Service Management for the Mobile Mainframe – Delivered via Cloud

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Mainframe applications increasingly used by Mobile devices supported on Private/Hybrid Clouds

1. IBM provides System z Service Management leadership supporting Mobile and Cloud
2. Mobile requirements for high reliability and ability to scale cost effectively make mainframe good fit
3. IBM's Open Standards SmartCloud Orchestrator provides end-to-end Cloud support for Mobile Mainframe

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Systems Infrastructures Today… Pressure from All Sides…

Line of Business, CMO

"Deliver my new application, quickly…"

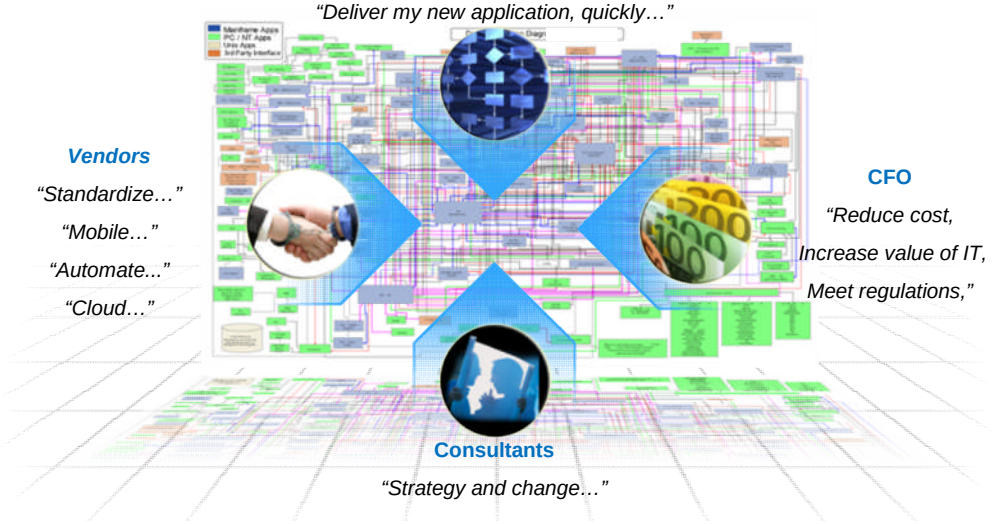
Vendors

"Standardize…"

"Mobile…"

"Automate..."

"Cloud…"



CFO

"Reduce cost,

Increase value of IT,

Meet regulations,"

Consultants

"Strategy and change…"

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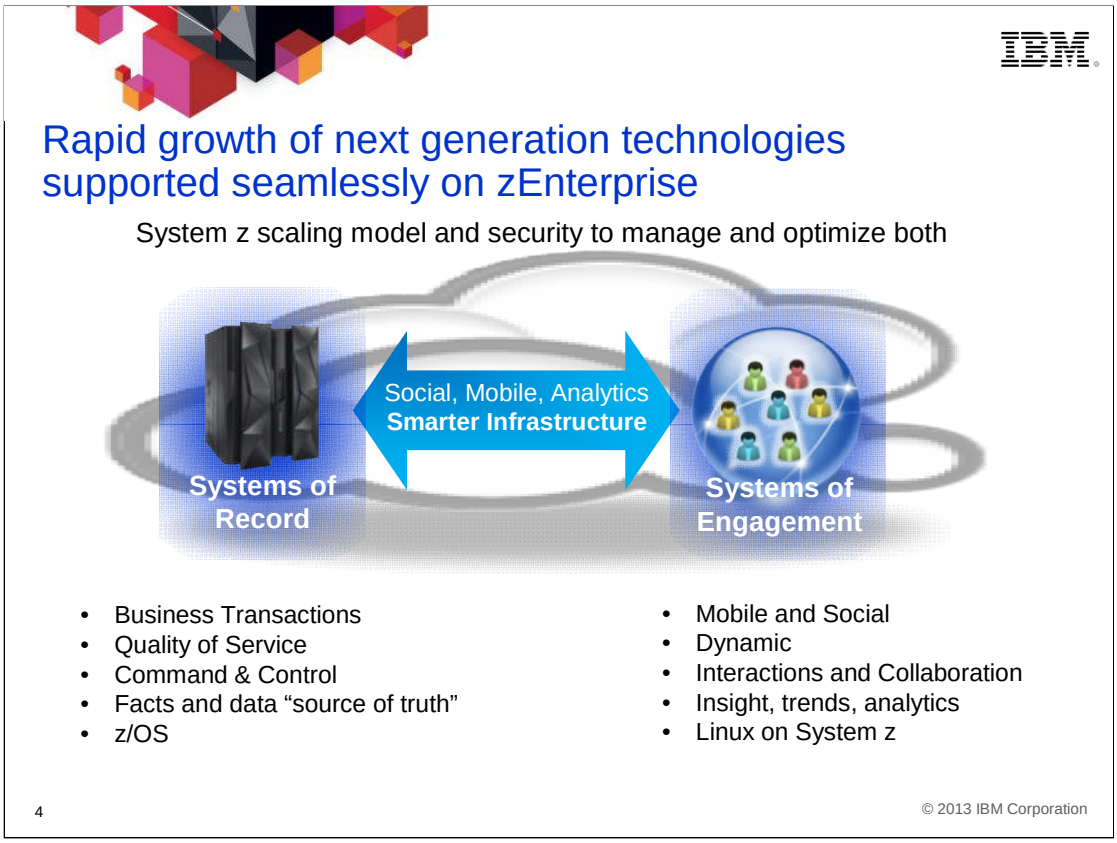

Main Point: Much of this Cloud, Mobile and Social innovation is starting to be enabled by new what is called "systems of engagement" that leverage ubiquitous cloud computing models, pervasive tooling and mobile access to bridge traditional IT "Systems of Record" to drive interactions closer to the customers and leverage relationships that are enabled by this shift.

The opportunity to capture markets through optimized customer interaction is driving rapid innovation and iteration in the cloud leveraged by these new systems. At the same time infusion of intelligence in physical assets such as automobile, building systems, electrical utilities and traffic control systems, require models that can more easily scale to collect data and deliver content.

Systems of Record are characterized by being what we think of as System z today, transactional, database, Command and Control. Systems of Record will be key in providing the data, security and availability needed for the new 24/7 requirements that come from Systems of Engagement.

Systems of engagement are the new technologies, and System z can support them just as well. Linux on System z is a great platform that provides the security, availability and reliability of zEnterprise and supports Linux workloads.

Both components are needed to successfully implement new business requirements.

System z proven platform to seamlessly address challenges for mobile and Cloud

Mobile

- Mobile Business workloads require security and high availability
- Increased mobile business data access and complexity
- Drives Scale-up and Scale-out Enterprise challenges

Cloud

- Performance, security, high availability and disaster recovery
- Data protection and regulatory compliance
- Ability to quickly and easily provision and orchestrate

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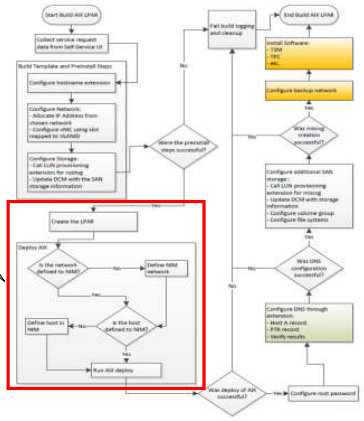
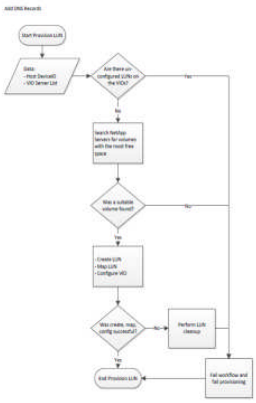
Scale-up SOR Scale-out with SOE

Evolving Data Centers to include Cloud

Automated	Cloud service delivery to deploy new apps – many mobile oriented
Standardized	Deliver “services”: repeatable, controlled, simplified, auditable
Flexible	Address unique requirements to integrate with existing processes and tools.

VM Provisioning





Real customer example

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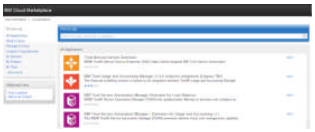
Cloud implementation can improve overall data center operations

An open and scalable cloud platform

An easy to use pallet to define cloud service automation

A marketplace for automation packages sharing and re-use



A rich set of ready to use automation packages

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Quick and easy implementation of Private Cloud on zEnterprise with provisioning of images and applications

Cloud Ready for Linux on System z

Cloud Monitoring

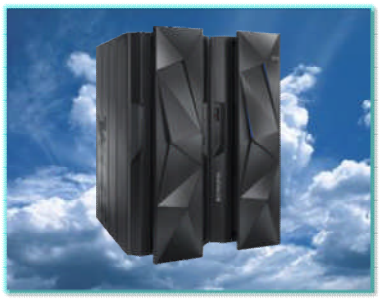
Service Lifecycle Management

Cloud Backup/Recovery

Automated Provision/De-Provision

Cloud Automation

Installation/Configuration support



Benefits:

- Bring up Cloud on Linux on System z in less then a week
- Improve productivity with user self-service portal

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Main Point: Cloud Ready for Linux on System z is a combined software and services offering

This offering includes 5 products Tivoli Provisioning Manager (TPM), System Automation for l

Cloud Ready for Linux on System z – it is available NOW. StreamFoundry will come in an in a week install and config the solution.

Client pain points addressed by the solution:

STG has sold a lot of IFL's

z/OS users want their platform to become "THE cloud platform"

z/OS users want the z/OS platform to be seen as more business critical

Linux on System z is a cheaper platform to run applications, however, the z/OS customers need the ability to demonstrate how efficient the platform is.

z/OS users want new workload to be added to the Linux on System z platform

z/OS users are concerned about their jobs as more applications move off their platform

IBM differentiators:

Only solution in the market that runs on System z and can manage a heterogeneous env't

Ability to reduce SW license cost by 60+ percent versus other platforms

Low entry point ($50K - $25K services – est $25K sw(depends on configuration)) with superior TTV through inclu

Current WINs – not referencable

•First client implementation complete – United Health Group

•Two deal in progress:

-Paid POC (26.3K) with First Data Corporation;

-Department of Justice: Bureau of Prisons

•Near closing: Prudential

Working closely with STG to exploit latest z/VM 6.2 support like live guest relocation, to dynan

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

Business Challenge:
- 3,000 distributed servers inefficient and costly. 80-90% capacity unused, software licenses on every server
- Need to standardize development in Fit-for-Purpose model
  - Take advantage of best platform that met characteristics
- Monitoring/capacity management spans x, z and p based on SLA

Solution Description:
Consolidated distributed servers to Linux virtual servers running WAS, DB2, and z/VM on System z creating a multi-platform private cloud optimized for all its different workloads

Customer Value:
- Application Development
- 80 percent reduction in power, cooling and floor space requirements

"The creation of a private cloud built around the z196 servers supports our business transformation goals by enabling the rapid, seamless deployment of new computing resources to meet emerging requirements," Jim Tussing, CTO for Operations, Nationwide

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Main Point: In the last 80 years, Nationwide has grown from a small mutual auto insurer owne
this Fortune 500-listed company is the number one provider of public-sector retirement plans a

The need for consolidation
To retain its position as a leader in a competitive industry, Nationwide wanted to increase its a

Like all insurance providers, Nationwide requires high-speed transaction processing to handle
mainframes, typically deploying other workloads – such as enterprise applications or web serv
These servers were consuming large amounts of floor space, energy and human resources, a

Jim Tussing, Chief Technology Officer for infrastructure and operations at Nationwide, says: "V
innovation across its products and channels, new environments were taking many weeks or m

First steps
Following a rigorous analysis of various options, Nationwide decided to consolidate its distribu
offered significant cost advantages over other possible platforms.

Brian Callaghan, Associate Vice President of middleware and emerging technologies at Natior
software licensing costs. IBM z/VM has enabled us to pack hundreds of virtual servers across
the business to respond to new challenges and opportunities quickly and effectively."

With IBM z/VM, the virtualized servers are able to use the fast I/O of the mainframe and share

The flexibility of the solution was proven when Nationwide premiered a high-profile TV comme
subsided, the company simply moved the allocated resources back into the central pool for otl

The two mainframes for Linux were installed in two separate data centers, with one running th
doubled as a disaster recovery resource, with data replicated between the two sites on a 30-s
best option, upgrading to two new IBM System z10® servers.

"Moving from managing physical environments to managing highly virtualized environments is

"The additional efficiency virtualization can provide brings with it additional responsibility. For e

"Careful attention to the configuration of processes, tooling and skills within the organization m
pursuit of improving our virtualized environment management capability that is now taking us i

The road to cloud
In recent years, emerging business challenges have increased the appetite for innovation at N

Jeff Imholz, Senior IT Architecture Consultant at Nationwide, says: "We worked with IBM to re
appropriate architecture based on the workload characteristics of each application."

Nationwide had initially made the decision to isolate its Linux and z/OS workloads on different
footprint, Nationwide consolidated all workloads to four IBM zEnterprise 196 servers and two z

"Our comfort levels with Linux on the mainframe and the maturity of the platform made us con
also effectively makes the mainframe into a private cloud – a single set of resources, manage

As a further optimization exercise, Nationwide deployed IBM WebSphere DataPower® and IB
Imholz. "Moving these workloads away from the z196 helps us maintain the right level of perfo
computing."

The new z196 has provided significantly greater capacity and performance for both Linux and

Major savings

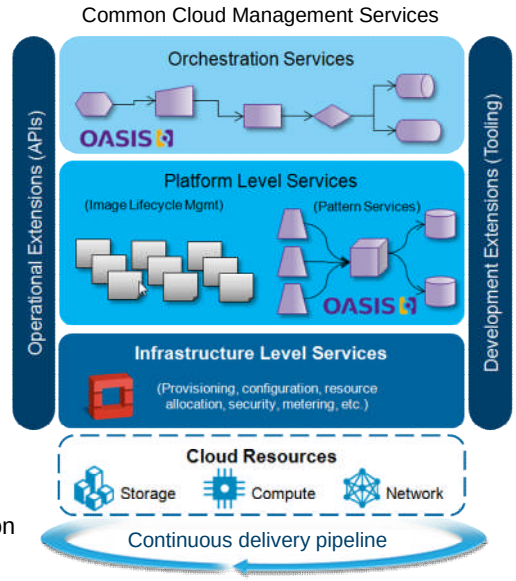
IBM Cloud implementations built on Open Standards based architecture

Governance Services:
- Ease coordination of complex tasks
- Support of OSLC from OASIS

Platform Services:
- Simplify deployment & lifecycle management
- Support of TOSCA from OASIS

Infrastructure Services:
- Highly flexible and heterogeneous
- Built on OpenStack

Extensibility:
- Plug and play
- Development tooling integration
- Pre-built images, patterns, process automation



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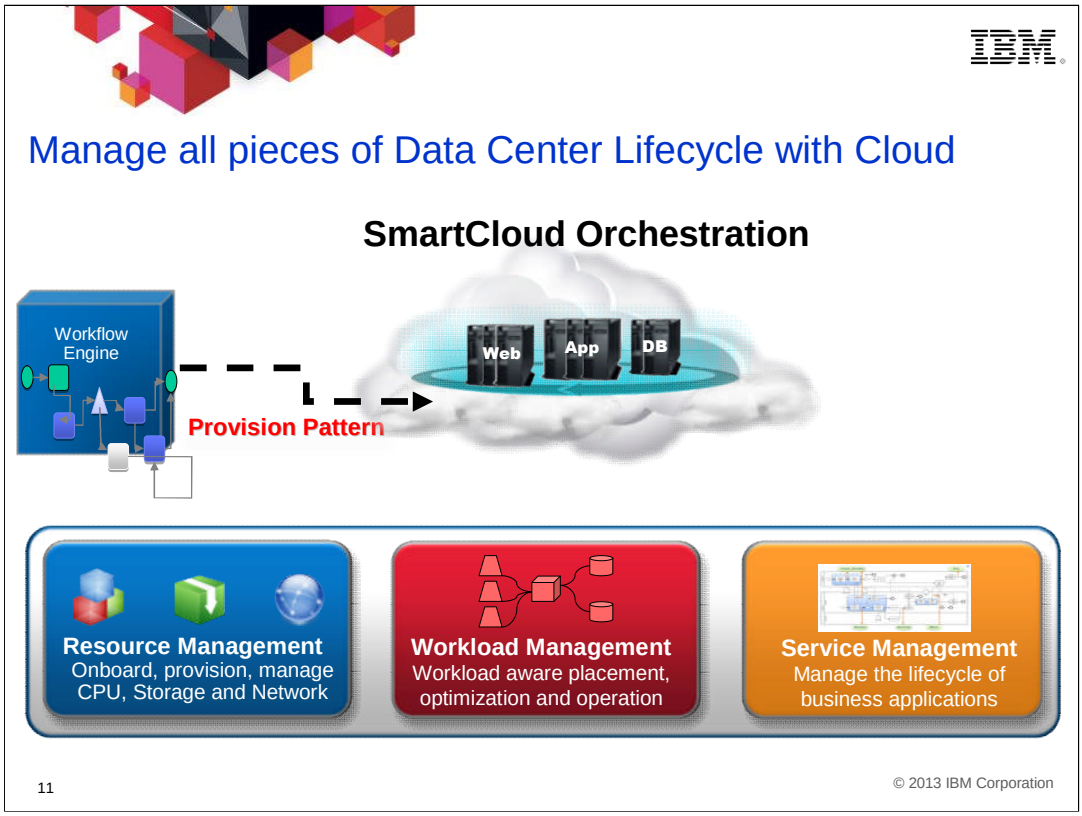
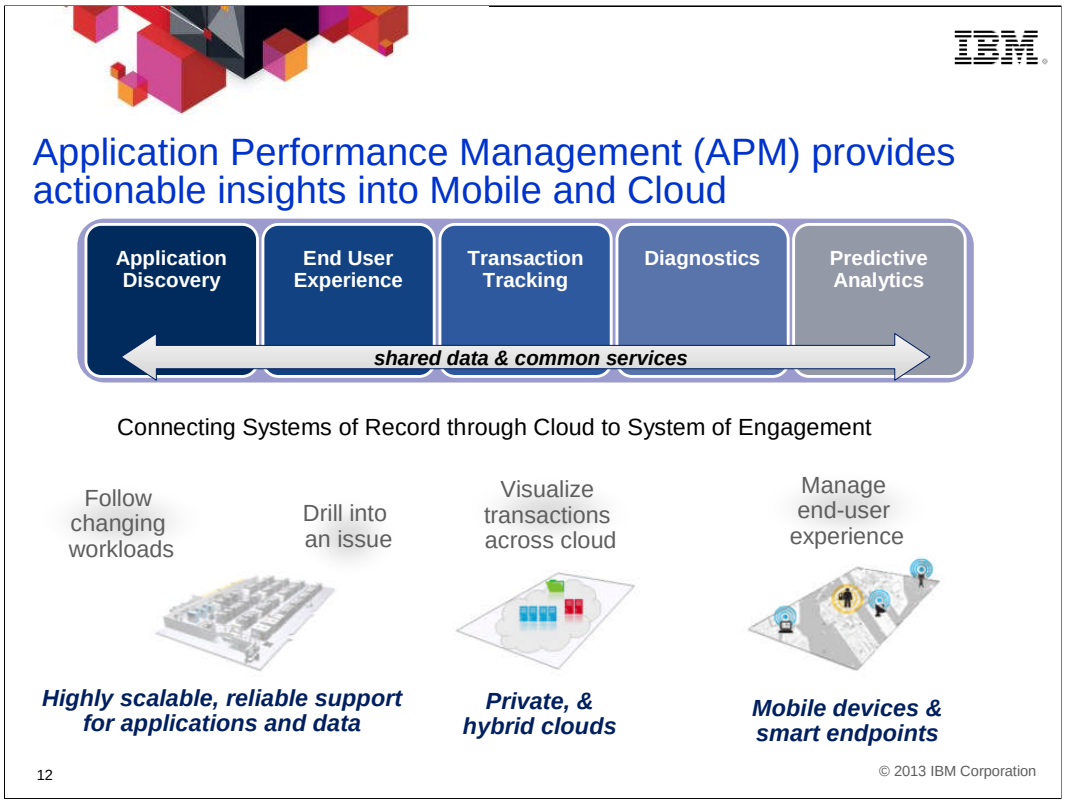


Leverage the power of cloud computing in the data center to provide a consistent, flexible and automated way to integrate the policies, processes and infrastructure across Compute, Storage and Network domains.

Key Characteristics

- Integration of automated IT operations and human tasks
- Automation across all components of the cloud stack and across IT domains
- Production-level cloud in compliance with IT and business rules, achieving business goals
- Intuitive graphical tooling to design and manage workflow
- Protect investment in orchestration-level artifacts while exploiting domain-specific technology updates



Typical APM capabilities. This defines APM. High level primary capabilities we offer and they are built on a common infrastructure sharing common services. SmartCloud APM introduced here.

With resource monitoring, you cannot accomplish what is being shown here.

You need a light view and you need a deep view – we provide agentless for light view and agent based to fit your deep visibility needs…IBM gives you the option of both…Get started with agentless and add to it with detail.

Unified Management
Central location to view & act on contextualized information
Reporting Interface to comprehend current appl environment and trends
Central repository for enterprise-wide performance mgmt data
Chargeback based on usage
Broader Coverage
Mobile & remote endpoints
OS & Virtual Environment
Databases
Web Servers and App Servers
Packaged Applications
Agent Builder supports custom apps
Virtualization
Multi-hypervisor support
Predict physical and virtual resource capacity bottlenecks
Ensure maximum resource utilization
Hybrid cloud management
Predictive Analytics
Across all layers
Automating Threshold Mgmt
Automate Trending to identify emerging Capacity and Performance issues
Predictive Learning – uncover anomalies
Integration
APM
Built on common infrastructure
Shared data model, reporting and UI
Predictive analytics from shared data warehouse
Related solutions
Deep integration with development tool set & processes (DevOps)
Supports e2e ITIL processes, including service desk, change management, and datacenter automation solutions
Scalability & Flexibility
Systems
IBM APM solutions provide broadest array of platform support including x86, Unix/AIX, and Mainframe
Monitor any custom application with IBM agent builder technology
Hypervisors
Virtualization management for all major platforms including VMware, Hyper-V, Citrix, KVM, PowerVM
Trustworthy capacity optimization recommendations from non-biased vendor
Ease of Use & Deployment
Usability

IBM

Exploit Linux on System z to save money and simplify Enterprise-wide mobile operations

Manage mobile application workstreams running across z/OS and Linux

zOS

- Cost Management
  - Accurately assess shared resource usage
  - Using TDSz as data collector of z/OS
- Application Performance Management
  - Classify mobile transactions, track E2E SLA
  - Merging information with OMEGAMON
- Log Analytics
  - Insights on Events
  - Application running on z/OS and zLinux

zLinux

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System z Service Management handles high growth rates and scalability of Mobile applications

- Dynamic scaling of Mobile workloads drives critical requirement for enhanced automation
  - 24/7 availability requires high degree of mainframe **System and Workload Automation**
- Network visibility and management important to keeping mobile apps available and performing
  - **End-to-end monitoring** with OMEGAMON
- Mobile as an extension of Cloud
  - Requires business critical asset and **end-point management** across distributed & System z

Top Mobile Adoption Concerns:

1. Security/privacy (53%)
2. Cost of developing for multiple mobile platforms (52%)
3. Integrating cloud services to mobile devices (51%)

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Main Point: Mobile is growing rapidly and it is impacting business applications running on System z. Mobile creates an environment where transactions come up 24/7 and at varying rates. This unplanned dynamic scaling requires exploitation of automation to allow for starting and stopping transactions and resources on a more dynamic basis to both minimize resource usage and maximize availability.

With Mobile the network becomes even more important as a key component of an end-to-end workload, and being able to monitor and manage the application end-to-end, and not just one machine at a time will be critical. OMEGAMON family, including OMEGAMON for z/OS and OMEGAMON for Mainframe Networks, working with other Tivoli Monitoring components can help with end-to-end visibility.

And with Mobile as an extension of Cloud, the ability to manage the security of devices and applications managing Linux on z end-points.

Getting around smarter

Just getting around the 2,000-acre UF campus is a challenge, especially for new students. The UF Mobile Web makes it easier, safer and faster. A live interactive map of the campus shows where buildings are located. An emergency feature allows users to contact the UF Police or the Operator in two clicks. The campus is serviced by the Gainesville Regional Transit System, and an interactive map enables the user to see where a bus is on its route and how long it will take to arrive. A people finder provides contact information for students and faculty.

The heart of the UF Mobile Web is the Integrated Student Information System (ISIS), which keeps students on track with class schedules, required textbooks, academic dates and information, grades and important announcements. "Academic life can be very complicated, especially in a vibrant environment such as the University of Florida, with so many activities and demands on the student's time," says Steve Ware, systems administrator/programmer, University of Florida. "The UF Mobile Web helps students navigate through this information overload and meet their responsibilities."

The UF Mobile Web was developed using the Mobile Web Open Source Project v2.5.0, a fork of version 0.9 of MIT Mobile Web. When students access ISIS on their smartphones, they are actually accessing the university's IBM CICS Transaction Server environment, which runs on the IBM mainframe. IBM CICS is an advanced mainframe transaction processing solution that provides powerful and flexible support for online transaction processing (OLTP) operations.

Boosting performance by four percent

No stranger to CICS, UF recently migrated to CICS Transaction Server for z/OS®, Version 4.2 from 4.1, in a beta testing program for the new version. "The University of Florida has been participating in CICS betas for about a decade, which has helped contribute to the continued success of CICS and the mainframe at UF, where we rely on CICS for our core business, which is our 50,000 students," Ware comments.

UF did load testing with CICS 4.1 and 4.2 versions to see if there was a difference in the performance of ISIS. "There was actually a four percent improvement in the performance of the CICS workload with 4.2," says Ware. "IBM has delivered another very fast, modern and extendable CICS Transaction Server in CICS TS V4.2."

Fast development in a few weeks

UF uses the IBM Communications Server CICS socket interface. "The socket interface made the development of the UF Mobile Web component that much easier because it utilizes several web servers running Apache," says Ware. "We were able to put a test environment together in a few weeks."

The UF CICS environment runs with IBM DB2® 10 database and VSAM. The data is stored in VSAM and DB2 tables. Most applications are developed in IBM High Level Assembler and, to a lesser degree, with IBM Enterprise COBOL for z/OS.

UF Information Technology (UFIT) management, UFIT CICS systems staff and UF ISIS CICS application developers use IBM Tivoli® OMEGAMON® XE for CICS to improve time to resolution should an issue arise with CICS performance. This helps to keep system availability high.

UF recently took delivery of an IBM System zEnterprise 114 server, replacing its IBM System z9® Business Class mainframe. "The upgrade to the zEnterprise 114 mainframe resulted in a 1.4-fold performance improvement," says Ware. "What's more, the CPU consumption for the CICS workload on the z114 has decreased approximately 30 percent."

zEnterprise continues to provide value in implementing growing Mobile, and Cloud workloads

1. IBM strategy and tools support reliably running Mobile and Cloud workloads on System z cost effectively
2. IBM can orchestrate across z/OS Systems of Record and Linux on z Systems of Engagement for workload aware performance, analytics and monitoring
3. IBM only vendor who can tie technologies together with Visibility, Control and Automation to meet end-to-end SLA

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In conclusion, System z will continue to be an important platform for customers looking to implement new technologies like Mobile, Big Data and cloud, with their rapidly increasing requirements for performance and availability cost effectively. IBM has always supported Systems of Record and is the proven leader in that area. New Systems of Engagement workloads can also run on zEnterprise, with its complete set of Visiblity, Control and Automation capabilities to support every higher SLA requirements.

Learn more about the IBM's Mobile, Cloud and SmartCloud Foundation Solutions

Mainframe Service Management	http://www-01.ibm.com/software/os/systemz/itsm/
Enterprise Cloud Computing	http://www-03.ibm.com/systems/z/solutions/cloud/
Enterprise Linux Server	http://www-03.ibm.com/systems/z/os/linux/els.html
Workload and System Automation	http://www-01.ibm.com/software/tivoli/solutions/system-workload-automation/
Tivoli Workload Scheduler	http://www-01.ibm.com/software/tivoli/products/scheduler/
IBM Tivoli Monitoring	http://www-01.ibm.com/software/tivoli/products/monitor/
OMEGAMON XE Family	http://www-01.ibm.com/software/tivoli/products/omegamonxeproductline/
Tivoli System Automation for z/OS	http://www-01.ibm.com/software/tivoli/products/system-automation-zos/
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