

System z Innovations for a Dynamic Infrastructure

Dr. Klaus Goebel
kgoebel@de.ibm.com
IBM Research & Development Lab
Boeblingen



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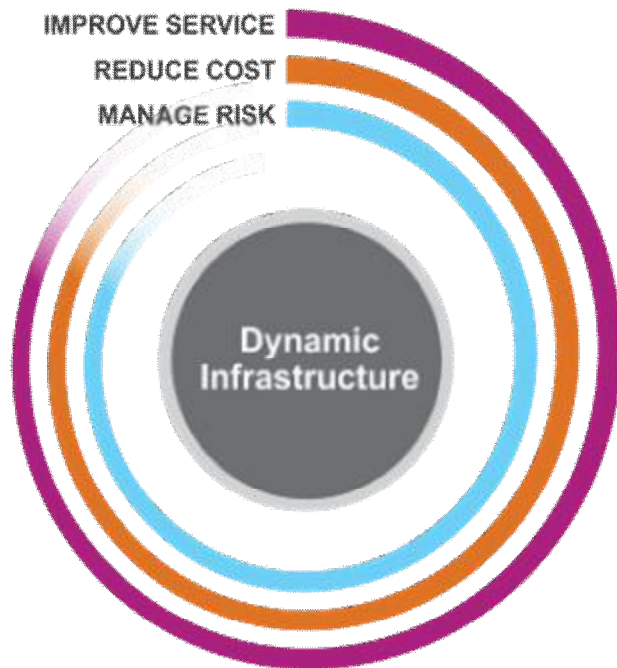
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A Dynamic Infrastructure is needed to address today's needs and to lay the foundation for the future.



*Delivering superior business and IT services
with agility and speed*

● IMPROVE SERVICE

High availability and quality of existing services today ...

... *Providing for real-time, dynamic access to innovative new services.*

● REDUCE COST

Containing operational cost and complexity today ...

... *Achieving breakthrough productivity gains tomorrow.*

● MANAGE RISK

Addressing today's security, resiliency, and compliance challenges ...

... *Preparing for the new risks of a more connected and collaborative world.*

Agenda

→ § Highlights of DI Announcement for System z

- ▶ Cognos BI 8 for Linux on System z
- ▶ z/VM Roadmap
- ▶ z/VSE V4.2.1

§ System z Trends & Directions

§ Summary



System z Announcement Overview – April 28, 2009



What's New	Reduce Cost	Improve Service	Manage Risk
EC and BC enhancements* <ul style="list-style-type: none"> WWPN & Infiniband SOD fulfillment deliver improved operational efficiencies EAL 5 certification on EC STP and CBU improve PD and recovery time z10 BC Memory Enhancements support larger scale consolidation 	X	X	X
Energy Efficiency SOD	X		
z/VSE V4.2.1		X	X
IBM Systems Director v6.2		X	
ACI Payments; ACI PRM and Integrated Risk Mgmt			X
Cognos BI 8.4 - Go!Mobile, Go!Dashboards	X	X	
GTS Services		X	X
System z Trends and Directions (roadmaps)	X	X	X
System z Cloud proof points	X	X	
Novell Mono Extension	X	X	



z/OS



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Business Intelligence with System z

New announcements to deliver enhanced value



Designed to simplify the delivery of warehousing solutions on System z

IBM InfoSphere Warehouse on System z

Enables the business to make more informed, faster, and more aligned decisions

IBM Cognos 8 BI for Linux on System z v4



Deliver information to business users whenever and wherever they need it

IBM Cognos 8 Go! Mobile for Linux on System z

Delivers dynamic and customizable information with drag-and-drop

IBM Cognos 8 Go! Dashboard for Linux on System z

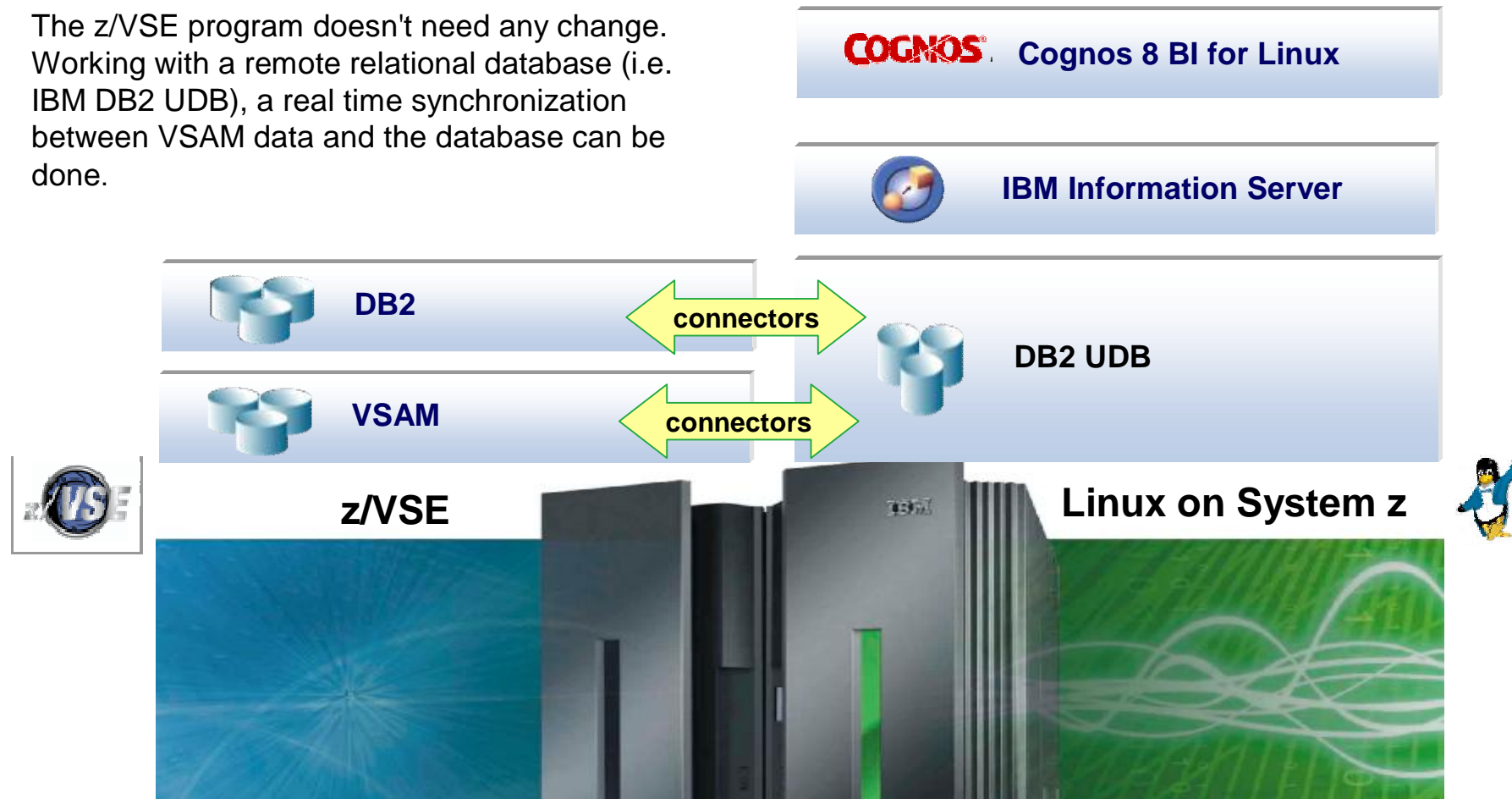
IBM Cognos 8 BI for Linux on System z w/ z/VSE

Remember the live demo given at GSE Leipzig 2008 ?



Connectors like *VSAM Redirector* enable a z/VSE application to store data on a remote system.

The z/VSE program doesn't need any change. Working with a remote relational database (i.e. IBM DB2 UDB), a real time synchronization between VSAM data and the database can be done.



IBM Cognos 8 BI for Linux on System z V4

Product Capabilities

- Adhoc query, reporting and analysis (Query Studio, Report Studio & Analysis Studio)
- Dashboards and charting (Cognos Connection & Report Viewer)
- Event management (Event Studio)
- Integration with Microsoft Office (Go! Office and CAFÉ)
- Cube building (Transformer)
 - **Lineage**
 - **Business Glossary Integration**
 - **Go! Dashboard**
 - **GO! Mobile**
 - **SDK/LDK**

8v4 Conformance

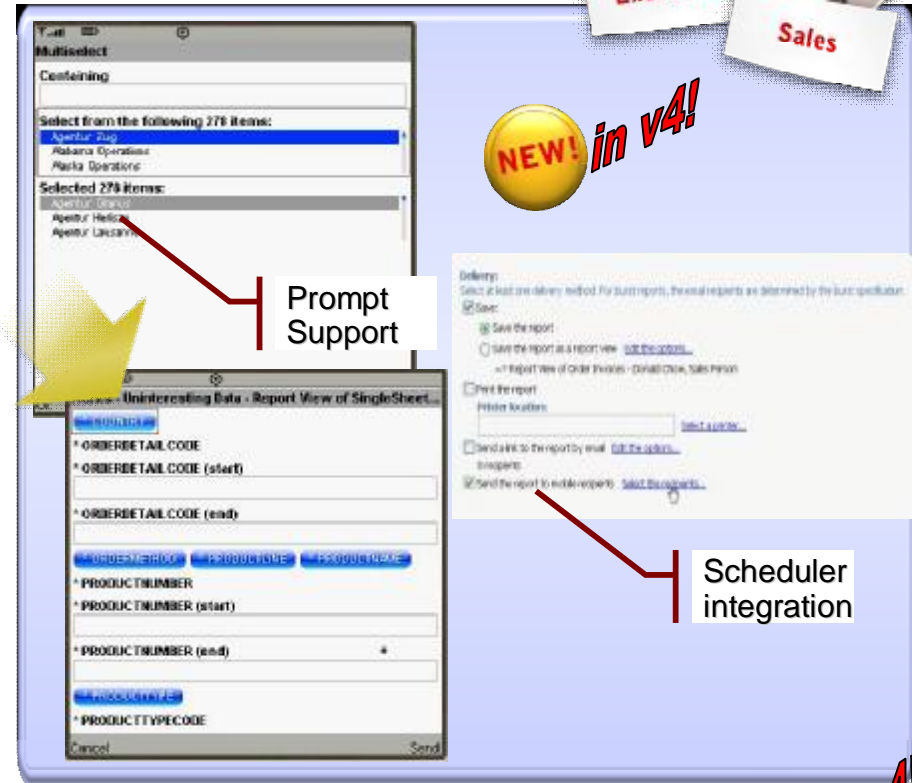
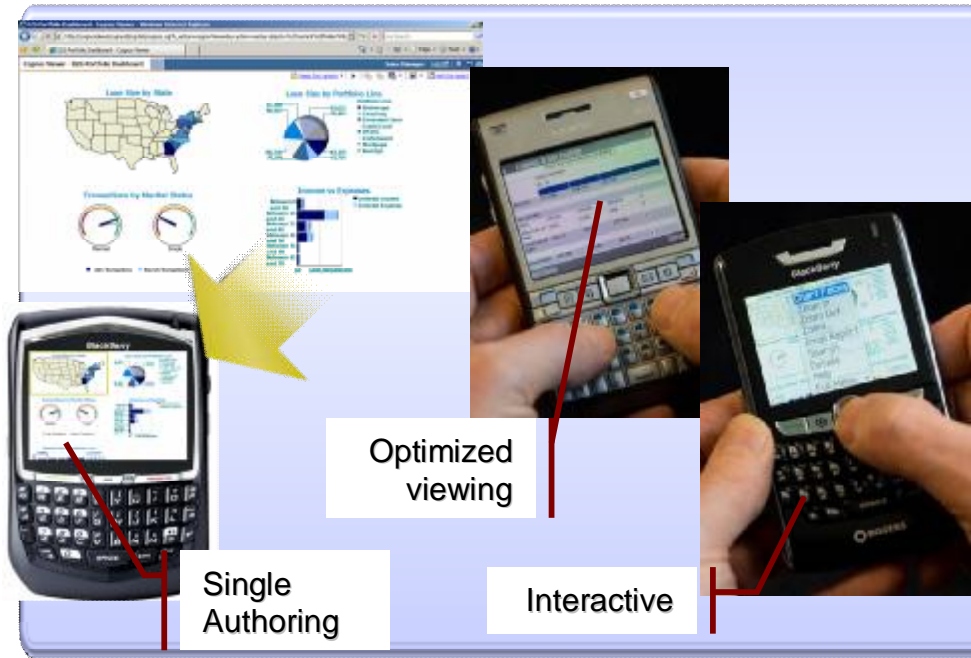
- | | |
|---------------------|---|
| Operating System: | •Novell SuSE SLES 10 SP1
• RedHat RHEL 5 |
| Database Support: | •DB2 z/OS 8 and 9
•DB2 LUW 9.5
• Oracle 10R2, 11 |
| Application Server: | •Apache Tomcat
• WebSphere 6.1.0.17 |
| Content Store: | •Derby on Linux for System z
•DB2 LUW 9.5
• Oracle 10g, Oracle 11
• DB2 z/OS 8 and 9 |
| Directory Server: | •IBM Tivoli Directory Server 6.0
•LDAP version 3 compliant server |
| Web Server: | •IBM HTTP server 6.1 |

Not included in this initial release are Scorecards (Metric Studio), and integration with enterprise search (Go! Search)

For latest updates at GA, please see supported environment on Cognos Support (support.cognos.com)



IBM Cognos 8 Go! Mobile for Linux on System z



- § Delivers IBM Cognos 8 BI content to mobile users
- § Leverages the Cognos 8 platform, including security
- § Rich native client, purpose-built

- § Enhanced prompt support
- § Location aware content
- § Fully integrated with IBM Cognos 8 scheduler – including the ability to burst reports to multiple mobile users
- § Support for IBM Cognos 8 BI on Linux on System z



IBM Cognos 8 Go! Dashboard for Linux on System z

Access to reports or report 'parts'

Personalization options enable end user to customize look and feel

Flash graphics deliver rich charts and enable re-sorts, filter etc

- § Personalized – self assemble with drag and drop interface
- § Dynamic – Flash enables dynamic interaction to get better insight
- § Trusted content – Cognos 8 full report or report parts

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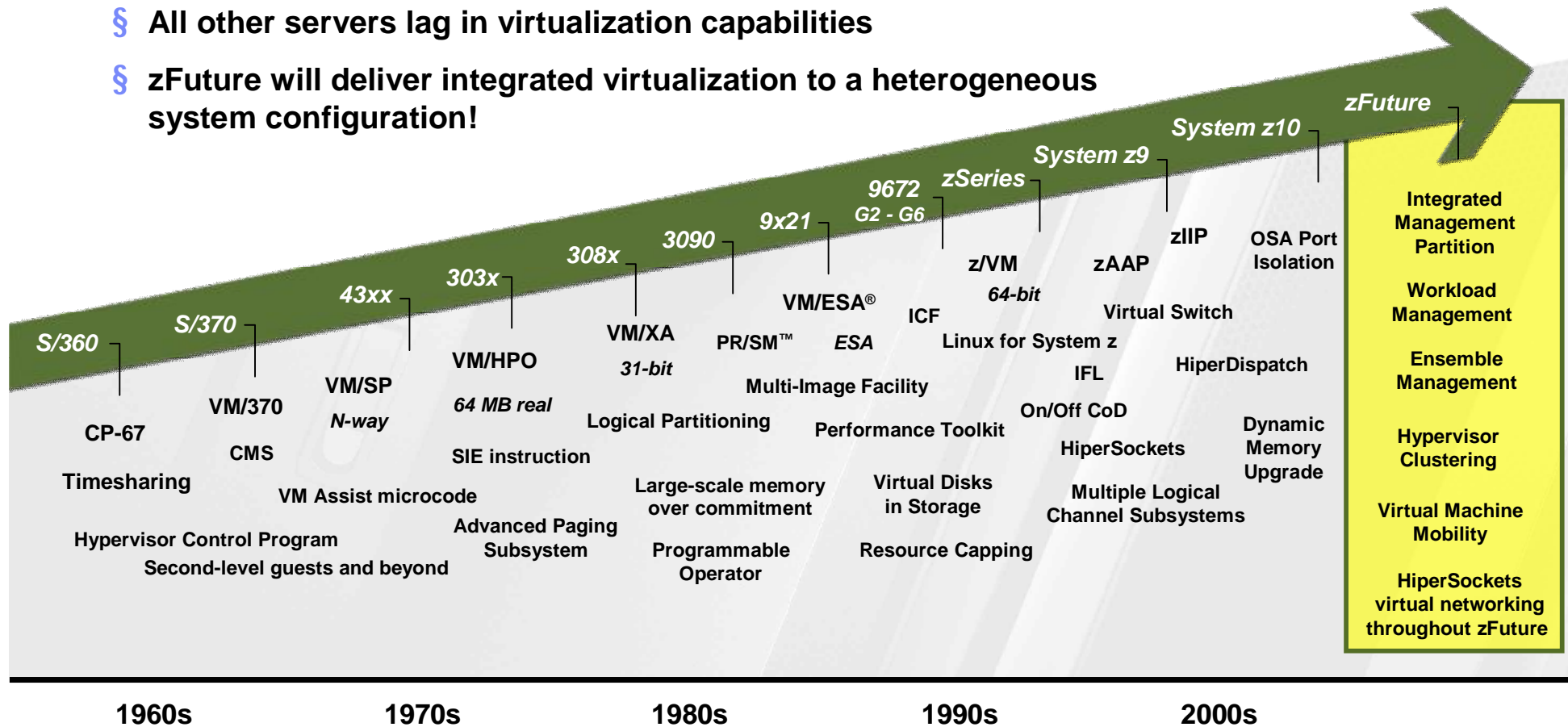
§ System z Trends & Directions

§ Summary



zFuture: The next Leap in Virtualization

- § Virtualization was pioneered and perfected on IBM mainframes
- § System z continues to set the gold standard in virtualization
- § All other servers lag in virtualization capabilities
- § zFuture will deliver integrated virtualization to a heterogeneous system configuration!



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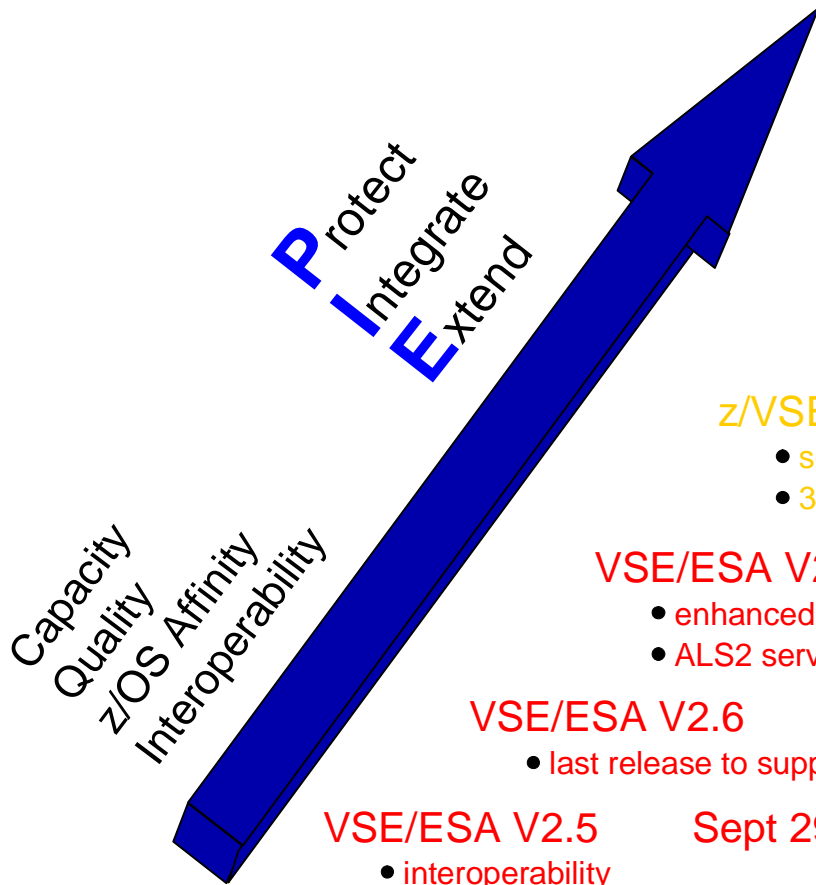
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§ Summary



z/VSE Evolution



z/VSE V4.2.1 July 17, 2009

- Delivering on SoD
- Additional enhancements

z/VSE V4.2 Oct 17, 2008

- More tasks, PAV, LDAP Client, SVC
- SoD for CICS/VSE, EGL, WMQ



z/VSE V4.1 March 16, 2007

- z/Architecture only / 64-bit real addr
- MWLC full & sub-cap pricing

z/VSE V3.1* March 4, 2005

- selected zSeries features, FCP/SCSI
- 31-bit mode only

VSE/ESA V2.7 March 14, 2003

- enhanced interoperability
- ALS2 servers only

VSE/ESA V2.6 Dec 14, 2001

- last release to support pre-G5 servers

VSE/ESA V2.5 Sept 29, 2000

- interoperability
- e-business connectors

VSE/ESA V2.4 June 25, 1999

- CICS Transaction Server for VSE/ESA
- e-business

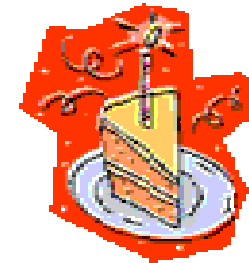
•Note: z/VSE V3 can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE V3 is designed to support selected features of IBM System z hardware.

z/VSE V4.2 Statement of Direction (SoD)*



§ Delivering on the SoD:

- ▶ New Enterprise Generation Language (EGL) extension to Rational Business Developer
- ▶ New version of WebSphere MQ for z/VSE



§ Reemphasizing the SoD:

- ▶ z/VSE V4.2 will be the last release to offer CICS/VSE V2.3
 - CICS/VSE V2.3 and DL/I V1.10 will not be included in any future version or release of z/VSE

§ For planning purposes:

- ▶ Expect any future version or release of z/VSE not sooner than second half of 2010

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z/VSE V4.2 Additional Enhancements

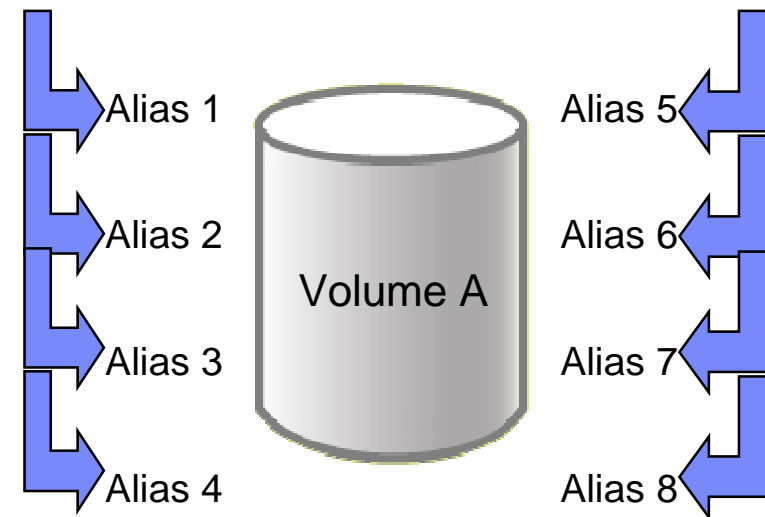
Planned availability: July 17, 2009



- § **Parallel Access Volume (PAV)** feature of IBM System Storage series DS8000 and DS6000
 - ▶ I/O performance improvements
- § **IBM DS8000 Full Disk Encryption**
 - ▶ Highest security for business-critical data
- § **IBM Virtualization Engine TS7700 Release 1.5** including support for the **TS7720 virtual tape system**
 - ▶ Support includes disk-only virtual tape systems with up to 70 TB of disk cache
- § **Encryption Facility for z/VSE V1.2** supporting the **OpenPGP** format
 - ▶ Flexible and highly secure data exchange with business partners and peers
- § **IBM Rational COBOL Runtime** for z/VSE V7.5
 - ▶ Execute modern **Enterprise Generation Language (EGL)** developed with **Rational Business Developer**
- § **IBM WebSphere MQ** for z/VSE V3.0
 - ▶ Improved interoperability on distributed and mainframe platforms

Parallel Access Volume (PAV)

- § **Allows a z/VSE V4.2 host to access a single ECKD disk volume with multiple concurrent requests**
 - ▶ multiple addresses (alias) to a single logical device
 - ▶ enables more than one I/O operation to a single logical device
 - ▶ may reduce device queue delays
 - ▶ volume sharing – not file sharing
- § **PAV is an optional, licensed feature of IBM DS8000 and DS6000**
 - ▶ no changes needed for application programs
- § **Examples of PAV candidates**
 - ▶ VSAM catalogs, shared clusters, libraries
 - ▶ spool files, work files, log files
- § **Potential benefits include possibility of improved performance/throughput**
 - ▶ multiple jobs, multiple partitions, CICS
 - ▶ gains are *highly dependent on workload*



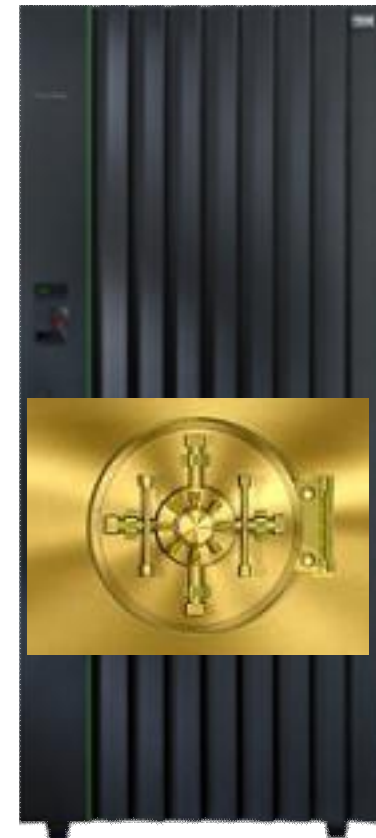
Full Disk Encryption on DS8000

§ Encrypted data on DS8000 series storage controller

- ▶ Capability to install encrypted 146 GB, 300 GB, and 450 GB 15,000 rpm Fibre Channel drives
- ▶ Full Disk Encryption drive sets are optional to DS8000 series
- ▶ Available only as plant order
- ▶ Transparent to applications
- ▶ Can be used by z/VSE V3.1 or later

§ Helps to mitigate the threat of

- ▶ Theft
- ▶ Mis-management
- ▶ Loss of critical data



IBM System Storage TS7700 Virtualization Engine Release 1.5

§ TS7720 is a new member of IBM's family of virtualization products

- ▶ Virtual tape system designed for use in a mainframe environment
- ▶ Tape Volume Cache capacity up to 70 TB but without a physical tape library for back-end processing

§ TS1130 Model E06 and Model EU6 Tape Drive support

The TS7700 Virtualization Engine tape solution is well suited for

- ▶ Disaster recovery
- ▶ Data consolidation
- ▶ Data protection
- ▶ Data sharing



Encryption Facility for z/VSE V1.2 (EF)

§ OpenPGP

- ▶ Complies with selected OpenPGP standard (RFC 4880) requirements
- ▶ Encryption of SAM files, VSE/VSAM files, VSE library members, tapes, or virtual tapes

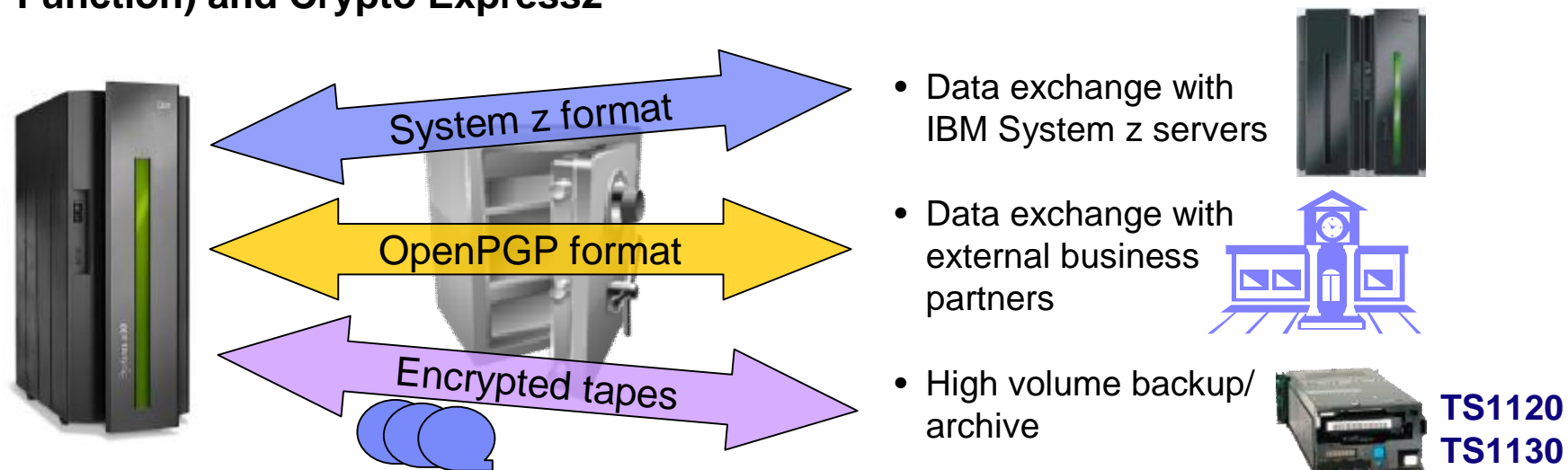
§ Choice of two formats:

- ▶ System z format (introduced with EF for z/VSE V1.1) - compatible with EF for z/OS
- ▶ OpenPGP - compatible with other products that are OpenPGP-compliant

§ EF is an optional priced feature for VSE Central Functions V8

- ▶ Requires z/VSE V4.1 or later
- ▶ MWLC-eligible

§ Exploits hardware encryption technology: CPACF (CP Assist for Cryptographic Function) and Crypto Express2



Modern Development Environment with RDB

§ Continued 4GL support for z/VSE is available

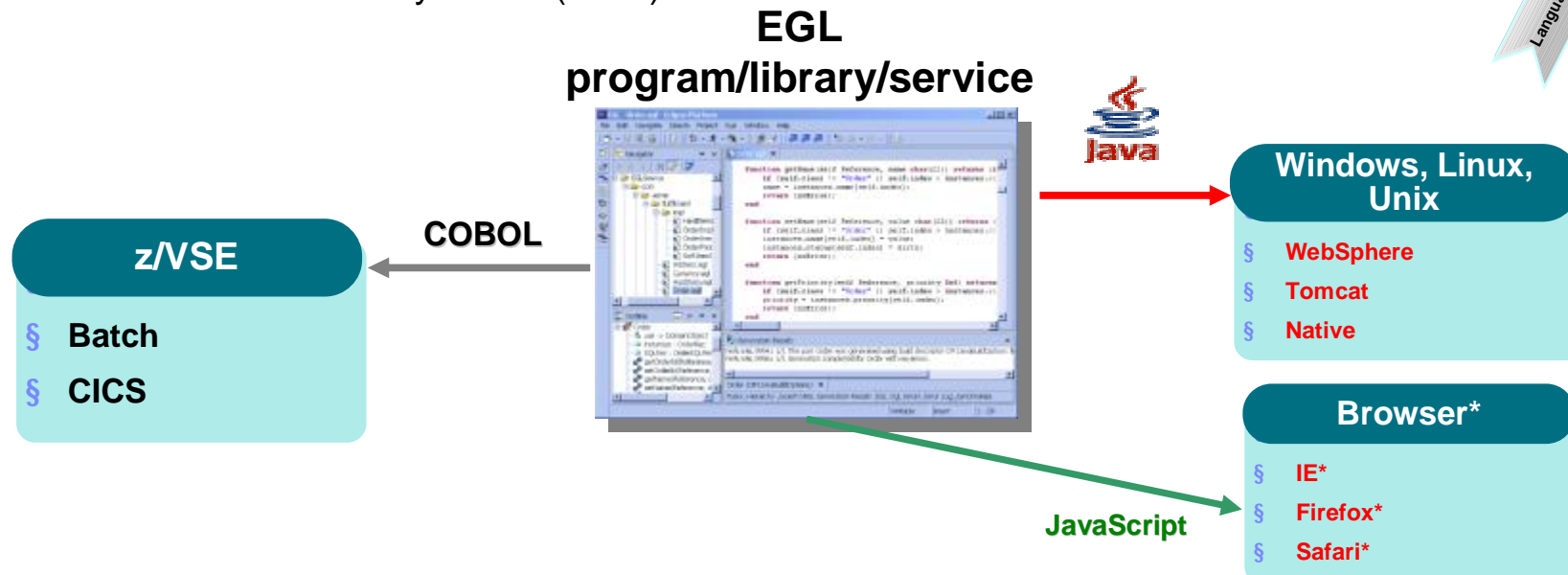
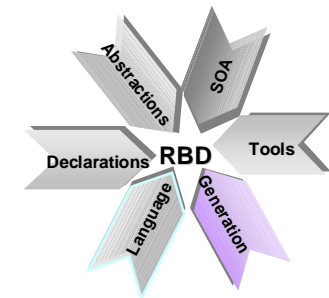
1. z/VSE host component: **IBM Rational COBOL Runtime for z/VSE V7.5**

▶ Replaces the VisualAge Generator Server for VSE

2. PC tool for development: **IBM Rational Business Developer (RBD) V7.5.1** and the associated components

▶ IBM Rational Business Developer Extension for z/VSE V7.5.1

- COBOL Code generation for z/VSE
- Generation for System z (z/OS)



IBM WebSphere MQ for z/VSE V3.0

§ Enhanced manageability, currency, and performance

§ Improved interoperability on both distributed and mainframe platforms

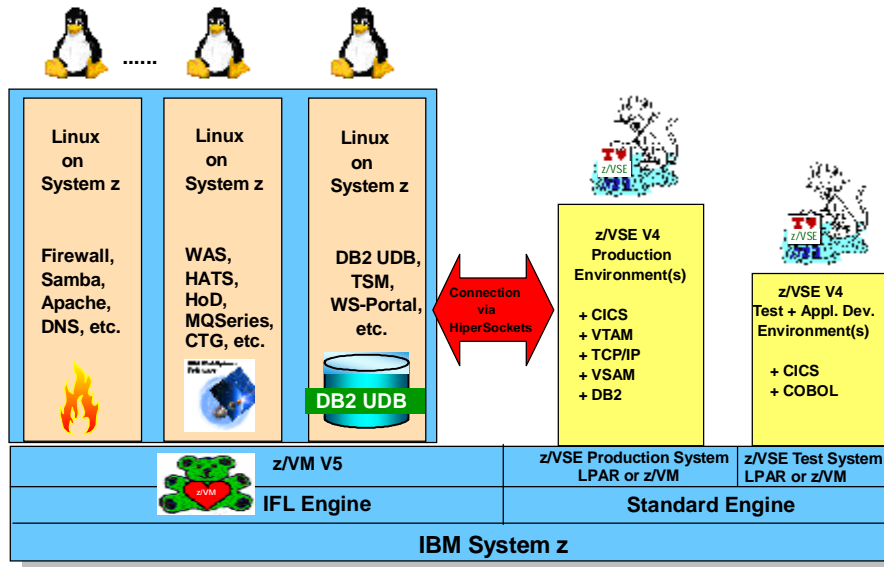
- ▶ API crossing exits – supports a chain of up to 8 API exits
- ▶ Chained message exit – supports a chain of up to 8 send, receive, and message exits
- ▶ WebSphere MQ Explorer interface enhanced to support remote administration
- ▶ Channel batch interval – performance in batch processing
- ▶ Miscellaneous performance enhancements: MQI operation, reduced logic paths and use of resources for improved message throughput
- ▶ Server and requester channels – allows accumulation of messages until needed by queue manager

IBM WebSphere MQ for

- Reliable application connectivity
- SOA connectivity with a proven messaging backbone
- Universal, multipurpose data transport



z/VSE V4.2.1 - Delivering on our Strategy



§ Protect

- ▶ PAV
- ▶ DS8000 Full Disk Encryption
- ▶ TS7720 support

§ Integrate

- ▶ Rational Business Developer
- ▶ Rational COBOL Runtime
- ▶ WebSphere MQ

§ Extend

- ▶ EF with OpenPGP



Agenda

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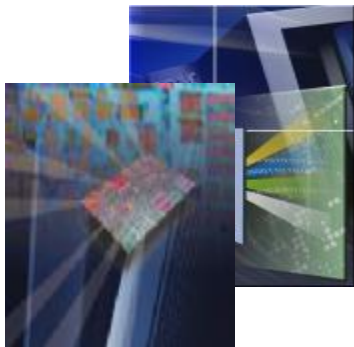
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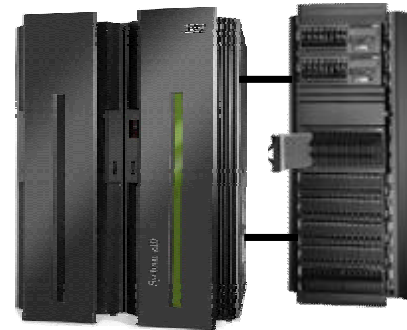
System z Technology Roadmap to deliver Client Value



Specialty Engines



System z10
The worlds most powerful enterprise computing platform



Integrated or network attached Accelerators
Enable new solutions with optimal efficiency, performance and service and cost



The next evolution of IBM Mainframe computers
Extend mainframe qualities to heterogeneous platforms within a Dynamic Infrastructure to support Business Critical Applications

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The Road ahead for Dynamic Infrastructure with z

Our goal is to extend mainframe qualities to heterogeneous platforms within a Dynamic Infrastructure to support business critical applications.

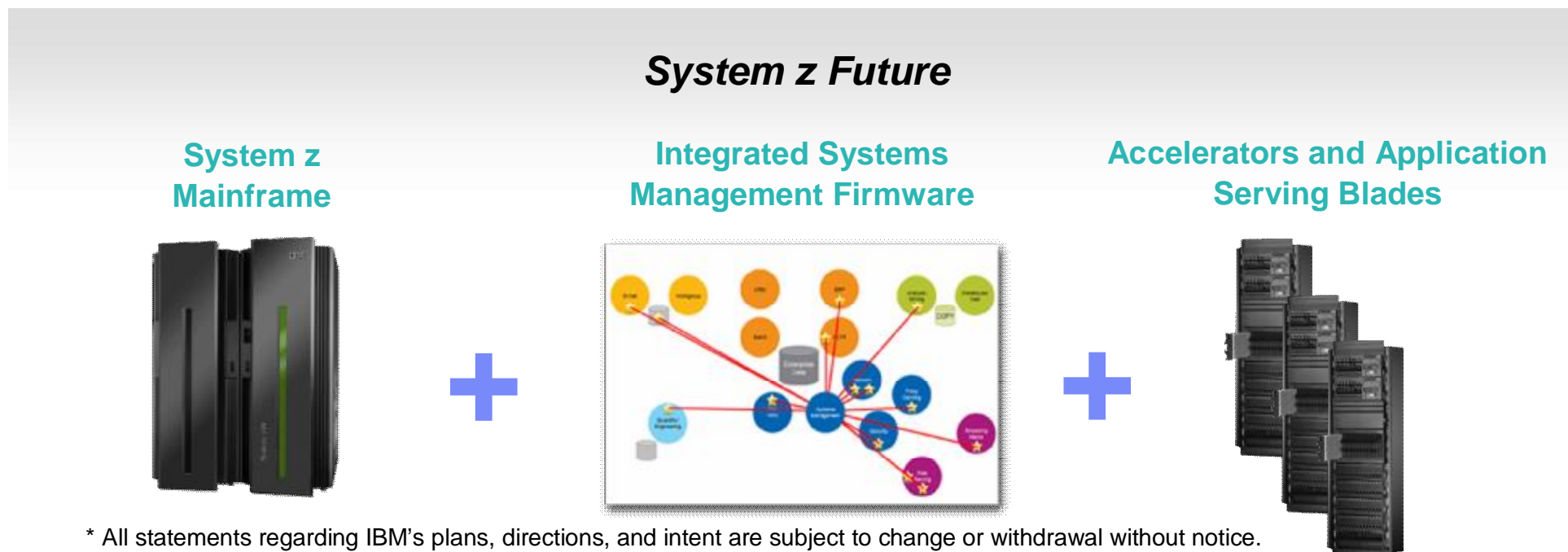


- § End-to-End Systems Management
- § Policy based Automation across the Applications Stack
- § Mainframe Security
- § Application Resiliency
- § Consolidated Disaster Recovery
- § Improved Economies of Scale and Efficiency

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Extending System z Management and QoS to non-z Technologies

- § A single management and policy framework across web serving, transaction, and database to lower the cost of enterprise computing
- § Mainframe QoS characteristics will be extended to acceleration appliances and application servers to manage risk
- § The dynamic resource management of the mainframe is extended to all devices within a multi-tier architecture to improve service



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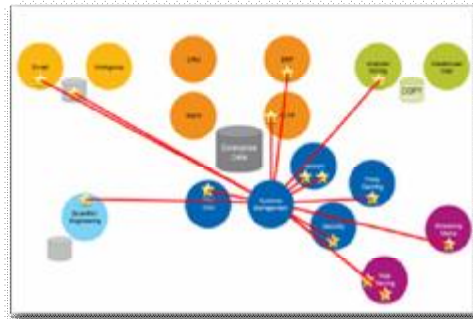
System z Ensemble

System z Future

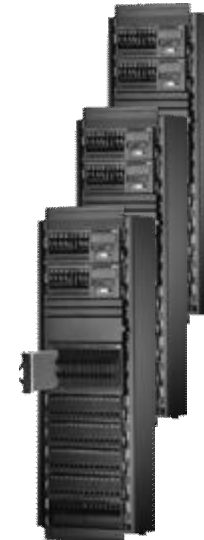
System z Mainframe



Integrated Systems Management firmware



Accelerators



- § Extend and accelerate System z workloads
- § Lower cost per transaction while improving application response time for CPU intensive applications

Application Serving Blades

- § Logical device integration between System z resources and application serving commodity devices
- § Providing competitive price-performance and improved QoS for applications with a close affinity to mainframe data

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- § Integrate, monitor, and manage multi-OS resources as a single, logical virtualized system
- § Single WLM, Security, and System Management interface across all resources

IBM multi-architecture Virtualization – Conceptual View

System z multi-system, federated Hypervisor configuration

§ The System z Platform Management Partition (PMP) will host a federation of platform management functions, including:

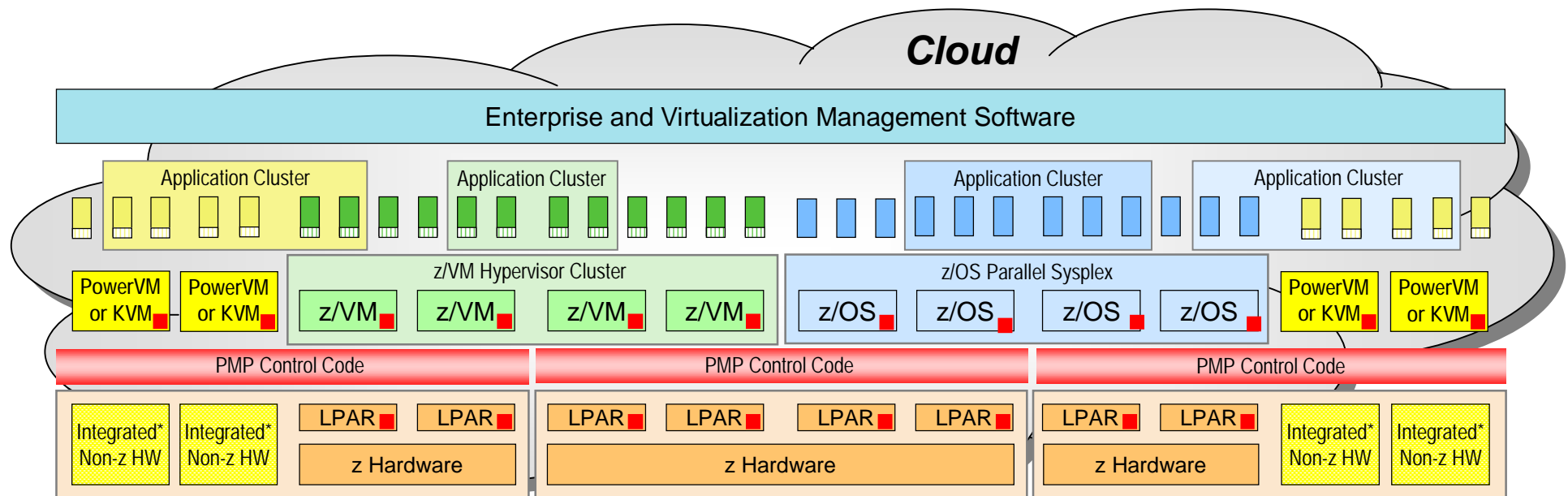
- Resource monitoring
- Workload management
- Availability management
- Image management
- Energy management

§ Integrates with hardware management and virtualization functions

§ Controls hypervisors and management agents on blades

§ Open integration to enterprise-level management software

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■ = Code that interfaces with Platform Management Partition (PMP)

* E.g., Cell Broadband Engine, DataPower, Power Blades, x86_64

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System z Announcement Highlights



Improve service for enterprise clients with solutions from System

- § Enabling businesses to make more informed, faster, and aligned decisions :
 - ▶ Delivering data anytime and anywhere: Cognos 8 Go! Mobile for Linux on System z
 - ▶ Dynamic and customizable information with drag-and-drop ease: Cognos 8 Go! Dashboard for Linux on System z

Improve service, reduce cost and manage risk with cloud on System z:

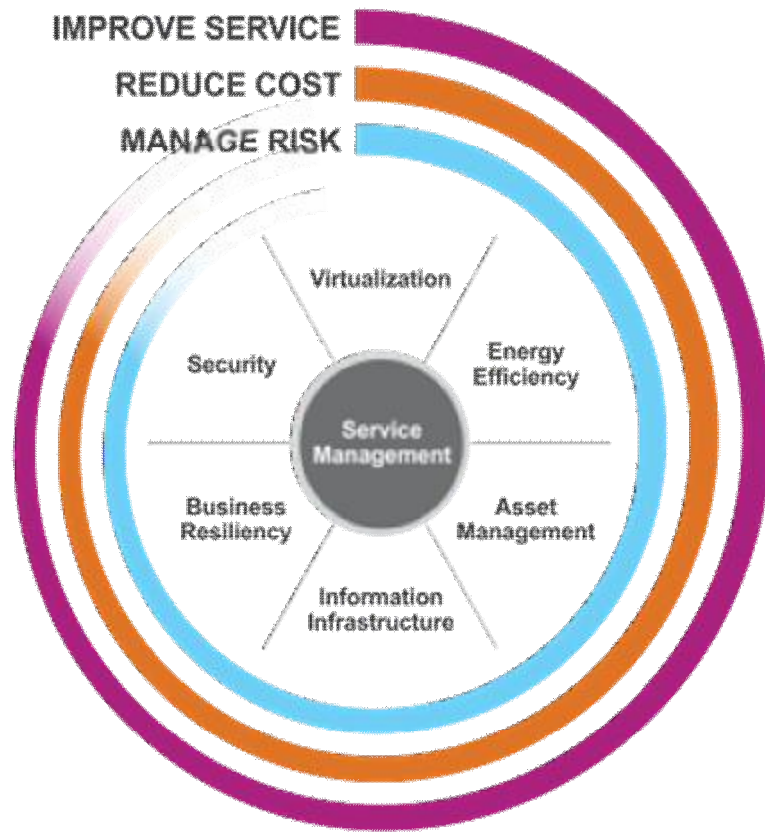
- § Run a multitude of workloads smarter and more efficiently via shared virtual resources in a single, secure system with lowered operating costs:
 - ▶ #1 inhibitor to deployment of cloud infrastructures = security. System z10 offers the highest security rating and classification for any commercially available server in the world with centralized visibility, management and control.

Reduce cost and manage risk with consolidation on System z:

- § New larger memory configurations on z10 BC enables consolidation of tens or hundreds of distributed workloads on a highly resilient System z platform for lower cost and reduced energy consumption.
- § *Reduce TCO with the z10 BC by up to 80% by consolidating x86 servers.

*Comparison is versus x86 Blade servers without virtualization, reflecting a current-day consolidation. Reductions will vary by the number and age of the x86 servers being consolidated.

The Future runs on System z ...



... System z delivers extreme business value by helping you reduce cost, manage risk, and improve service.

Questions ?



Thank You !



IBM Technology – Made in Böblingen