



IBM Systems & Technology Group

# IBM Mainframe Strategy The System z Advantage

**Terri Virnig**  
**IBM System z Strategy and Marketing**



# IBM Systems Strategy and the Mainframe

## *The Environment*

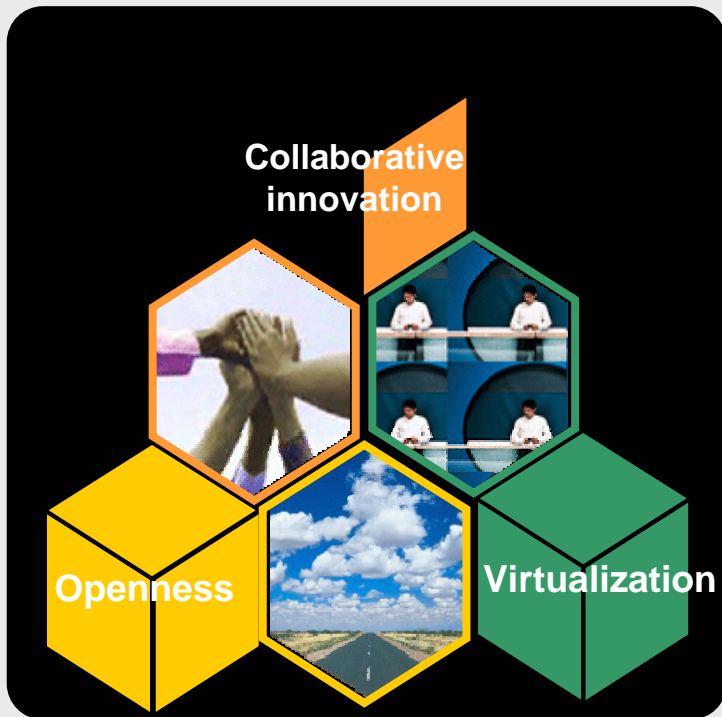
*Building an IT infrastructure to support an On Demand Business and help enable Innovation That Matters*

- **A company's profit and growth are driven by its ability to innovate and grow.**
- **Use IT to help drive responsiveness and position a company to find new ways to innovate.**
- **Streamline processes and better use technology to drive even more value**
- **IT systems can become accelerators of innovation**



# IBM Systems—a commitment for delivering innovative technology and expertise for business advantage

## Technology Innovation



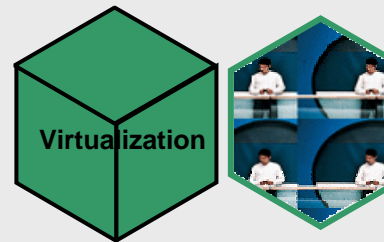
## IBM Systems Agenda



Working with clients and industry partners, IBM provides the breadth of expertise and resources to implement IT solutions that can drive innovation and help transform your business.



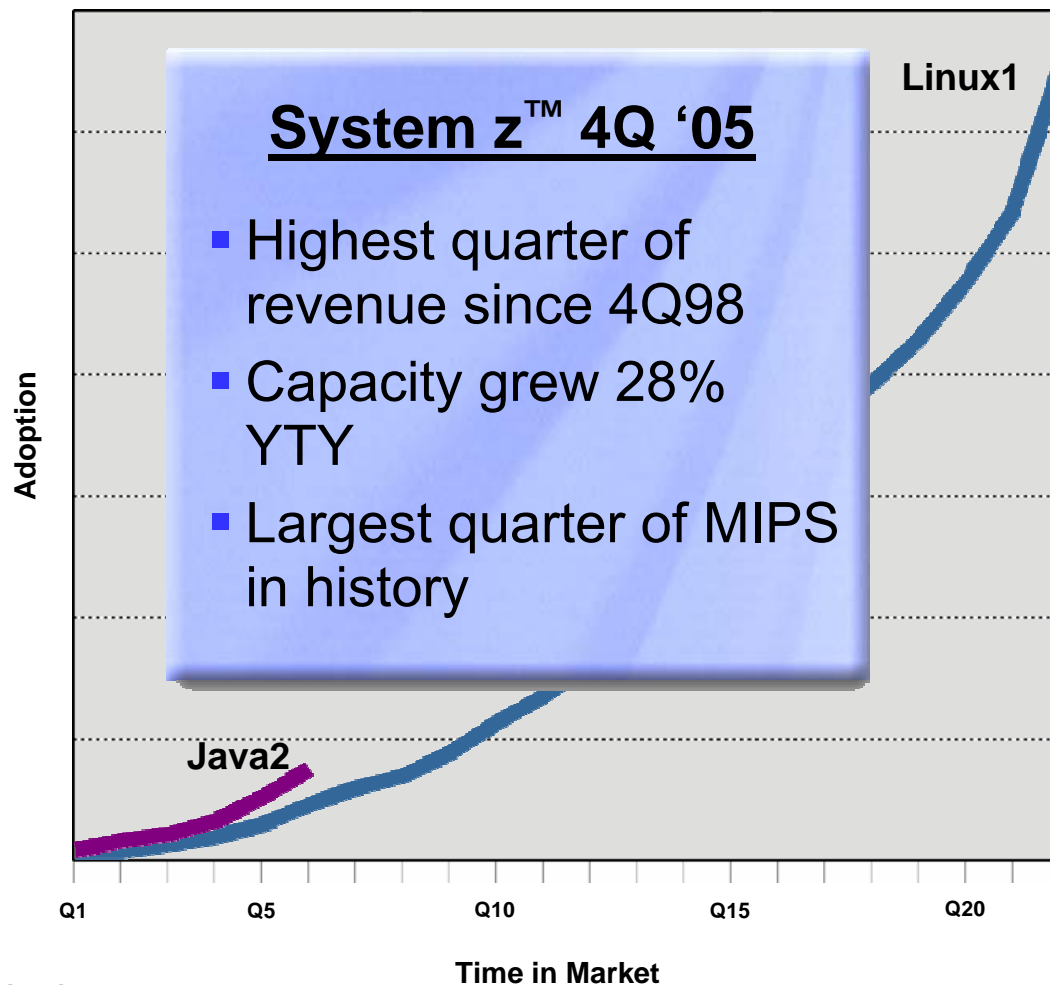
IBM is committed to sharing technology with the industry and providing the industry's richest portfolio of interoperable server and storage systems.



Optimize IT operations and dynamically respond to the priorities of the business by managing the IT environment more efficiently with proven IBM cross-platform virtualization capabilities.

# Mainframe evolution powers new growth

- Virtualized
- Open
- Collaborative



1. Adoption rate of IFL engines normalized for qualifying hardware
2. Adoption rate of zAAP engines normalized for qualifying hardware

Source: IBM

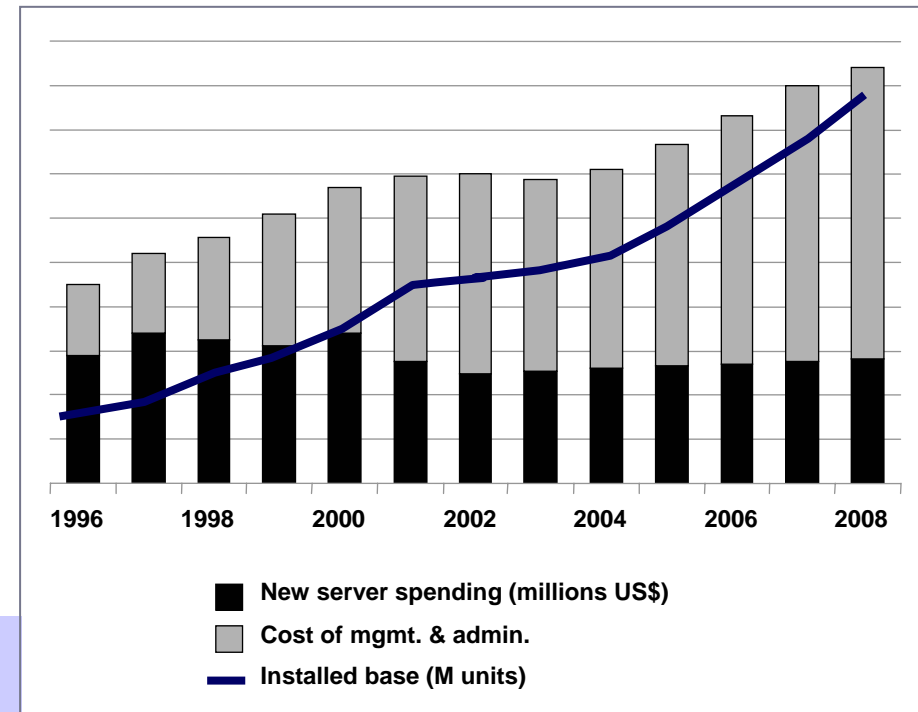
# The Mainframe and your journey to On Demand

# Getting the most value from your IT

*Wringing costly complexities out of an untamed environment*

- Simplifying and integrating today's environment helps drive down costs
- Driving down costs requires taking control
  - Simplify and consolidate
  - Manage key infrastructure capabilities end to end
  - Automate resource optimization
  - Get the most out of your IT investments

## Expenditures for people vs. new systems



Source: IDC, *On-Demand Enterprises and Utility Computing: A Current Market Assessment and Outlook*, IDC #31513, July 2004.  
John Humphreys, *IDC Directions*, March 2005.

***Control spiraling costs without compromising flexibility***

# Mainframe Paradigm

- Mainframe original design point:
  - Share everything
  - Support of mixed workloads
- Virtualization helps enable:
  - Simplification
  - High utilization
  - Intelligent management
- *This creates a foundation to:*
  - *Help customers solve On Demand business problems*
  - *Extend mainframe capabilities to intelligently manage virtualized resources across the enterprise*

The diagram illustrates the architecture of mainframe multi-dimensional virtualization. On the left, a vertical stack of three boxes represents the layers of virtualization: 'Virtual access' at the top, 'Virtual management' in the middle, and 'Physical & Virtual Resources' at the bottom. To the left of these boxes, the text 'Virtualization Engine 2.0' is written vertically. In the background, there is a large, stylized image of an IBM System z9 mainframe computer. At the bottom of the diagram, a yellow text box states: 'Key virtualization features are designed in, not added on'.

## Mainframe multi-dimensional virtualization

Virtualization Engine 2.0

Virtual access

Virtual management

Physical & Virtual Resources

System z9

Key virtualization features are designed in, not added on



# Extending Mainframe Qualities of Service to Your Enterprise

## Four enterprise-wide roles of the mainframe system

- Enterprise security management
- Enterprise business resiliency management
- Enterprise hub for data & SOA
- Enterprise workload management

## Enterprise wide approach delivers incremental value from IT

- Truly align IT to the business opportunities
- Efficiencies of infrastructure wide management
  - Reduces cost
  - Reduces complexity
- Adaptable to ongoing business change
- Security for peace of mind

**Extending zSeries Business Resiliency Strengths**  
Creating a "Secure Vault" for Heterogeneous Environments

**Today's Capabilities**

- Up to 99.999% availability<sup>2</sup> across all zSeries resources to avoid planned and unplanned outages
- Minimizes interruption through intelligent management of system resources based on business priorities
- Enables End-to-end integrity of zSeries capability to secure at granular user level

**Initial Focus\***

- Enable asset and resource associations to be mapped by business function.
- Extend DDPD to heterogeneous environments and single site environments.
- Extend zSeries ability to provide granular integration of Security through utilization of open technologies.
- Provide a capability to provide granular control over data and applications.

**Extending zSeries Business Integration Strengths**  
"Flexible Business Integrator" for Heterogeneous Environments

**Today's Capabilities**

- An industry across a
- An industry processing
- Deep hardware stack integration

**Initial Focus\***

- Enable zSeries Web services support and
- Further past WebSphere and WebSphere integration.

**A vision for System z advanced data serving**  
System z Enterprise Hub for Mission Critical Data

- With a strong foundation for transaction processing, built on 40+ years of technology innovation, System z servers with zOS and DDO can provide a premier platform for data serving, today and into the future.<sup>1</sup>
- IBM plans to continue to invest in new solutions to address customers' strategic information on demand goals.

**Today's Capabilities**

- Autonomous resource performance
- Intelligent utilization
- World by over

**Extension of capabilities**

- High capacity storage (CPI) with zEC and zSeries for mission critical ERP, CRM, and other key business applications.
- Database system improves regulatory compliance and subsecond.
- Support of encryption capability (Data protection) with zSeries and zSeries.
- Data protection by active highest levels of security capabilities.

**Future direction**

- Additional zSeries capabilities
- DDO enhancements to help improve usability and reduce complexity and management costs.
- DDO native work acceleration via zSeries.
- Support of encryption capability (Data protection) with zSeries and zSeries.
- Handle larger volumes of data with improved scalability.

**ON DEMAND BUSINESS**

## Roadmaps for delivery

# **IBM's ongoing commitment to the mainframe: The IBM System z**

# The Mainframe Charter



Innovation



Value



Community



# The IBM System z9

# System z9

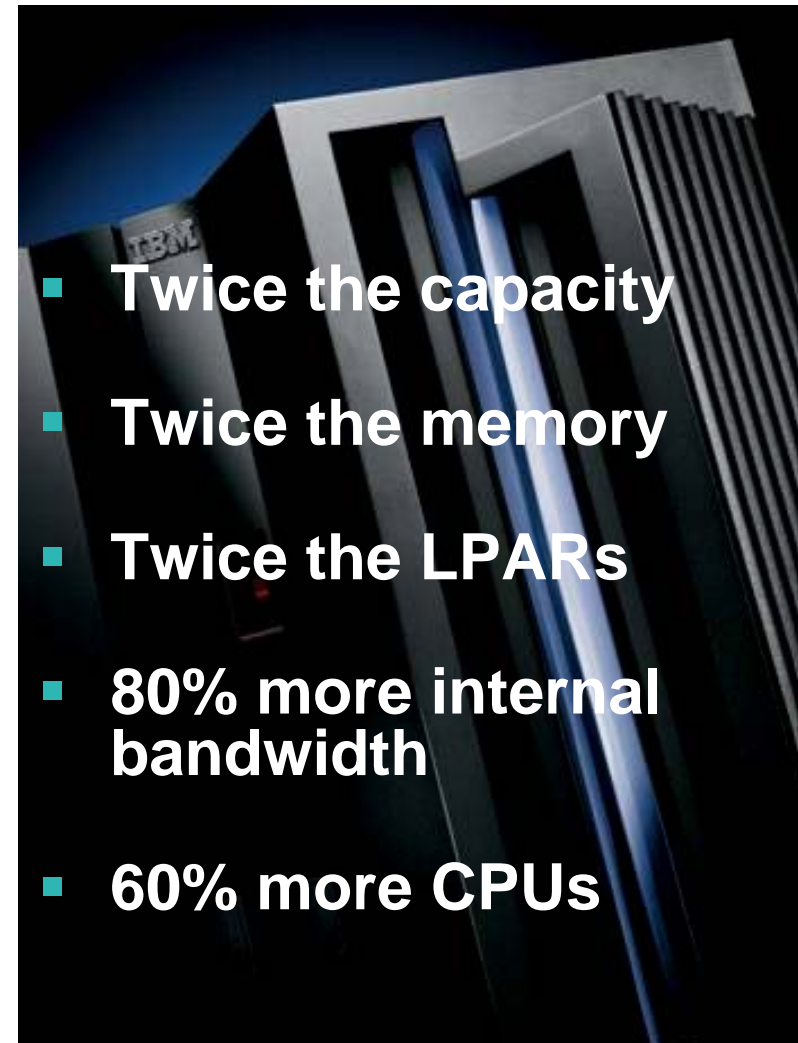
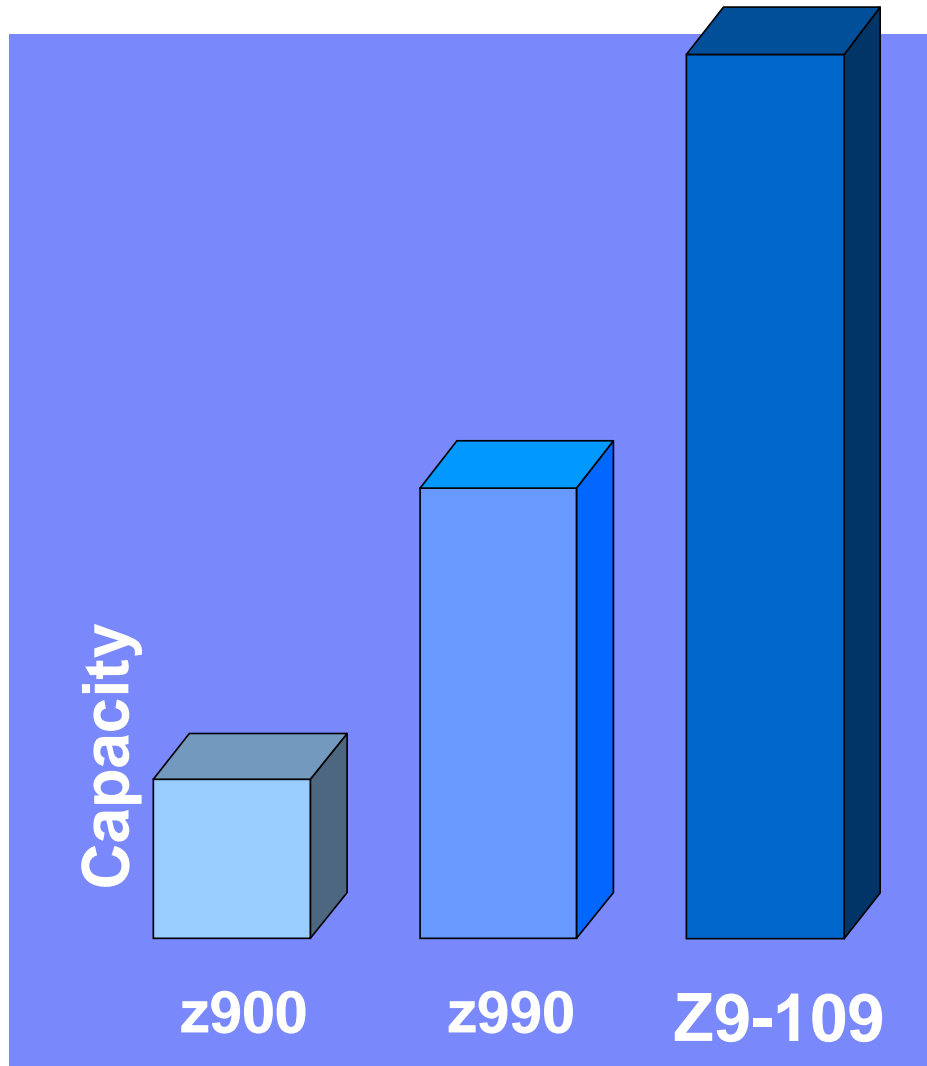
## Investment:

- 3 years
- \$1.2 billion
- 5,000 tech professionals



# The IBM System z9

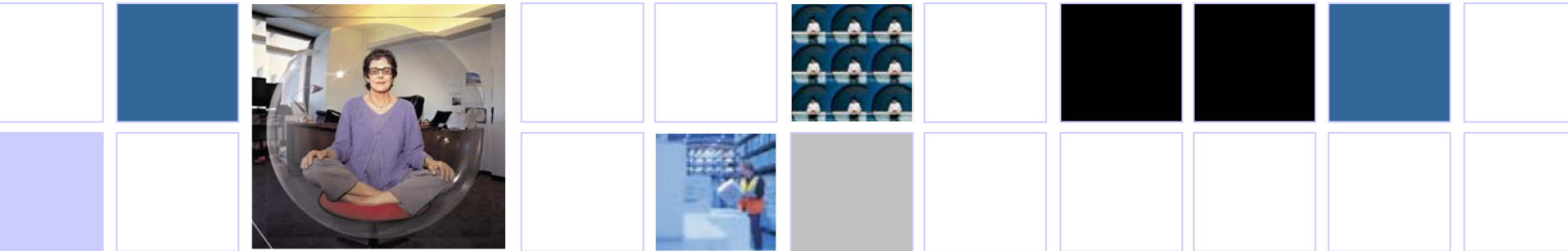
## *The Next Level in Scalability*



- Twice the capacity
- Twice the memory
- Twice the LPARs
- 80% more internal bandwidth
- 60% more CPUs

# Leadership in systems innovation

- New innovations in business resiliency help to keep your business secure and provide peace of mind
  - New security options help to tighten system security
  - Helping to keep your applications protected against planned and unplanned outages
- The System z9 environment provides the ability to integrate applications and data
  - Specialty engines can provide price/performance improvements



# The Hidden Costs of IT – Security Breaches & Downtime

*Security breaches are becoming more prevalent and can be very costly*

- **Computer viruses increased by 25% in 2004**
- **Estimates of over 6% of e-mail contain viruses**
- **More Than 90% Of Companies Expose Sensitive Data<sup>1</sup>**
- **Businesses Reluctant To Report Cyber Attacks<sup>2</sup>**
- **One In Four Identity-Theft Victims Never Fully Recover<sup>3</sup>**
- **Card Associations Unite Setting Standards to Fight Fraud<sup>4</sup>**



*Downtime and security issues can mean more than economic loss to your business*

- *Regulatory compliance*
- *Cost of research and recovery*
- *Cost to notify customers*
- *Problem solution or remediation*
- *Claims from trusted vendors and business partners*
- *Market competitiveness*
- *Customer loyalty*
- *Business image & reputation*

**Financial Impact of Downtime Per Hour**  
(by various Industries)

Brokerage Retail	\$6.5 Million
Credit Card Sales Authorization	\$2.6 Million
Airline Reservation Centers	\$90,000
Package Shipping Services	\$28,250
Manufacturing Industry	\$26,761
Banking Industry	\$17,093
Transportation Industry	\$9,435

Source: ©Eagle Rock Alliance, LTD. All Rights Reserved 2003

<sup>1</sup> Reconnex Insider Threat Index August 2005

<sup>3</sup> Nationwide Mutual Insurance Co. Survey July 2005

<sup>2</sup> 2005 CSI/FBI Computer Crime and Security Survey

<sup>4</sup> Green Sheet Inc. August 2005 Issue 2

# Vision to Secure Enterprise Data

## *Solutions for a Heterogeneous Environment*



**Enterprise-wide  
Key Management**


**Protect  
Enterprise-  
wide Data**

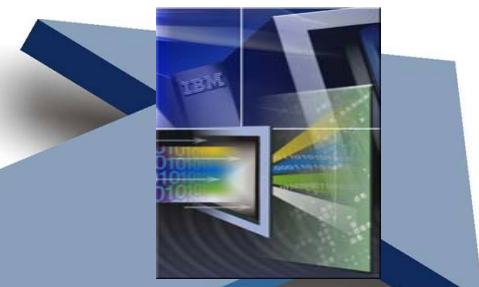




# More choice for your business

## *Evolution of specialty engines*

Building on a strong track record of technology innovation with specialty engines, IBM introduces the System z9 Integrated Information Processor 



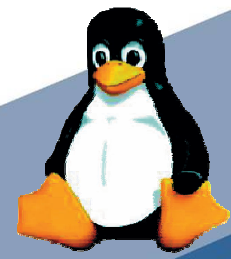
**IBM System z9  
Integrated Information  
Processor (IBM zIIP)** 

Designed to help improve resource optimization for eligible data workloads within the enterprise



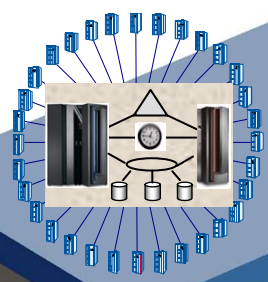
**System z9  
Application Assist  
Processor (zAAP)  
2004**

Designed to help improve resource optimization for z/OS Java technology-based workloads



**Integrated  
Facility for Linux  
(IFL) 2001**

Support for new workloads and open standards



**Internal Coupling  
Facility (ICF) 1997**

Centralized data sharing across mainframes

# DB2 v8 exploitation of IBM zIIP

## *Database workload scenarios*

- ERP, CRM, Business Intelligence apps



- Data warehousing applications<sup>1</sup>
- DB2 for z/OS v8 utilities

1- The zIIP is designed so that a program can work with z/OS to have all or a portion of its enclave Service Request Block (SRB) work directed to the zIIP. The above types of DB2 V8 work are those executing in enclave SRBs, of which portions can be sent to the zIIP.

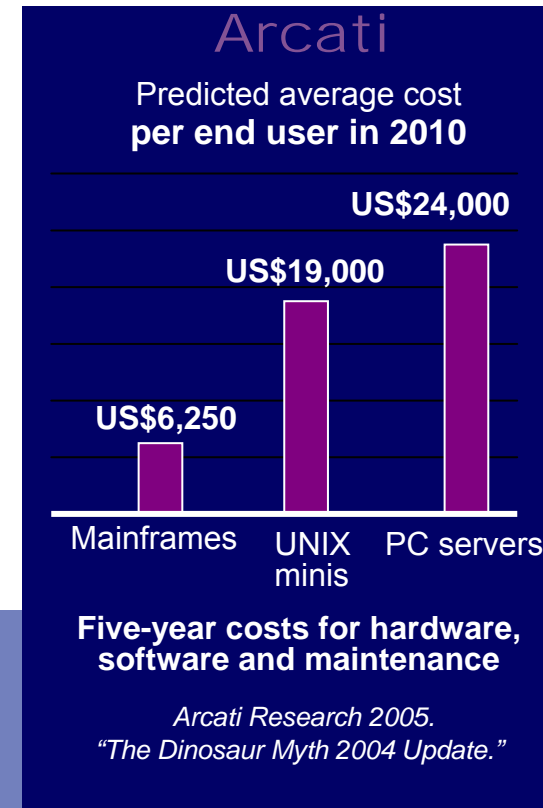
# Getting the most value from your IT

## *Delivering value today and tomorrow*

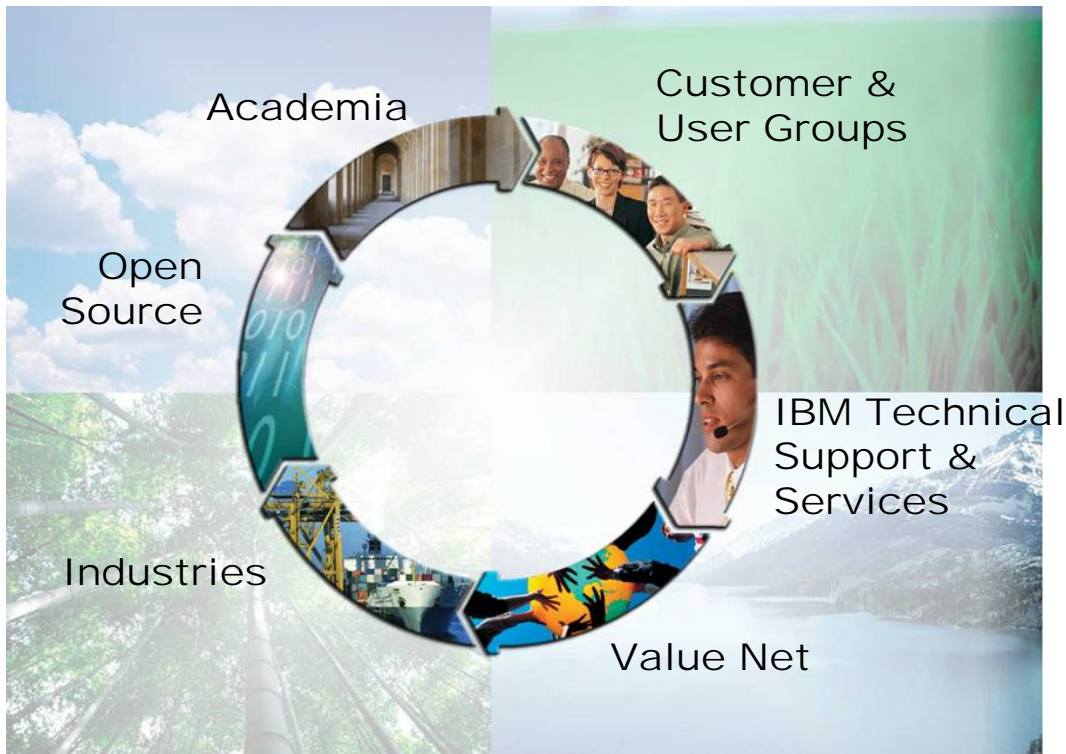
- The mainframe charter recognized the need to continually improve price/performance
  - Lowering costs across the board with each successive generation
    - Specialty engines delivered up to a 58% percent price/perf improvement from z900
    - No charge MES for specialty engines
    - z9-109 memory pricing now as low as US\$8,000 per GB\*
    - z9-109 HW maintenance cost down 46 percent from z900
  - Delivering greater value from your software
    - z9-109 delivers a 19 percent reduction in chargeable MSUs from z900
    - Innovative integration solutions with zAAPs, zIIPs and IFLs
    - Competitive tools portfolio

**Prediction:** *The five-year cost of mainframes will be one third of UNIX mini environments and one quarter of PC server environments.*

*Arcati Research 2005. "The Dinosaur Myth 2004 Update."*



# Mainframe Community Ecosystem



## IBM Academic Initiative

- **20,000 new skills by 2010**
- **200+ colleges and universities**
- **800 students in first ever Mainframe student contest**

## Partners

- **282 Linux ISVs and 790 Linux applications**
- **Websphere z/OS ISV initiative; increased investment in '06**

**Mainframe blog <http://mainframe.typepad.com>**

# The Mainframe Charter – setting future direction



## Innovation

- **Focus on enterprise wide roles**
  - ▶ Security
  - ▶ BR and Workload management
  - ▶ Data Hub and Business Integration
  - ▶ On Demand solutions with SWG
- **Continue to “Raise the Bar” on technology leadership**



## Value

- **Attractive for new workloads**
- **Continued focus on specialty engines & accelerators**
- **Drive granularity to support broad market**
- **Generation to generation Price / performance improvements**



## Community

- **Drive ISV applications & strengthen partner relationships**
- **Build new skills in marketplace, including next generation**
- **Focus on emerging geographies**

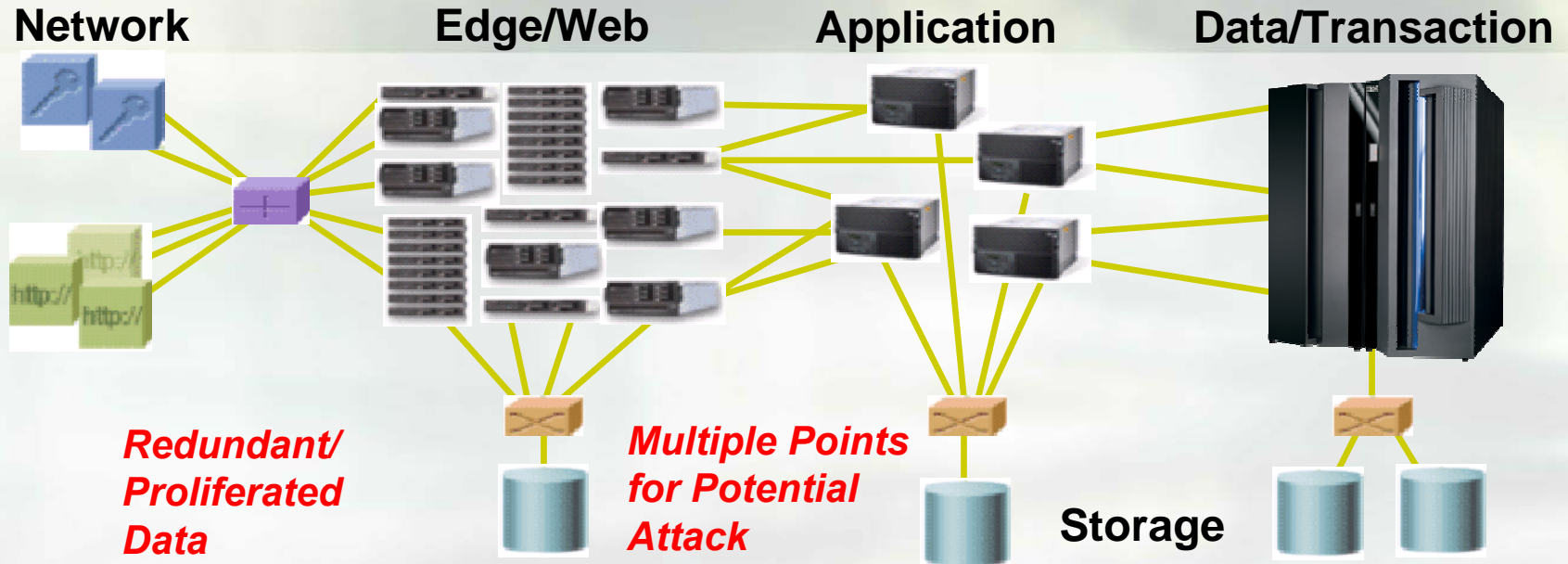
# Transforming Clients into On Demand Businesses



**Thank you !**

# The Journey to On Demand

## Traditional Operating Environment



**Common View of Data**



**Integration**



**Workload Management**



**Security**



**Business Resilience**

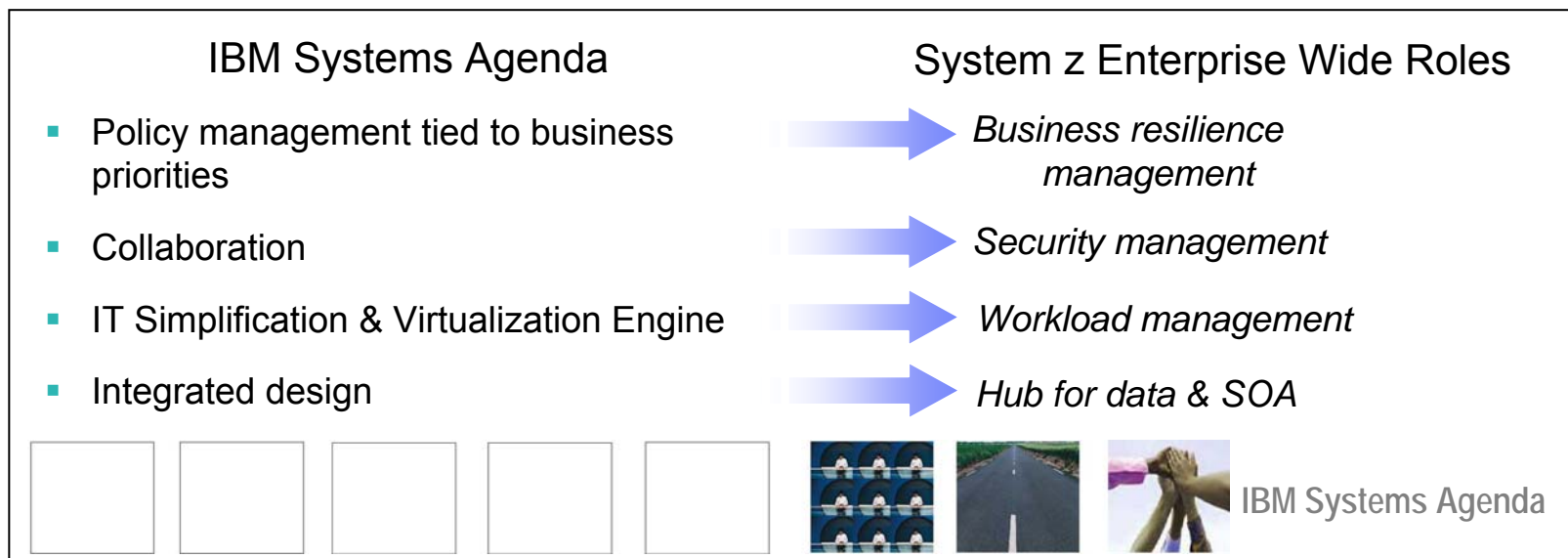




# IBM Systems Agenda:

## *Extending IBM's On Demand Strategy*

- Linkage of business design/transformation to business processes and IT infrastructure
- Information On Demand and SOA Strategy
- System z9 as the first proof point of the Systems Agenda



# zIIP – System z9 Integrated Information Processor

- A breakthrough that strengthens mainframe position as the world's premier database serving platform
- Frees-up computing capacity
- Business Intelligence and transaction processing:
  - ▶ Reduce security risks
  - ▶ Improve resource optimization
  - ▶ Lower costs



# Where you put your Data Matters....

## *IBM System z and DB2*

- Integrity
- High availability
- Security
- Systems and database management

### DB2 for z in:

- 25 of the top 25 WW banks\*
- 23 of the top 25 US retailers\*\*
- 9 of the top 10 global life/ health insurance providers\*\*\*

Top companies as identified in:

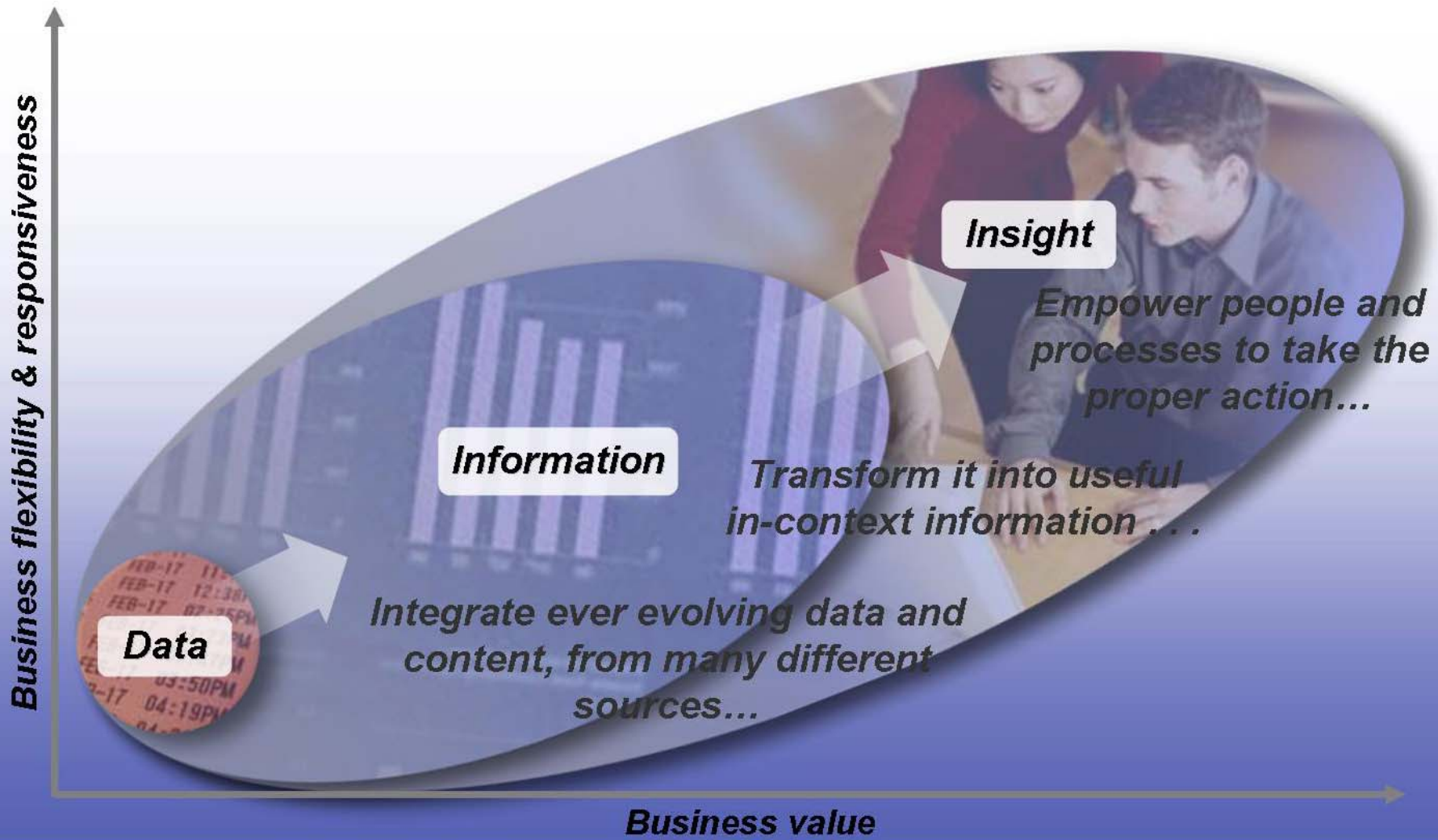
\* WW Banks from The Banker.com: [http://www.thebanker.com/news/fullstory.php/aid/1699/Tio\\_1000\\_World\\_Banks.html](http://www.thebanker.com/news/fullstory.php/aid/1699/Tio_1000_World_Banks.html)

\*\*US Retailers from National Retail Federation July 2005: <http://www.stores.org/pdf/TOP100printwithad.pdf>

\*\*\*Insurance - 2005 Ward's 50 Benchmark Group: [www.memico.com/news/Wards50.asp](http://www.memico.com/news/Wards50.asp)



# Data, at the core of your business



# Where you put your Data Matters....

## Confidence in System z, z/OS and DB2 for z/OS

- **Integrity**
  - z/OS System Integrity Programming Standard – in writing
  - System z integrity features that help protect data
- **High availability**
  - Designed with a 'Never go down' philosophy as opposed to a 'rapid reboot' philosophy
  - Capability of providing concurrent HW maintenance and upgrades and rolling changes to DB2 for z/OS (in a Parallel Sysplex) can mean fewer database outages
- **Security**
  - Encryption, encryption, encryption – comprehensive solution
  - MLS – merge data into single server and helps preserve data isolation.
  - Helping address regulatory compliance with ability to establish centralized policies and procedures for privacy, security and audit
- **Systems and database management**

### DB2 for z/OS in:

- 25 of the top 25 WW banks\*
- 23 of the top 25 US retailers\*\*
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\* WW Banks from The Banker.com: [http://www.thebanker.com/news/fullstory.php/aid/1699/Tio\\_1000\\_World\\_Banks.html](http://www.thebanker.com/news/fullstory.php/aid/1699/Tio_1000_World_Banks.html)

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\*\*\*Insurance - 2005 Ward's 50 Benchmark Group: [www.memco.com/news/Wards50.asp](http://www.memco.com/news/Wards50.asp)

# New IBM System z9 Integrated Information Processor (IBM zIIP)

- Specialty engine designed to help customers integrate data across the enterprise, and lower the cost of ownership for eligible data serving workloads
  - z/OS manages and directs work between the general purpose processor and the zIIP
  - No changes anticipated to DB2 for z/OS V8 applications
  - DB2 for z/OS V8 will be first exploiter of the zIIP with System z9 109, z/OS 1.6 or later, and DB2 for z/OS V8
- Portions of the following DB2 for z/OS V8 workloads may benefit from zIIP\*:
  - ERP, CRM, Business Intelligence or other enterprise applications
    - Via DRDA over a TCP/IP connection



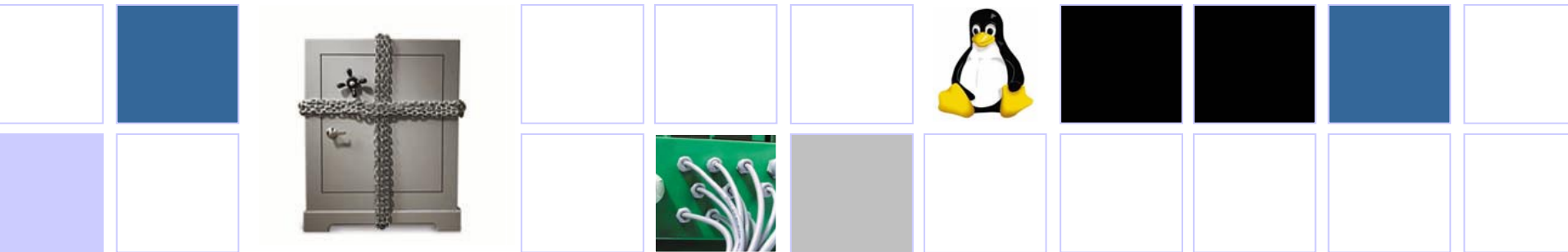
**New Specialty Engine**

- Data warehousing applications\*
  - Requests that utilize star schema parallel queries
- DB2 for z/OS V8 utilities\*
  - Internal DB2 utility functions used to maintain index maintenance structures

\* The zIIP is designed so that a program can work with z/OS to have all or a portion of its enclave Service Request Block (SRB) work directed to the zIIP. The above types of DB2 V8 work are those executing in enclave SRBs, of which portions can be sent to the zIIP.

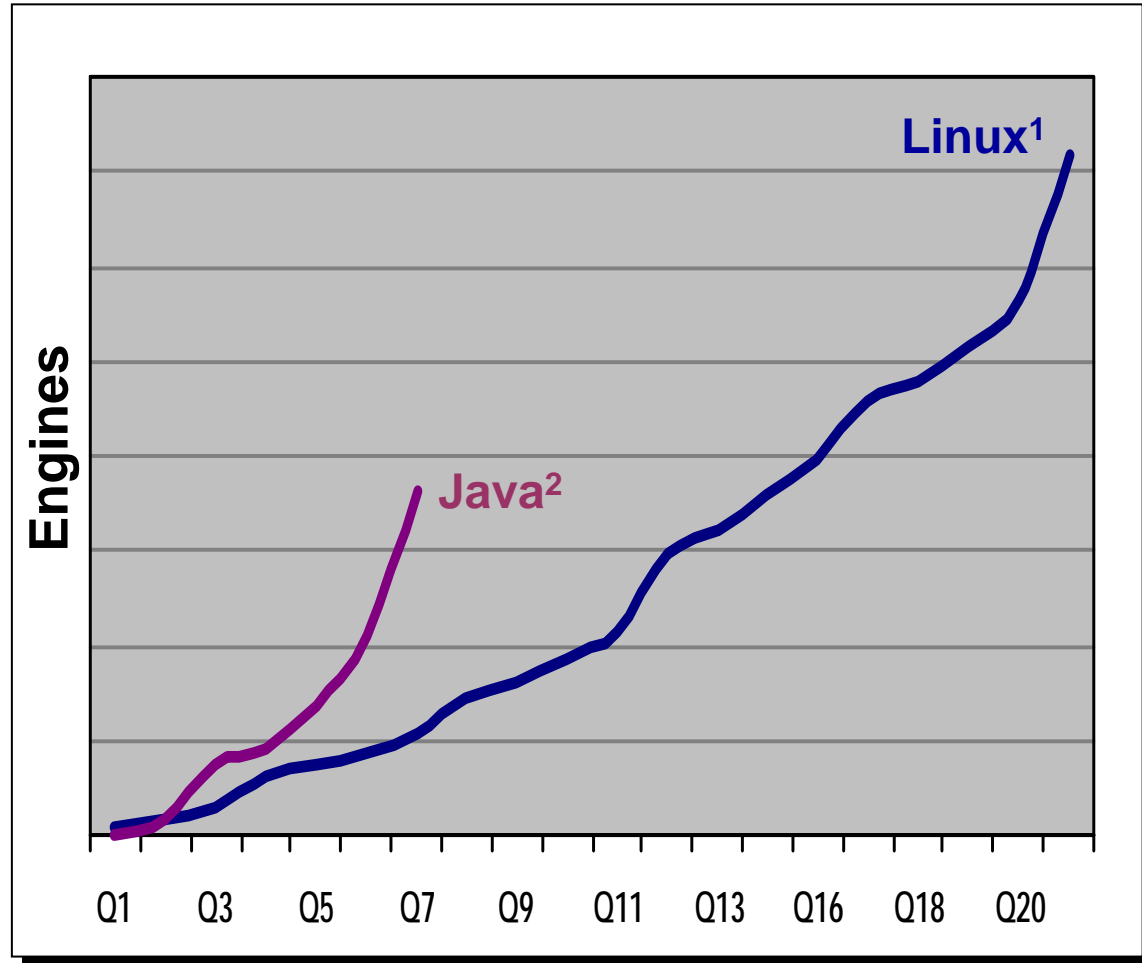
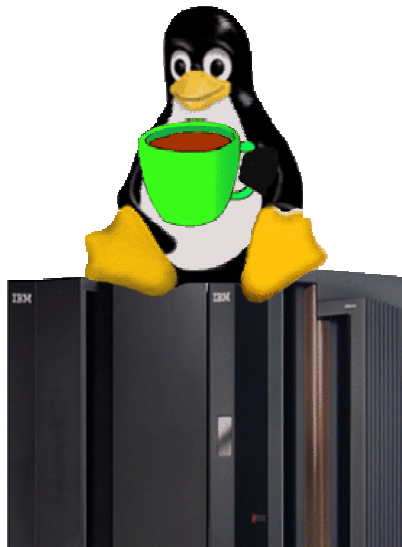
## z9-109 – Enhancing security

- ★ ■ New integrated cryptography features offer more security options on z9-109
  - Advanced Encryption Standard (AES) support in z9-109 hardware
  - Stronger hash algorithm with SHA-256
  - Pseudo Random Number Generator
- ★ ■ Crypto Express2 improved flexibility and speed
  - Configurability options, two coprocessors, two accelerators or one of each
  - With both adapters configured as accelerators each Crypto Express2 card is designed to provide up to 6000 SSL handshakes per second \*
- Secure encryption facility for z/OS to help protect data shared with partners, suppliers, and customers \*\*
  - Designed to leverage z/OS key management and high performance hardware encryption
- Can help to achieve higher levels of certifications and compliance
- Virtualized cryptographic capabilities for card sharing by Linux virtual servers
- Complementary IBM technology and vendors' advanced security solutions
  - Can enable a cross-platform model that can extend RACF capabilities to the enterprise
  - May provide the capability of integrating security enforcement across the networking enterprise



# IBM Mainframe

- Virtualized
- Open
- Collaborative





# IBM's Systems Strategy and the mainframe

Virtualize Everything

Commit to Open

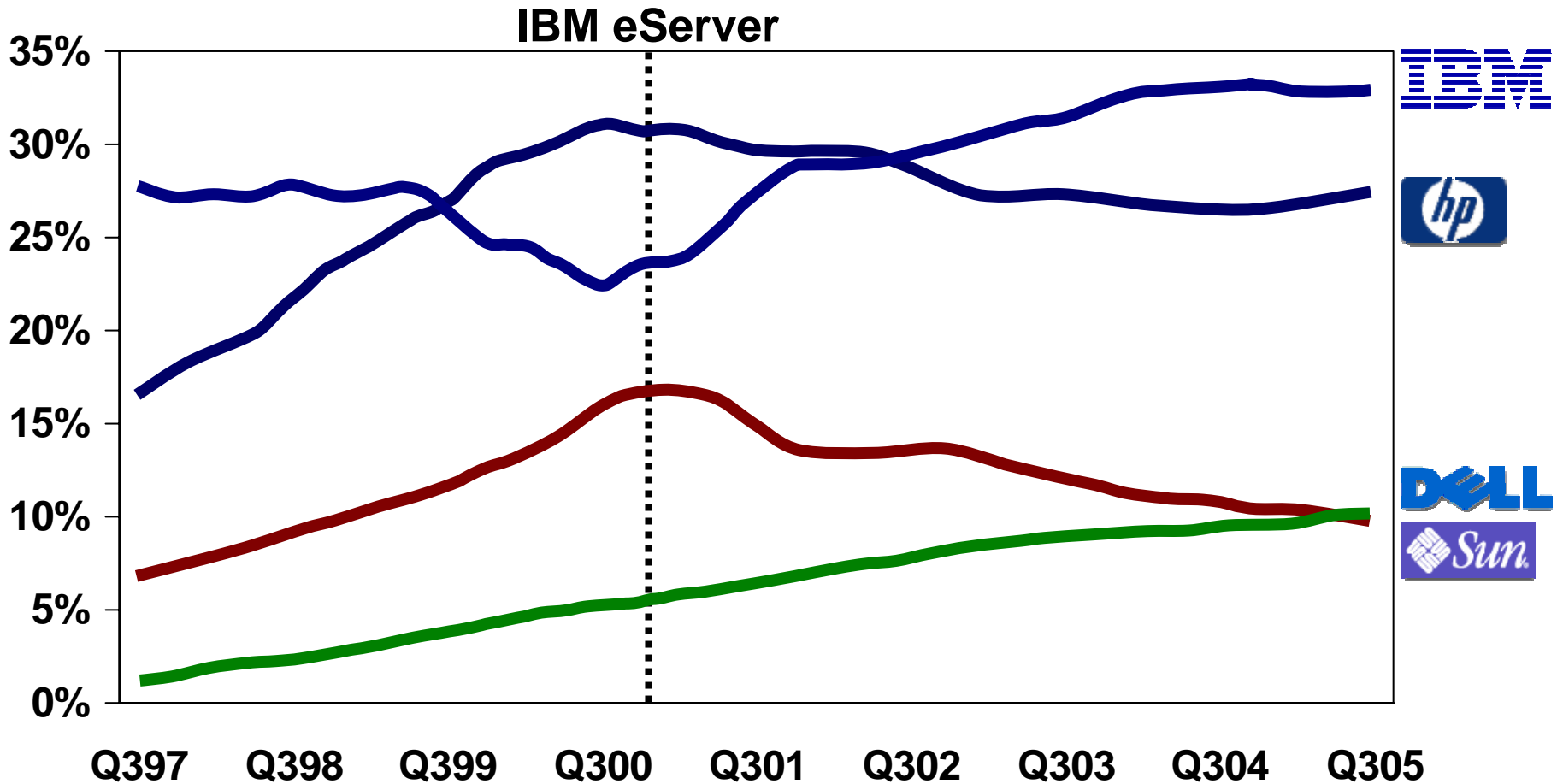
Collaborate to Innovate



- Reliability
- Dynamic Logical Partitioning
- On/off Capacity On Demand
- Automation
- Virtualization

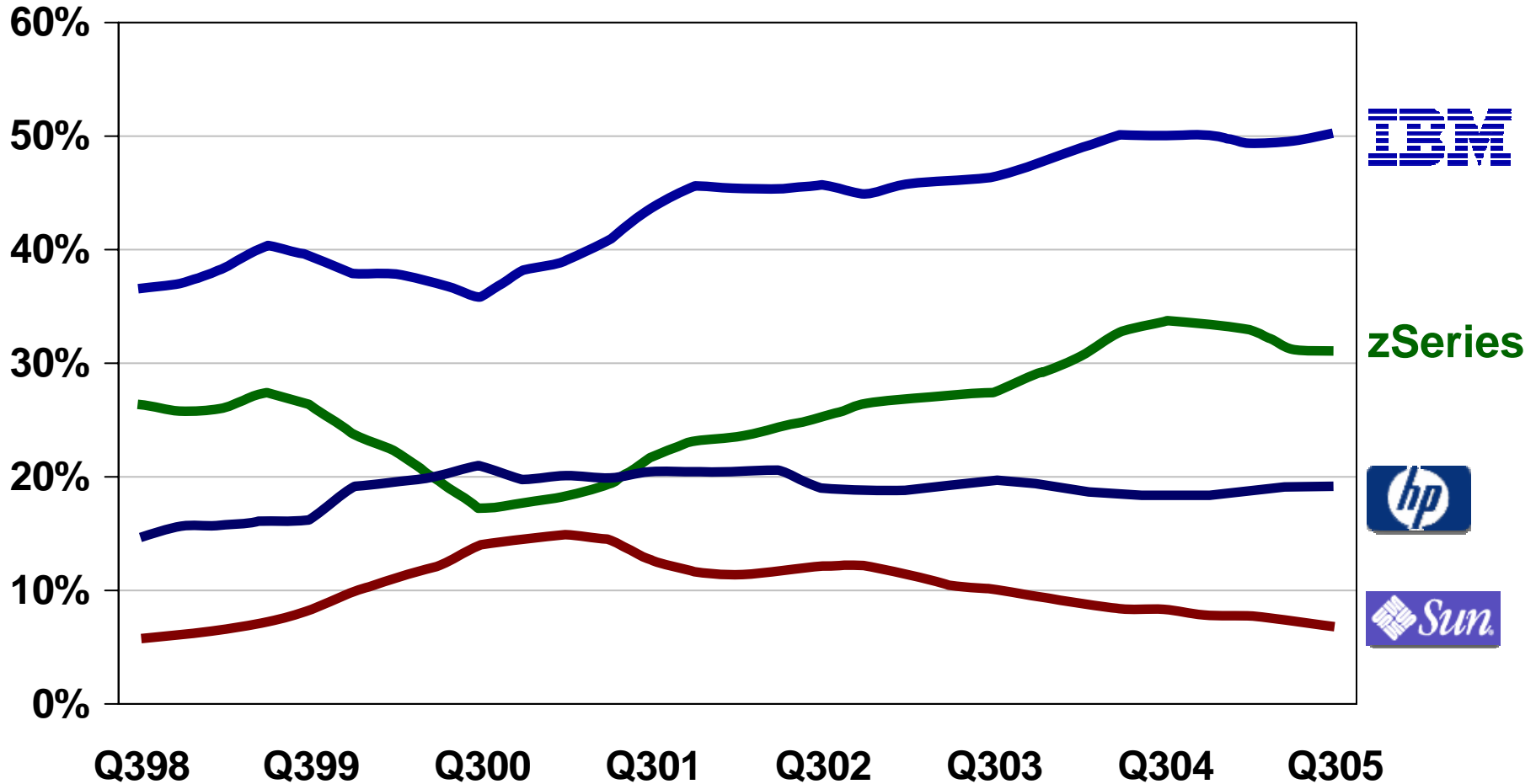


# Marketplace Momentum



Source: IDC FY2005-Q3 Quarterly Server Tracker

# Momentum in the > \$250K market



Source: IDC FY2005-Q3 Quarterly Server Tracker  
\$250K+ server market

## **System z**

Highest quarter of revenue  
since 4Q98

Capacity grew 28% YTY

Largest quarter of MIPS in  
history

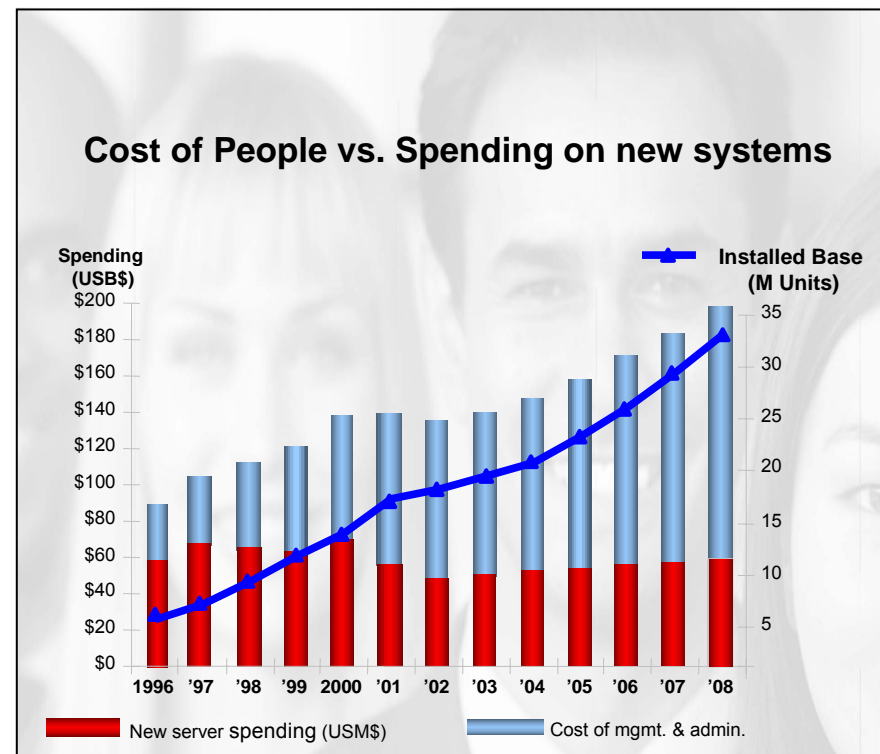
# The Cost of Complexity

## Managing today's mixed IT platform environments can be complex and costly

- Thousands of servers and growing
- Hundreds of applications
- **More data**
- Thousands of software licenses
- Thousands of distributed control points
- Ineffective costing methodologies

## The Result

- Lack of control
- Underutilized IT assets
- **Spiraling people costs**
- Strains on electricity, cooling, and space
- Increased downtime and security costs
- Potentially - poor IT platform choices



Source: IDC, *On-Demand Enterprises and Utility Computing: A Current Market Assessment and Outlook*, IDC #31513, July 2004.

## z9-109 – Providing new levels of availability

- New enhanced book availability and redundant I/O interconnect – increasing z9-109's availability by helping to avoid unplanned outages:•
  - Enhancing recovery of resources
  - Improving ability to nondisruptively add and repair memory resources
- Improving the application of hardware driver maintenance:•
  - Potentially reducing planned outages using enhanced driver maintenance
- Extending capability for Capacity Backup Upgrade (CBU) to include specialty engines
- Improving memory availability with flexible memory offering

