

Steve Talbot-Walsh, Senior System z Client Architect (zCA)

Feb 2013



Smarter systems for a smarter planet:

# System z<sup>®</sup> Forum

Secure and resilient cloud computing  
for the modern enterprise

## System z Software Update

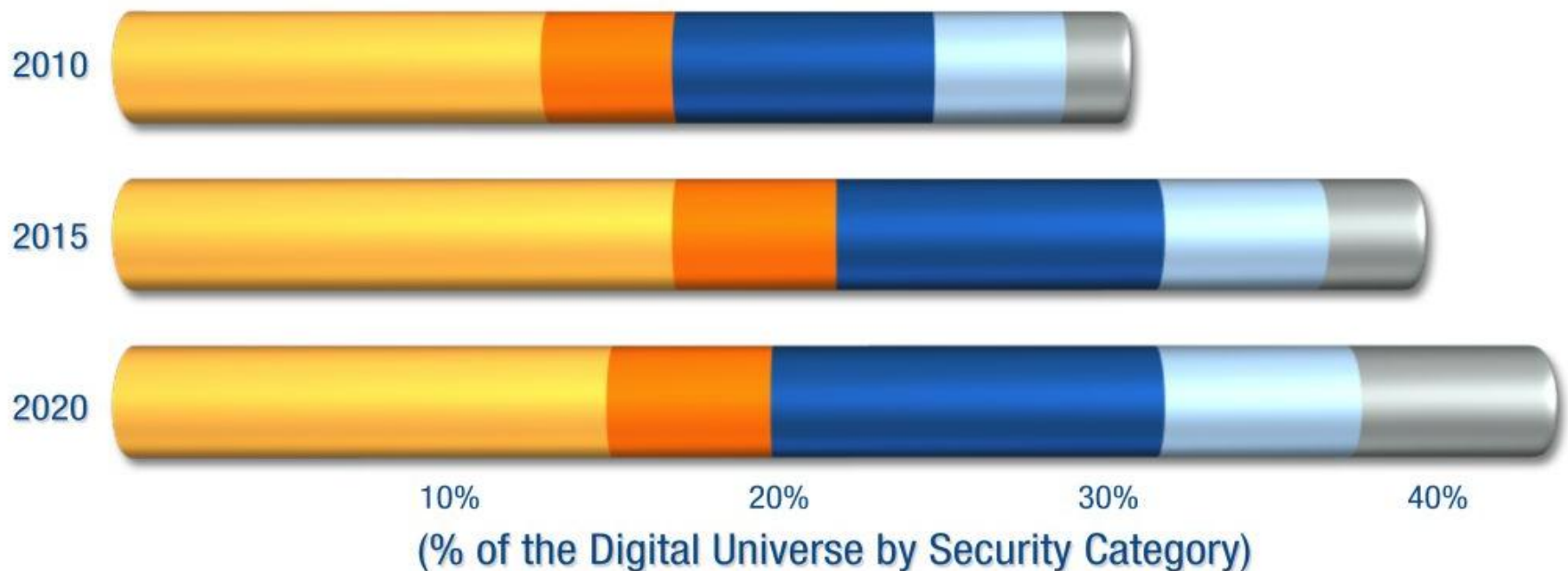
- ❑ **Supporting Mobility (Smart Phones and Tablets): Security, Security, Security**
- ❑ **Virtualization, Phase 2 Adoption, VM density**
- ❑ **Cloud Computing: Virtualization is the “on-ramp”**
- ❑ **Big Data servers, Scale-up and Scale-out**
- ❑ **Business Analytics, Operational Analytics: Finding Patterns in the Data**
- ❑ **End-to-End Workloads Span Many VMs, Need Orchestration, Management and Security**

# Business Analytics & Big Data: Drivers Across Business Processes



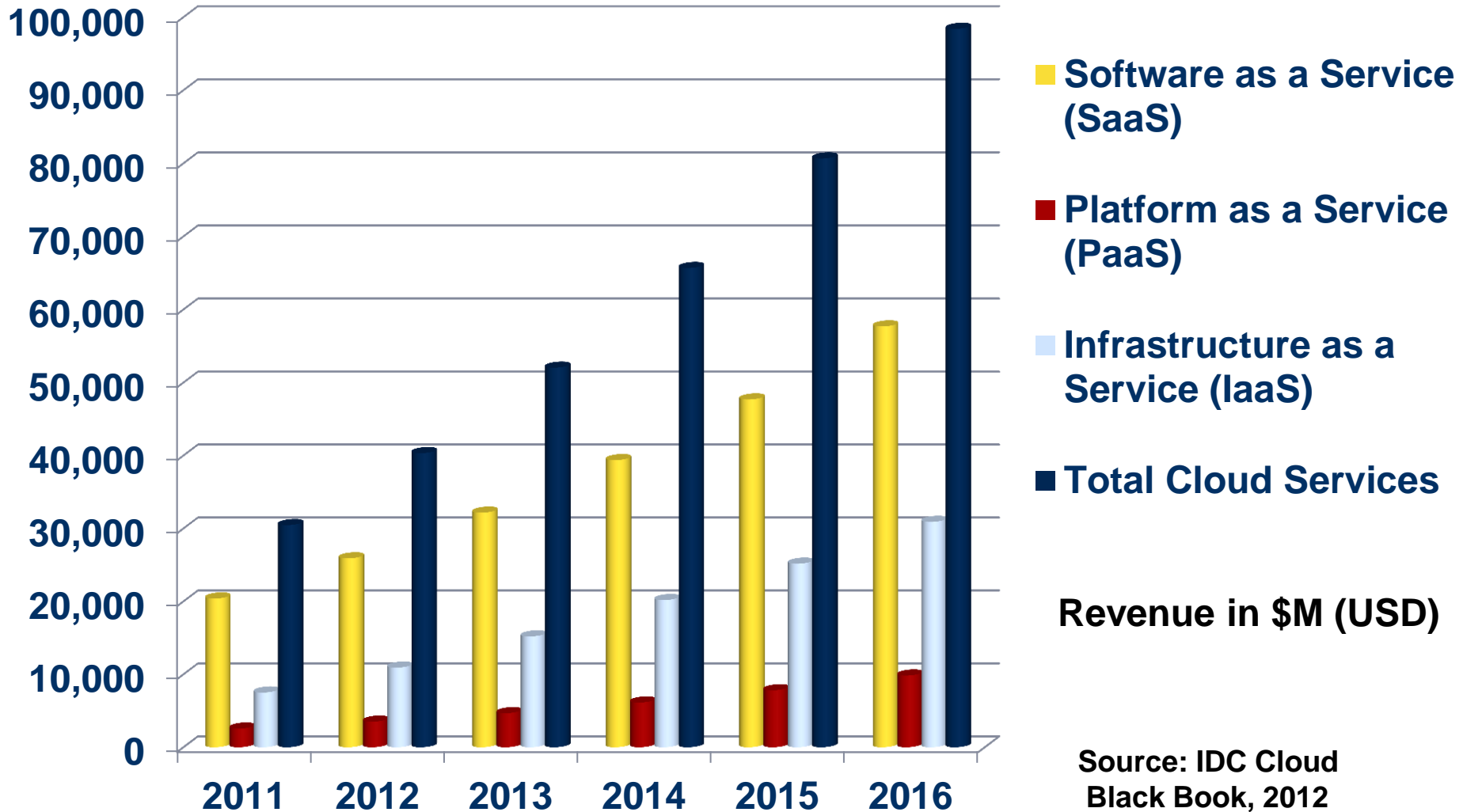
# The Need for Information Security

- Privacy** e.g., an email address on a YouTube upload
- Compliance** e.g., emails discoverable in litigation or subject to retention
- Custodial** e.g., account information, breach may lead to identity theft
- Confidential** e.g., trade secrets, customer lists, confidential memos, etc.
- Lockdown** e.g., financial transactions, medical records, military intel

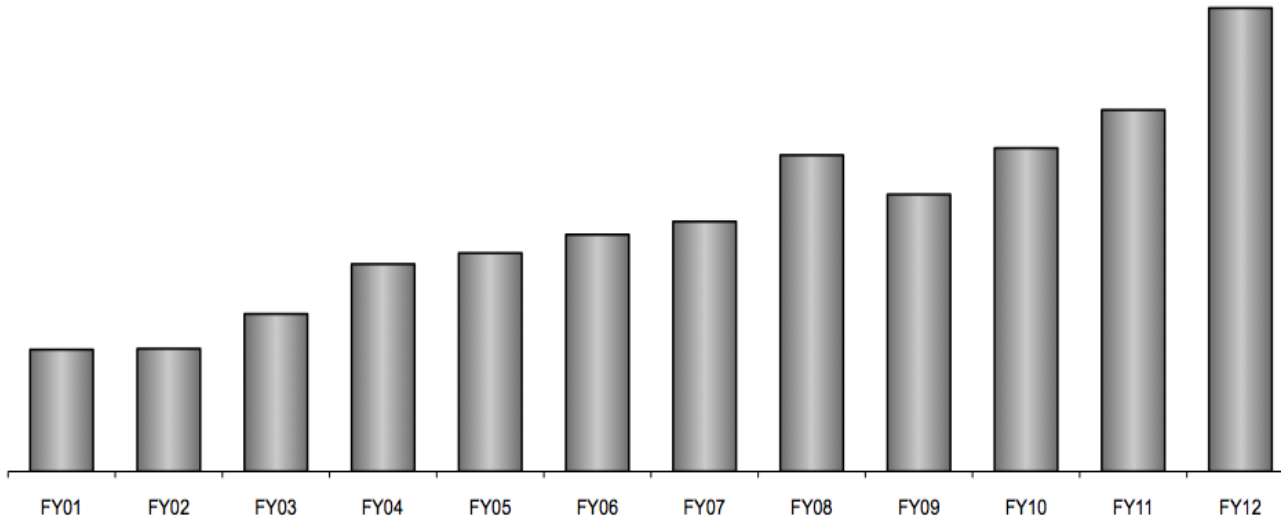


Source: IDC's Digital Universe, "The Digital Universe in 2020: Big Data, Bigger Digital Shadows, and Biggest Growth in the Far East" Sponsored by EMC, Dec. 2012

# Worldwide Growth of Cloud Services (IaaS, PaaS and SaaS), 2011-2016



# The growing IBM zEnterprise System ecosystem



4Q12: 66% yty  
The highest shipped MIPS growth in history of the m/f (49 years)

System z Total Installed Capacity

**56%**

yty revenue growth in 4Q12, best absolute dollar growth since before 2000

**180+**

new accounts since 3Q10 IBM zEnterprise<sup>®</sup> launch, with 1/3+ in growth markets

**220+**

hybrid computing units shipped since 3Q10

**3/4+**

of Top 100 enterprises have installed IFLs

[ IFL = Linux-on-z Only Engine ]

**1,000+**

schools in 67 countries are part of the IBM Academic Initiative for IBM System z<sup>®</sup>

**7,400+**

ISV apps run on IBM System z; 90 new ISVs added in 2012

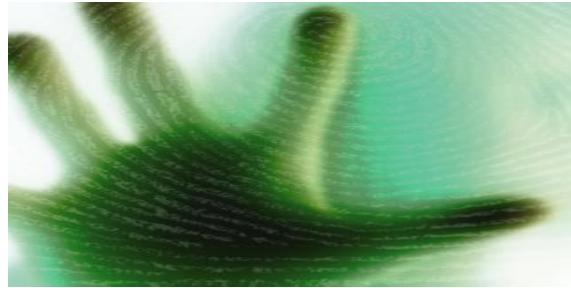
[as of 4Q12]

# IBM Software for System z delivers value with new announcements



## Cloud

Faster ROI and ability to operate in simplified cloud environments with **Smart Cloud Ready for Linux on z, CICS TS V5.1 and Tivoli® Asset Discovery for z/OS®**



## Data

Blending System z and new Netezza technologies to deliver unparalleled performance for complex analytics with **IBM DB2® Analytics Accelerator**



## Performance

Deep integration with Java™ 7SR3 and System z showing **4x aggregate throughput improvement in IMS™ workloads** over the last 3 years



## Enterprise Modernization

A new lightweight, dynamic and fast **WebSphere® Application Server** runtime model, Liberty profile on **z/OS**

Simple to use tools for mainframe development with new **Rational® Developer for System z**

Cache in on Connectivity with enhanced **Message Broker for System z and MQSeries® mobile pack**

# Exploiting Cloud on System z provides significant business value day one and increased value over time

## Infrastructure Teams

### 1 Self Service Delivery and Management

*“I need to reduce my capital costs, lower utilization, and gain accountability for resource usage”*

**Virtualization Management**



## Operations Teams

### 2 Virtualization Optimization

*“I am not gaining benefits of virtualization: image sprawl, compliance, lack of visibility”*

**Image Management**

**Updated!  
Cloud Ready for Linux on z**



## Dev & Operations Teams

### 3 Workload Optimized Cloud

*“I need to standardize and optimize applications to deliver faster”*

**Workload Optimized Patterns**

**SmartCloud Provisioning**



## CIO / IT Executive

### 4 Cloud Enabled Data Center

*“I need to optimize & orchestrate services across domains”*

**Self Service Automation**

**Usage Metering and Chargeback**

**SmartCloud Orchestration**





# Faster ROI and ability to operate in cloud environments

## *Tivoli Asset Discovery for z/OS V8.1*



New!

- **NEW support for public domain SQLite Database**
  - Reduce cost of ownership and improve responsiveness by supporting an additional database offering
- **Better manage system dependencies and improve resource efficiency with advanced reporting**
  - Views of Machine Inventory, Storage Devices, and Resources
  - Show Value Units and Product Usage
- **Enhanced oversight – Validate changes to ensure accurate reporting and process compliance**
  - Enhanced infrastructure and Administration support
  - License Validation – Ensure compliance to software entitlements and identify significant over purchasing
  - Performance / footprint improvements



*“The IBM system automation solution helps us deliver the high-availability services our customers expect.”*

FIDUCIA IT AG

## Nationwide cuts costs in the cloud



**Nationwide**<sup>®</sup>  
On Your Side<sup>SM</sup>

### 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<sup>®</sup> virtual servers running WebSphere application server, DB2, and z/VM<sup>®</sup> on System z, creating a multi-platform private cloud optimized for all its different workloads.

**80%**

Reduced power, cooling and floor space requirements

**\$15 million**

Reversed expenditure on distributed server landscape over three years

**80 – 90%**

Effective capacity utilization

“

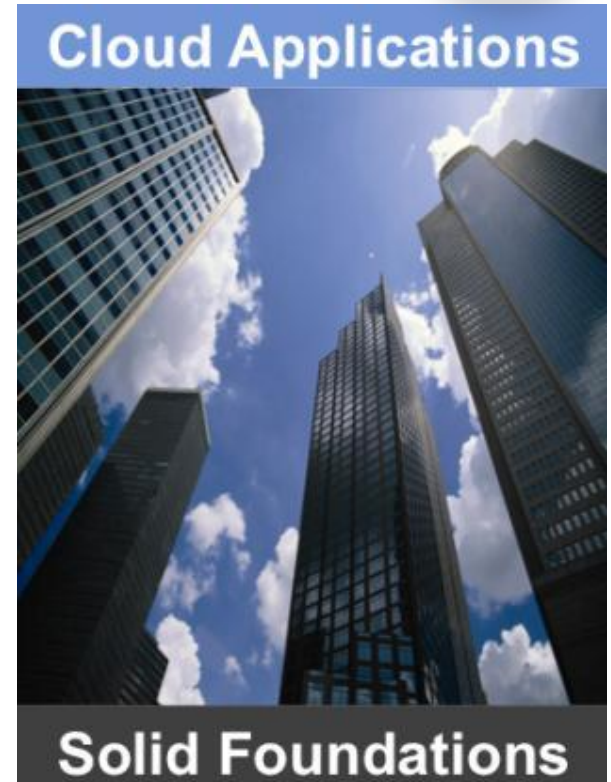
*It [Linux] effectively makes the mainframe into a private cloud – a single set of resources, managed with the same tools, but optimized for a variety of very different workloads.*

# Cloud-style CICS Applications and Infrastructure

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



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



*DATEV enhances response times for the CICS Transaction Server software by a factor of five*

# Lowering the costs of trusted analytics

## *DB2 Analytics Accelerator V3.1*



*Blending System z and Netezza technologies to deliver unparalleled, mixed workload performance for complex analytic business needs.*

***Over 50 in production!***

### ***More insight from your data***

- 3 x faster than previous generation & 50% greater capacity
- New Netezza h/w based on IBM PureData System for Data Analytics
- Unprecedented response times for “right-time” analysis
- Complex queries in seconds rather than hours
- Transparent to the application
- Inherits all System z DB2 attributes
- No need to create or maintain indices
- Eliminate query tuning
- Fast deployment and time-to-value

# Aetna manages the growth of members



Provides a range of insurance products and services for more than 40 million members.

Explosion of data due to the Affordable Care Act.



## Solution

- System z
- IBM DB2 Analytics Accelerator for z/OS

## New Feature Benefits

- **Incremental update** to meet regulators' stringent requirements for updated, on-time reporting
- **High-performance storage saver** to store data on the accelerator and save storage cost savings

Query times from **3 hours**  
to **6 seconds**

# Optimizing performance with DB2 and IMS tools

## *DB2 for z/OS and IMS*



- **DB2 Performance Solution Pack for z/OS V1.1**

NEW solution bundle that provides the vital tools needed to successfully identify, diagnose and solve performance challenges in your organization — as well as prevent them from reoccurring in the future.

- **IMS Cloning Tool for z/OS V1.2**

NEW features to allow users to mask sensitive data when refreshing databases and easily create new databases.

- **IMS Online Reorganization Facility for z/OS V1.3**

NEW features to easily allow you to schedule when you want to reorg online databases by predefining an online reorg window, saving DBA resources, CPU time, and increasing database availability.

### **The World of DB2 for z/OS**

The proven foundation for trusted, secure data... helping you to reduce cost and complexity in your IT infrastructure and gain business insight

#IBMDB2



# System z software excels in performance with Java 7SR3



WebSphere Application Server 8.5



**Up to 32%** throughput increase running same workload

WebSphere Operational Decision Manager



**Up to 38%** throughput increase running same workload

IMS 12



**Up to 32%** throughput increase running same workload

CICS® Transaction Server V5.1



**Up to 39%** throughput increase running same workload

# A new approach for application development

## *WebSphere Application Server z/OS V8.5, Liberty Profile*



- **Composable** - allowing you to specify just what function you need for the applications you are serving
- **Lightweight** - optimizes the loading of functions, which results in a footprint significantly less than traditional WebSphere Application Server
- **Dynamic** - runtime functions may be dynamically updated by simply changing the configuration XML; applications may be added or updated by simply replacing the application file in the file system directory
- **Fast** - due to the composable design and other factors, the Liberty Profile is able to execute very quickly

No-charge  
Download



< 5 seconds for  
server startup time

*A new lightweight, dynamic and fast WebSphere Application Server runtime model combined with IBM's flagship operating system platform.*



## Innovate more, maintain less

### *Rational Developer for System z Family V8.5.1*



New!

- Rational Developer for System z Family v8.5.1 uses industry standards to simplify the development of rich client interfaces, web user interfaces, traditional terminal interfaces, and back-end, business logic deployable to System z
  - ✓ Improve productivity with a responsive interface and simpler-to-use tools
  - ✓ Create modern, dynamic Web2.0 applications and web user interfaces with EGL or Java
  - ✓ Facilitate reuse of existing applications



*gained standardized development, a modern server solution and simplified operations for developers with an integrated development environment*

# HSBC Bank saves development cost and time



Optimizing processes and resources  
while improving quality



## Need

- Reduce application development costs and quickly identify and fix root-cause issues affecting performance and reliability

## Solution

- Rational Developer for System z
- CICS
- Problem Determination Tools

Reduced coding issues from  
**hours to seconds**

Increased programmer  
productivity by **30%**

# Mobile is a significant component of the evolution of computing



# University of Florida goes mobile



*Enabling 50,000 students, 5,400 faculty members and staff access to online features anytime, anywhere*

## Data provided to students real time

- Mobile formatted information of class schedules, textbooks, academic dates, grades, emergency information and campus map

Up to **1M** transactions/day

## Solution

- Accessing CICS with System z information via smartphones



# System z solutions address key CIO concerns

- ✓ Proven secured technology to develop a private cloud environment
- ✓ State of the art analytics solutions to manage the explosion of data
- ✓ Modernized tools for easy development and deployment to multiple devices

## Connect with us:



- IBM System z



- IBM System z mainframe



- IBM System\_z



- System z advocates



# System z

## *Introducing the new and updated IBM zEnterprise solutions*

IBM System z is committed to helping clients create business value through new solutions, key technologies and continued innovation.



### Cloud Ready

*Highly secure and scalable enterprise cloud*

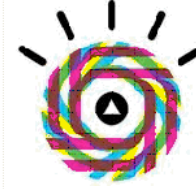
- IBM Intelligent Operations Center for Smarter Cities™
- z/VM® 6.3 Preview



### Data Ready

*Enterprise data repository that integrates operational analytics for accelerated insight*

- IBM DB2® Analytics Accelerator V3.1
- IBM Smarter Infrastructure for Social Services – Curam on IBM zEnterprise
- IBM Smarter Analytics Anti-Fraud Infrastructure for zEnterprise
- IBM Enterprise Asset Management (Maximo) for Government
- IBM zEnterprise Smarter Analytics for Retail
- z/OS® 2.1 Preview



### Security Ready

*Unmatched security for critical business processes, applications and data*

- IBM Enterprise Key Management Foundation

# What's New in z/OS V2.1 and z/OSMF V2.1

## *A preview*

### ***z/OS Version 2.1, The Smart Foundation for Smarter Computing***



#### **Ultimate Security**

*Security ready infrastructure to protect data, reduce risk and strengthen customer trust*

- New Crypto as a Service
- Additional industry standards support
- Risk reduction with audit readiness



#### **Efficiency at Scale**

*Scale and Availability for Cloud Ready Qualities of Service*

- Cloud-like scale
- Innovations for paging, throughput
- Optimized performance reporting



#### **Operational Analytics**

*Outstanding data serving to drive analytics and power new data hungry applications*

- Optimized data storage
- Faster file retrieval with new zFS
- Improved FICON® management



#### **Powered by a Superior Management Foundation**

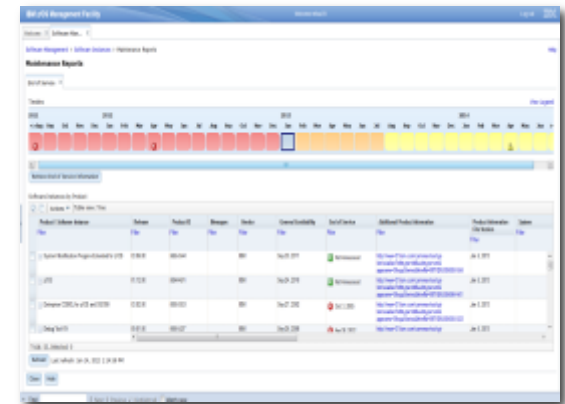
*Management built into the fabric of z/OS*



- Workload Optimization built in
- Continued batch modernization
- Extended management reporting

# z/OSMF Version 2.1, Intuitive Management for Smarter Computing

- Manage your **Software portfolio** at a glance
  - Report on software service levels and currency of system software
  - Gain a view of your system software assets
- New **Workflow** simplifies z/OS configuration tasks
  - Simplify sequencing of tasks to user roles using new workflow; addresses skills needs
- New **Optimized footprint** and fast startup
  - New use of Liberty profile in WebSphere® for z/OS to accelerate deployment; faster time to value
- Enhanced **Efficiencies**
  - New z/OSMF z/OS Jobs REST API to submit work, bridging batch and web-based applications



“ The z/OS Management Facility initiative has been expanded with a number of new functions available with z/OS V1.13. This product shows great promise of being a great help for the younger z/OS system programmers, who may not have many years of experience with the platform.



-- Bertil Anderson, Senior Enterprise IT Architect, Svenska Handelsbanken



# z/VM 6.3 preview

## Smarter Computing with Efficiency at Scale

### Improved economies of scale with z/VM Support for 1TB of Real Memory

- **Better performance** for larger virtual machines
  - 4x increase in memory scalability while continuing to maintain nearly 100% resource utilization
- **Reduce LPAR sprawl** for additional horizontal scalability
  - Up to 4x more virtual machines in a single LPAR depending on workload characteristics
- **Reduced administrative expense** for management of a smaller number of large capacity z/VM host servers

**High server consolidation ratio with support for more virtual servers than any other platform in a single footprint <sup>2</sup>**

### Improved performance with HiperDispatch

- **Improved price performance** as a result of higher and more efficient utilization of CPU hardware resources<sup>1</sup>

**Improving price performance with efficient dispatching of CPUs**



<sup>1</sup> The performance boost expected with HiperDispatch depends on workload characteristics. Memory-intensive workloads running on large numbers of physical processors (16 to 32) are most likely to achieve the highest performance gains.

<sup>2</sup> Based on IBM internal measurements and projections.

# zEnterprise Industry Solutions for a Smarter Planet

## Smarter Planet® – Industry Solutions

### Banking

- IBM Financial Transaction Manager on zEnterprise
- SAP Bank Analyzer on zEnterprise
- IBM Core Banking Solution on zEnterprise
- FSS Business Intelligence and Data Analytics Solution
- IBM Smarter Analytics Anti-Fraud Infrastructure for zEnterprise New!



### Insurance

- IBM Smarter Analytics: Anti-Fraud, Waste and Abuse Solution for Insurance
- IBM Genelco® Insurance Administration Solution
- IBM zEnterprise Insurance Integration Hub



### Government / Smarter Cities

- IBM zEnterprise Starter Edition for Cloud for Government
- IBM Intelligent Operations Center for Smarter Cities New!
- IBM Smarter Infrastructure for Social Services - Curam on zEnterprise New!
- IBM Enterprise Asset Management (Maximo) for Government New!



### Healthcare / Life Sciences

- IBM Smarter Analytics Signature Solution: Anti-Fraud, Waste and Abuse
- IBM Health Plan Integration Hub

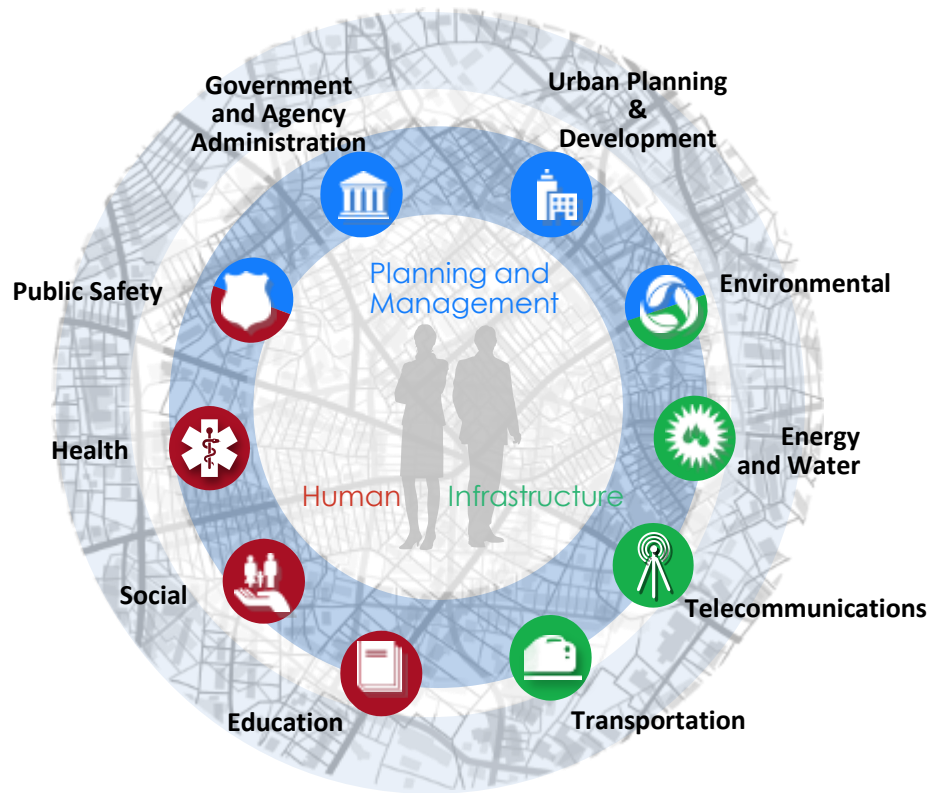


### Retail

- IBM zEnterprise Smarter Analytics for Retail New!



# Smarter Cities for IBM zEnterprise



## City Operations – Intelligent Operations Center

Information available when you need it to make the best decisions real time

## Social Program Management Curam on zEnterprise

Trusted and secure citizen's integrated data to create and improve citizen services

## IBM Enterprise Asset Management (Maximo) for Government

Optimal management by integrating data and using analytics on high value assets for quick time to value

“ Working with IBM enabled us to take an innovative approach. Instead of following the long processes of other governments or even the private sector, we were able to get things up and running quickly.



-- Gordon J. Bruce, director and CIO of the Department of Information Technology, City and County of Honolulu

# IBM Intelligent Operations Center for Smarter Cities on System z



Providing integrated data visualization, and real-time analytics that help city agencies prepare for problems before they arise and coordinate and manage problems as they occur.



## zEnterprise Differentiation

- **Virtualization** for efficient application and data consolidation that saves money – *delivers a virtual Linux® server for under \$.70 per day<sup>1</sup>*
- **High Availability** providing proven continuous, ‘must-have’, city operations - *99.999% availability.*
- **Maximum elasticity** with Capacity on Demand; respond to spikes during emergencies or disasters - *support up to 60 virtual servers on a single IFL in a single footprint for large scale consolidations.<sup>2</sup>*

# IBM Smarter Infrastructure for Social Services

## *Curam on zEnterprise*

*End-to-end social program service delivery, empowering organizations to collaborate around client's needs, making access to governmental services easier for the citizen and more effective in achieving desired social goals.*

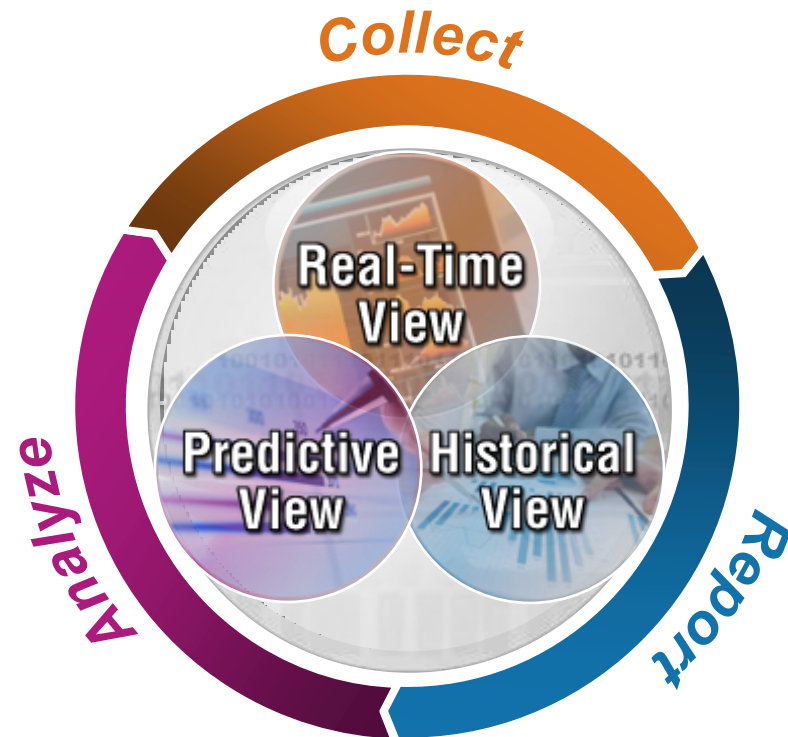
### **zEnterprise for Secure and Available Social Services**

- Protects sensitive citizen data with the highest commercially available security levels; only commercial platform with EAL5 security classification.
- Enables program managers to rapidly support new policy by adding new programs quickly at lower costs.
- Provides true 24 x 7 response and disaster recovery to provide citizens critical services when needed most



# IBM Smarter Analytics Anti-Fraud Infrastructure for zEnterprise

*Foundational infrastructure to quickly integrate real-time analytical and reporting capabilities with operational systems*



Architectural guidance that maps System z infrastructure to IBM industry solutions, initially focused on integrating anti-fraud analytics with operational systems for banking, healthcare and insurance clients.

## ***Why System z for fighting fraud\*:***

- **Less leakage:** in-database scoring can deliver 5x the transaction rate of remote scoring with a 5x reduction in response time, allowing a higher percentage of fraudulent requests to be detected pre-payment without impacting payment processing efficiency.
- **More efficient warehousing:** complex analytic queries performed against an IBM zEnterprise Analytics System 9700 warehouse measured 26x throughput and 33x price/performance improvements compared to competition.
- **Reduction of data movement cost:** the typical 4yr cost just to transfer/house z/OS data on distributed systems for analysis is over \$8M USD.

# zEnterprise growth initiative



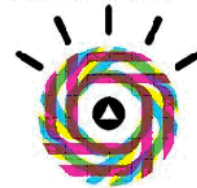
## Cloud

- Enterprise Linux Server
- IBM zEnterprise Starter Edition for Cloud (w/Tivoli Provisioning Manager)
- CloudReady for Linux on System z
- IBM System z Solution Edition for Cloud Computing (w/Tivoli Services Automation Manager)



## Analytics

- IBM zEnterprise Analytics System 9700 / 9710
- IBM DB2 Analytics Accelerator V3.1
- Cognos®/SPSS® for System z
- IBM Smarter Analytics Signature Solution: Anti-Fraud, Waste and Abuse for Health Care and Insurance on zEnterprise
- IBM Smarter Analytics Anti-Fraud Infrastructure for zEnterprise **New!**



## Security

- Integrated Cryptographic Service Facility (ICSF)
- Resource Access Control Facility (RACF®) for z/OS & zVM
- Trusted Key Entry Workstation Feature for System z
- Security zSecure Suite
- Enterprise Key Management Facility **New!**
- Encryption Facility for z/OS

# IBM Enterprise Key Management Foundation

*IBM Enterprise Key Management Foundation is a highly flexible and secure key management system for the enterprise which leverages a clients investments in System z Hardware Cryptography*



## Ultimate Security on zEnterprise

### Data Protection

*Only the System z server provides an integrated encryption infrastructure – from the server, to the z/OS operating system, and protecting sensitive data over the internet, on databases, and tape.*

### Auditing

*Up to 70% in security audit savings.*

### Compliance

*zEnterprise enables a reduction of risk and simplification of governance and compliance.*

### Transaction Processing

*Vantiv, the #1 Largest processor of PIN Debit transactions in the US, performs over 2 billion crypto transactions per month*

*“The cryptographic coprocessors provide the ability to create tremendous encryption capacity for all operating platforms. Our use of the Crypto Express processors has expanded beyond a single purpose, mainframe-only solution, to an enterprise-wide encryption service”*

*- Vantiv*



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For More Information

zEnterprise solution offerings:

- **[www.ibm.com/systems/zsolutions](http://www.ibm.com/systems/zsolutions)**

zEnterprise software offerings:

- **[www.ibm.com/software/os/systemz/announcements](http://www.ibm.com/software/os/systemz/announcements)**

# Thank You!

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