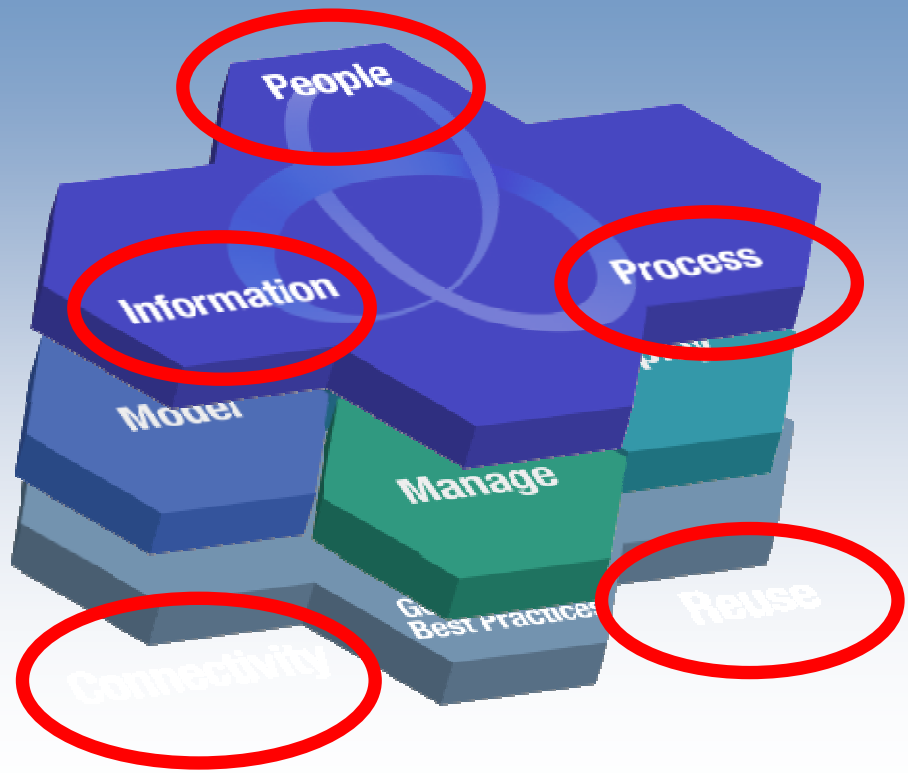
- IT assets are described and exposed as standards-based Web services
- Composite Business Services (CBS) are loosely coupled, distributed apps built on IT assets typically already available to the organization and exposed as services



# SOA Entry Points

***System z as a platform for:***
- ***Business services***
- ***Business connectivity***
- ***Process Management***

***While reusing your existing application and information assets***



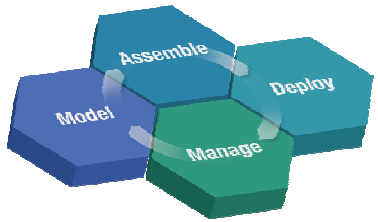
# SOA, WAS z/OS, & the Mainframe

**Recent data indicates that 41% of mainframe customers are building or deploying new applications on System z - up from 31% a year ago.**

**WebSphere is the key to unlocking & reusing many core assets and extending their value, and the mainframe is at the heart of many SOA customers.**

- Commitment to open standards
  - J2EE
  - JMS support
  - XML support
  - Advanced Web services
- Commitment to SOA
  - SCA & futures
- WebSphere security
- WebSphere high availability
- Engine for WebSphere expansion products on z/OS

## WebSphere Application Server for z/OS




## CICS, IMS, & DB2

- Platform integration
  - z/OS WLM
  - Automatic Restart Mgr
  - Parallel Sysplex
  - Security (RACF)
- Asset integration
  - Local DB2 connections
  - IMS & CICS integration

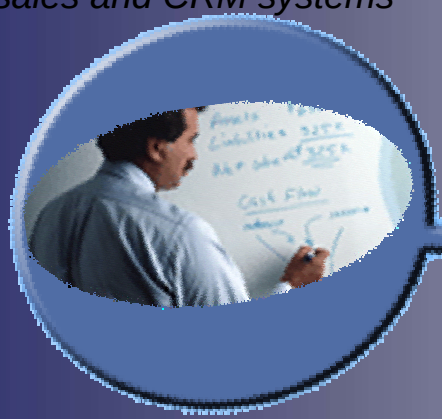
# Bank of Montreal Exploits its Re-usable Assets

## *Integration with the mainframe is essential for BMO's SOA*

**Actions & Benefits:**

*To increase customer satisfaction, BMO needed a new teller application that integrated with its sales and CRM systems*

*"WebSphere was very attractive to us because of its ability to integrate with our existing main-frame legacy systems."*
— Randy Oswald, senior vice president, technology and solutions, BMO Financial Group



*Built an SOA using **WebSphere's** open standards for interoperability between disparate products and platforms*

*Used flexible **Web services** to transform core CICS systems to integrate with Siebel CRM*

**Improved productivity& efficiency** *with reduced operating costs using WebSphere integration on z/OS*

Capabilities used: WebSphere Message Broker, WebSphere Application Server, CICS

BMO Financial Group

# The IBM Software Development Platform – A New Face for z

*Integrated and role-specific tools*

**Analyst**

WebSphere Business Modeler

WebSphere Business Monitor

Rational RequisitePro

Rational Software Modeler

**Architect**

Rational Software Architect

Rational Data Architect

WebSphere Studio Asset Analyzer

Asset Transformation Workbench

**Developer**

WebSphere Developer for zSeries

Rational Business Developer Extension

Rational Application Developer

WebSphere Integration Developer

**Tester**

Rational Functional & Manual Tester

Rational Performance Tester

Problem Determination Tools for System z

**Deployment Manager**

IBM Tivoli Configuration Manager

Tivoli Monitoring

Tivoli Provisioning Manager

Tivoli Intelligent Orchestrator

***Customer Extensions***

**ECLIPSE**

***3rd Party ISV Tools***

**Project Manager**

Rational Unified Process
Rational Build Forge
IBM SCLM Advanced Edition

Rational ClearCase
Rational ClearQuest
File Manager for z/OS

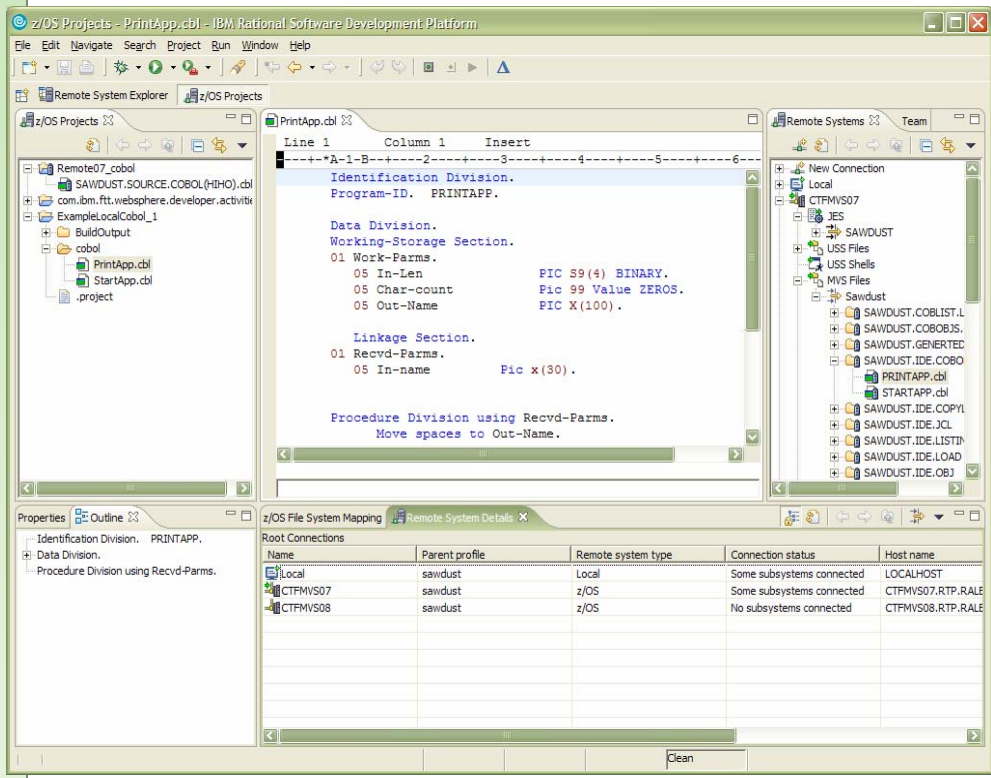
**Executive**

**Rational Portfolio Manager**

# WebSphere Developer for zSeries

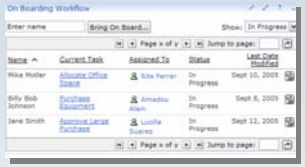
**Eclipse-based integrated development environment for developing enterprise-level, multi-tier applications (composite applications)**

- **Builds z/OS applications**
  - COBOL, PLI, HLASM
  - TSO/Batch, CICS, IMS, DB2
  - DB2 Stored Procedures – COBOL, PLI, Java, SQL
- **Creates COBOL/CICS/JSF/Java/J2EE Multi-tier apps**
  - Built on Rational Application Developer
    - Includes all of the J2EE web development tools
  - Generate JSF/EGL/J2EE web front ends
  - COBOL back ends running on zSeries
- **Enables CICS and IMS applications for Web services and SOA**
  - Provides tooling to make it easy to integrate existing applications into an SOA
- **Supports the full application lifecycle**
  - Model, Architect, Develop, Test, Deploy, and Manage



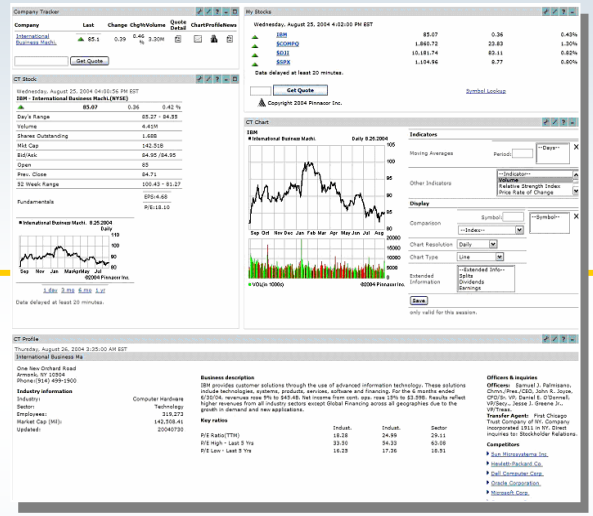
# WebSphere Portal V6 integrated with Process Server

## *Integrate Process Flow on System z* - And Portlet Factory



**Process Orchestrating within Portal**

**Form Driven Workflows**



ENHANCED!

**Portlet to Portlet Interaction**

**Ad-Hoc Person to Person Exception Handling and Problem Resolution**

***Dynamically Presented Based on Role & Security***

# Information on Demand and System z

- ***Unleash existing information assets for new applications***
  - Data Serving in an SOA environment
  - Meet Unique Service Level requirements
    - Availability, Scale, Security
  - Enabled by open standards
    - The mainframe is an open platform supporting open standards which is why you can use this as an enterprise data server and realize the value of z.
    - JDBC, ODBC, SQLJ, Web Services, DRDA…
- ***Simplify IT infrastructure***
  - Optimize existing information and physical resources
  - Virtualized information placement
- ***Optimize IT costs***
  - Leverage zSeries TCO advantages
  - Skill and infrastructure utilization

# Critical Business Initiatives Depend on Information

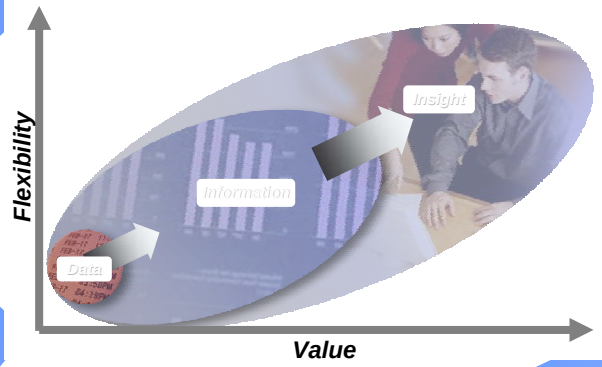
- ***Master Data Management***
  - Single view of the customer and product
  - Gain control of disparate  silos
- ***Business Analysis and Discovery***
  - Deeper insight into buying behavior
  - Efficient, consumer driven supply chain
- ***Business Transformation***
  - Partner collaboration
  - Real time information based decision
- ***Worker Productivity***
  - Information accessible to every user when and where they need it… both structured and unstructured
- ***Risk & Compliance***
  - Loss and Fraud prevention
  - Government regulations and taxes

# World's Best Data Servers

Data Base Servers

DB2
IMS

Information On Demand




Business Intelligence

Data Warehousing

DB2

New Workloads

zIIP

Data Mining

Analytics

Tools

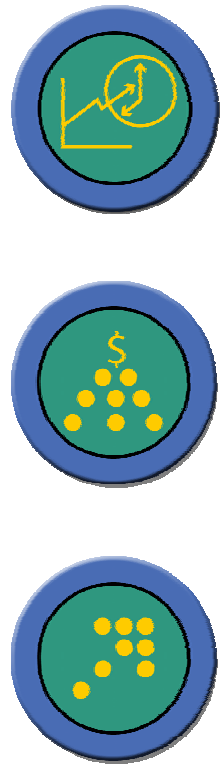
WebSphere Information Integrator
WebSphere DataStage & QualityStage

***Information Management Ecosystem***

# DB2 9 for z/OS: Raising the Bar

## *Addressing Business and Infrastructure Goals*

| | |
|---|---|
| Faster, Lower Cost Development and Porting | ▪ pureXML simplifies access to XML data<br>▪ SQL improvements that simplify porting<br>▪ Native SQL procedural language<br>▪ Default databases and table spaces<br>▪ Automatic unique indexes to support primary keys |
| Decrease Complexity and Cost | ▪ Enhanced Compression and Optimization<br>▪ Fast table replacement and append<br>▪ Partition, range, multi dimensional clustering & hashing<br>▪ Volume-based COPY/RECOVER using FlashCopy<br>▪ Optimization Service Center<br>▪ DB2 managed optimistic locking |
| Streamline Compliance Efforts | ▪ Network trusted security context & database roles<br>▪ Instead of Triggers<br>▪ Improved auditing capabilities<br>▪ SSL<br>▪ New encryption of key DB2 resources |
| Information Led Business Innovation | ▪ Support for both relational & integrated pureXML data<br>▪ WebSphere integration<br>▪ Data Warehousing on System z<br>▪ SAP optimized with 40+ specific features |



# Optimize Infrastructure, Skills & Cost

## *System z Excellence*

***Enables growth of System z9 SAP workloads through resource optimization***

***"Enhancements in DB2 for z/OS, along with the new zIIP processor, will increase total value for our System z clients.***

***We look forward to certifying DB2 for z/OS as it becomes available so our clients may benefit from these new values and the unique System z qualities of service."***

Dr. Torsten Wittkugel, Vice President
DB/OS Platform Development, SAP AG

# New Tools to address TCO in 2006

- 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

# Bundesministerium für Inneres
## (BMI, Austrian Ministry of the Interior)


### Business Challenge

- Government initiative to promote IT services and improve efficiency
  - Centrally stored data that's instantly and securely available all over the country

### Solution

- DB2 UDB v8 for z/OS enabled
  - Homogeneous data based design in implementation
  - DB2 Administration tool replaced several home grown tools
  - WebSphere is an essential building block as they move towards SOA

# System z Management In an SOA Enterprise

- **Changing role of the mainframe**
  - From platform of legacy applications to host of core business services & data
  - System z can no longer be viewed as an island
- **End to End Scope**
  - To manage and secure business services mean to manage the resources from end to end
  - Enterprise-wide tools and skills are now basic needs
- **“z-Centric” to “z-Inclusive”**
  - The solutions that made System z secure, resilient and continuously available now need to apply to the whole enterprise

# IBM Service Management to Meet the Challenge

Performance Management

OMEGAMON XE

Tivoli Enterprise Portal

New Face of z

Composite Application Management

Composite Application Manager Solutions

High Availability

Tivoli System Automation
NetView for z/OS

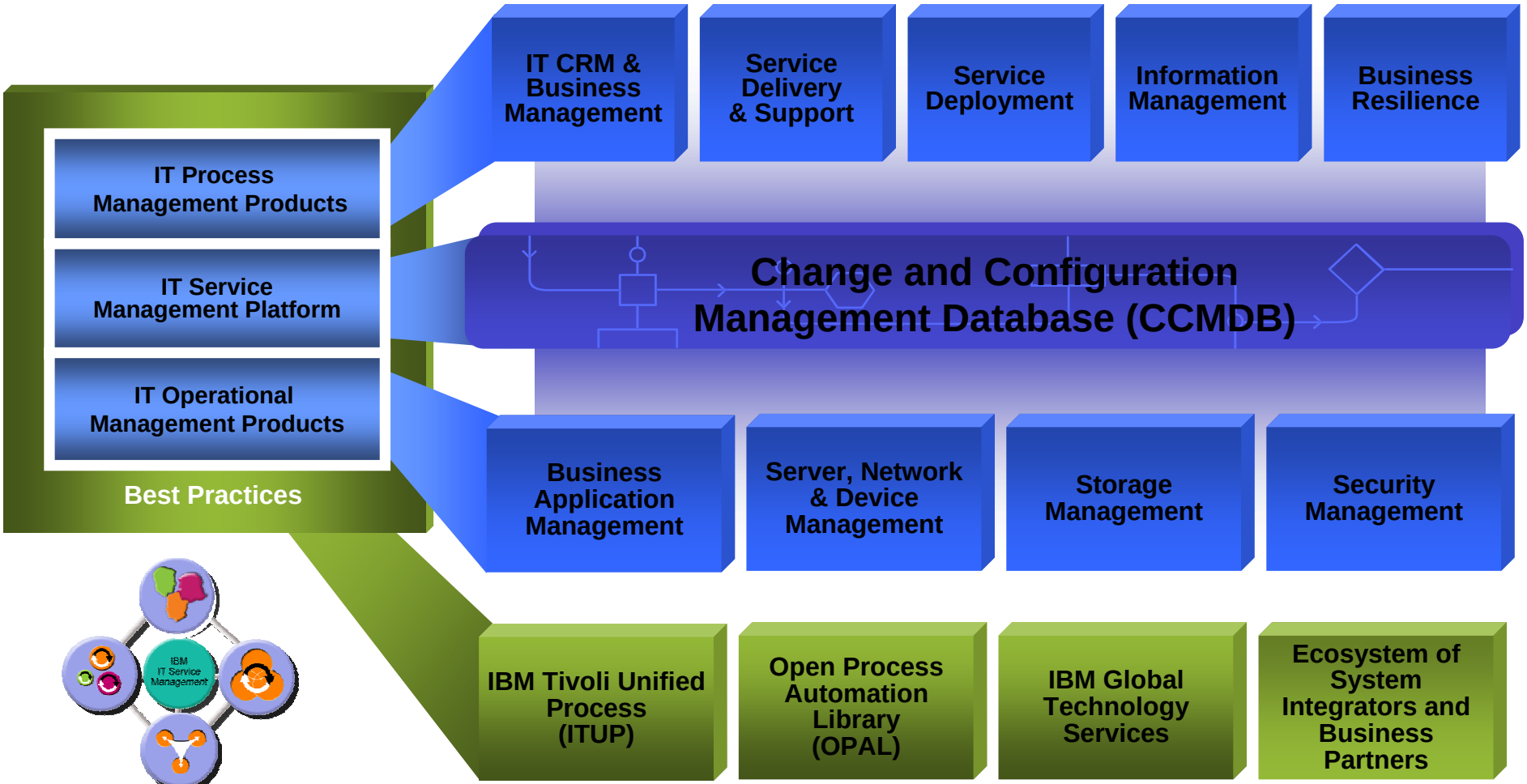
Security

RACF &
Vanguard Solutions

***End-to-End Systems Management***

# IBM Service Management

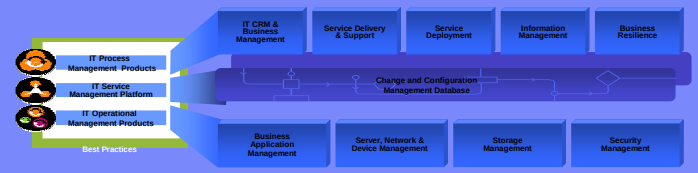
**The industry's most comprehensive set of products, services and solutions**



# Composite Application Manager for SOA v6.1

**Support for ITSM strategy**

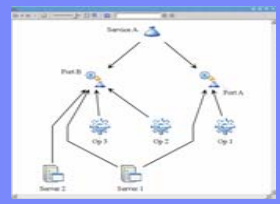
Discovery Library Adapters add discovered Service information to CCMDB




**Integration with WebSphere Service Registry and Repository**

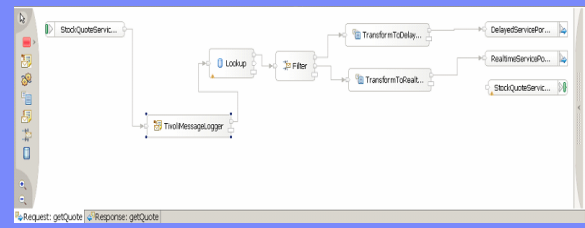
Reconciliation of registered services with those monitored by TCAM

Tivoli Enterprise Portal views show business process relationships for impact analysis



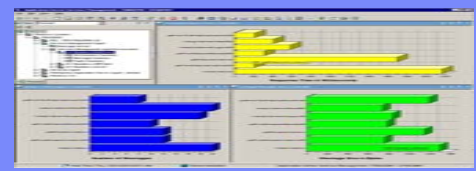
**Integration with WebSphere Enterprise Service Bus SCA runtime**

Provides SCA-based mediation primitives for enhancing management functions (monitoring, logging, routing and transformation)




**New Platform support**

CICS TS 3.1, DataPower SOA Appliances, WebSphere ESB, WebSphere CE, JBOSS Application Server, SAP NetWeaver



# How is Security Different on the Mainframe?

**A highly secure business environment with compliance to standards helps build industry creditability and gain consumer trust**

**Information & Applications**

Supports a variety of encryption standards to help keep **current with industry and government security regulations**

**People**

**Manage access of critical data for users** through **Multiple Level Security**

**Hardware**

**End-to-end protection** that helps keep data uncorrupted and uncompromised

**Networks**

**Integrates security** with the network with built-in technology **resistant to hackers**

**Operating System**

**Architected for security** from within to **reduce risk** and **not be susceptible to viruses**

*"The **IBM mainframe** is the **only** computing system to earn the **highest level of industry security** certification, EAL5."* Bob Hoey, Worldwide VP Sales for System z

*"Operating systems generally called 'secure' rarely reach higher rankings than EAL4."* *wikipedia.org* *EAL (Evaluation Assurance Level) = International standard to define security requirements in computer systems.

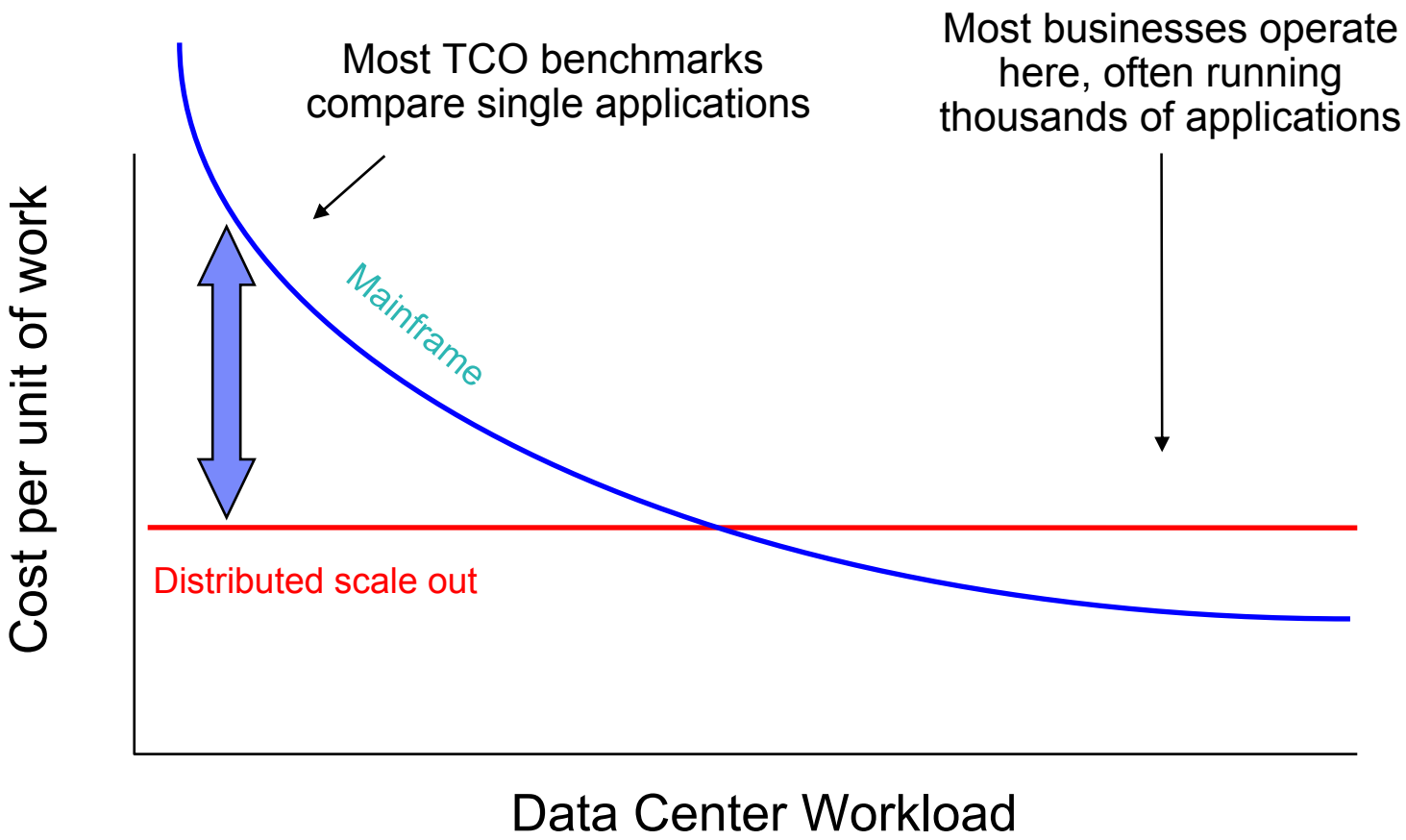
# Let's Break Down the Elements of Cost

Total Cost of Ownership =

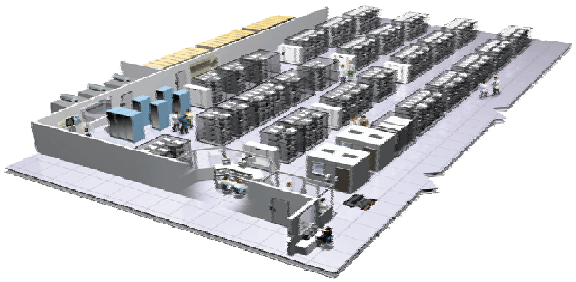
Hardware/Maintenance
+ Software
+ Labor
+ Environmentals
+ required Quality-of-Service
(Availability, Security, Disaster/Recovery…)
+ other Elements
(ISV software, Development Productivity, Reuse through SOA…)

*The total cost requires a total picture of your I/T assets and expenses*

# The benchmark paradox …



# TCO Comparisons



*Distributed*

**CONSOLIDATION**

**OFFLOAD**

*System Z*

# Tale of Two Customers

| | Baldor | Welch's |
|---|---|---|
| Supplier | IBM | Dell |
| Moved From.... | 3 Mainframes and 8 Unix Servers | S/390 and AS/400 |
| Moved to... | 1 z990 System z Server | 100 Intel Servers |
| Virtualization | z/VM | VMWare |
| Decision to Completion Time | Approximately 6 months | Started sometime before June 2005 "...project will continue into 2007" |
| IT Staff | Down to 38 | 50 |
| IT Spending | 1.2% of Sales<br>(and still declining....now down to 0.9%) | About 2.5% of Sales |
| Max Power consumption | 15.8 kW | 48.4 kW |

Three years ago, Baldor's IT director had investigated migrating to a Windows server environment with cluster fail-over. *"We thought we were going to save a ton of money,"* but the systems crashed all the time, he noted, and the idea was quickly abandoned.

***"We have a very stringent requirement of being up all the time … Weighing heavily in support of the mainframe was its track record. There hadn't been any mainframe downtime since 1997"***

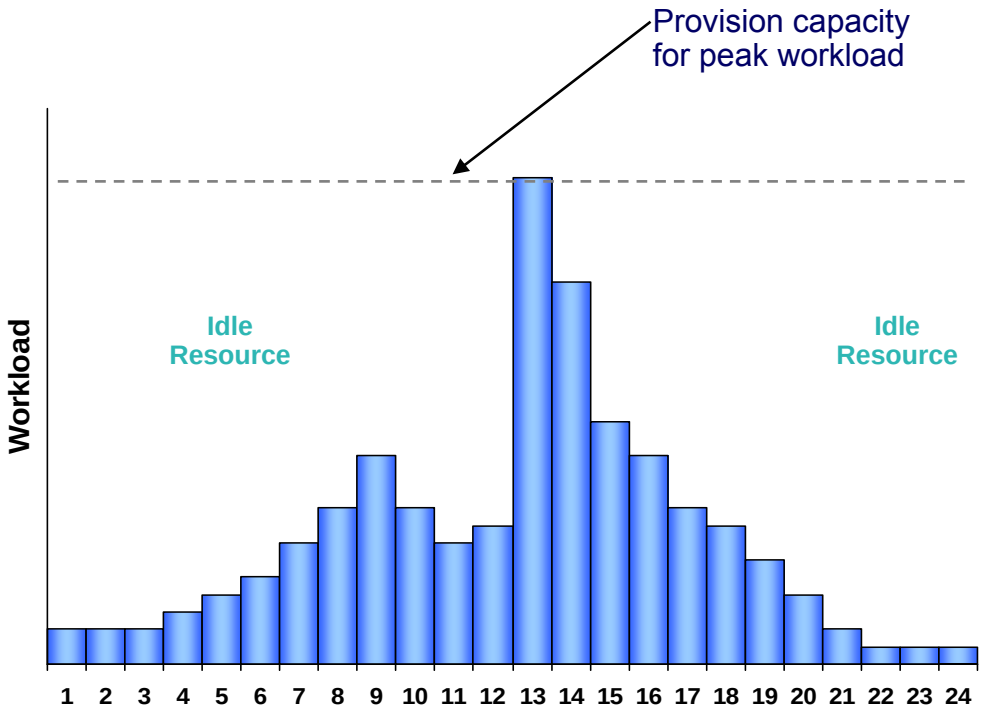
**Mark Shackleford**
Director of Information Services, Baldor Electric

# Utilization of Distributed Servers & Storage

| Typical utilization of: | |
|---|---|
| Windows Servers | 5-10% |
| UNIX Servers | 10-20% |
| System z Servers | 85-100% |

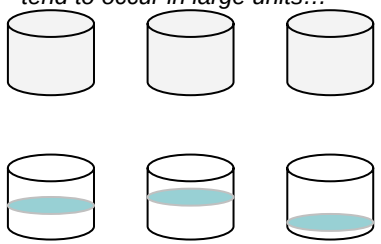
Server dedicated to one application

The cost of storage is typically three times more in distributed environments




- **Storage Allocation**
  - Application-specific resulting in over-allocations
  - Fine grained storage allocation mechanisms characteristic of mainframe storage are uncommon in distributed environments.
- **Storage Utilization**
  - Single digit utilization for distributed environments is not uncommon
  - Storage utilization of 80% + is typical for mainframe
- **Storage Management**
  - Data disaster recovery, synchronization, and transfer requirements add complexity and cost

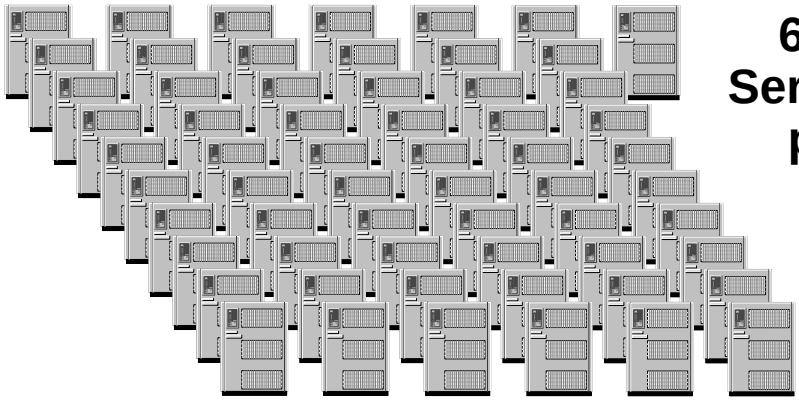
*Application specific storage allocations tend to occur in large units…*



*resulting typically in single digit utilization*

# European Banking Customer

## TCA Analysis to Offload CICS Transaction Workload



**61 Windows Servers with 244 processors**

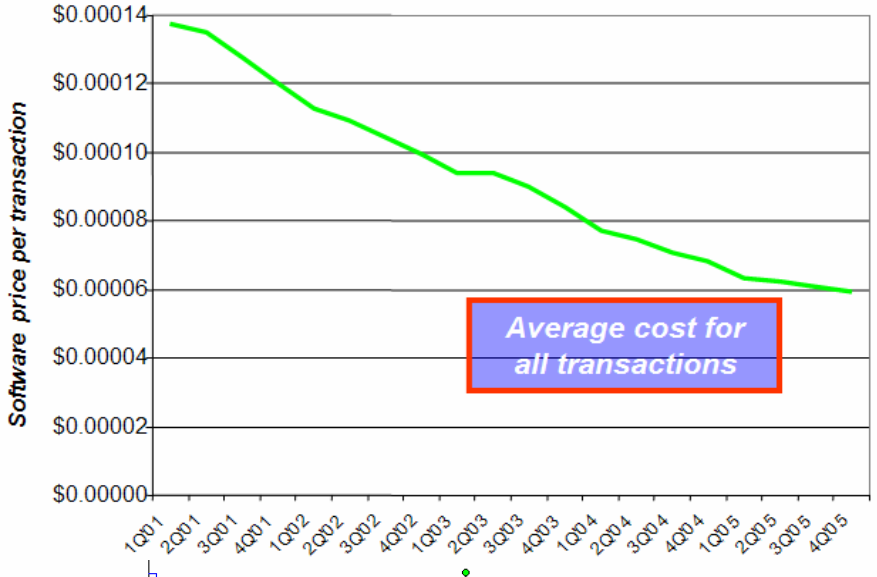
To Windows

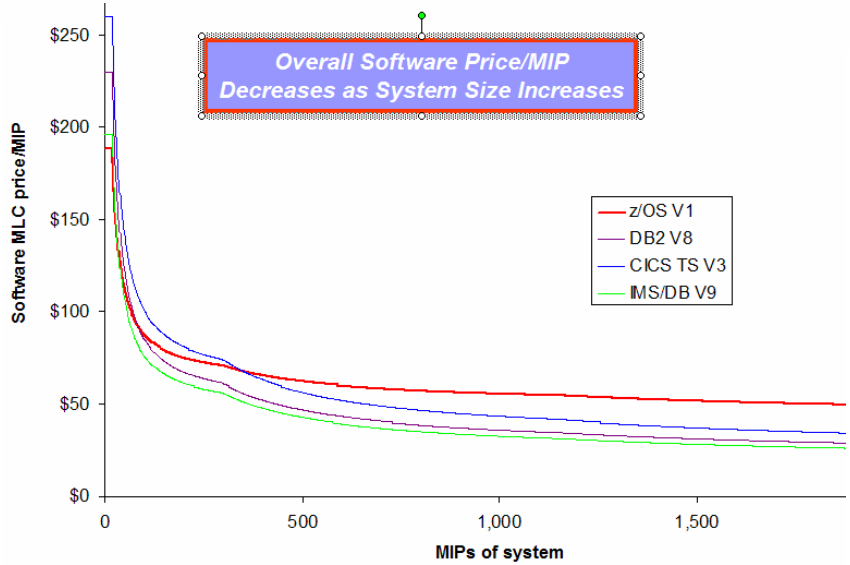

**49 System P LPARS with 98 processors**

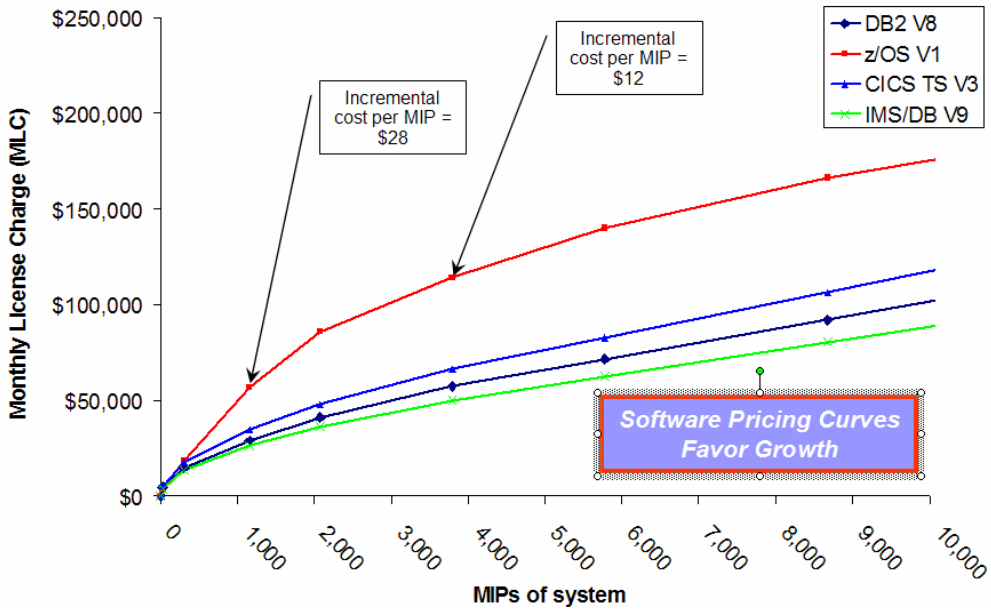
To Unix

Conclusion: Same TCA with no benefit from additional migration cost & project risk

# IBM Software Price Per Transaction is Going Down



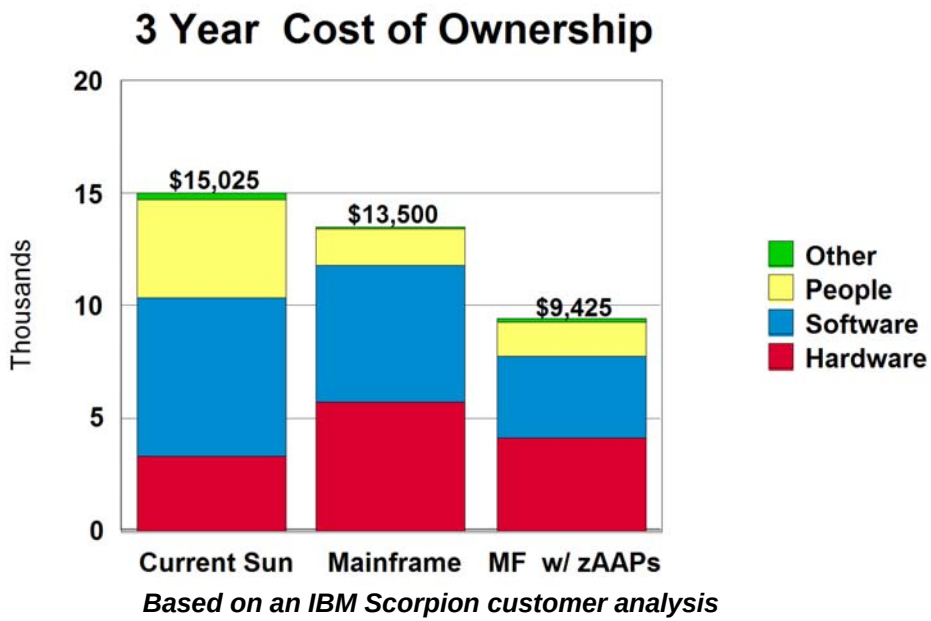




## Putting This in Perspective

- For a typical system of 1,400 MIPS, MLC software stack costs $59 per incremental MIP
- If a transaction is 1 million instructions, an incremental MIP can perform >2½ million additional transactions per month for Δ$59 software cost (44K transactions per dollar)
- **If these are credit card transactions** of average $100 with a commission of 2%, the business makes $5.2M per month for a software cost of $59 per month (88,000 times return)
- **If this is a bank account** averaging 3 transactions a day, the business can do 40 years of account management for a software cost of $1

# zAAPs can reduce charges by 40%

- They needed 14 people to support these 73 servers
  - At only 20% utilization
  - Each server cost $20K per annum to support
  - $7M of Software over 3 Years
- A comparable z- implementation would have required just 20 processors
  - 5 additional people to support
  - $6M of Software over 3 Years – pre zAAP




*Based on an IBM Scorpion customer analysis*

- The customer thought the Solaris environment was 1/5 the cost of the mainframe…
  …but in fact the **z-TCO was 37% less**

# Abercrombie & Fitch Improves AD Productivity and Application Time-To-Market

- Leading specialty clothing retailer headquartered in Columbus, Ohio, US.
  Four divisions: *Abercrombie & Fitch, Hollister Co., abercrombie kids,* and *Reuhl*

- ***Situation:***
  - Many different programming languages required to create A&F's enterprise applications,
    - including CICS/COBOL, Lotus Notes/Domino, Java,C/C++ and RPG

- ***Problems:***
  - Developers are proficient in different programming models and can't collaborate on enterprise-class application projects
  - Maintaining this nonintegrated setup was costly and inefficient

- ***Solution:***
  - Upgrade and standardize AD environment for improved productivity and collaboration
    - Use Java/J2EE as the standard programming development and runtime environment
  - Upgrade existing System z with a zAAP specialty engine for Java workload
    - Close to the company's CICS transactions and mainframe data, and fully integrated with existing mainframe operational procedures

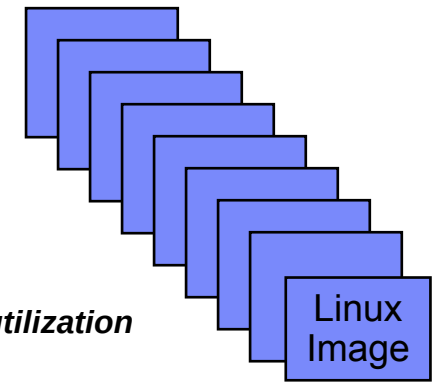
- ***Result:*** **Improved competitiveness by deploying new enterprise applications faster, without increased software costs, and support for Java growth**

***"The zAAP works as advertised."***

**Rich Olimpio**
Tech Services Manager, Abercrombie & Fitch

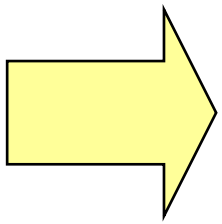
# The Economics of zLinux Workload Consolidation

- CIOs are increasingly dissatisfied with the TCO of their ever-growing distributed server infrastructure
  - Distributed server scalability
  - Software costs in the distributed environment
  - Infrastructure complexities in support of mission critical applications
- Distributed servers typically run at utilization levels in the range of 5% to 20%
  - Production servers, development servers, test servers
- Virtualization and workload management enable consolidation on the mainframe
  - Run multiple images on fewer processors
  - Achieve utilization levels of 85% or more




***5% to 20% utilization***

62 Linux servers with low utilization
62 @ $5,000 = $310,000
Plus 62 middleware licenses
Plus $6,500 x 62 = $403,000/yr labor



***Full utilization***

One IFL processor with high utilization
1 @ $125,000 = $125,000
Plus one middleware license
Little additional labor

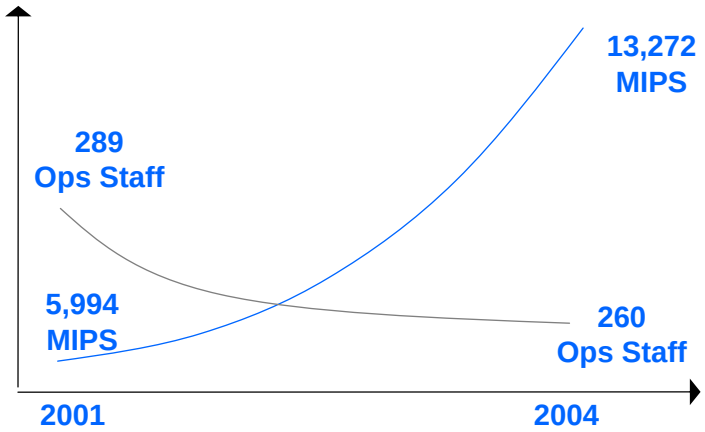
# Nationwide® saves $16+ million with Linux on System z

Nationwide® On Your Side™

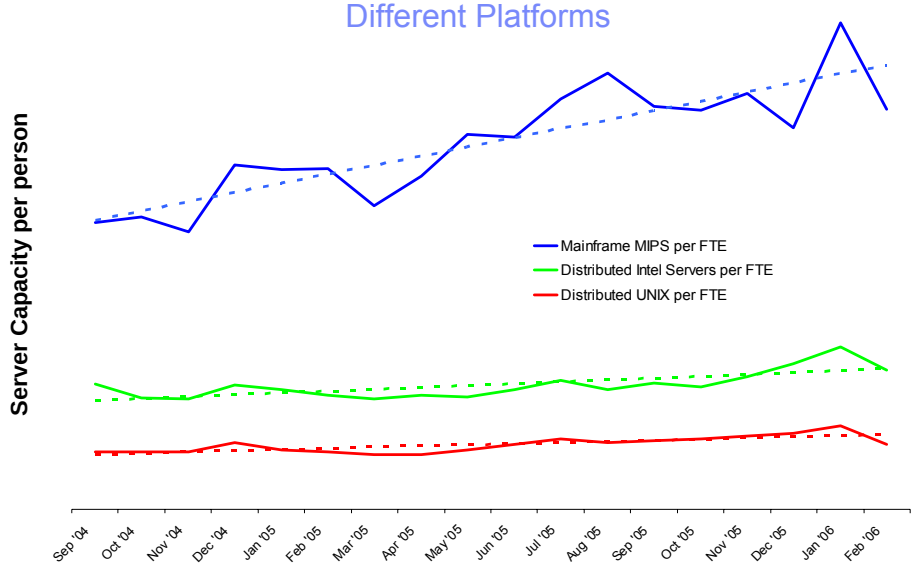
- ***Nationwide*** is a US-based Fortune 100 insurance & financial services company
  - $21B+ revenue, 30,000+ employees (6,000 in IT)
- ***Situation:***
  - 5000+ distributed servers under management with low utilizations
  - Linux and J2EE being used for new applications, with no single point of failure
- ***Problems:***
  - High TCO including data center power and floor space scarcity (new facility would cost $10M+)
  - Long server provisioning process
  - Need to "over-provision" for peaks leading to inefficient utilization
- ***Solution:***
  - Server Consolidation using System z Virtualization (System z990, IFLs, z/VM… )
- ***Result:*** **Vastly improved TCO, Speed & Simplification**
  - 50% reduction in Web hosting monthly costs, 80% reduction in floor space & power conservation
  - 50% reduction in hardware & OS support efforts; significant savings on middleware costs
  - 350 servers virtualized with 15 z990 IFLs, supported by 3 FTEs
    - 12 mission critical applications with 100,000+ users/day
  - Fast deployment (4 months)
  - Significantly faster provisioning speed (months → days)
    - Provisioned 22x the anticipated load for SuperBowl AD using CoD (1 processor for 2 weeks)
  - Dynamic allocation of compute power eliminates need to "over-provision"
  - Simple, robust mainframe high availability & disaster recovery

# Mainframe Labor Costs Are Going Down

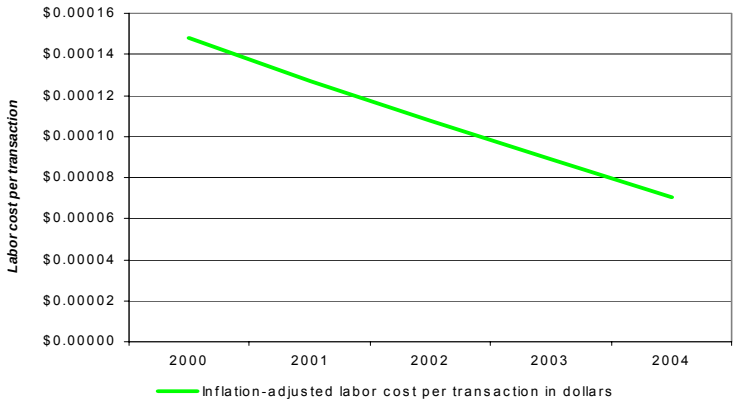
## Data Center Staffing Levels for System z Have Not Increased Despite Large Increase in MIPS




## Hardware Managed Per Person for Different Platforms




## Labor Cost Per Transaction on System z is Decreasing

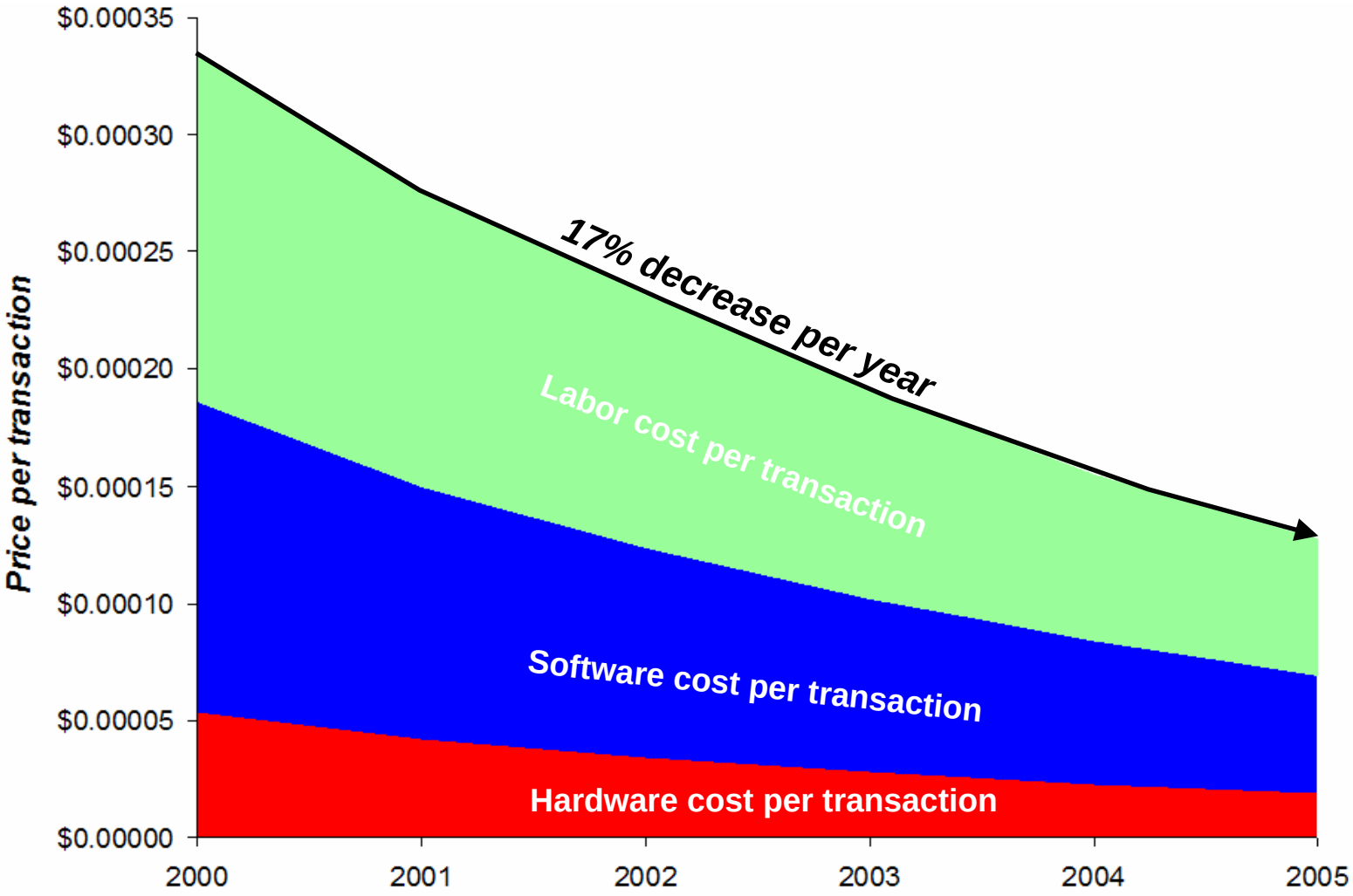



## First National Bank of Omaha

| | Servers | Reliability | Utilization | Staff |
|---|---|---|---|---|
| ***First move:*** Implemented distributed computing architecture that became **too difficult to monitor, maintain, upgrade and scale** | ▪ 30+ Sun Solaris servers<br>▪ 560+ Intel ser | Un-acceptable | 12% | 24 people growing at 30% year |
| ***Next move:*** Consolidated back on the mainframe | z990 | Much improved | 84% with additional reserve capacity ***on-demand*** | Reduced to 8 people |

***Staff growth reversed by consolidating to the mainframe***

# Conclusion: Total Mainframe Transaction Costs Have Reduced by 62% in 5 Years



# Power and Cooling

- Mainframes Can Save Customers Substantial Environmental Costs:
  - *The Wall Street Journal* stated that distributed server farms now generate up to **3,800** watts per square foot (in 1992 it was 250 watts/sq foot)
  - According to *The Robert Francis Group,* mainframes are
    - **Less than half as expensive** in power and cooling as Unix servers
    - And **less than a fifth as expensive** in power and cooling as Wintel servers
  - An average distributed system consumes about 400W
    - Switching on another mainframe processor adds only 60-75W
  - So 1,000 servers **cost about $840K** annually to power and cool
    - > $35K power/month, plus another $21K - $35K in cooling/month
    - A mainframe replacement would save $420K - $672K in power & cooling annually
- *"Power-related problems in 2005 will cause 4 of the 20 major failures, up from 2 of 20 last year"* (The Uptime Institute)
- More than half of all serious outages are now caused by power problems*
  - Room temperatures averaging 92ºF lead to erratic machine behavior
  - A failed air conditioner at Pomona Valley Medical Center's data center caused *"**temporary shutdown** of systems serving the hospital's laboratory, **$40,000 in damage** to servers and hard drives, and prompted a **$500,000 retrofitting of the cooling system**"*
  - Costly outcomes – reduce raised-floor occupancy, reconstruct and/or upgrade
    - digging up parking lots, knocking down walls, building new facilities
    - $20,000 electrical-system upgrade, $150,000 air-conditioning upgrade

**Source: recent AFCOM survey of 200*

# Office for Technology Saves Money by Replacing Old Communication Hardware

- ***New York State Office for Technology (OFT)*** provides IT services to state agencies, employs more than 600 people
  - Centralized data center, state-wide network infrastructure, data and voice services, and other IT services
    - E.g. Department of Motor Vehicles, NY State Higher Education Services Corporation, NY State Office of General Services.

- ***Problems:***
  - OFT needed to update its communication hardware platform as two IBM 3745 Communications Controller devices were becoming obsolete
  - Needed to reclaim floor space while providing a high level of service

- ***Solution:***
  - Replace and simplify aging communication controller technology with a robust, stable, secure and cost-effective operating platform on IBM System z
    - IBM Communication Controller for Linux (CCL) software emulates the 3745 device on a virtual communication controller within the System z Linux environment to support traditional Systems Network Architecture (SNA)
    - NCP function running on two 3745 base frames and eight 3746 expansion frames hardware replaced by CCL on a new z990 server with two IFL specialty engines (subsequently upgrade to a System z9)
  - CCL not only maximizes the value in existing SNA applications, but also enables an evolution toward an even simpler network infrastructure, including IP functionality and enhanced hardware independence
  - Transparently take advantage of z/VM support for zSeries hardware architecture and reliability, availability, and serviceability (RAS) features

- ***Result:*** **Quickly saved $30,000 a year by freeing-up critical data center floor space and easier support costs – 3 year payback**

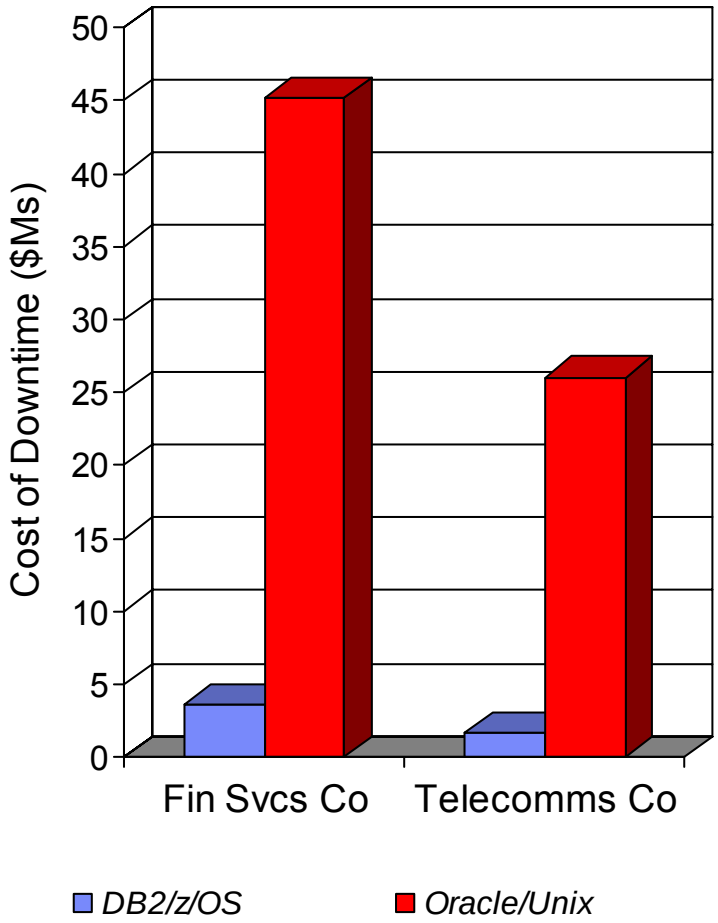
# Fractional Availability Improvements Translate Into $Ms

- **Example 1: Financial Services Company**
  - $300B assets, 2500+ branches, 15M customers
  - Retail banking, loans, mortgages, wealth management, credit cards
  - CRM System – branches, financial advisors, call centers, internet
  - Number of users – 20,000+

| | *Unix/Oracle* | *zSeries/DB2* |
|---|---|---|
| Availability | 99.825% | 99.975% |
| Cost of Downtime | **$45.188M** | **$3.591M** |

- **Example 2: Telecommunications Company**
  - $20B sales, 2500+ branches, 25M customers
  - Wireless, wire line, internet services
  - CRM System – call centers and internet
  - Number of users – 20,000

| | *Unix/Oracle* | *zSeries/DB2* |
|---|---|---|
| Availability | 99.725% | 99.95% |
| Cost of Downtime | **$26.038M** | **$1.684M** |




*Source: ITG Value Proposition for Siebel Enterprise Applications, Business case for IBM eServer zSeries, 2004*

# Security Incidents and Cost per Incident Rising

The overall cost of a UK company's worst incident has risen

| | ISBS 2006 - overall | ISBS 2006 – large businesses |
|---|---|---|
| Business disruption | £6,000 - £12,000 *over 1-2 days* | £50,000 - £100,000 *over 1-2 days* |
| Time spent responding to incident | £600 - £1,200 *2-4 man-days* | £1,750 - £3,500 *5-10 man-days* |
| Direct cash spent responding to incident | £1,000 - £2,000 | £5,000 - £10,000 |
| Direct financial loss (e.g. loss of assets, fines etc.) | £500 - £1,000 | £3,500 - £5,000 |
| Damage to reputation | £100 - £400 | £5,000 - £10,000 |
| Total cost of worst incident on average | £8,000 - £17,000 | £65,000 - £130,000 |

*Source: PwC and UK Dept of Trade and Industry*

The median number of incidents suffered is **roughly 8 per year**

For large businesses this could mean security losses cost **~$740K annually**

A number of data points provide the cost of allowing customer information to be exposed:

- When cleanup and recovery, systems modifications and other indirect costs were considered, **Gartner** estimated the cost of exposure to be $90 per exposed account
- *Small customers* – the costs per account can work out to much-higher numbers when amortized across a smaller account base base. **Gartner** estimated that when 5,000 accounts were compromised cost per account was closer to $1,500
- *Very large exposures* (> 1 million accounts) – the direct cost per account is around $50, the chance of litigation and loss of goodwill are higher in these cases

*Source: Committee on Veterans' Affairs May 25, 2006 Testimony of Avivah Litan, Gartner*

# Secure and Efficient "Smart Card" Solution at Banco Itaú Fights Fraud and Saves


- ***Banco Itaú S.A.*** is one of the largest banks in Brazil
  - Approximately 3,000 branches, 20,400 automated teller machines and 42,200 employees
  - 15M checking accounts, 9M savings accounts, 6M credit cards

- ***Situation:***
  - To meet efficiency objectives and ensure the security of its 12 million issued debit cards, Banco Itaú replaced its regular cards with security chip-enabled smart cards.
  - Need improved security so that new markets and customers can trust the bank while getting quick and easy access to their accounts

- ***Problem:***
  - Performance bottleneck with Thales e-Transactions security servers (which process “smart cards”)

- ***Solution:***
  - Leverage superior mainframe security, eliminate separate security server and migrate smart card solution to the mainframe
    - All core business systems run on mainframes
    - System z reliability and technical support also key factors in this decision
    - Better price performance
  - Install mainframe PCI Cryptographic Coprocessor cards (PCICC)
    - Encryption keys are generated and stored on PCICC cards and used for smart card authentication, blocking and password change
    - Use IBM z/OS V1.6 security APIs
- ***Result:*** **Reduced fraud from stronger smart card security, reduced costs, PLUS increased stability, efficiency, and faster processing**

# *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.**

# BlueCross BlueShield of Tennessee Saves by Replacing ISV Tools with IBM While Gaining flexibility

- ***BCBS of Tennessee*** is the leading healthcare provide in the US state of Tennessee and one of the most financially healthy BCBS plans in the country
  - Mainframe is vital so must focus on its cost-effectiveness
- ***Problems:***
  - Recent hardware growth of 30-40% lead to unacceptable doubling of ISV SW costs
  - Need to be able to react to competition by change cost structure *dynamically* according to business volumes but mainframe ISVs won't adjust monthly charges
- ***Solution:***
  - Conducted an IBM Portfolio Review Analysis with under strict non-disclosure
    - Initially anticipated $8M savings over 4 years, later increased list of "switch out" products to 28
    - Aggressive timetable – account teams helped migration (some foundational software for 20 years)
  - Smooth migration with no major impact, on-time, under budget due to IBM Specialists
- ***Result:*** **<u>On track to save $17.5M by 2007, but most important, much more flexibility to change internal cost as business volumes change</u>**
  **<u>Functionality and UI of the IBM tools have "leap-frogged vendors in place"</u>**

***"… a year and a half into our contract, our savings now are over $14M. It's just amazing, if we can cut our costs and provide the same or better service, that is going to give us a business competitive advantage"***

**Bob Venable**
Manager of Enterprise Systems, BlueCross BlueShield of Tennessee

# SOA Featuring an Integration Hub on System z

*Wachovia prepares for the future by integrating – today and tomorrow*

## *What is the business challenge?*

Wachovia needed to improve their speed to market with functionality, while decreasing production costs. They required simple, streamlined integration technology delivery that fit into their SOA strategic direction, as well as their business environment. And they needed to be able to staff their solution effectively.

## *Benefits*

- Create a centralized integration hub on System z in close proximity to the majority of the customer data
- Realized a 300-400% increase in productivity per associate using open standard based applications
- Wachovia modified its trust-services processes – reducing what took three days to perform down to hours
- Exceeded 99.9% SLA

## *Actions taken*

- Remove the redundant business logic and replace with a centralized common shared logic
- Replaced proprietary aging integration mechanisms with open standard based solution based on process adoption
- Deployed critical applications on WebSphere Application Server for z/OS for integration with core IMS and DB2 assets
- Realized 92% Java offload rates by implementing zAAPs

# Key Points:

| Mainframe Costs | Distributed Costs |
|---|---|
| The cost of running incremental workload on the mainframe goes down as the total workload grows | The cost of running additional workload on distributed servers goes up more linearly |
| ▸ Labor costs hold steady as workload grows | ▸ Labor is now the highest cost element in distributed environments<br>Administrative staff costs increase in proportion to the number of servers |
| ▸ IBM pricing policies designed to favor the addition of more workload | ▸ New workload requires additional servers and licenses |
| ▸ Highly Efficient Power and Cooling – Small Footprint | ▸ Energy and Space cost is more linear |
| ▸ Lower software costs per transaction as workload grows – and PRA can lower ISV tool costs | ▸ Cost of software licenses is more linear |
| ▸ High Availability and Security Translate into low cost | ▸ Fractionally less Availability and Security can drive Significant downstream costs |
| **Customers have learned that mainframes deliver economies of scale, especially as the workload grows** | **Result – scale out strategies do not deliver equivalent economies of scale as the workload grows** |

*This pricing discussion uses published list prices*

# 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