



The New zEnterprise: Creating Success in Your Business With New Solutions in the Areas of Big Data, Analytics, Cloud, and Mobile

July 2013



Agenda



System z Business Update and New zEnterprise BC12

Greg Lotko

Vice President & Business Line Executive, System z

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

Ray Jones

Vice President, System z software worldwide sales





System z Business Update

Greg Lotko

*Vice President & Business Line
Executive, System z*

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...

Mobile & Social



...they are reshaping the customer engagement model

Cloud



Analytics



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.

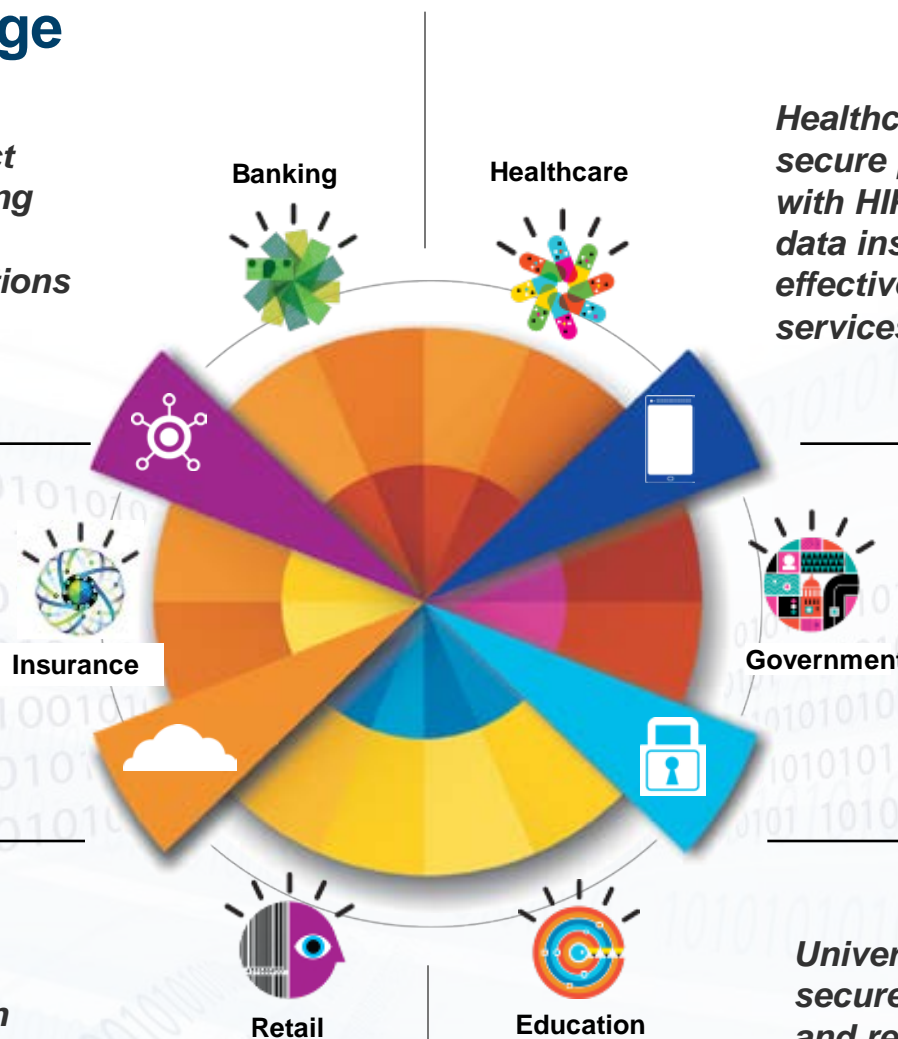
Insurers rapidly develop and provide new offerings at lower costs and discover suspicious claims before payment to minimize loss.

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

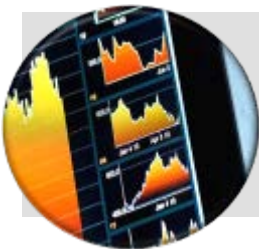
Healthcare payers and providers secure patient data and comply with HIPAA while creating real-time data insights to deliver more effective, preventative healthcare services at lower costs to patients.

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.



zEnterprise Industry Solutions deliver on key business requirements



Predict risks and discover opportunities

- Anti-Fraud, Waste and Abuse Solution for Healthcare and Insurance
- **Anti-Fraud, Waste and Abuse Solution for Tax***
- Smarter Analytics for Retail

NEW

Improve citizen services

- Intelligent Operations Center for Smarter Cities
- Enterprise Asset Management - Maximo
- Smarter Infrastructure for Social Services - Cúram
- **Cúram Solution for Care Management**

NEW

Manage regulatory compliance

- **Smarter Analytics for Banking***
- Health Plan Integration Hub
- SAP Bank Analyzer

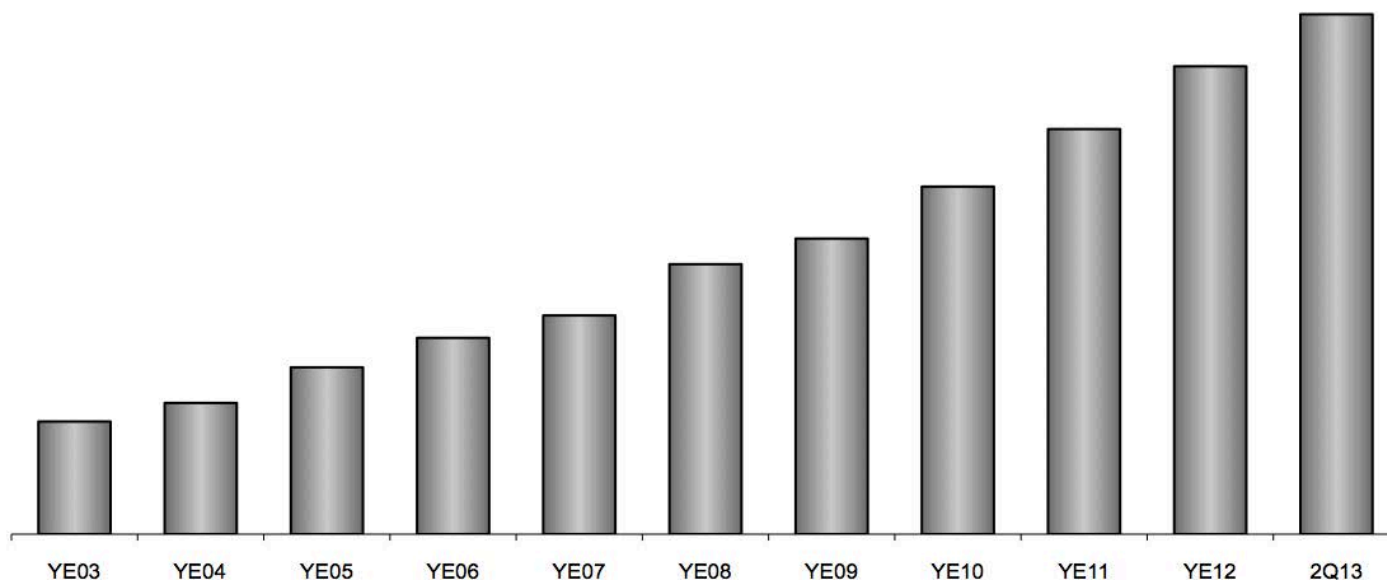
NEW

Integrate & modernize for efficiency

- Financial Transaction Manager
- Genelco Insurance Administration Solution
- Starter Edition Cloud for Government



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+

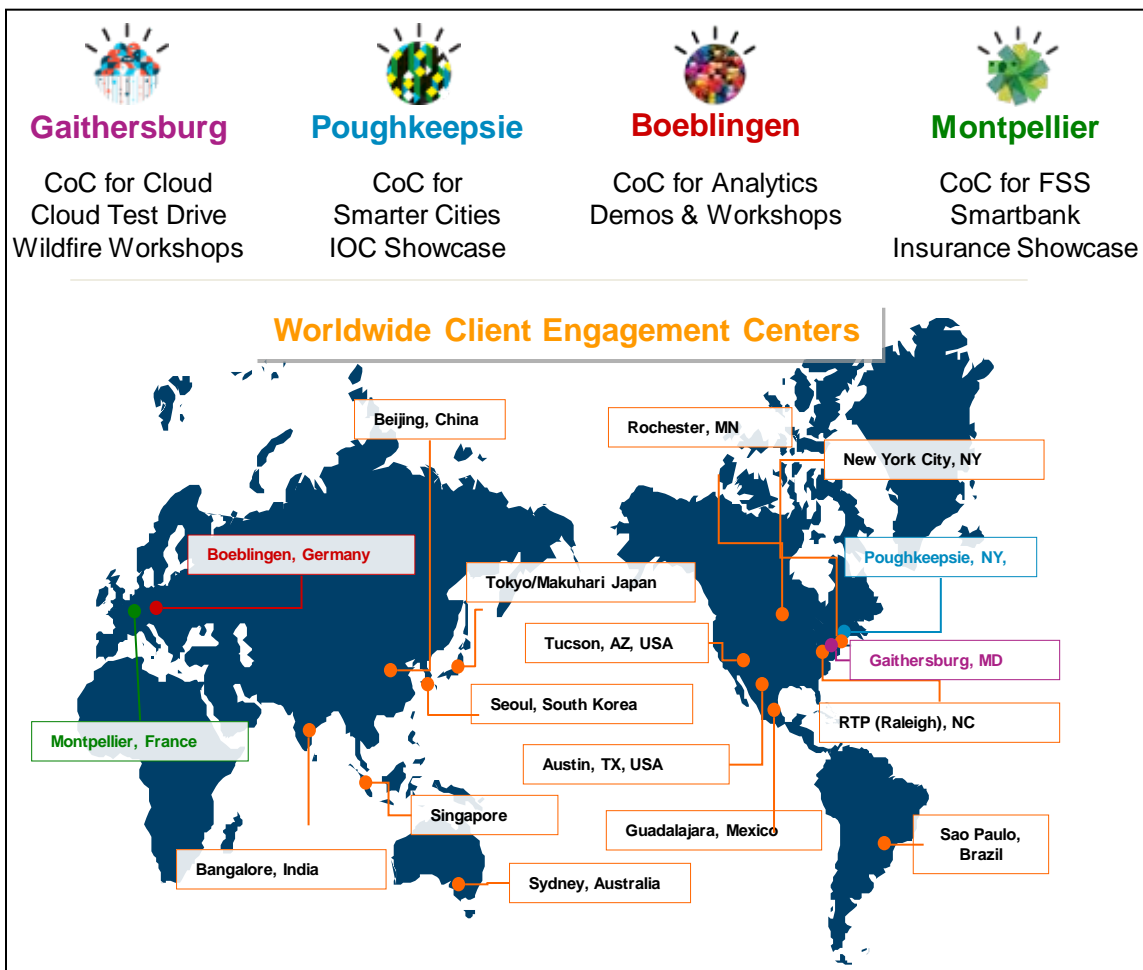
schools in 67 countries are part of the IBM Academic Initiative for System z

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*

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

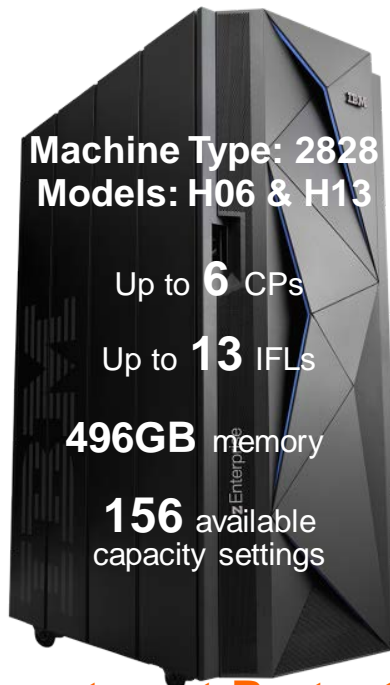
More Performance

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® 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

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



zEnterprise delivers optimized fit-for-purpose Cloud infrastructures

Over **275**

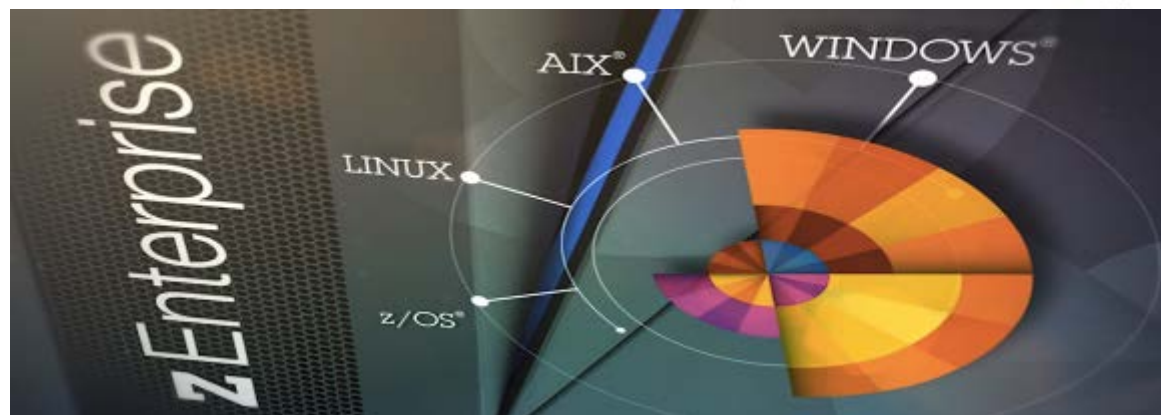
Hybrid* units shipped since inception

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 charge Exploits 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 available

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

Ray Jones

Vice President, System z software worldwide sales

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

\$241B

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

\$7.2M

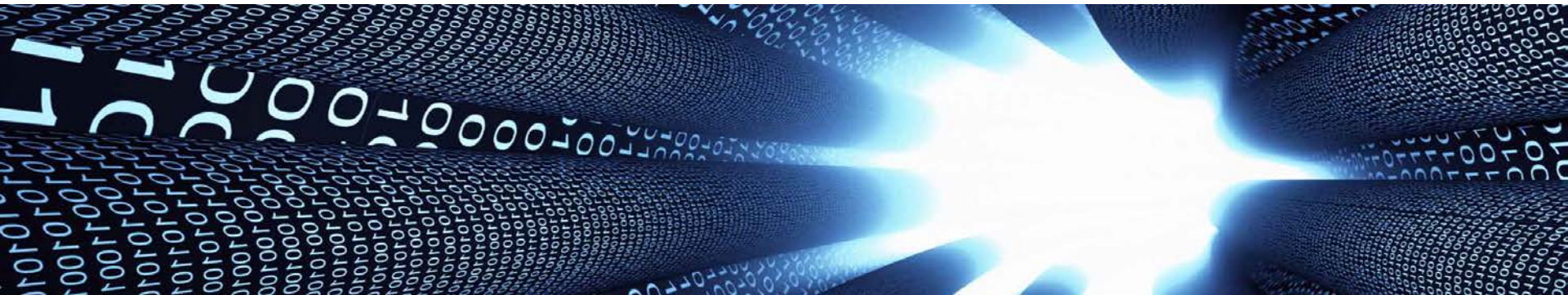
cost per incident (on average) for a security breach

Security

\$Trillion

business transactions are processed per day on a mainframe

Applications



New innovations on zBC12 for zEnterprise software

NEW

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

NEW

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

NEW

Proactive Systems Health Analytics

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

NEW

Compiler Enhancements

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

Up to **15%**

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

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

zEnterprise BC12 software solutions for Big Data and Analytics



- **A cost-competitive analytics solution optimized and integrated** to deliver mission critical analytics with **NEW!** 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



Up to **30%**

performance improvement
in query workloads with
DB2® 11 for z/OS vs. DB2

9

2000x

in performance query

50+

IBM DB2 Analytics Accelerators in
production

*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



- 
Detect performance problems and increase analytics visibility in the cloud to minimize, or preclude business impact with **ENHANCED! IBM OMEGAMON for z/OS Family**
- 
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**
- Keep systems available** by identifying the root cause of network failures in the cloud with **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



Nationwide[®]
On Your SideSM

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

NEW

- **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**

1.7M+

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

Manage and Secure

NEW

- **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**

6x and 3x

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

Extend and Transform

NEW

- **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**



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

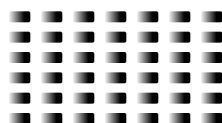
Opening a new channel with mobile

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



inter
VERSICHERUNGSGRUPPE

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**

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

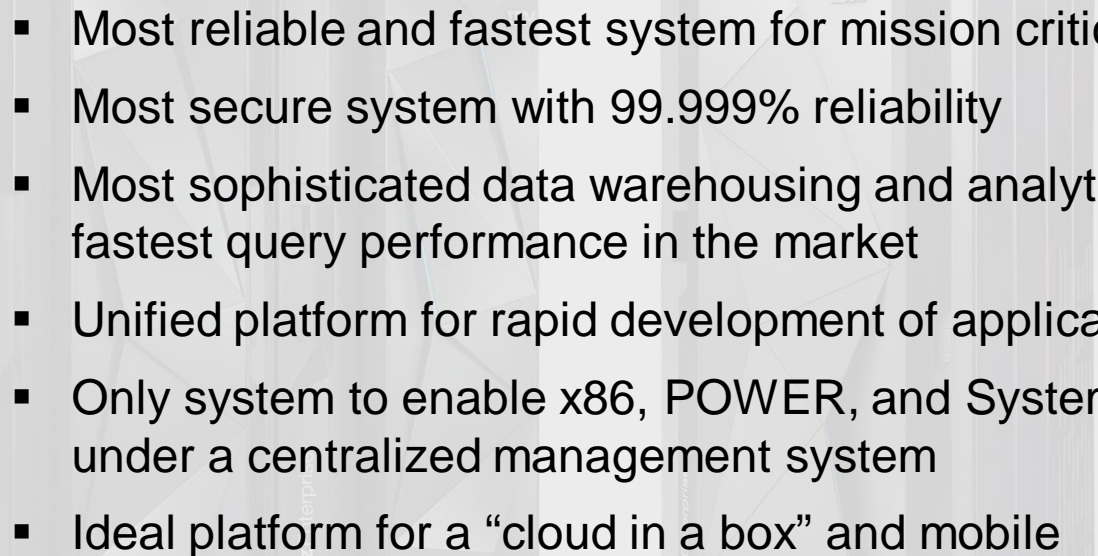
has access to sensitive data

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