

# System z Software Update

(including the new zEnterprise BC12 Announcement)

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# Agenda



**System z Business Update  
New zEnterprise BC12**

**New Capabilities for Big Data & Analytics, Cloud,  
Mobile, DevOps, Security, and Applications**





# System z Business Update

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# The world is changing ...

## Customer expectations have never been higher



They are better informed



They operate in a network of peers



They interact through a multitude of devices



They demand personalized service and offerings



***Forward thinking businesses are building competitive advantage through a better customer experience***

# Cloud, analytics and mobile aren't simply remaking computing...

**Cloud**



**Mobile & Social**



**Analytics**



...they are reshaping the customer engagement model

**Security**



# Building better customer experience provides industry advantage

*Financial institutions detect fraudulent money laundering activities and offer reliable and secure mobile applications for anytime, anywhere banking services.*

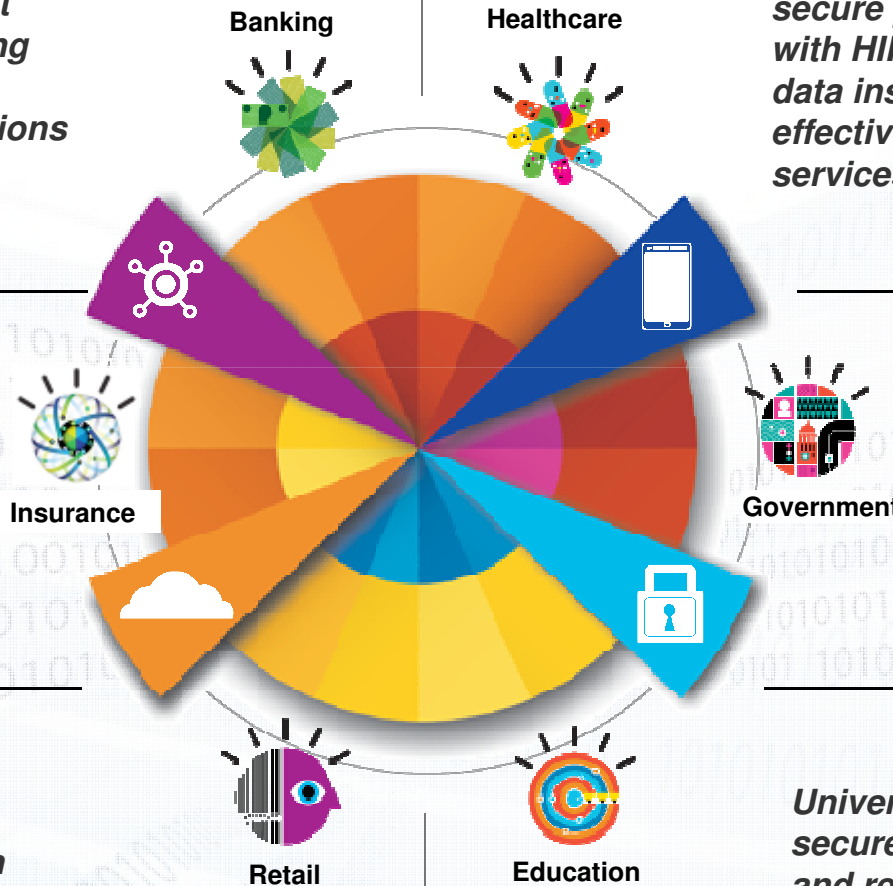
*Insurers rapidly develop and provide new offerings at lower costs and discover suspicious claims before payment to minimize loss.*

*Retailers boost revenue through discovery of customer buying behaviors and ensure compliance with Payment Card Industry (PCI) data security standards.*

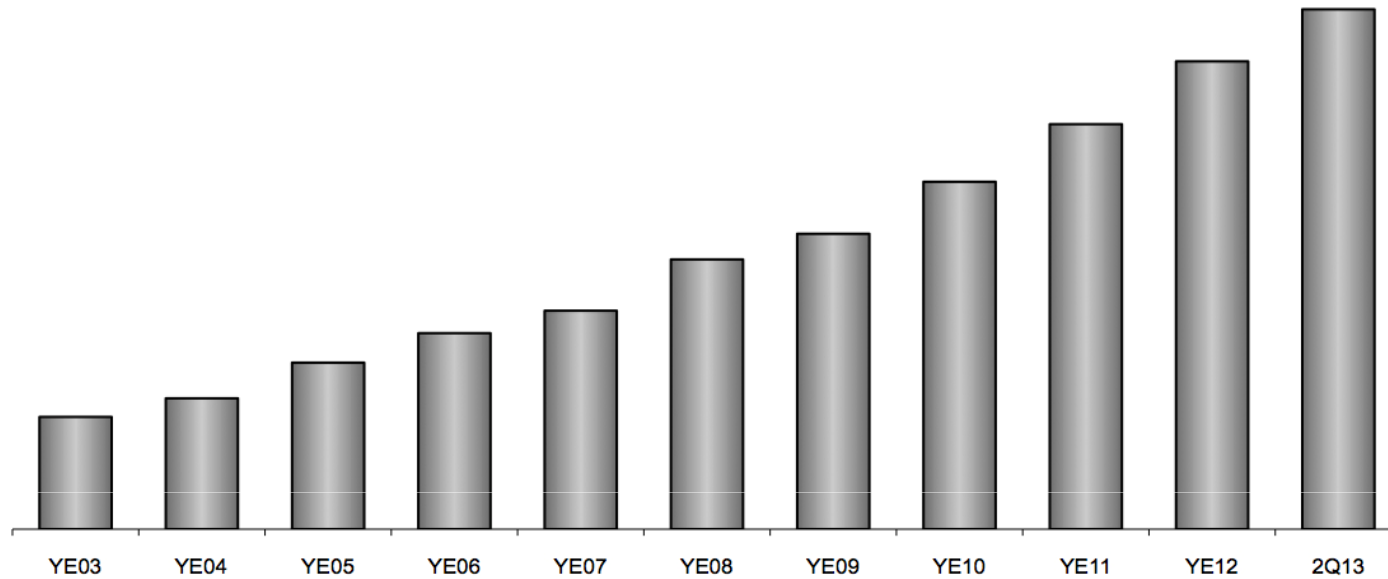
*Healthcare payers and providers secure patient data and comply with HIPAA while creating real-time data insights to deliver more effective, preventative healthcare services at lower costs to patients.*

*City Governments expand and coordinate and administer city services through citizen-centric applications.*

*Universities provide students secure, flexible virtual desktops and real-time access to university information systems to improve the student experience.*



# IBM zEnterprise System Momentum



System z Total Installed Capacity

**23%**

MIPS growth and 10% revenue growth year-to-year

**210+**

new accounts since 3Q10 zEnterprise launch, with 1/3+ in growth markets

**275+**

hybrid computing units shipped since 3Q10

**3/4+**

of Top 100 clients have installed IFLs

**1,000+**

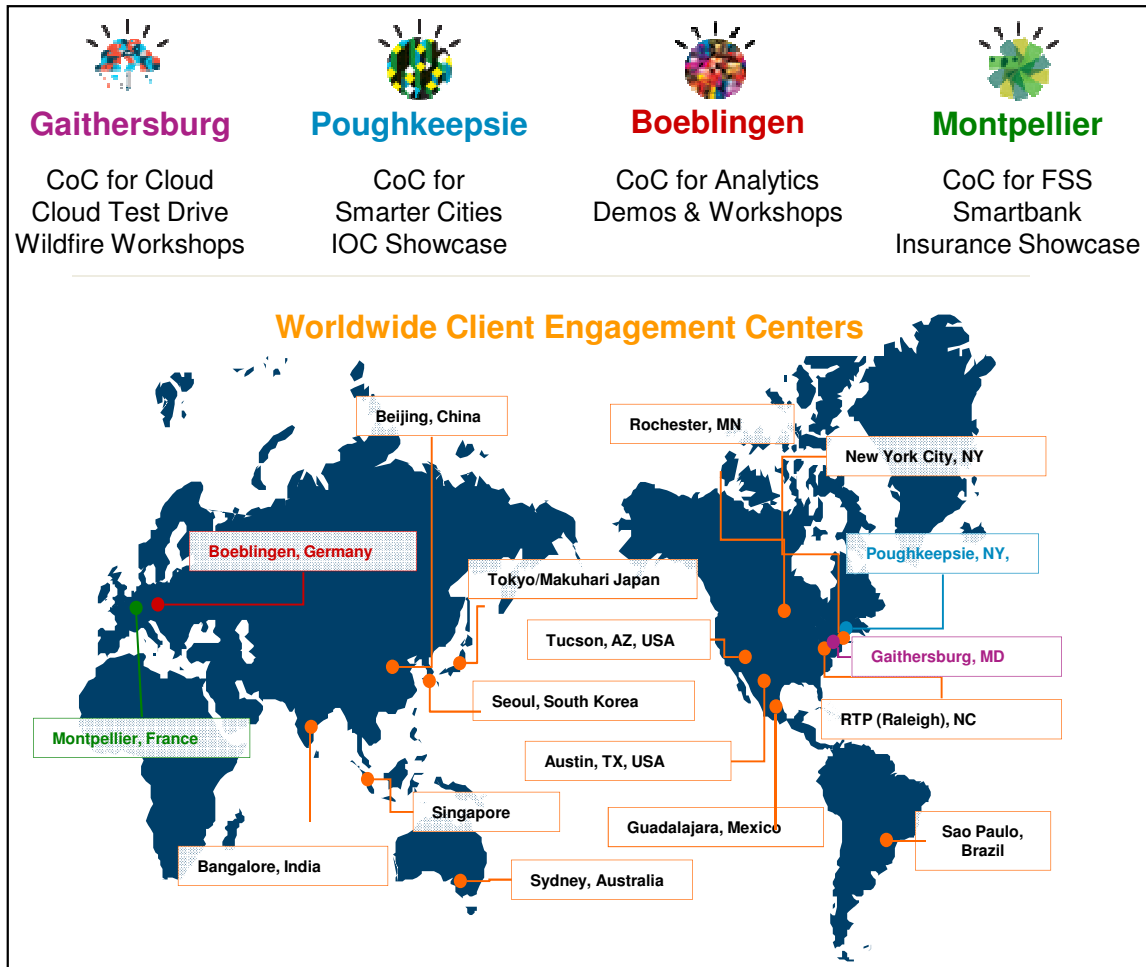
schools in 67 countries are part of the IBM Academic Initiative for System z

**7,400+**

ISV apps run on IBM System z; 55 new ISVs added in 1H13

[ IFL = Linux-on-z Only Engine ]

# Deep investments across the ecosystem fuel adoption of new zEnterprise technologies and Industry solutions



- Global investments across **18** zEnterprise & Smarter Computing Client Design Center capabilities and resources
- Technical skills development and placement with new alliances between IBM, **1,000+** member Universities and clients
- New ISVs and Business Partners supporting the platform with **over 7,200** new or upgraded applications
- Migration and Implementation Services & Solutions expertise

*In 2013 alone, IBM is investing **more than \$50M USD** in System z Solution Enablement*





# New zEnterprise BC12

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# Extending new mainframe capabilities to organizations of all sizes with IBM zEnterprise BC12 (zBC12)

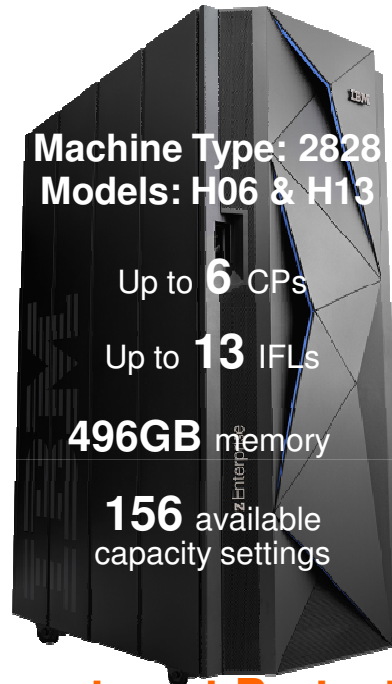
## More Performance

**36%** performance boost per core

**4.2GHz** processor speed

**62%** more total system capacity for workload growth

**2X** increase in RAIM memory



## More Value

Still starting as low as **\$75K USD\*** (\$1,965 / mo. for 36 month lease)

**27%** improvement in price performance for Specialty Engines

**100%** increase in allowable zIIP/zAAP capacity per CP

**20%** increase in granularity

## Investment Protection

Start Small and Rapidly Grow with Ease  
Upgrade from z10<sup>®</sup> BC and z114; Upgrade into zEC12  
Upgrades from zBX Model 002 to zBX Model 003



**DS8870 BC Config: Easy tier enabled entry level enterprise storage starting at \$70K USD\***



**Integrated Data & Analytics Engine**



**Efficient, Agile Cloud Foundation**

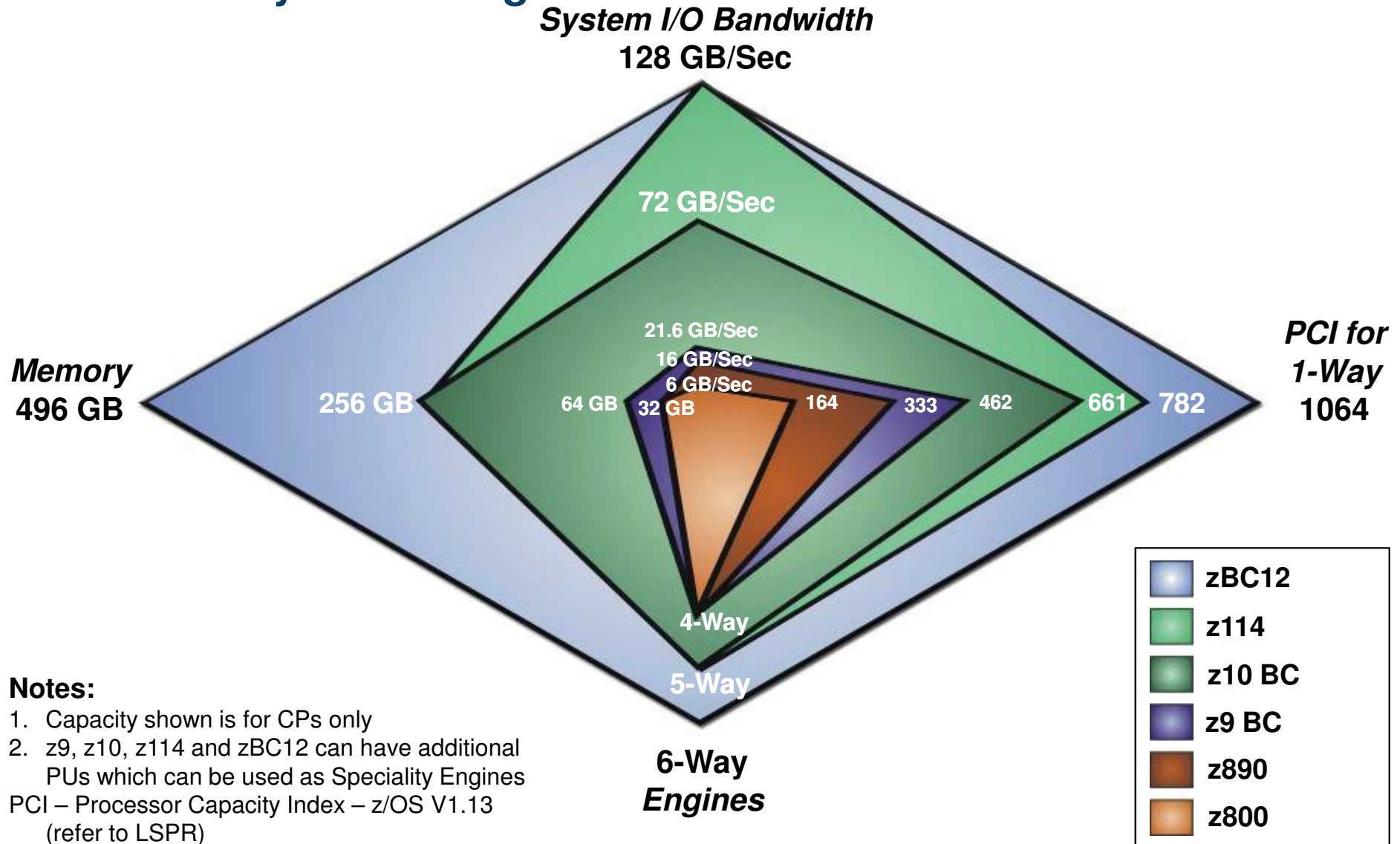


**Sophisticated Mobile Computing Platform**



**Ultimate in Trusted Security & Resiliency**

# Balanced System Design



**Notes:**

- 1. Capacity shown is for CPs only
  - 2. z9, z10, z114 and zBC12 can have additional PUs which can be used as Speciality Engines
- PCI – Processor Capacity Index – z/OS V1.13 (refer to LSPR)

# The game changer: New zBC12 based Enterprise Linux Server

*Attracting new clients with differentiated value*



Deploy up to **40** virtual servers per core or **520** in a single footprint

Up to **13** Linux cores running at **4.2 GHz**

## Enterprise Linux Server (ELS)

As low as **\$1.00/day** per virtual server

Balanced System Design with **496GB** memory

**Pre-Packaged** Linux Server cloud foundation including Hardware, z/VM Hypervisor, and 3 years Maintenance

More than **3,000** Linux ISVs apps supported

**Highest** level of security with EAL 5+ certification

Support for **Red Hat, SUSE** and **OpenStack** cloud

**New ELS for Analytics and Cloud Ready** for Linux Solutions

Save up to **55%** on TCO over 5 years

**12 to 1**

*Leading contemporary UK art gallery needed real-time inventory access and continuous availability with expansion efforts and efficiently consolidated 12 distributed x86 servers onto a single ELS*

WHITE CUBE

## zEnterprise delivers optimized fit-for-purpose Cloud infrastructures

Over **275**

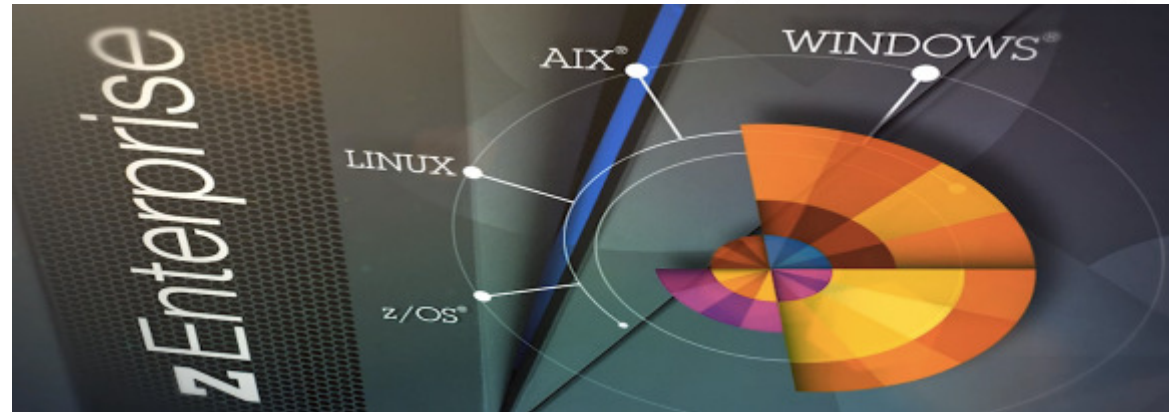
Hybrid\* units shipped since inception

Up to **84%**

Lower TCA with fit for purpose cloud architectures

Up to **35%**

Lower infrastructure management costs



### IBM zBX and zManager:



Workload policy based performance management for AIX®, Linux on System x® and Microsoft® Windows®



Continuous operations across the ensemble with alert and notification for blade virtual servers



Extended GDPS®/PPRC capabilities for continuous availability and disaster recovery of zBX blade resources



Support for Layer 2 communications between intranet and zBX



Support for Microsoft Windows Server 2012



DataPower Virtual appliance SoD for x86 blades



Futures roadmap

# Operating systems focused on exploiting zEnterprise value

**NEW** z/OS  
Version 2.1  
& z/OSMF 2.1

- Handle huge volumes of data with 100-way (SMP) support in a single LPAR on IBM zEC12
- Reduce CPU load across the board\*....also up to 80% less CPU when running VSAM RLS against large catalogs\*
- Shorten batch windows with 40% shorter file recall time
- Improve SAP workload performance with 175x faster zFS V5 directory lookup
- Leverage Crypto-as-a-service for Linux to extend z's reach as a crypto hub
- Lower entry cost of z/OSMF by up to 60% and running cost by up to 25%

**NEW** z/VM  
Version 6.3

- Supports more virtual servers than any other platform in a single footprint with support for 1TB of real memory,
- Increased performance for large VMs with a 4x increase in memory scalability while maintaining greater than 90% resource utilization
- More efficient use of CPU resources for better price performance
- Enabled for OpenStack support

**HARDWARE EXPLOITATION** z/VSE®  
Version 5.1

- Special Linux on System z offering for V5 and zBC12 clients
- New 64-bit virtual addressing for exploiting larger memory for Virtual Storage Constraint relief
- Gain visibility and control into CICS with CICS Explorer at no extra chargeExploits full range of IBM System Storage
- More efficient communications with **Linux Fast Path** by eliminating need for TCP/IP stack
- Allows z/VSE applications to access a relational database on System z or zBX

**HARDWARE EXPLOITATION** z/TPF  
Version 1.1

- World's most efficient platform for real-time reservations and credit card authorizations
- Average 35% performance improvement on IBM zEC12/BC12
- New adapter for ODM improves cross platform integration
- New business eventing allows integration with the enterprise eventing
- Open development environment to leverage skills commonly availabl3

**NEW** Linux on System z

- Deploy from hundreds (zBC12) to 1000's (zEC12) of virtual servers in a single footprint
- Secure isolation of Logical Partitions with highest level of security certification (EAL5+)
- Balanced System Design with up to 3TB of memory (zEC12)
- Pre-Packaged Linux only Server (ELS) includes Hardware, Hypervisor, Maintenance
- Enterprise Linux Server (ELS) for Analytics
- Support for Red Hat, SUSE and OpenStack



# **New Capabilities for Big Data & Analytics, Cloud, Mobile, DevOps, Security, and Applications**

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# Information technology – changing the way information is accessed, applied and architected

**90%**

of the world's data has been created in the last two years

**Big Data & Analytics**

**\$241 B**

investment in cloud computing by 2020 (22% growth)

**Cloud**

**96%**

year to year increase in mobile cyber Monday sales between 2011 and 2012

**Mobile**

**51%**

of projects are over budget and often lack critical features

**DevOps**

**\$5.4M**

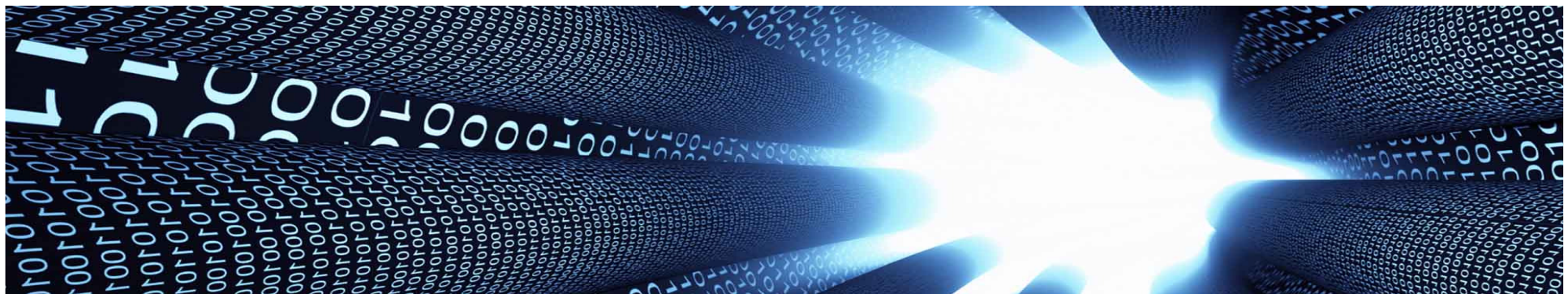
cost per incident (on average) for a security breach

**Security**

**\$Trillion**

business transactions are processed per day on a mainframe

**Applications**





# New innovations on zBC12 for zEnterprise software



## Data Compression Acceleration

Reduce latency for large data files that use zlib compression and future compression for Java™ workloads and advanced encryption with **zEDC Express**

Up to **4x**

compression of large data files



## High Speed Communication Fabric

Reduce both latency and CPU resource consumption over traditional TCP/IP for communications across z/OS® systems without any changes with **10Gb RoCE Express**

Up to **80%**

reduction in network latency



## Proactive Systems Health Analytics

Integration of **zAware** with **OMEGAMON®** for detecting application and system problems for faster problem determination and resolution

Up to **15%**

performance improvement for CPU-intensive batch applications with zEnterprise COBOL compiler





## Compiler Enhancements


optimized application infrastructure for increased software performance with IBM **zEnterprise® compilers (COBOL, PL/I, C/C++)** for z/OS


*Improved system performance, reduce CPU consumption, and optimize application infrastructure*

## zEnterprise BC12 software solutions for Big Data and Analytics

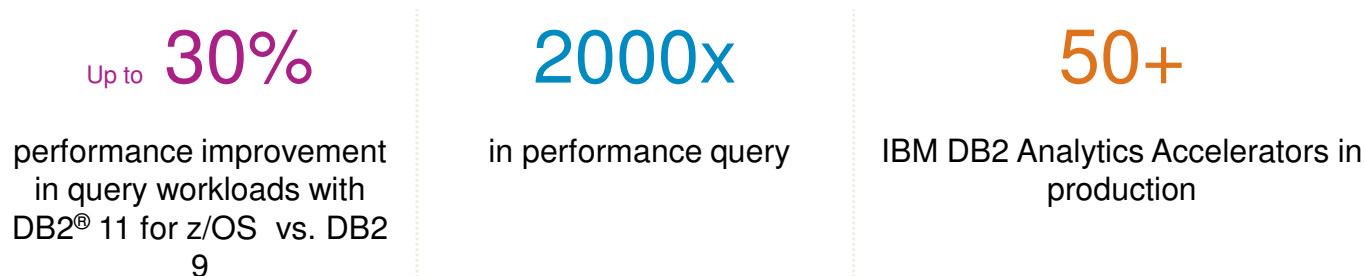
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 ■ **A cost-competitive analytics solution optimized and integrated** to deliver mission critical analytics with **NEW! IBM zEnterprise Analytics System 9710**
  
- **Deliver rapid acceleration of complex analytic queries** in a mixed workload environment with the **IBM DB2 Analytics Accelerator** powered by the latest Netezza technology
  
- 

 ■ **Incorporate new and innovative chart types and reduce memory footprint for data** with **NEW! IBM Cognos BI V10.2.1** on z/OS and zLinux
  
- 

 ■ **Provide enhanced state of the art DB2 real time scoring with ENHANCED! SPSS® Modeler 14** and **analyze complex relationships** through a set of algorithms with **NEW! SPSS® Statistics 22**
  
- 

 ■ **Manage Big Data from requirements through retirement** to promote business driven governance with **NEW! InfoSphere™ Optim™ Family z7.2**



*Leveraging the power and performance of the zEnterprise to drive advanced analytics*

## Banca Carige created a secure and scalable platform for analytics



***Offering high-speed analytics on real-time data to up to 1,000 business users simultaneously***

### **Deliver data-driven insights**

Created a secure analytics platform enabling better decisions about everything from product development to special offers and promotions

### **IBM Solution**

IBM zEnterprise EC12  
IBM DB2 Analytics Accelerator

***“DB2 Analytics Accelerator enables us to bring analytics to our customer-facing employees on the front line, and our product development teams behind the scenes.....attracting more business, and driving growth.”***

## zEnterprise BC12 software solutions for Cloud



- Enhanced!** **Detect performance problems and increase analytics visibility in the cloud** to minimize, or preclude business impact with **ENHANCED! IBM OMEGAMON for z/OS Family**
- NEW!** **Automate, plan and control** the processing of System z workloads with **NEW! Tivoli® Workload Automation for z/OS V9.1**
  - React to events** as a human would, but much faster, more efficiently and effectively with **IBM Automation Control for z/OS**
- Enhanced!** **Keep systems available** by identifying the root cause of network failures in the cloud with **ENHANCED! IBM NetView®**

Up to **80%**

Reduced power, cooling, and floor space requirements with a zEnterprise cloud infrastructure

Up to **90%**

Capacity utilization with zEnterprise and cloud

Greater than **50%**

Economies of scale through consolidation of workloads from distributed to Linux on System z



*Develop a private cloud with the zEnterprise for maximum utilization, superior reliability and availability*

## Nationwide cuts costs in the cloud



### Need:

3,000 distributed servers were inefficient and costly. 80-90% capacity unused, software licenses on every server

### Solution:

Consolidated its distributed servers to Linux virtual servers running WebSphere® application server, DB2, and z/VM on System z, creating a multi-platform private cloud optimized for all its different workloads.

**80%**

Reduced power, cooling and floor space requirements

**80 – 90%**

Capacity utilization

**Military level Security**

Protection from unauthorized users

**\$15 million**

Reversed expenditure on distributed server landscape over three years

“

*It [Linux] effectively makes the mainframe into a private cloud – a single set of resources, managed with the same tools, but optimized for a variety of very different workloads.*

# zEnterprise BC12 software solutions for Mobile

## Build and Connect



- **Native JSON support** and conversion between JSON and data structures with **NEW!** CICS® Transaction Server Feature Pack for Mobile Extensions V1.0 and **NEW!** DB2 11 for z/OS
- **Development of multiplatform mobile applications** with **NEW!** IBM Worklight V6 and **NEW!** Rational® Developer for the Enterprise v9

## Manage and Secure

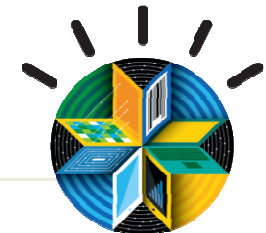


- **Secure access to System z data on mobile devices and integration with LDAP** on zEnterprise BC12 with IBM Endpoint Manager
- **Easy-to-use security enhanced integration and IMS integration for mobile devices** with **NEW!** IBM WebSphere® DataPower® Gateway Appliances V6

## Extend and Transform



- **Extend mobile devices to WebSphere MQ** on z/OS with **NEW!** IBM Mobile Messaging client pack updates
- **View of dashboards, reports, etc** on mobile devices with **NEW!** Cognos Mobile



1.7M+

apps in the world today with 70B apps downloaded in 2013

6x and 3x

the number of Android and iOS versions Google and Apple respectively have released compared to Microsoft®

*Building, connecting, and securing zEnterprise data to mobile devices to provide information instantaneously*

# First National Bank goes mobile



*Shifting to self-service mobile banking to grow business and reduce IT costs*

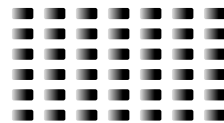
## Opening a new channel with mobile

Easy Mobile Channel integration with core z/OS IMS applications to improve customer experience and add new revenue opportunities at low implementation cost





## IBM Solution

Accessing IMS 11 with System z information via smartphones

Up to **920M** transactions/month



## zEnterprise BC12 software solutions for DevOps

-  Accelerate and Continuously Deliver Multiplatform Applications with **NEW!** IBM UrbanCode Deploy and IBM UrbanCode Release on Linux on z
-  Low cost, high fidelity off host mainframe application development and test with parallel sysplex support in **NEW!** Rational Development and Test Environment for System z V9.0
-  Simplify testing with virtual CICS programs with **NEW!** IBM Rational Test Automation Solution (Green Hat)
-  Exploitation of zEnterprise BC12 hardware for optimal performance with **NEW!** IBM zEnterprise COBOL for z/OS V5.1, **NEW!** Enterprise PL/I for z/OS v4.4, and **NEW!** z/OS v2.1 XL C/C++

41%

experience delays in integration, configuration and testing of applications

34%

applications are rolled back due to quality issues escaping into production

45%

experience delays due to troubleshooting and fine-tuning issues in production

*“New, optimization technology in COBOL v5 provided significant performance improvements to our CPU-intensive applications. We did not have to make any code changes or recompile the entire application to take advantage of the new COBOL compiler.”*



## INTER Versicherungsgruppe increased productivity in application development



### Need:

Motivate young developers to embrace the world of the mainframe and match development capabilities of large companies with fewer staff

### Solution:

Deployed Rational Developer for System z as a modern toolset for supporting mainframe processes in an Eclipse development environment

### Consistent

integration and automation in software development

### Collaboration

between IT team and technical departments

### Modern tools

for young developers



“ ***An efficient software development environment is in many ways similar to a good manufacturing plant*** ”

## zEnterprise BC12 software solutions for Security

- **Administer mainframe security**, monitor for threats, enforce policy compliance, audit usage and configurations, and assist in compliance management and audit reporting with **NEW! IBM Security zSecure Suite V2.1**
- **Assure the privacy and integrity of trusted information** in the data center, and reduce costs by automating the entire compliance auditing process with **IBM InfoSphere Guardium® Solutions**



Up to **70%**

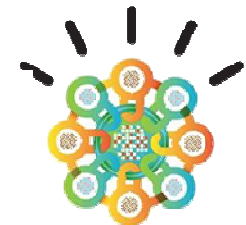
in security audit savings with zSecure Suite

**63%**

reduction in Total Cost of Information (TCI) when using zEnterprise security

**74%**

staff savings for security administration personnel on zEnterprise system



*Making zEnterprise BC12 the enterprise security hub for mission critical data*

## Blue Cross and Blue Shield of Kansas upgrades its security



### Need:

Lower cost and consolidate security software to make it easier to administer

### Solution:

Replaced its previous security with a combination of RACF and zSecure suite to control security access to datasets and resources, define access rules and detect and analyze security exposures

One place

to upgrade security landscape

Integration

between RACF, DB2, and zSecure

“ IBM is embedding more security code in z/OS, and integrating RACF more tightly with DB2, so we can now take advantage of things that we couldn't before...we no longer need to separately upgrade our security landscape when we upgrade z/OS ”

## zEnterprise BC12 software solutions for Application Infrastructure, Connectivity, and Business Process Management

- NEW** ▪ **Rapidly deploy new Java workloads** with **NEW! CICS Transaction Server 5.1 Value Unit Edition (VUE)**
- Enhanced!** ▪ **Deliver high scalability, transactional integrity and business agility** for transactional and batch decisions as well as automated straight through processing supporting thousands of transactions per second with **ENHANCED! IBM ODM for z/OS and IBM BPM Advanced for z/OS V8.5**
- NEW** ▪ **Build solutions addressing diverse integration requirements** including application integration for Java developers with **NEW! IBM Integration Bus for z/OS V9.0**
- NEW** ▪ **Highly composable and dynamic application server runtime environment beyond web applications suited for developers** with **WebSphere Application Server for z/OS, V8.5.5 Liberty Profile**

Up to **25%**

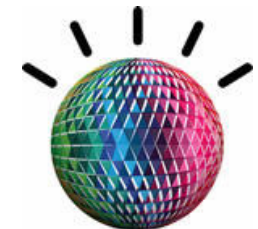
performance improvement with CICS and zBC12

Up to **30%**

performance improvement with WebSphere Operational Decision Management and zBC12

Up to **90%**

Throughput improvement of Java multi-threaded workloads



*Industrial-strength online transaction management for mission critical applications on zEnterprise*

## Visiting Nurse Service of New York (VNSNY) positions staff to better serve patients



### Need:

Securely move information including patients' health information between systems from a variety of locations

### Solution:

Implemented WebSphere MQ and System z to move data from one system to another using tablets and other devices. Sensitive data triggers transactions to update financial systems, medical records and medication databases

**Any location**

has access to sensitive data

**40,000**

home visits per day

**“At the end of the day, people get their visiting nurse knocking on the door and take care of the people, and that’s good”**

## zEnterprise software – Open and Advanced Technology

- Most reliable and fastest system for mission critical workloads
- Most secure system with 99.999% reliability
- Most sophisticated data warehousing and analytics solutions with the fastest query performance in the market
- Unified platform for rapid development of applications
- Only system to enable x86, POWER, and System z applications under a centralized management system
- Ideal platform for a “cloud in a box” and mobile