



# Global Technology Outlook und Smarter computing mit IBM System z ec12

## Trusted Security & Resiliency – Efficiency at Scale – Operational Analytics

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## Global Technology Outlook Objectives

GTO identifies **significant technology trends** early. It looks for high impact disruptive technologies leading to **game changing products and services** over a **3-10 year horizon**.

Technology thresholds identified in a GTO **demonstrate their influence** on clients, enterprises, & industries and have **high potential to create new businesses**.

Anstelle der GTO Folien erhalten sie das GTO Booklet als separates Dokument. Bitte schauen sie beim Download nach dem GTO Booklet.



## Evolving Customer Needs



On a Smarter Planet™, information centric processes are exploding in growth



Insights based on real-time information imbedded in business processes to gain competitive advantage



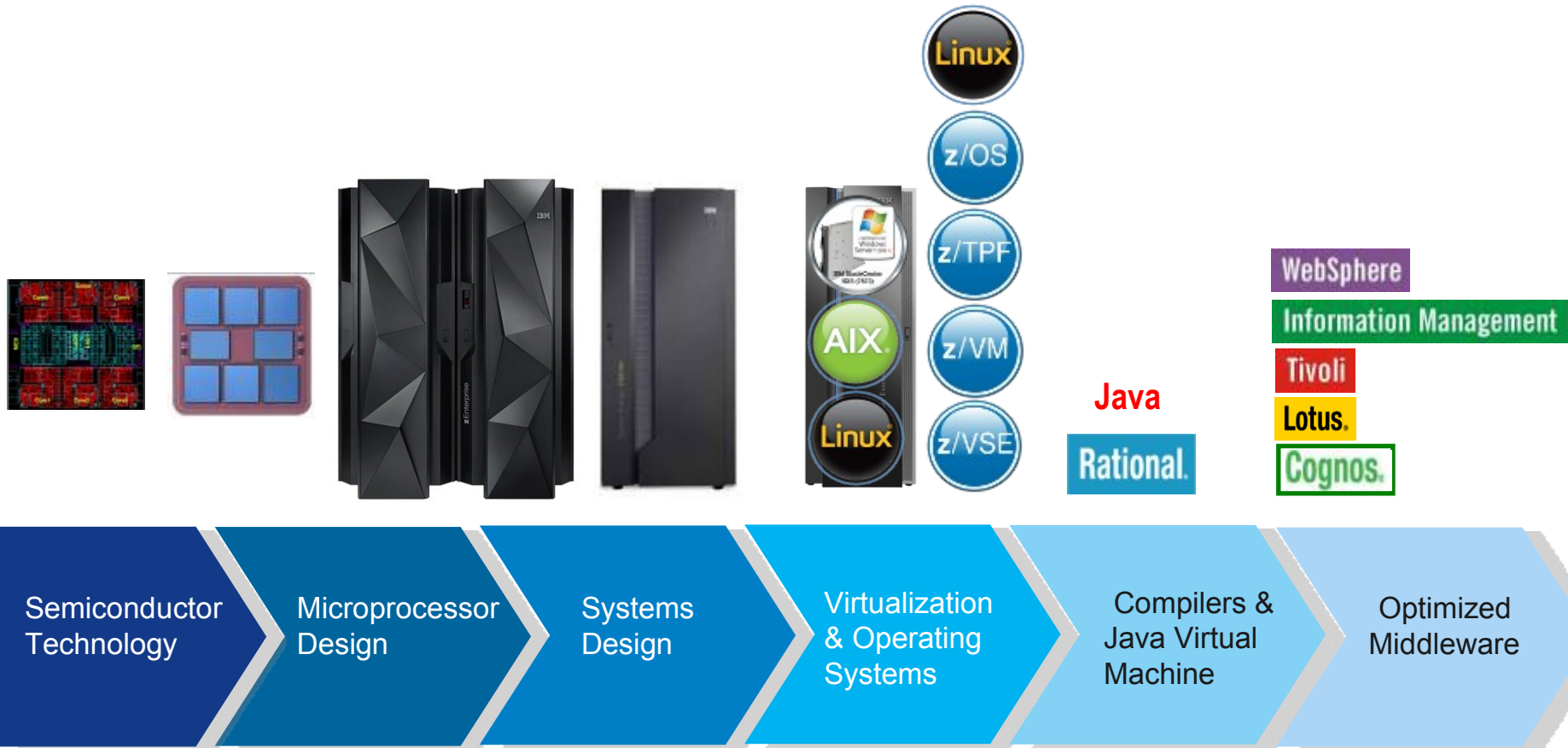
Strengthening the customer experience now means global access to services 24 x 7 from any device



New services are demanded by the business but IT budgets are constrained by existing operations



## IBM zEnterprise EC12: An optimized system



Trusted Security & Resiliency – Efficiency at Scale – Operational Analytics

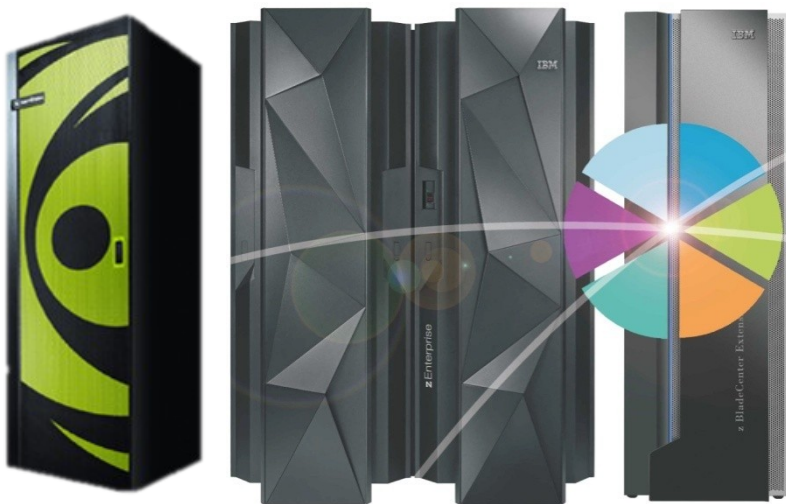




## Introducing the newest members of the zEnterprise System family *The zEnterprise EC12 and zEnterprise BladeCenter Extension Model 003*

### IBM zEnterprise EC12 (zEC12)

- zEC12 has the industry's fastest chip with each core at 5.5 GHz
- New innovation to drive availability with IBM zAware and Flash Express
- Optimized for the corporate data serving environment
- Hardware functions boost software performance for Java™, PL/I, DB2®



### IBM zEnterprise Unified Resource Manager and zEnterprise BladeCenter Extension (zBX) Mod 003

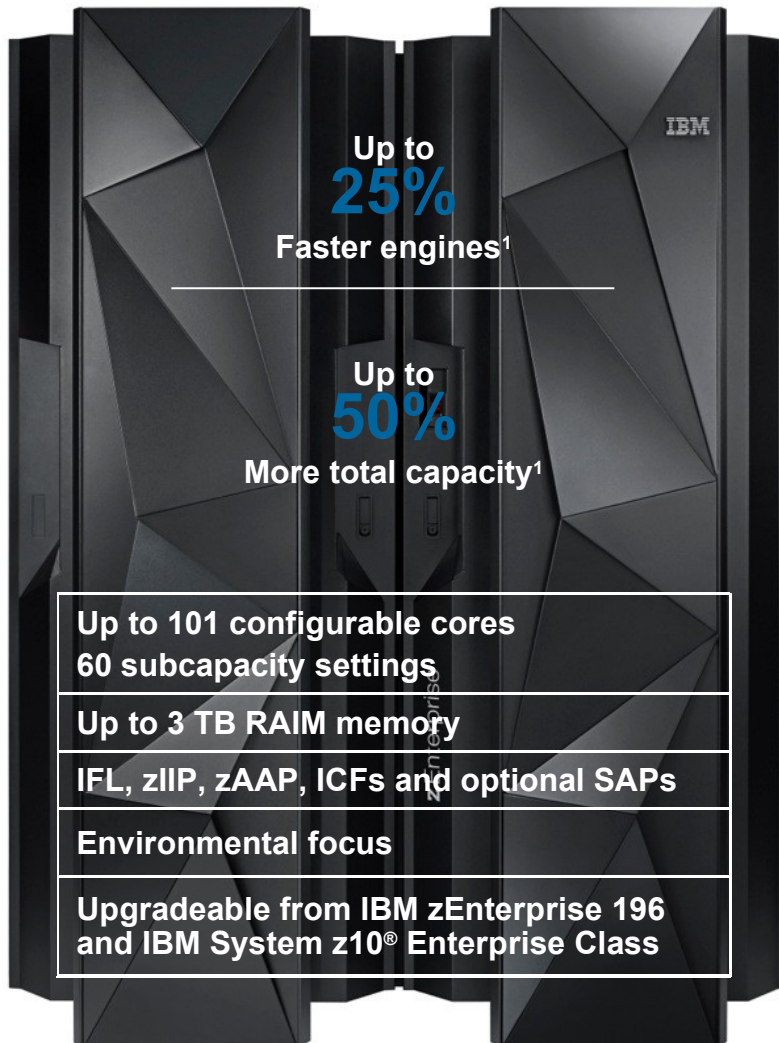
- Supports the new zEC12 platform
- Hosts PS701 and HX5 blades
- Provides workload-awareness resource optimization
- Enhancements to System Director support zBX
- System z will continue to expand hybrid computing

### Plus more flexibility and function by connecting IBM DB2 Analytics Accelerator

- IBM DB2 Analytics Accelerator (IDAA) allows deployment of business analytics on the same platform as operational applications
- Analytics and OLTP can be run as the same workload



# zEnterprise EC12 is the core of next generation of System z



## **zEC12**

*Machine Type: 2827*

*Models: H20, H43, H66, H89, HA1*

- **Advanced Technology 5.5 GHz 6-core processor chip delivers a performance boost for all workloads**
- **Innovation to drive availability to superior levels**
  - **IBM zAware** offers snap-shot of the current state of your business
  - **FLASH Express and pageable large pages** to drive availability and performance for critical workloads
- **Trusted resilience is a zEnterprise standard**

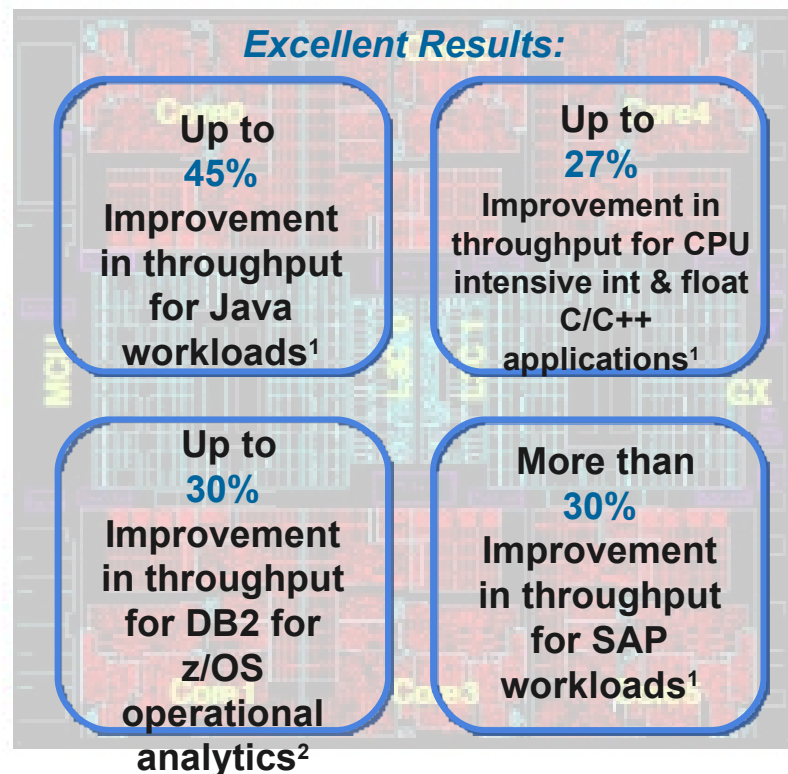
<sup>1</sup>Based on preliminary internal measurements and projections against a z196. Official performance data will be available upon announce and can be obtained online at LSPR (Large Systems Performance Reference) website at: <https://www.ibm.com/servers/resourcelink/lib03060.nsf/pages/lspindex> . Actual performance results may vary by customer based on individual workload, configuration and software levels.



# Processor chip optimized for software performance

*Exploited by Java, PL/I, compilers, DB2, more*

- **Our leadership in microprocessor design supports a boost in performance for all workloads**
  - Second generation out of order execution design
  - Multi-level branch prediction supports complex workloads
- **Larger caches to optimize data serving environments**
  - Almost 2x on chip and 2x additional on book
- **New hardware functions optimized for software performance**
  - **Transactional Execution Facility** for parallelism and scalability
  - **Runtime Instrumentation Facility** is intended to help reduce Java overhead
  - **2 GB page frames** are intended to offer performance Improvements for DB2 buffer pools and Java heaps
  - New IBM Enterprise PL/I compiler is planned to exploit and get a performance boost from **decimal format conversions facility**
  - Up to **30% improvement in IMS™ throughput** due to faster CPU, cache and compilers<sup>1</sup>



<sup>1</sup> Based on preliminary internal measurements and projections

<sup>2</sup> As measured by the IBM 9700 Solution Integration Center. The measured operational BI workload consists of 56 concurrent users executing a fixed set of 160,860 Cognos reports . Compared DB2 v10 workload running on IBM's z196 w/10 processors to an zEC12 w/10 processors



## IBM Flash Express – Smarter Availability for Smarter Systems



- **Flash Express is an innovative solution designed to help you compete effectively in today's market**
  - Automatically improve availability for key workloads at critical processing times
  - Drive availability and performance for workloads that cannot tolerate paging spikes or inconsistent performance
  - Slash latency for critical application processing such as diagnostics collection
- **Extends IBM's expertise in memory management introducing a new tier of memory using Flash Express**
- **Provides a secured, resilient and immediately usable solution**
- **Planned Flash Express and pageable large page exploiters:**
  - z/OS V1.13 *Language Environment*
  - *Java SDK7* and by extension
    - *WAS Liberty Profile v8.5*
    - *DB2*
    - *IMS 12*
    - And a future release of *CICS® Transaction Server*
  - *IMS 12 Common Queue Server*







## Continuing to build a multi-platform roadmap for the future

### *Strengthening the story*

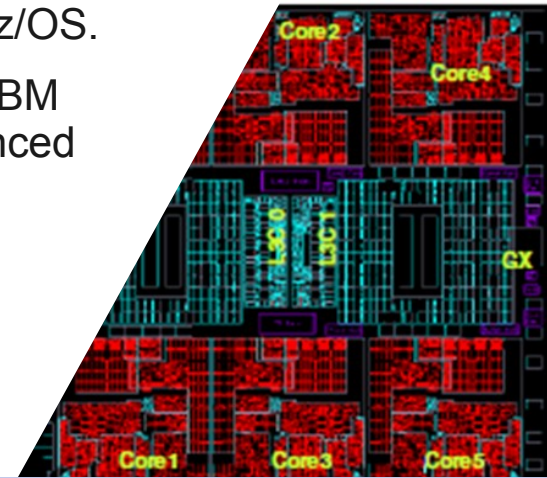
- **IBM Intends to deliver new Systems Director capability through Unified Resource Manager APIs<sup>1</sup>**
  - Ability to discover, inventory, and visualize zBX resources under the Systems Director umbrella
  - Image management provided for blades within a zBX to support provisioning of new virtual servers
  - Energy Management of the zBX to lower energy consumption and costs
  - Power capping on System x and Power blades and power savings for Power blades
- **In the future, System z will continue to expand in the hybrid computing area<sup>1</sup>**
- **IBM intends to deliver workload-aware optimization for System x blades through function in Unified Resource Manager<sup>1</sup>**
- **IBM intends to deliver automated multi-site recovery for zBX hardware components based upon Geographically Dispersed Parallel Sysplex™ GDPS® technologies.<sup>1</sup>**

<sup>1</sup> All statements regarding IBM future direction and intent are subject to change or withdrawal without notice and represents goals and objectives only.



## IBM System z Software takes advantage of new zEnterprise technology

- **NEW Java enhancements** to exploit new features including Flash Express and pageable large pages, Transactional Execution Facility, Miscellaneous-Instruction-Extension Facility, and 2 GB pages for IMS™ 12, DB2 10 for z/OS®, WAS Liberty, and CICS® Transaction Server for z/OS.
- **NEW performance analytics capability** with IBM zAware and Tivoli service management solutions will provide enhanced problem isolation and resolution
- **NEW Cloud capability** with updates to CICS Transaction Server for z/OS, providing new application, platform and policy capabilities that can help clients build private clouds from new and existing CICS applications.
- **NEW Application compilers** with superior performance with integration of Decimal-Floating-Point Zoned-Conversion Facility for PL/I compiler and Transactional Execution Facility for XL C/C++ compiler.



### New architectural facilities and 23 new instructions

- Transaction Execution
- 2 GB page support
- Instruction processing directives
- Decimal Floating Point Extension
- Runtime Instrumentation
- 1 enhanced-DAT facility, 6 transaction execution, 4 DFP zoned conversion, 3 instruction hint, 5 load and trap, 3 miscellaneous, 1 processor assist



## Social Business with zEnterprise Software



### Optimize interactions between people to gain a competitive advantage

- Social business software enabled through Linux on IBM System z®
- Bringing social to WebSphere® Portal
- Faster task execution through quick access to information from an expanded professional network
- Increased efficiency and effectiveness of business processes using existing skills discovered through professional networks

The global mobile worker population will represent

nearly **35%** of the worldwide workforce in 2013

**Solutions include IBM Connections, IBM Connections Mail, IBM Lotus Notes®, WebSphere Portal**



# Simplicity in Developing New Web Applications

## WebSphere Application Server (WAS) on z/OS Liberty Profile



- **Simplified and reduced configuration** for both WAS and z/OS
- **Dynamic server profile** which is determined by the application at a fine-grained level
- **Dynamic runtime** enabling the adding of features and updating configurations without server restart
- **Lightweight runtime** with small memory footprint (~75MB)
- **Continued exploitation** of zEnterprise systems and z/OS through optional extension to components (WLM, HA, Security)

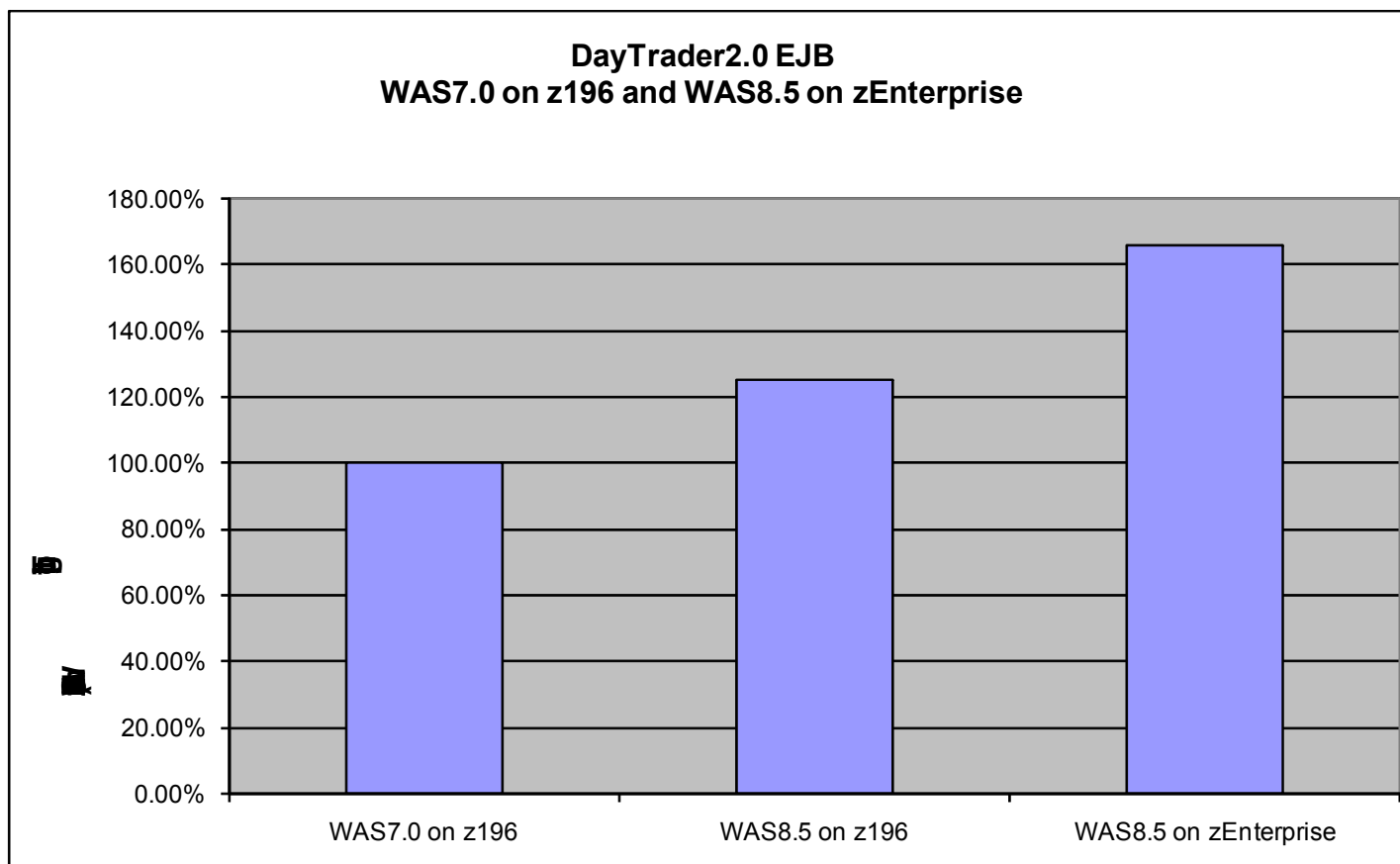
Up to **30%**  
improvement in  
throughput over  
WAS8.5 running light  
web apps

**< 5 seconds**  
for server startup time





## WebSphere on z/OS – Then and Now



Up to **32%** throughput improvement over z196

Up to **25%** throughput improvement over WAS 7.0



Up to **66%** aggregate improvement with WAS 8.5 and zEnterprise EC12



## z/OS Java SDK 7:

### 64-Bit Java Multi-threaded Benchmark on 16-Way



zEnterprise offers a ~45% improvement over z196 running the Java Multi-Threaded Benchmark



## Business Rules and Processes with zEnterprise software



Discover, document, automate and continuously improve business processes and rules



### Provides business value with effective business process management

- Analyzes current processes to identify those that will deliver the greatest ROI
- Improve maintainability and visibility of decision logic in mainframe applications
- Streamlined rules development and processes
- Accelerate process performance with new zEnterprise system.

Up to **~30%**  
**improvement**  
running ILOG WebSphere  
Operational Decision  
Management

*Replacing the rigid, point-to-point integration within its core business systems with SOA-based integration.....Highmark*

Solutions include IBM WebSphere Operational Decision Management for z/OS and Linux on System z, IBM Business Rules for z/OS, IBM BPM Advanced for z/OS



## Enterprise Modernization with zEnterprise software



**Modernize and reuse assets for optimal development productivity and deployment**

**Single unified platform for development, testing, and team collaboration**

- Develop once, distribute to appropriate platforms
- Team collaboration, sharing of code and resources all available through Rational tools
- Continuous Integration for System z facilitates faster Version-to-version upgrades with better insight into regressions and upgrade risks

**Compilers optimized for the technology**

- NEW Enterprise PL/I for z/OS and Updated C/C++ compilers use architectural enhancements on zEnterprise EC12 to optimize performance without recoding



Up to **31%**  
improvement to PL/I-  
based CPU intensive  
applications

Up to **23%**  
improvements to  
C/C++ based CPU  
intensive applications

**Solutions include Rational® Compilers, Integrated Solution for System z Development, Continuous Integration for System z, IBM Rational Application Developer, IBM Rational Developer for zEnterprise**



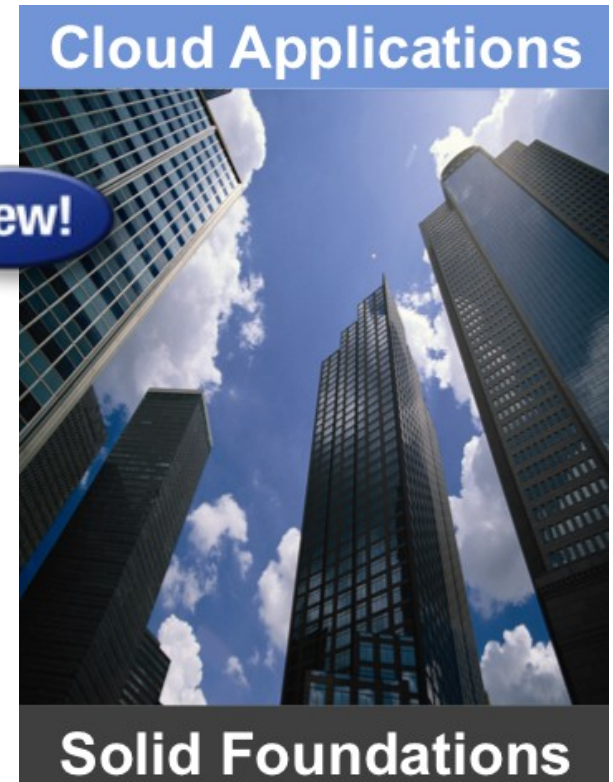


# Cloud-style CICS Applications and Infrastructure

## *CICS Transaction Server for z/OS V5.1 open beta*



- **Simpler and faster** development, deployment and operations with cloud-style CICS
- **New** CICS web application capability, built on the WAS Liberty Profile
  - **Platform as a Service (PaaS)** capabilities that can be used to host Software as a Service (SaaS)-based CICS applications.
  - **Policy-based management** to automatically modify the behaviour of tasks that exceed predefined thresholds, during runtime.
  - **Fast and lightweight Java web container** combining Java Servlets and JSPs with fast local access to CICS applications.
  - **Capability and scalability advancements** that allow CICS applications to do significantly more, with much greater ease.



Up to **25%** performance improvement with CICS on zEnterprise EC12



# Data Warehousing and Management with zEnterprise Software



## Delivering best in the class database solutions

### High performance database

- Unique temporal capabilities to support business and system time within the database itself

### High performance database management

- Real time Database Activity Monitoring (DAM) to address both security and compliance needs
- Deliver the privacy and integrity of trusted information in the data center
- Manage data from requirements to retirement to boost performance, empower collaboration, and improve governance across applications, databases and platforms.

## Flash Express

reduces paging delays associated with the startup of new workloads or other transitions

*"DB2 provides us with a foundation such that two and three years down the road, we know we won't be impeded in developing new applications..."*

*Primerica*

**Solutions include DB2 for z/OS, DB2 for z/OS tools, InfoSphere™ Guardium solutions, Optim™**



## Operational Analytics with zEnterprise Software



**Delivering predictive and operational analysis of real-time enterprise data to deliver insights**

### High performance operational analytics

- Integrate real-time scoring within the transactional applications of the enterprise
- Comprehensive query and reporting capabilities to make smarter decisions.
- Monitor, measure and manage corporate performance at a glance.
- Up-to-the second relevant information in context with BI information.

**8 seconds or less** for complex queries<sup>1</sup>

*“We were surprised by the performance gain IBM DB2 Analytics Accelerator provided, as well as its ability to further boost the capacity of our IBM zEnterprise System”*  
SwissRe

**Solutions include DB2 for z/OS, DB2 for z/OS tools, InfoSphere™ Guardium solutions, Optim™**



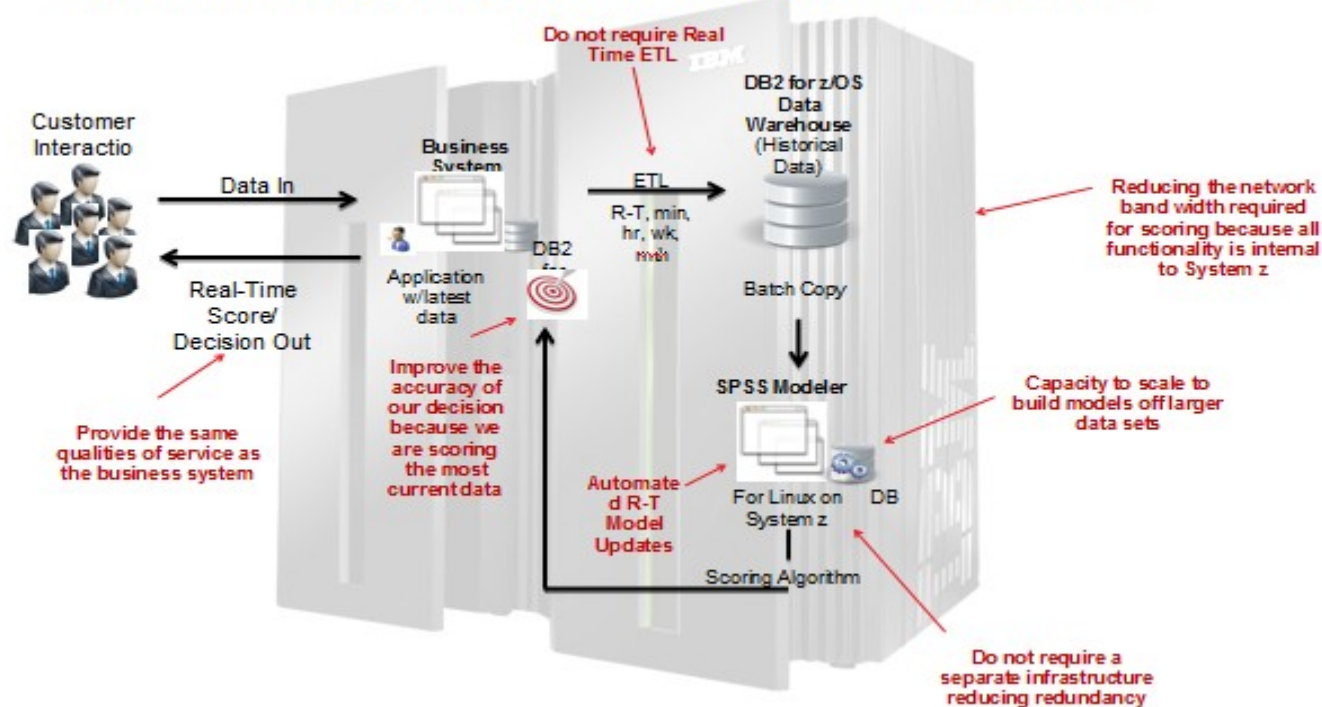
## Business Analytics – Real Time Predictive Analytics

### Improved speed and accuracy of scoring to drive better, more profitable decisions and business results

The combination of SPSS Modeler & DB2 for z/OS now enable **in-database scoring** including **the real time scoring of transactional data on System z**

- ❑ Applies the same high qualities of service as the OLTP/Business systems
  - Availability, scalability, reliability and performance
- ❑ Can automate, continuous real-time updates to the model to improve the quality of the decision
  - Define new patterns faster & more frequently to improve the speed of which we can react to changing conditions
- ❑ Scores the most current data **directly within your OLTP or Data Warehousing applications on System z**
  - Provides sub-second response time
  - Reduces data latency
  - Minimizes data movement
  - Scales to large data volumes to improve accuracy of scores
  - Single infrastructure for reduced complexity and redundancy of HW, SW and administration resources

### In-Database Scoring process for Data that originates on System z







## Superior Operational Analytics Solutions



**IBM Smart  
Analytics  
System  
9700/9710**

Comprehensive portfolio of data management, hardware, software, and services capabilities that modularly delivers a wide assortment of business changing analytics



**IBM DB2  
Analytics  
Accelerator**

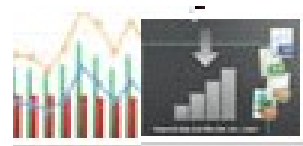
Powered by Netezza, **high volume operational and complex queries** in a highly secure and available environment within a single workload



**Faster and more accurate operational analytics** with SPSS analytics scoring with transactional data providing real time analytics against the primary copy of the data



**IBM SPSS**



**IBM Cognos**

**Advanced business intelligence and performance management** solutions for running business analytics reporting directed at DB2/zOS from Cognos on z/OS or Linux on System





# IBM zEnterprise EC12 in an information-centric world

## Trusted resilience for unmatched security and reliability

- Most secure system with 99.999% reliability
- Unified platform for rapid development of secure applications end-to-end

## Efficiency at scale

- Most efficient and fastest system for mission-critical workloads
- Increased efficiency will free up IT resources to focus on new services to drive growth
- Hybrid architecture enables rapid cloud deployment

## Operational analytics to enable business opportunities

Most sophisticated data warehousing and analytics solutions with the fastest query performance in the market

Leverage your data to build competitive advantage





## Fragen ?



Vielen Dank !

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