System z Vitality
Why Mainframes are Here to Stay

Information Management software

The 45th Anniversary of the Mainframe - 2009

*Commemorating 45 Years of Market Leadership
Mainframe: The World's Most Trusted Server*

45 Years Ago a Revolution Began
The Mainframe Was Born

- **The Mainframe**

  - "Mainframe aids Apollo mission to the moon" - the beginning of IMS

  - Virtualization - in 1972

  - Parallel Sysplex- availability and reliability

  - World Class Security

  - Open Standards - Linux support

  - IBM's Project Big Green - from 3,900 servers to 30 mainframes

  - IBM System z10

> *Mainframe: The world's most trusted server*
>
> *the revolution continues*

IBM

System z: The right technology…
45 years of market leadership

Just in Time Capacity

Permanent capacity for non-disruptive growth

Temporary capacity for fluctuating workloads

Interim capacity for continued operation

Policy based automation capabilities

Offerings can be replenished dynamically

Secure and Resilient

Mitigate the risk of security breaches

Dedicated cryptographic processors

Industry leadership capabilities and certification

Where mean time between failure is measured in decades

World-Class Virtualization

Large scale consolidation for savings of up to 80% in total cost of ownership compared to distributed platforms

Deploy servers, networks, and solutions fast

Support for multiple operating systems

Dynamically optimize resources according to business priorities

IBM System z

The world's most powerful enterprise computing platform

Improved price/ performance

100s of Capacity choices for the right size server

Business Resilience

LOW COST OF OWNERSHIP

Leadership capabilities with IBM Systems software

The future runs on System z and the future begins today

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Introducing the IBM System z10 Enterprise Class
A marriage of evolution and revolution

- *Building on leadership capabilities*
    - Over 50% more capacity and flexibility to support growth and consolidation of workloads
    - Enhanced algorithms to strengthen security
    - Improved resiliency to help reduce risk
    - Improved efficiency to help further reduce energy consumption
   - 100 Capacity settings for 'right-sizing' to optimize capacity and cost

- *Delivering new capabilities*
    - 4.4 GHz quad core processor for performance for open workloads such as Java®, Linux® and, z/OS
    - Expanded choice and value for future workloads enabled through the integration of Cell technology
    - Just in Time deployment of capacity
    - Over 50% extra specialty engine capacity at no extra cost
    - Can reduce labor, software license, and energy costs through large scale consolidation

Unprecedented performance and capacity
Transforming the economics of the data center

- *Lower software license costs*
- *Lower labor costs*
- *Lower energy and facilities costs*

- **50% average increase in specialty engine performance**
- **Up to 2x performance increase in CPU intensive tasks**
- **Up to 10x improvement in decimal floating point instructions**

70% more <u>usable</u> capacity

More Engines

z9 EC

z10 EC

z990

z900

50% more performance
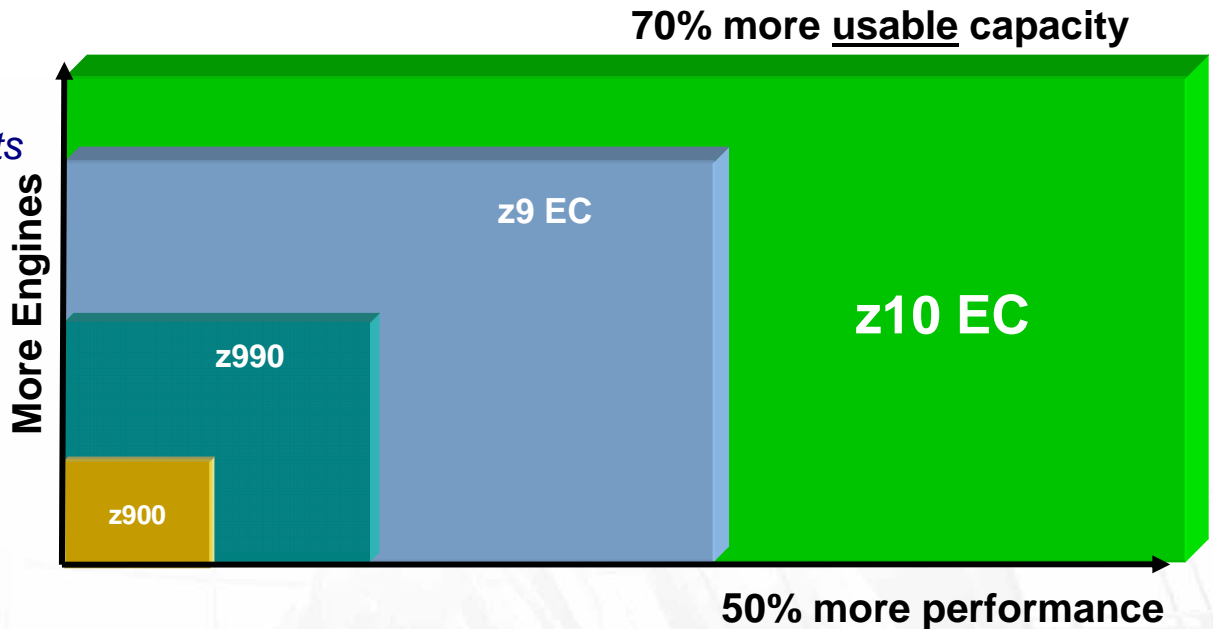
One System z10 core can do work of up to 30 x86 Cores, helping to reduce licensing costs by up to 30 to 1 and lower TCO by up to 80%

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Reduce cost through industry-leading virtualization

- Run 10s or 100s of application instances on a single System z server

- Drive hardware utilization rates near continuously at 85%+

- Dynamically optimize resources according to business priorities

- Deliver extra capacity for Linux virtual servers typically at no extra cost with z10 specialty engines

… System z delivers large scale consolidation capabilities for savings of up to 80% in total cost of ownership compared to distributed platforms

Reduce cost through energy efficiency

- Do the workload of up to hundreds of distributed servers in a single energy efficient System z10

- z10 technology delivers improved performance per KWh

- Active Energy Manager and Mainframe gas gauge to help manage energy consumption

"the IBM System z platform can be configured to require 1/12th the electricity as a distributed server farm with equivalent processor capability." [1]

1 IBM System z: Platform Star for Linux and Open Source Software, Ptak, Noel & Associates.

Manage risk with System z security
Leadership technologies for peace of mind

- **Comprehensive protection:**

  - User authorization and access control

  - Encryption to secure data

  - Protection from viruses and malware

- **Industry leadership capabilities and certification - (EAL5)**

- **Dedicated cryptographic processors**
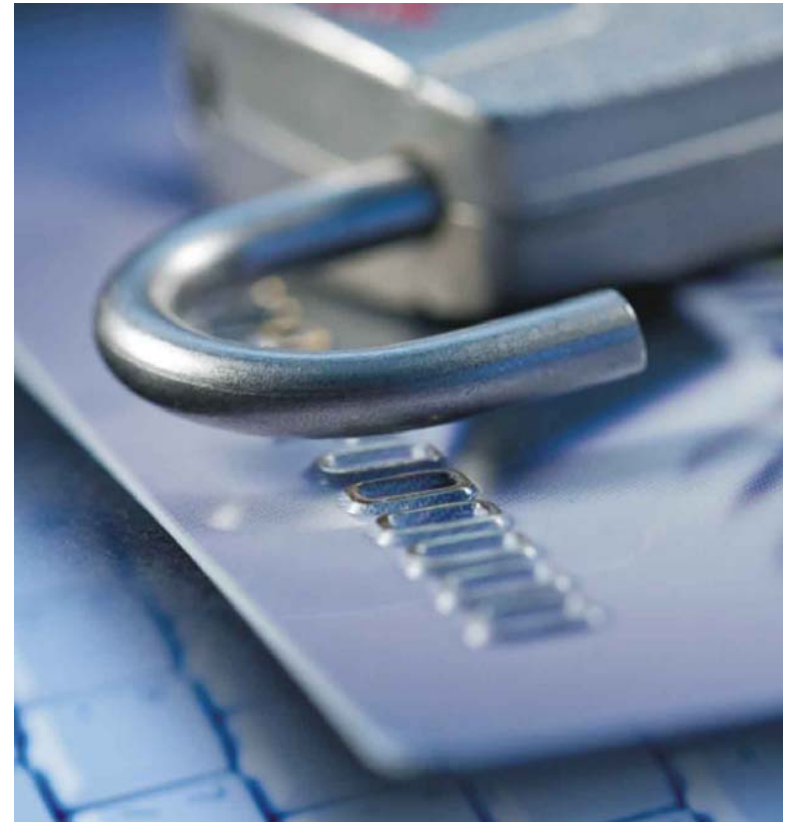
✓ *Mitigating the risk of security breaches*

✓ *Helping to protect your organization's brand image – and bottom line*

✓ *Helping to address compliance needs*

Manage risk with System z resiliency
Availability built in across the system

Designed to deliver availability at the *application level*
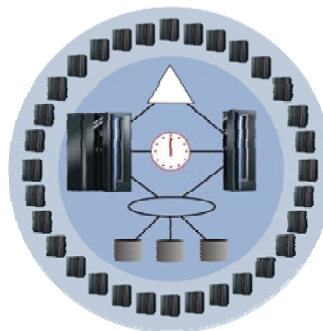
Single System z	Multiple System z	Multiple Data Centers
		Site 1 Site 2
Where mean time between failure is measured in decades	**Designed for *application* availability of 99.999%**	**Industry-leading solution for disaster recovery**
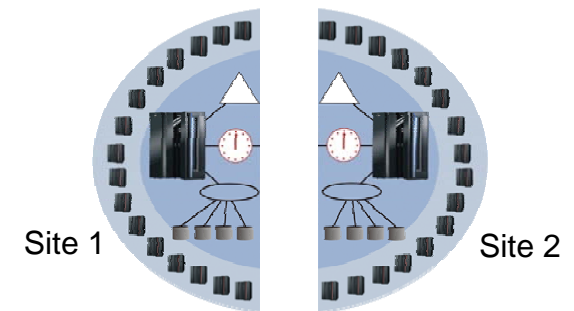
- ✓ *Avoiding the cost of downtime*
- ✓ *Ensuring access to critical applications*
- ✓ *Maintaining productivity of users*
- ✓ *Open to clients 24/7*

Evolution of System z Specialty Engines

Building on a strong track record of technology innovation with specialty engines – DB Compression, SORT, Encryption, Vector Facility

IBM System z10 Integrated Information Processor and IBM System z9 Integrated Information Processor (2006)

System z Application Assist Processor (zAAP) 2004

Eligible for zIIP:

- DB2® remote access and BI/DW
- ISVs
- IPSec encryption
- z/OS XML System Services
- z/OS Global Mirror (XRC)
- New! HiperSockets for large messages
- New! IBM GBS Scalable Architecture for Financial Reporting

Integrated Facility for Linux® (IFL) 2000

Eligible for zAAP:

- Java execution environment
- z/OS XML System Services

Internal Coupling Facility (ICF) 1997

IBM System z
Smart, cool, affordable

- ## System z10 designed to:
  - Reduce cost
  - Manage data and information
  - Deploy new applications and services
  - Manage security and compliance needs
  - Maintain availability and productivity
  - Reduce energy consumption

Unlike many distributed servers…

… System z Delivers extreme business value through industry leading security, availability, scalability, virtualization and management capabilities
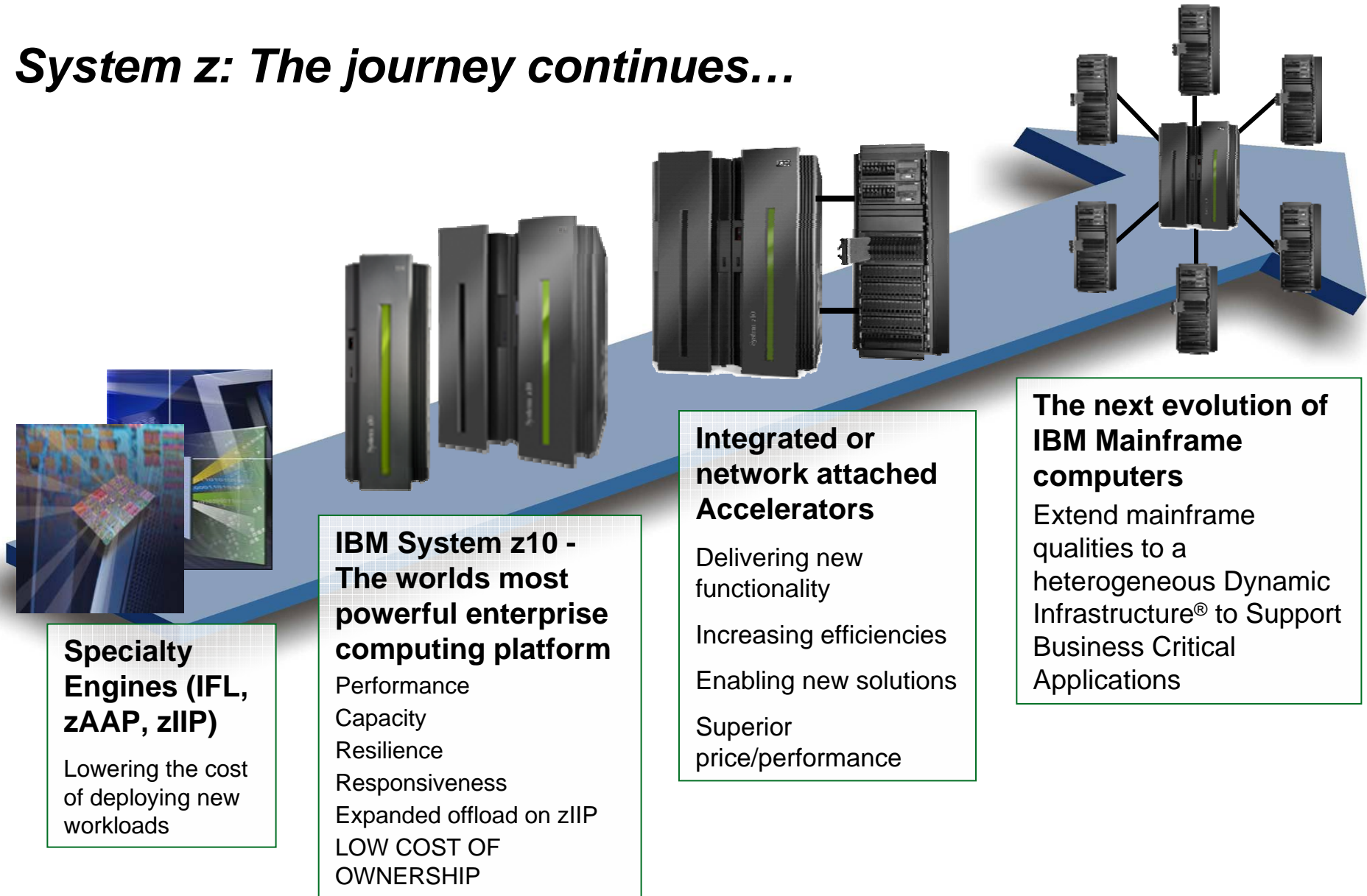
The Future runs on System z
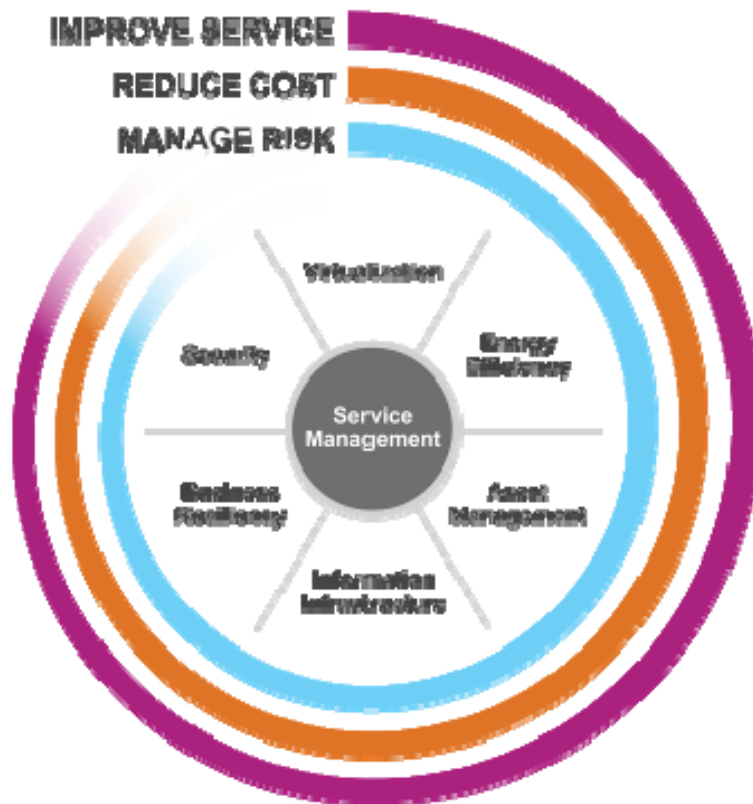
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System z: The journey continues…

Specialty Engines (IFL, zAAP, zIIP)

Lowering the cost of deploying new workloads

IBM System z10 - The worlds most powerful enterprise computing platform

Performance
Capacity
Resilience
Responsiveness
Expanded offload on zIIP
LOW COST OF OWNERSHIP

Integrated or network attached Accelerators

Delivering new functionality

Increasing efficiencies

Enabling new solutions

Superior price/performance

The next evolution of IBM Mainframe computers

Extend mainframe qualities to a heterogeneous Dynamic Infrastructure® to Support Business Critical Applications

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