Moving to cloud?

System z provides key capabilities for optimizing workloads on Private Cloud

Cloud implementations that include System z maximize Enterprise flexibility and increase cost savings

Key Takeaways

- IBM SmartCloud open cross-platform architecture includes System z within a fit-for-purpose framework

- System z in Cloud optimizes critical business workloads requiring high availability and performance

- Implement Cloud on System z quickly with Cloud Ready, and easily migrate to SmartCloud over time

Industry today moving towards number of inflection points

Technology now #1 on CEO's list

- Huge challenges of cloud, social and mobile

- Innovations required to remain competitive

- Customer relationships driving IT agenda

Value vs. Cost pressures

- Managing risks associated with public cloud vs. efficiencies to be gained

- Lines of business pushing IT to much more rapid and dynamic provisioning of services

- System Z skills and processes need modernizing

Concern with System z ability to support new operating models and business requirements going forward

Maintaining Relevance

- Able to address new business requirements

- Combat management perceptions of z and remain core part of business

- Applications outsourced and off-loaded

Staying Efficient

- Meet growing cost demands from business

- Reduce cost of today's operations

- Concern with changing business requirements vs IT ability to deliver

- Capture economies of scale for growing and bringing new workloads to System z

But, customers continue to exploit System z as platform for business critical applications

- 90% of Fortune 500 companies rely on mainframes

- 70% of Enterprise Customers indicate z will play part in **cloud initiatives**

- 90% of top insurance companies use z to process high volume transactions

Why are customers continuing to use System z?

- Up to 50% savings on applicable IT costs

- Up to 99.999% availability and uptime

- Proven mixed-workload management

Achieving cost savings and high availability requires:
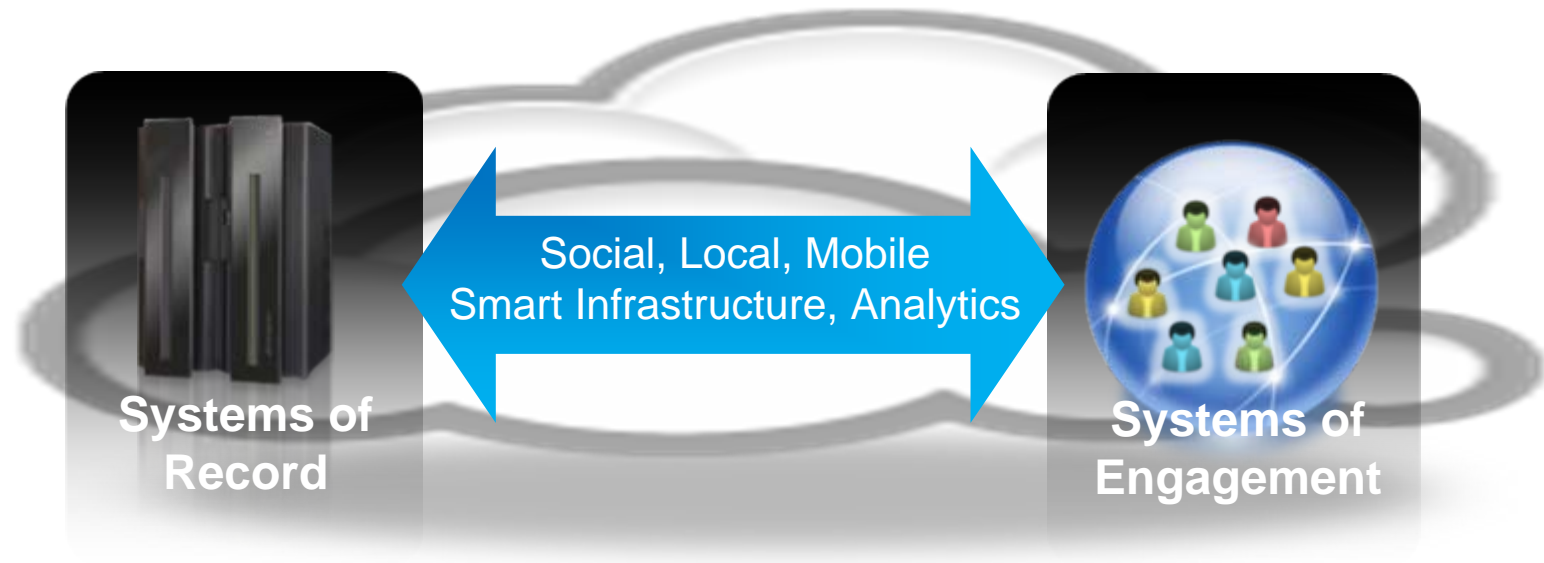
Visibility   Control   Automation

Smarter Infrastructure with new technology providing System z agility required to rapidly meet market demands

Both 'Systems of Record' and 'Systems of Engagement' included in cloud

Social, Local, Mobile
Smart Infrastructure, Analytics

Systems of Record
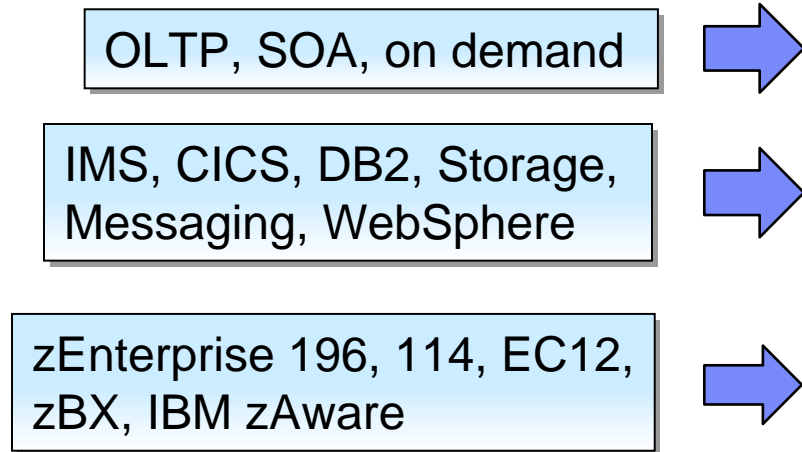
Systems of Engagement

- Transactions
- Command & Control
- Authored content focused on text and graphic docs
- Facts and data mastered in single "source of truth"

- Interactions
- Collaboration
- Community based content primarily with video / audio
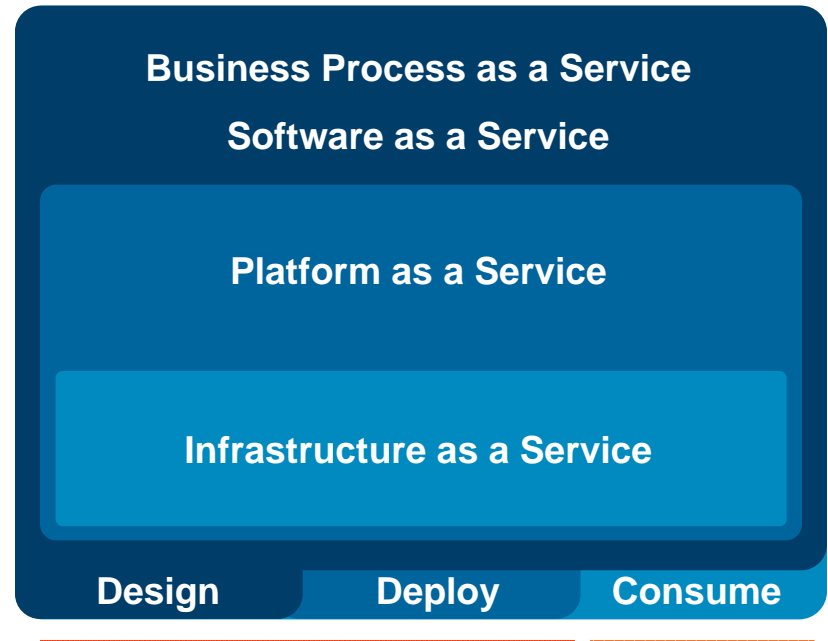- Insight, trends, analytics thru open forums

Systems of Record will be key resource supporting new Systems of Engagement implementations

zEnterprise provides key capabilities for Cloud, including virtualization, database, security, high availability and high utilization

System of Record on System z

IBMSmart**Cloud**

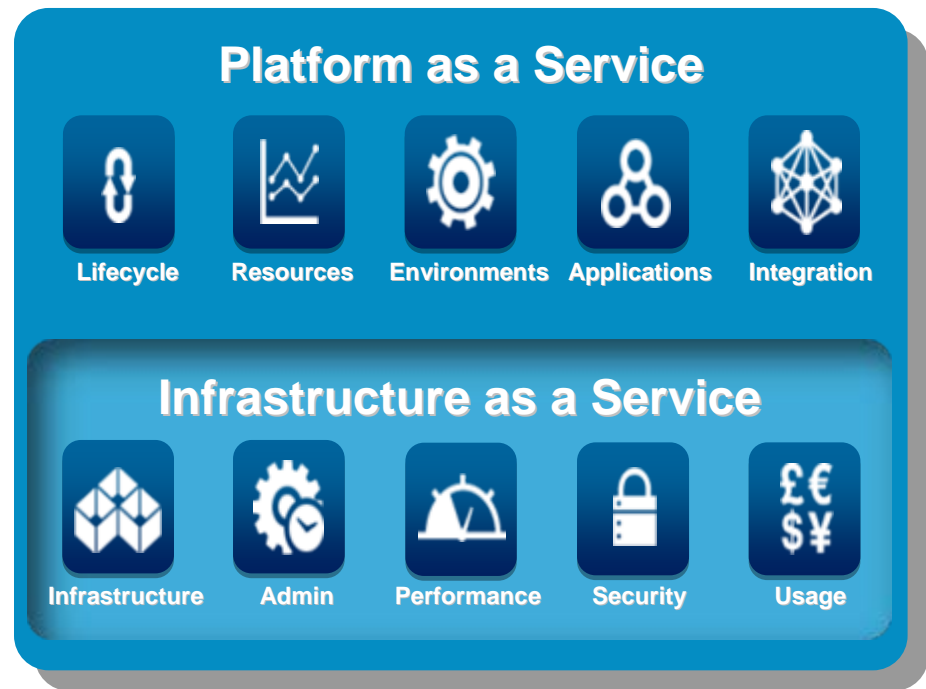| OLTP, SOA, on demand | → | **Business Process as a Service**
Software as a Service |
| IMS, CICS, DB2, Storage, Messaging, WebSphere | → | **Platform as a Service** |
| zEnterprise 196, 114, EC12, zBX, IBM zAware | → | **Infrastructure as a Service** |

Design   **Deploy**   **Consume**

IBM SmartCloud Foundation provides necessary building blocks for Cloud-enabled data center

IBMSmart**Cloud** Foundation

- **Comprehensive** set of offerings enabling Cloud infrastructures

- Optimized **patterns** of adoption adapting existing infrastructures

- **Heterogeneous** server, networking, storage & middleware

- Interoperate based on **open standards**

Platform as a Service

| Lifecycle | Resources | Environments | Applications | Integration |

Infrastructure as a Service

| Infrastructure | Admin | Performance | Security | Usage |

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- Speed infrastructure delivery from 45 days to 20 minutes
- Improve server to administrator ratio from 10:1 to 100:1

SmartCloud Foundation offer private cloud across platforms with open "fit for purpose" approach

z Enterprise secure cloud for data	Power Systems for compute intensive applications	System x reduced cost & data→ insight	Pure Systems for workload optimized design
zEnterprise EC12	*Power 770, Power 780, Power 795*	*System x eX5, x3640*	*Pure Systems*

Flexibility to choose platform that meets business requirements

- Management tools are **consistent** and **interoperable** across platforms
- Open standards approach avoids vendor lock-in
- Common tools translate to low learning curve

Benefits:
- Reduced administration costs and increased staff productivity
- Lower total cost of ownership including software licensing savings
- Decreased risk with improved automation and workload consolidation

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

openstack

Operations Teams

2 **Virtualization Optimization**

"I am not gaining benefits of virtualization: image sprawl, compliance, lack of visibility"

Image Management

Cloud Ready for Luux on z

openstack

Dev & Operations Teams

3 **Workload Optimized Cloud**

"I need to standardize and optimize applications to deliver faster"

Workload Optimized Patterns

SmartCloud Provisioning

openstack

CIO / IT Executive

4 **Cloud Enabled Data Center**

"I need to orchestrate services across domains"

Self Service Automation

Usage Metering and Chargeback

SmartCloud Orchestration

openstack

Cloud Ready for Linux on System z accelator supports quick/easy provisioning of images and applications

- Automated provisioning from simple VMs to clustered infrastructure applications

- Automated and integrated server lifecycle management for physical and virtual machines across platforms and hypervisors

- Pre-built automation that can be leveraged by customers existing tools

Benefits:

- Client turnaround time reduced per service request from **2 months down to 4 hours**

- Build simple to complex VMs consistently and fast in an automated fashion

- Ensures standardized rollout at large volumes according to enterprises' best practices
  - 7 by 24, highly available and meeting highest security standards

Use Cloud Ready to get up and running quickly, and easily migrate to SmartCloud as requirements grow

Cloud Ready for Linux on System z

Automation with Cloud
System Automation for Multiplatform

Cloud Backup/Recovery
Tivoli Storage Manager

Cloud Monitoring
ITM (OMEGAMON for z/VM & Linux)

Service Lifecycle Management
SC Control Desk (Svc Catalog)

Automated Provisioning
Tivoli Provisioning Manager

SmartCloud Foundation

Automation with Cloud
System Automation for Multiplatform

Cloud Backup/Recovery
Virtual Storage Center

Cloud Monitoring
SmartCloud Monitoring

Service Lifecycle Management
SC Control Desk (Svc Catalog/Desk)

Automated Provisioning
SmartCloud Provisioning

- Services for all stages of Cloud on z design & implementation
- Knowledge Transfer & on-going support, as needed.

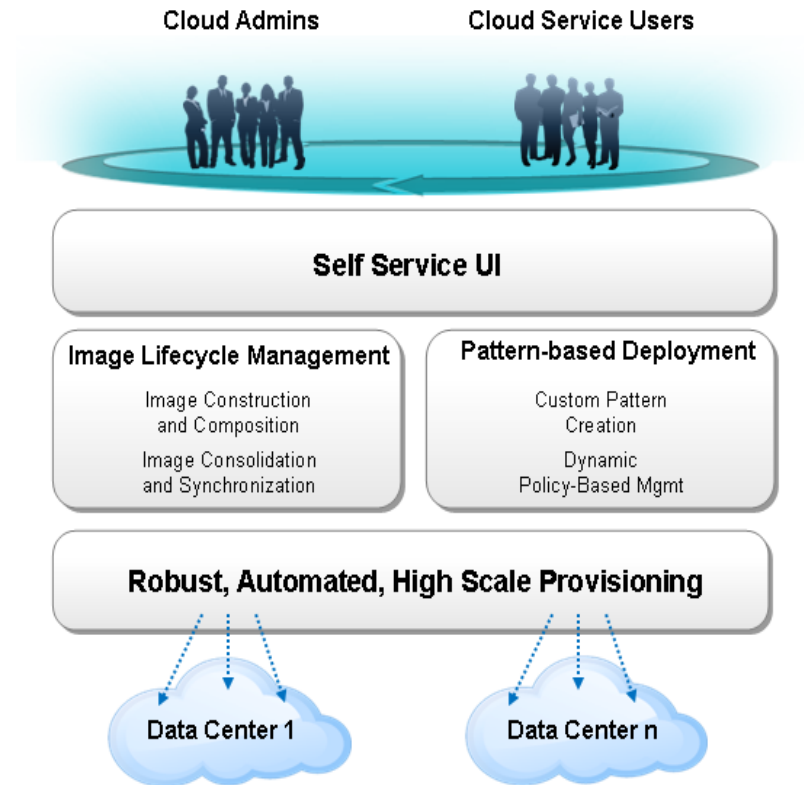ITM – IBM Tivoli Monitoring
SC – SmartCloud

<u>SmartCloud Provisioning</u> increases business agility by building the workload-optimized cloud environment

Differentiating capabilities of business-ready cloud

- Accelerate application deployment
  Reduced standardized topology deployment from over 2 months to 18 minutes

- Manage virtual environment
  40% - 80% labor cost reduction by increasing image/admin ratio efficiency

- Avoid vendor lock-in
  IBM SmartCloud supports VMware, PowerVM, KVM, z/VM, Hyper-V, and OpenStack

- Improve agility
  Deploy 100s of new VMs in less than 5 minutes

IBMSmartCloud Provisioning

Cloud Admins   Cloud Service Users

Self Service UI

Image Lifecycle Management	Pattern-based Deployment
Image Construction and Composition	Custom Pattern Creation
Image Consolidation and Synchronization	Dynamic Policy-Based Mgmt

Robust, Automated, High Scale Provisioning

Data Center 1   Data Center n

SmartCloud Monitoring includes visibility & management for z/VM & Linux applications and resources

Cloud Health Visibility and Optimization:

• Reports on Performance and Availability metrics

Foundation for Extensible Cloud Environment:

• Business Expansion based on capacity planning with ability to grow without adding hardware

Performance & availability:

• Take advantage of zVM Live Guest Relocation and Single System Image.

Client Success

▪ Major cloud service provider **consolidates 59 development & test labs into 6** centralized labs.

▪ Utilizing SmartCloud Monitoring, able to increase utilization significantly, **increasing VM density by 58%**

SmartCloud Control Desk provides IT asset and service management across entire enterprise

Holistically govern service management processes

Manage cloud services from single console utilizing Service Catalog

- Asset lifecycle management

  - Services and policies based on SLAs.

- Manage IaaS across service lifecycle

- Intelligent provisioning to simplify Private Cloud Change Control

- Automated service request handling

Benefits:

- Minimize outages related to changes within IT Operations by **up to 70%**

- Increase Process Speed and Efficiency by **up to 40%**

- Increase Service quality and responsiveness by **up to 60%**

- Optimize Software license usage and drive additional savings

System Automation for Multiplatform provides high availability of workloads across heterogeneous platforms

- Application level control through easy to use, policy and goal driven automation for resiliency without added complexity

- Reduced risk by ensuring service availability for both local disruptions and geographic disruptions

- Monitor and control Cloud Resource
    - Applications and workloads
    - Network (TCP/IP)
    - File Systems

- Integrates with System Automation for z/OS for complete zEnterprise support

Benefits:
- Achieve Cloud workload SLAs
- Simplify operation with policy based automation

Customers exploiting different approaches to take advantage of Cloud on System z today

Workload consolidation to Linux on System z

- Reduce administration and capital cost

- Remove inefficiencies due to image sprawl

- Avoid server and workload underutilization across platforms

Enabling System z to be Cloud Ready

- Get up and running quickly with Installation/Configuration Services

- Provide platform to easily interface to Enterprise wide cloud services

Cloud Ready

Creating Peer to Peer Cloud across Distributed and System z

- Provide workload optimization based on business requirements

- Manage from either distributed or z platform

Government agency modernizing for cost avoidance and investment protection based with Cloud approach

Business Challenge:

- US Government agency wanted asset management solution for physical assets (e.g. vehicles, equipment)

- Needed to deploy environment to support 5000 users
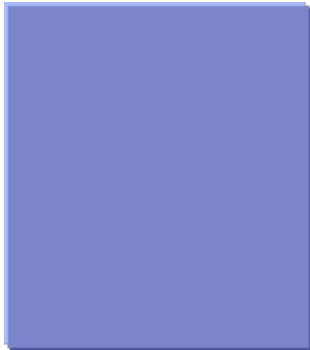
IBM Solution:

- System z10 Server with 28 IFLs

- Oracle DB for Linux on System z Servers

- IBM Maximo Asset Management for System z

Business Benefit:

- Leveraging unused processors on System z

- **Deploy in 1/3 time** of x86 servers and no additional energy costs

- Software license charges **saved $1 million** on System z

- **Included Disaster Recovery** on System z, where it would double x86 costs

Nationwide Insurance cuts costs with smart workload consolidation on Cloud on System z

Client Pain Points addressed by solution:
- Need to standardize development in Fit-for-Purpose model
- Reduce complexity of deploying workloads
- Take advantage of best platform that met characteristics
  - Initially across z Linux and x Linux.
- Monitoring and capacity management that spans x, z and p based on SLA

Solution description:
Application Deployment of standardized patterns on an integrated, optimized expert system for faster time to market

IBM Value Add:
- Patterns to reduce complexity of application development
- Consistent user and admin interfaces across x and z
- Abstraction in elements used to manage platform selection based on customer policies
- Initial platform for cloud delivery with ability to grow

Learn more about IBM's entire Tivoli System z portfolio at upcoming Pulse Conference

IBM Software

Pulse2013

Optimizing the World's Infrastructure

March 3 – 6
MGM Grand – Las Vegas, Nevada

Register at:

http://www-01.ibm.com/software/tivoli/pulse/

- *Receive Tivoli for System z information updates on a regular basis:*
  - *IBM Software Newsletter*