Solution Innovations for System z10

Garry Geokdjian
System z10 Consultant
IBM Systems
garry_geokdjian@uk.ibm.com
+44 (0)20 8818 4768

The Future Runs on System z

IBM Systems

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IBM System z10 Enterprise Class

Innovative Enterprise Systems Solutions, Now and in the Future

IBM System z10™ Enterprise Class enables clients to **consolidate and virtualize** their server environment…

to **reduce costs and simplify** their IT infrastructure…

with high performance, **energy efficient green technologies**,…

providing the most **resilient and secure** system to support business innovation and growth.

New Solutions Optimized for System z10 Innovations

System z10 Designed for New Customer Workloads

New System z10 based solutions for workloads and Industry processes that leverage the full power of System z10

- Operational Business Intelligence on System z10
- SAP Business Intelligence Accelerator on System z10
- Consolidation & Virtualization Server Optimization and Integration Services for System z10
- SOA Core Banking Renovation & Payments Framework for System z10
- Encryption Authentication - Digital Certificate Authority on System z10

IBM Operational Business Intelligence Solutions for System z10

Customer Needs

- Leveraging business data to deliver a competitive advantage
- Enriching customer experiences at every touch point
- Enhancing the value of existing operational processes with business insights
- Integrating regulatory requirements and reporting, into core systems

System z10 Value Proposition

- Memory and processor enhancements maximize throughput of concurrent workloads
- Advanced workload manager features optimize workflow across the system.
- Workload integration delivers immediate access to operational data for business insights

IBI WebFocus

- Provides insights into data with Web-based applications

2 Tier BI Offerings:

- Data Warehouse Edition, Cognos,
- Business Objects, MicroStrategy, Hyperion

DB2 9 for z/OS Value Unit Edition

- A new offering that provides flexibility to deploy new workloads in a z/OS NALC environment.
- For "Net New Workloads" to the platform / database
- New Application License Charge (zNALC) LPAR(s).Qualifying Workload

Rapid Deployment of z/OS, DB2

- Services Offering for fast deployment of data sharing environment

DataQuant

- Offers dashboard/visualization features to simplify data interpretation

Alphablox on Linux for z

- Integrates analytic capabilities into existing workloads to drive business value

SAS: Ent Business Intelligence

- Delivers integrated environment for BI applications and business insights

SAS: Enterprise Miner

- Provides analytic capabilities native to System z workloads

IBM SAP Business Intelligence Accelerator for System z10

Customer Needs

- Extend the reach of traditional SAP NetWeaver BI environments
- Reducing administration costs
- Greater flexibility in the types and depths of queries that can be executed

System z Value Proposition

- Business Intelligence Accelerator enables crunching through terabytes of data in seconds, delivering faster business insight and turbo-charging your business intelligence solution
- Near real-time speed of query processing; faster than current SAP NetWeaver environments
- significantly reduces response time of SAP/BI queries

Optimize Query response times for SAP

- Timely access to relevant information has always been critical to business success
- With new data sources and increased access, managing, processing and making sense of huge data volumes is even more important. SAP NetWeaver® Business Intelligence (SAP NetWeaver BI) leads the way in providing a complete picture of a business from diverse data sources

Solution Components

- System z10 + IBM BladeCenter® technology with Intel® EM64T and IBM storage
- z/OS®
- DB2®
- SAP NetWeaver Business Intelligence Accelerator

Consolidation & Virtualization Server Optimization and Integration Services for System z10

Customer Needs

- Stop server sprawl
- Reduce energy and related facility costs
- Improve security and reliability
- Increase flexibility for changing business needs
- Get control of workload/systems management

System z Value Proposition

- Allows customers to rely on GTS consolidation experts skilled on System z10 platform technologies to assess current IT deployment, design and implement changes
- Measure and document improvements and related cost savings
- Gives customers the assistance needed for consolidation projects

. . . The Power of many

. . . The Simplicity of ONE

GTS Services on System z10

- Based on internally developed assessment tools combined with GTS subject matter expertise and System z skills offered to clients on a custom basis tailored to their specific enterprise needs

Solution Components

- System z10 with z/VM®, Linux
- Services that include:
  - assessment,
  - planning,
  - design,
  - implementation

SOA Core Banking Renovation & Payments Framework for System z10

Customer Needs

- Address consumer demands for more personalized service and product flexibility
- Achieve a single view of the customer relationship
- Respond to regulatory pressures
- Improve operational effectiveness

System z Value Proposition

- Enables customers to leverage SOA to extend the functionality of their mainframe-centric infrastructure with industry-leading core banking and payments applications
- The performance, scalability, security and availability enhancements of the System z10 strengthen the mainframe's value as a robust and flexible hub for back office and payments core systems.

Extension of Payments Framework

- The IBM Payments Solution Framework enabled on a System z-centric infrastructure will be expanded to include both retail and wholesale payments functionality.

Solution Content

- Examples of key IBM middleware in the Frameworks enabled on System z include WebSphere® Process Server, WebSphere Message Broker, WebSphere Transformation Extender, and WebSphere Enterprise Service Bus.
- Examples of ISV's in the Frameworks enabled on System z include: ACI Worldwide, EFD (eFunds), Intercope, Fidelity, Temenos and i-flex
- Major UK bank implements enhanced version of ACI's BASE24-es on mainframe to meet UK's new Faster Payments Service (FPS) requirements

Encryption Authentication – Digital Certificate Authority on System z10

Customer Needs

- Deploy secure transactions and network connections
- Securely exchange encryption keys
- Manage the lifecycle of digital certificates

System z Value Proposition

- Save thousands to millions of dollars by replacing third party hosting of digital certificates
- Full certificate life cycle management
- Highly available and highly secure

Saving costs

- Relatively low MIPS to drive thousands of certificates using no-cost feature of z/OS

Industry certification

- Certified by Identrust, a global leader in trusted identity solutions recognized by global financial institutions, government agencies and businesses

System z robustness

- Leverages resiliency and disaster recovery features
- Highly secure using mainframe access and audit controls and encryption features
- Services available to accelerate

New ISV support

- Venafi™ solutions for centralized digital certificate management now support z/OS Certificate Authority

Proven Solutions Now Optimized for System z10

Proven Solutions now optimized to deliver greater value with System z10

- **IBM Data Management Solutions for System z**
  - Information Server for System z
  - SAS Enterprise Business Intelligence
  - IBM Rapid Deployment of z/OS and DB2: Lab Services
- **Consolidation & Virtualization Offerings for System z**
  - Energy Efficiency Certificate
- **IBM SOA Offerings for System z**
  - IBM SOA Healthcheck
- **Security Solutions for System z**
  - Payment Card Industry Compliance

IBM Data Management Solutions – solidifying System z as a world class Data Hub

Customer Needs

- Supporting globally dispersed work forces and customer markets
- Maximizing the security of critical business data throughout its lifecycle
- Responding to regulatory pressures
- Expanding the functionality of existing core systems
- Improving operational effectiveness

System z Value Proposition

- Increased processor capacity and memory, increases the ability to consolidate applications onto a central server,
- Advanced architecture enables high availability support of operations

Information Server for System z10

- Centralizes the ability to access, manage and control data from central system.

SAS: Enterprise Business Intelligence (eBI)

- Equips organizations for success by helping them answer more questions, for more people, across more departments. With eBI on System z, SAS, a recognized leader in analytics, delivers an integrated set of business intelligence software and services to navigate today's challenges, while capitalizing on tomorrow's opportunities

IBM Rapid Deployment of z/OS and DB2: Lab Services

- Provides fast delivery of a centralized, highly available environment for customers new to System z, or those in need of a separate data sharing environment – FAST!

Energy Efficiency Certificate for System z

Customer Needs

- Enables customers to manage and obtain value from energy savings efforts
- Certification of energy savings benefits of System z consolidation

System z Value Proposition

- Robust and flexible platform for consolidating workloads from distributed servers
- Extreme virtualization for deploying and managing multiple workloads
- More processors, and more capacity per processor allows more workloads to be migrated and consolidated
- Higher clock speeds improve workload performance

Energy Efficiency Certificate

- Energy Efficiency Certificate, issued by Neuwing Energy Ventures providing documentation of energy savings in consolidation projects with IBM System z, for customers wishing to document progress toward a company's energy efficiency goals or traded for cash or other credit on the energy efficiency credit market
- Certificates are awarded as clients decrease power consumption and implement energy efficiency actions based on accepted industry benchmarks and practices.

Offering Components

- The energy efficiency certificate is based on hardware implementation only, and the associated power savings of migrating and consolidating workloads from less efficient hardware deployments.

IBM SOA solutions leveraging the strengths of System z

Customer Needs

- Increased business flexibility
- Achieve economies of scale
- Leverage existing IT investments
- Adopt current and emerging applications
- Improve operational effectiveness

System z Value Proposition

- More cost effective than today's distributed alternatives
- Preserve existing IT investments through reuse of core mainframe assets
- Supports server consolidation and simplification
- System z10's increased memory and processor speed enhances heterogeneous workload performance

IBM's SOA entry points provide an on ramp to reuse existing mainframe assets, integrate your enterprise with an ESB, empower productivity, automate and choreograph business processes and deliver trusted business information while benefiting from the simplification and efficiency of centralized assets and optimized operations.

IBM SOA Healthcheck covers six common areas that impact the success of an SOA strategy, including application reuse, governance, security, middleware and workload and service management.

Payment Card Industry Compliance leveraging System z Security

Customer Needs

- Avoid the costly penalties and bottom line impact of data breaches
- Helping to reduce the complexity and cost of compliance audits
- Help protect the organization's brand image

System z Value Proposition

- The capacity, reliability, and security of the System z10 platform makes it possible for customers to confidently deploy numerous and/or large workloads to achieve the high utilization rates necessary to maximize energy efficiency, power and cooling that forms the basis for the energy efficiency certification.

Highly Secure by Design

- Security-rich holistic design and security controls to help protect system from malware, viruses, and insider threats
- Virtualization technologies with time-tested integrity features including the only servers with EAL5* certification for virtualization

Encryption Solutions

- Encrypt sensitive data across the Internet, on tape and in databases with strong encryption key protection

Compliance and Audit Tools

- Monitoring and reporting with Tivoli zSecure and Tivoli® Compliance Insight Manager

*** As of November 30, 2007**

System z10 Industry and ISV Solutions with SOA

Service Oriented Architecture and Industry Specific Solutions

Powered on System z10

Banking and Payments

- ACI Worldwide's BASE24-eps for Banking Payments
- EFD Data Navigator for Banking Payments
- Core Banking Renovation with SmartBank SOA Solutions
- Enterprise Payments Platform powered by System z
- SAS Fraud Management

Insurance Industry

- Life Insurance SOA on System z

Public Sector

- *Informs* Student Information System (SIS^{J2K})
- Integrated Case Management with Cúram Software

Automotive Industry

- Supplier Parts Quality on System z

Payments Solutions leveraging the strengths of System z

Customer Needs

- Reduce fraud exposure
- Comply with new standards and regulations
- Enhance customer service
- Achieve a single view of the customer relationship
- Improve operational effectiveness

System z Value Proposition

- Robust and flexible platform for enterprise payments processing
- Performance, scalability and reliability supporting high-volume and highly available transaction processing

ACI Worldwide's BASE24-eps

- Supports payment transaction flexibility
- A major UK bank is implementing on mainframe to meet requirements for real-time funds transfer between retail bank accounts

EFD DataNavigator®

- Enables a real-time enterprise-wide view of all consumer transactions.
- DataNavigator forms the transaction management layer of EFD's Enterprise Payments Framework.

SAS® Fraud Management

- Enables real-time protection against credit and debit card fraud using sophisticated analytic intelligence
- HSBC leverages mainframe to manage card portfolio and reduce fraud

Core Banking and Insurance Solutions Leveraging the SOA Strengths of System z

Customer Needs

- Address consumer demands for more personalized service and product flexibility
- Respond to regulatory pressures
- Extend the functionality of existing core systems
- Improve operational effectiveness

System z Value Proposition

- The solutions, which address key business processes, showcase the mainframe's strengths as the SOA and data integration hub for insurance and banking core systems

Life Insurance SOA Solutions

- System z based IBM middleware and ISV solution components include DB2, WebSphere Process Server, WebSphere Customer Center, Workplace Forms and Tivoli Enterprise Monitoring; LIDP, Allfinanz, Mapinfo, and Informatica.

Core Banking SOA Solutions

- System z based IBM middleware and ISV solution components include WebSphere Process Server, MQ, CICS® Transaction Server, DB2 and Tivoli; Fidelity Information Systems, and ACI

Enterprise Payments Platform (EPP) powered By System z

- System z based IBM middleware and ISV solution components include WebSphere Process Server, Message Broker, MQ, DB2 and WebSphere Transformation Extender; ACI and Intercope.

Public Sector Solutions leveraging the value of System z10

Customer Needs

- Cut costs and increase operational efficiency
- Allow students access to their own data over the Internet
- Respond quickly to clients needs and changes in government policies

System z Value Proposition

- Flexible and resilient platform for student information systems and integrated case management across the enterprise
- Advanced security features for controlling system access and ensuring confidentiality

Informs Student Information System (SIS^{J2K})

- Web-based Student Information System developed by Information Management Specialist, Inc. (*Informs*)
- System z solution components include WebSphere Application Server and DB2. SIS^{J2K} can run on either the z/OS or Linux® operating Systems.

Integrated Case Management with Cúram Software

- Cúram Business Application Suite™, designed for social enterprises enables an integrated service delivery model
- System z solution components include z/OS, DB2, DB2 Content manager for z/OS, and MQ.
- Utah Department of Human Services implemented on mainframe to integrate service delivery and improve eligibility determination.


IBM
The Future Runs on System z

What's new in z/OS
z/OS V1.10 Preview

March 2008

IBM Systems

ZSP03082-USEN-00

Focused performance boost

Hardware Decimal Floating Point

- **Decimal arithmetic widely used in commercial and financial applications**
  - Computations often handled in software
  - Avoids rounding and other problems with binary/decimal conversions
- **On IBM System z9® delivered in millicode -** brought improved precision and function
- **On System z10 integrated on every core -** giving a performance boost to execution of decimal arithmetic
- **Growing industry support for hardware decimal floating point standardization**
  - Open standard definition led by IBM, endorsed by key ISVs including Microsoft® and SAP
  - Java BigDecimal, C#, XML, C/C++, GCC, DB2® V9, Enterprise PL/1, Assembler
- **z/OS V1.9 Hardware Decimal Floating Point support requires:**
  - High Level Assembler (all supported releases)
  - Enterprise PL/1
  - XL C/C++ with PTF
  - Debug tool (in support of C/C++, PL/1, and HLASM)
  - dbx (in support of C/ C++)
  - DB2 9 for z/OS (allows you to define DPF data in DB2)

Bringing high performance computing benefits to commercial workloads

Availability – Sysplex improvements*

Announced/Previewed with z/OS with z/OS V1.10

- **Simplification**
  - XCF/ XES health checks promotes sysplex 'best practices'
  - HCM enables you to share configuration packages across sysplex
  - z/OS Communications Server - New support to help you coordinate LU name assignments among TN3270 servers in sysplex
  - Planned: A z/OS Management Facility for sysplex management support *
- **Performance/ Availability**
  - Support for InfiniBand® Coupling links
  - Intelligent WLM XCF signaling
  - Optimized XCF/ XES CF locking requests
  - Consoles enhancements – Improved console serialization (and up to 99 active MCS, SMCS, and subsystem consoles per system in a sysplex)
  - Reduced potential of RACF® database error
  - Potential to avoid IPL with z/OS UNIX System Services sysplex wide root
  - Reduced latency with SFM Auto IPL trigger
  - Improved GRS migration
  - Load balancing advisor support of subplexes
  - Shorter wait for DFSMShsm CDS backup

Scalability!
Up to 64 processors per server (z10 EC) and up to 32 servers in a sysplex = up to 2,048 engines!

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zAAPs and zIIPs

More application technology exploiters, more benefits

- **zAAPs and zIIPs are designed to help implement new application technologies on System z and to integrate them with core applications and data.**
  - Java eligible for zAAP– lowering the cost of computing for WebSphere Application Server and other Java technology-based applications
  - Centralized data serving eligible for zIIP - workloads such as BI, ERP, and CRM applications running on distributed servers with remote connectivity to DB2 V8
  - Network encryption on zIIP - zIIP becomes an IPSec encryption engine helpful in creating highly secure connections in an enterprise (with z/OS V1.8)

Available 6/07

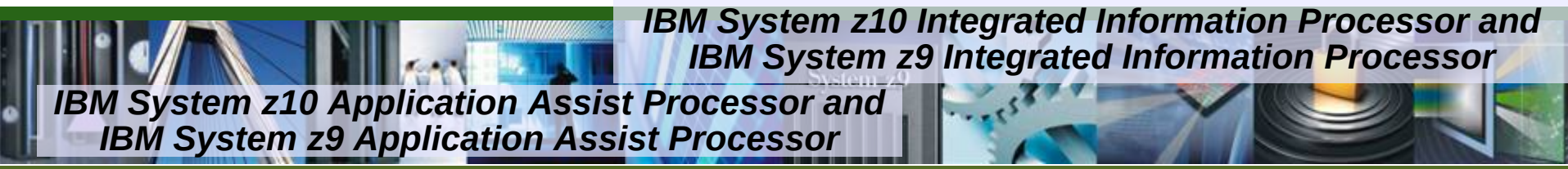
  - z/OS XML System Services eligible for zAAP and zIIP - helps make hosting XML data and transactions on System z more attractive. DB2 9, Enterprise Cobol V4.1, and XML Toolkit for z/OS V1.9 are first IBM exploiters (introduced with z/OS V1.9 and rolled back to V1.8 and V1.7)

Available starting 9/07

  - Remote mirror on zIIP – zIIP assisted z/OS Global Mirror function (zGM, formerly XRC) Most of the System Data Mover (SDM) processing eligible for zIIP offload. Helps reduce server utilization at recovery site (with z/OS V1.9)

new!

  - ISV exploitation of zIIPs



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System z and z/OS Security

- ISS
- Global Services: Security & Privacy Consulting
- IBM Services: Ethical Hacking

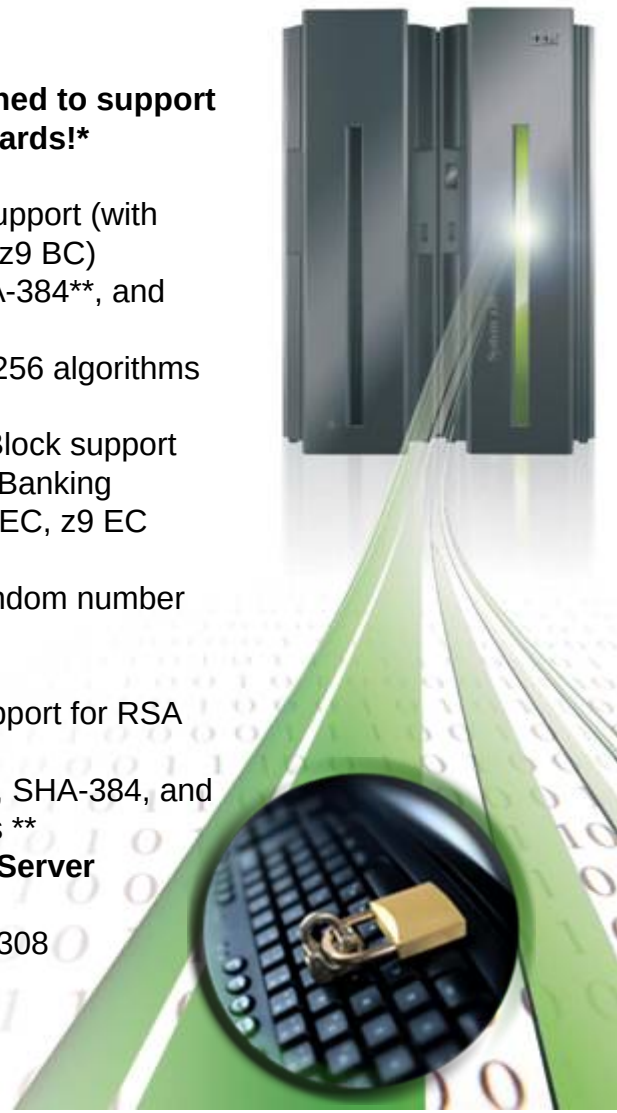
- z/OS CommServer (IDS)
- System zAlerts
- SMF & Tivoli zSecure
- z/OS Healthchecker
- DB2 Audit Tool

- Robust Encryption Infrastructure
- Tape encryption
- DB2 & IMS Encryption & Test Tools
- z/OS Encryption Facility V1.2 (Jan 2007)
- Network encryption: SSL/TLS, IPSec, AT-TLS, OpenSSH, NSS
- ISO Format 3 Pin Block (1.9)

- System Integrity
- RACF MLS
- z/OS PKI Services
- Tivoli Identity Manager (TIM)
- Tivoli Federated Identity Manager (TAM)
- Tivoli zSecure

- EAL 5 for z9 LPAR
- EAL(1.8) & FIPS Certifications
- Linux on System z as DMZ
- z/OS CommServer Security

- **With z/OS V1.10, designed to support industry security standards!***
- **ICSF**
  - 4096-bit RSA key support (with z10 EC, z9 EC and z9 BC)
  - IBM: SHA-224, SHA-384**, and SHA-512**
  - AES-192 and AES-256 algorithms **
  - ISO Format-3 PIN Block support (meets ISO 9564-1 Banking standard) (with z10 EC, z9 EC and z9 BC)
  - ALSO in ICSF - Random number callable service
- **System SSL**
  - Utilize hardware support for RSA digital signature **
  - SHA-224, SHA-256, SHA-384, and SHA-512 algorithms **
- **z/OS Communications Server**
  - IPV6 standards RFCs 4301-4305, 4308



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**With appropriate HW

Centralized policy-based networking

z/OS Communications Server

- **Application Transparent -TLS (1.7) and IPSec (1.7)**
  - Simplified development and maintenance of security-rich Web apps – centralized configuration of AT-TLS and IPSec can help you secure the network data with no application modification.
  - AT-TLS for FTP and TN-3270 (1.9) AT-TLS for SASP Load balancing advisor (1.10)*
- **Quality of Services & Intrusion Detection Services (1.8)**
  - Quality of Service policies help maintain network traffic prioritization
  - IDS policies help you detect and report suspicious network activities
- **Network Security Services (NSS) (1.9)**
  - Provides single, centralized certificate storage, monitoring, and managing services for IPSec cross-systems or cross-sysplex
  - NSS for WebSphere DataPower appliance ID authentication and access checks (1.10)*
- **TCP/IP Policy-Based Routing (PBR) (1.9)**
  - Outbound network traffic can be separated by application needs
  - Allows TCP/IP stack to make routing decisions based on job name, ports, protocol (TCP or UDP), source IP address, NetAccess security zone, and security label
- **Defensive filtering (1.10)***
  - Defensive filters (temporary security policies) can be quickly deployed to defeat network attacks

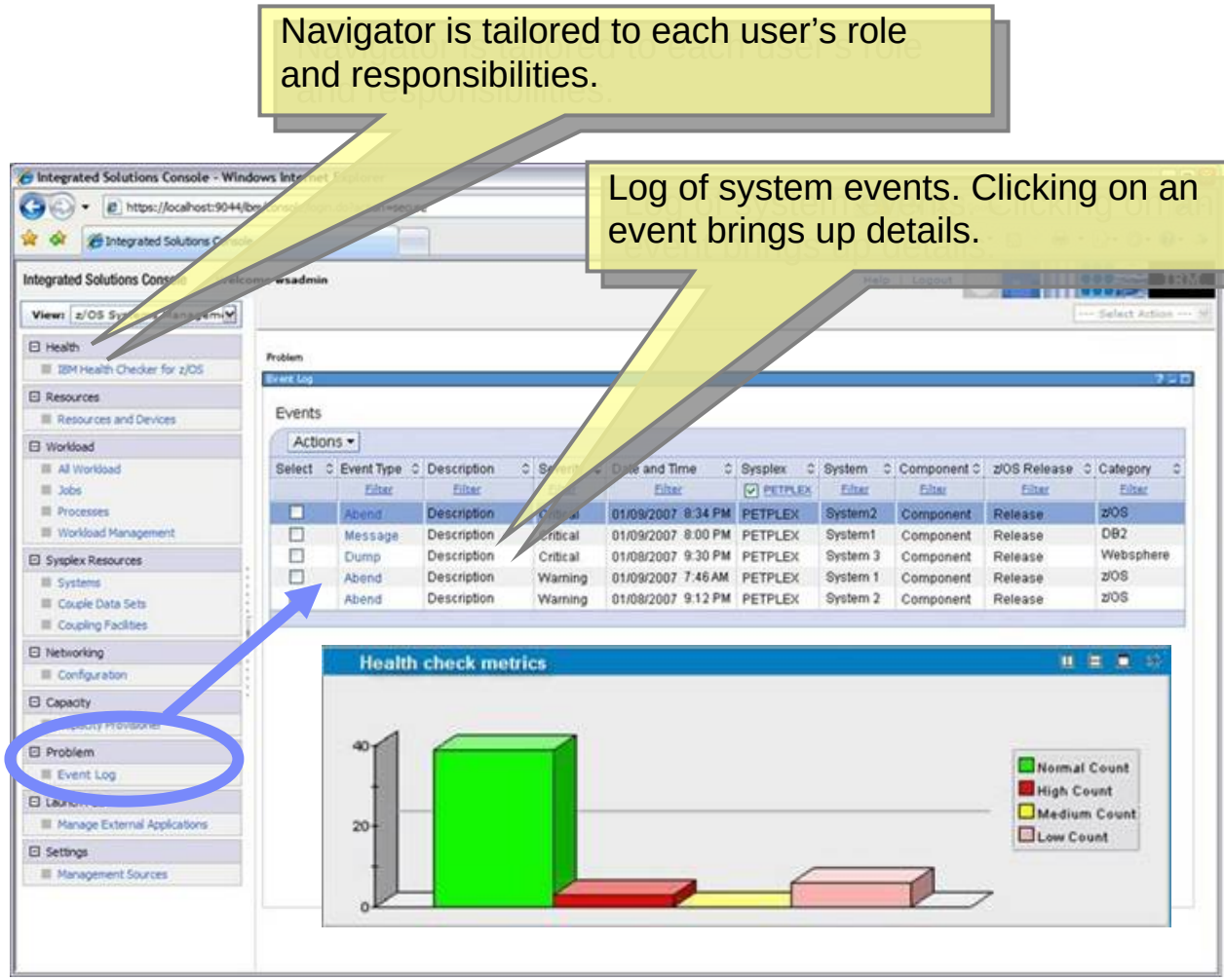
z/OS Simplifying operations and programming*
Announced/Previewed with z/OS with z/OS V1.10

- **IBM Health Checker for z/OS**
  - Save check data and browse historical Health Check output (from log stream) – helps allow you or check application to view historical values returned by various health checks, can help establish predictive diagnosis capabilities.
  - New and/or updated checks for SFM, z/OS UNIX System Services, RACF, CINET, XCF/XES.
- **Configuration Assistant for z/OS Communications Server**
  - The Configuration Assistant plans to import existing policy text files into the GUI. This allows the CA to learn of and absorb manual changes that the system administrator may have made to the policy configuration text files since the last time they were exported.
- **Hardware Configuration Manager – Need help with I/O management?**
  - Improved saved views.
  - Support for configuration packages similar to those supported by HCD
  - Support for importing and exporting I/O configuration data, similar to that provided by HCD
- **Additional improvements to**
  - **Language Environment –** new parmlib syntax checks
  - **ISPF –** allows you to specify multiple targets for move and copy line commands, and more!
  - **New GRS ENQ monitor –** to aid in identifying/optimizing resources
  - **Logger –** enhancement to aid in problem determination of log stream data sets.
  - **SMP/E** – simplification of PSP bucket implementation
  - **z/OS Communications Server** - New functions for network management and improvements to APIs
  - **DFSMShsm** – many improvements

A z/OS Management Facility *

A Web-browser based management console for z/OS

- **Designed to provide the infrastructure, services, and interfaces to support a browser based graphical user interface needed to support a management console for z/OS.**
- **This initial release of the z/OS Management Facility plans to provide job and process management and Parallel Sysplex management support.**



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z/OS optimization and management*

Announced/Previewed with z/OS with z/OS V1.10

- **Policy based Capacity Provisioning for System z10**
  - A new Capacity Provisioning Manager planned for z/OS V1.10 (and z/OS V1.9 with PTF) plans to monitor System z10 servers and manage z/OS 1.9 and 1.10 systems and add /remove temporary capacity automatically.
  - In the future, z/OS will allow authorized applications to query, change, and perform basic operational procedures against the installed System z hardware base - efficiently deploying server resources when needed*
- **z/OS Workload Manager:**
  - Improved Contention Management
    - Longer promotion, will now promote resource holders to the priority of the highest-priority waiter
  - WLM to manage more address spaces in service class SYSTEM:
    - XCFAS, GRS, SMSPDSE, SMSPDSE1, CONSOLE, IEFSCHAS, IXGLOGR, SMF, and CATALOG (in addition to *MASTER* and WLM)
  - More Performance Block (PB) delays
    - Up to 15 from 5
    - Applications can specify names to replace the default names
  - zIIP CPU management = Manage zIIPs like CPs and zAAPs

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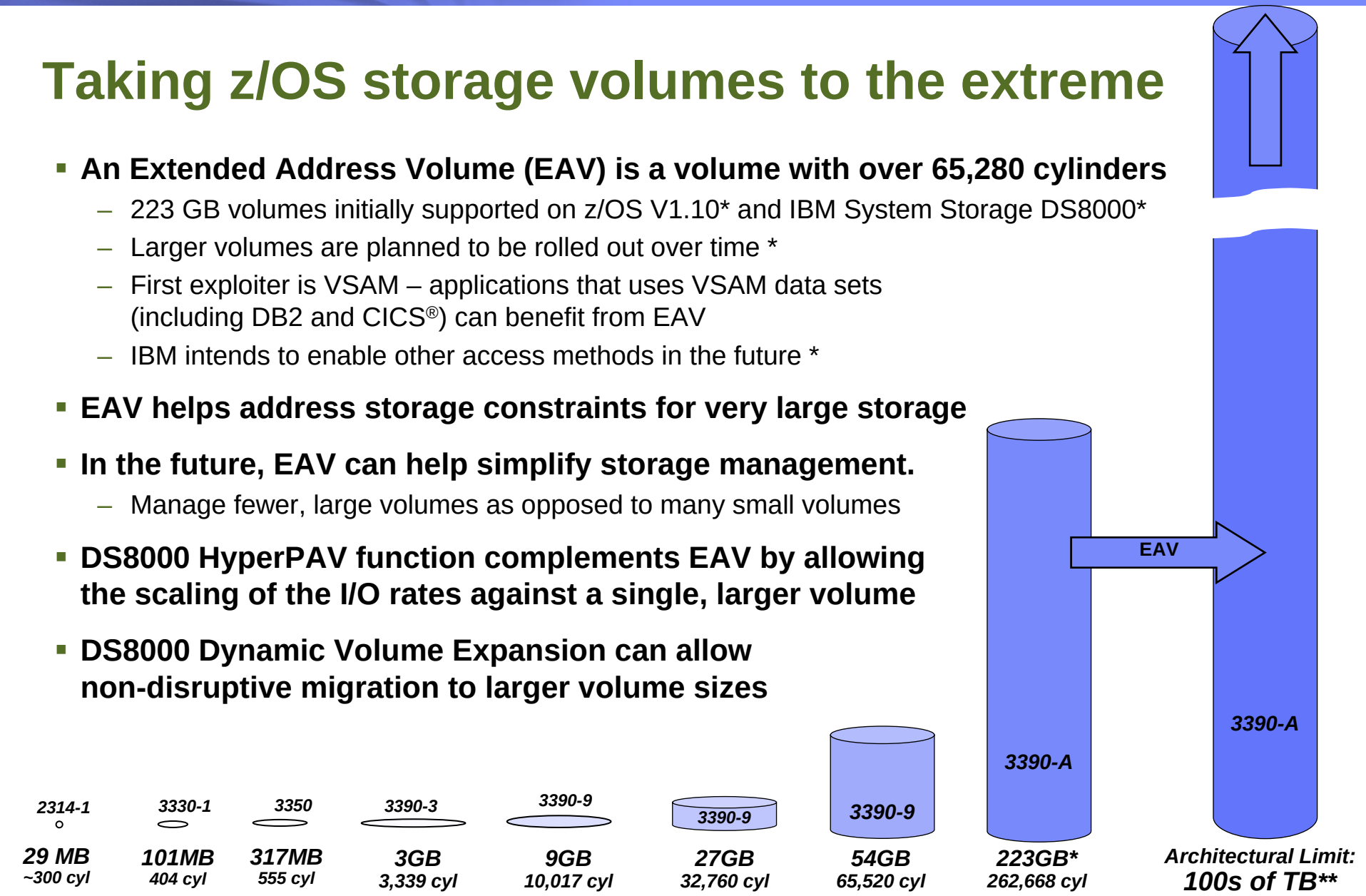
Taking z/OS storage volumes to the extreme

- **An Extended Address Volume (EAV) is a volume with over 65,280 cylinders**
  - 223 GB volumes initially supported on z/OS V1.10* and IBM System Storage DS8000*
  - Larger volumes are planned to be rolled out over time *
  - First exploiter is VSAM – applications that uses VSAM data sets (including DB2 and CICS®) can benefit from EAV
  - IBM intends to enable other access methods in the future *
- **EAV helps address storage constraints for very large storage**
- **In the future, EAV can help simplify storage management.**
  - Manage fewer, large volumes as opposed to many small volumes
- **DS8000 HyperPAV function complements EAV by allowing the scaling of the I/O rates against a single, larger volume**
- **DS8000 Dynamic Volume Expansion can allow non-disruptive migration to larger volume sizes**



* When available z/OS V1.10 GA planned to be 3Q 2008, DS8000 function planned 2H 2008
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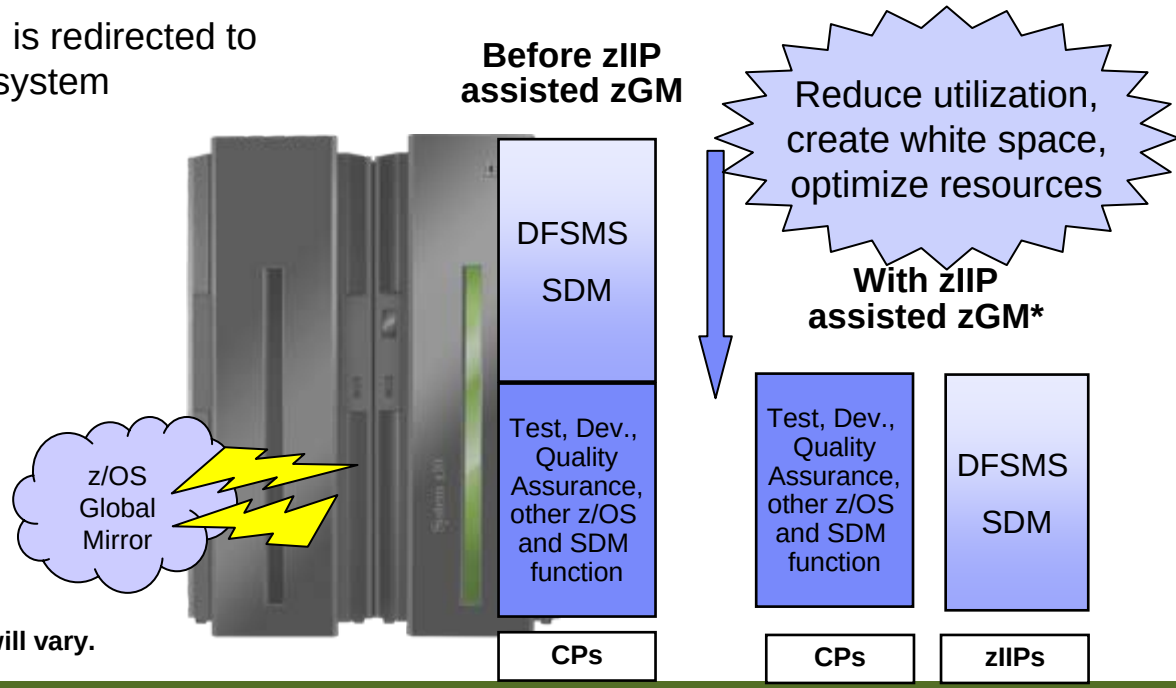
zIIP Assisted z/OS Global Mirror: a cost effective mirroring solution

- **z/OS Global Mirror (formerly Extended Remote Copy, XRC) is enabled for the zIIP**
  - z/OS DFSMS™ allows a part of System Data Mover (SDM) processing to be eligible for the zIIPs
  - Most SDM processing associated with zGM/XRC is made eligible to run on the zIIP.

- **zIIP assisted z/OS Global Mirror function, can help provide better price performance and improved utilization of resources at the mirrored site.**
  - A part of DFSMS SDM processing is redirected to a zIIP processor which can lower system utilization at the mirrored site.

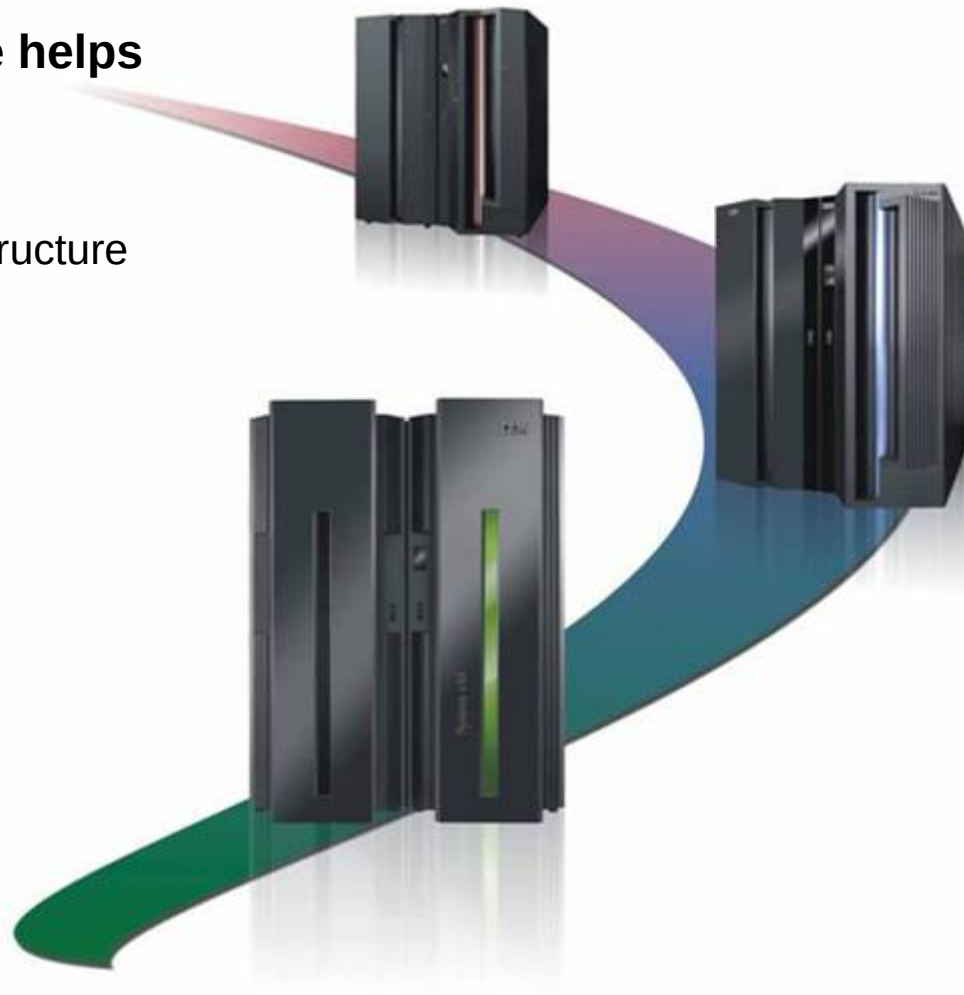
- **Available with:**
  - z/OS V1.10 (when available), or z/OS V1.9 and V1.8 with PTF for APAR OA23174
  - IBM System Storage DS8000, or any storage controller supporting z/OS Global Mirror
  - IBM System z9 or z10 server

* **For illustrative purposes only, your results will vary.**



Thank you!

- **IBM's commitment to the mainframe helps deliver:**
  - Extreme scalability, and availability
  - Reduced costs and simplified IT infrastructure
  - High performance and energy efficient technologies
  - a resilient and security rich system



Backup

IBM Systems