

December 2013



# System z in a Mobile World

The role of System z in your mobile strategy



As enterprises work to gain control of the challenging mobile environment, System z has a key role in hosting mobile applications, both as a System of Record, and as a System of Engagement.

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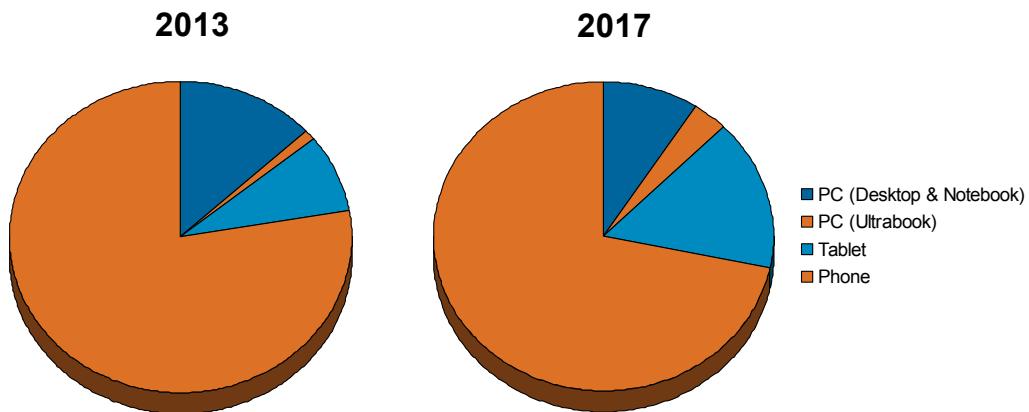
## Agenda

- Enterprise mobile challenges
- IBM MobileFirst
- System z's role in Mobile Applications.
- IBM Worklight on z
- CICS, IMS, DB2 are ready for mobile. (Quick video demo)
- What our customers are doing.
- Your next steps



## Mobile Devices are 80% of the devices sold to access the internet.

### Worldwide Shipment of Devices to Access the Internet



**Worldwide Devices Shipments by Segment (Thousands of Units)**

Device Type	2012	2013	2014	2017
PC (Desk-Based and Notebook)	341,263	315,229	302,315	271,612
PC (Ultrabooks)	9,822	23,592	38,687	96,350
Tablet	116,113	197,202	265,731	467,951
Mobile Phone	1,746,176	1,875,774	1,949,722	2,128,871
<b>Total</b>	<b>2,213,373</b>	<b>2,411,796</b>	<b>2,556,455</b>	<b>2,964,783</b>



## Mobile Internet users will surpass PC internet users by 2015.

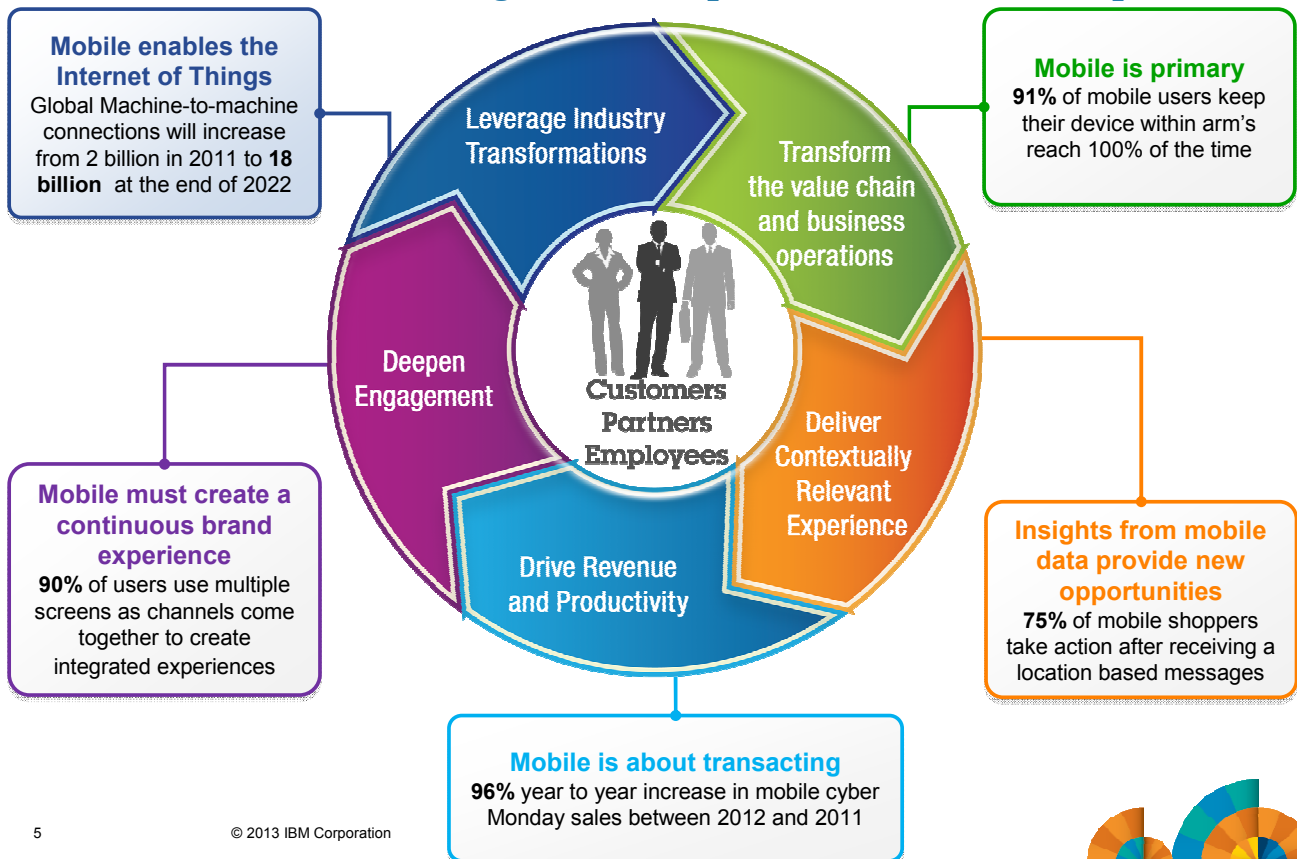


The number of people accessing the Internet from smartphones, tablets and other mobile devices will surpass the number of users connecting from a home or office computer by 2015, according to a September 2013 study by market analyst firm IDC.

Mobile has already superseded the Web  
Web is the new Legacy!

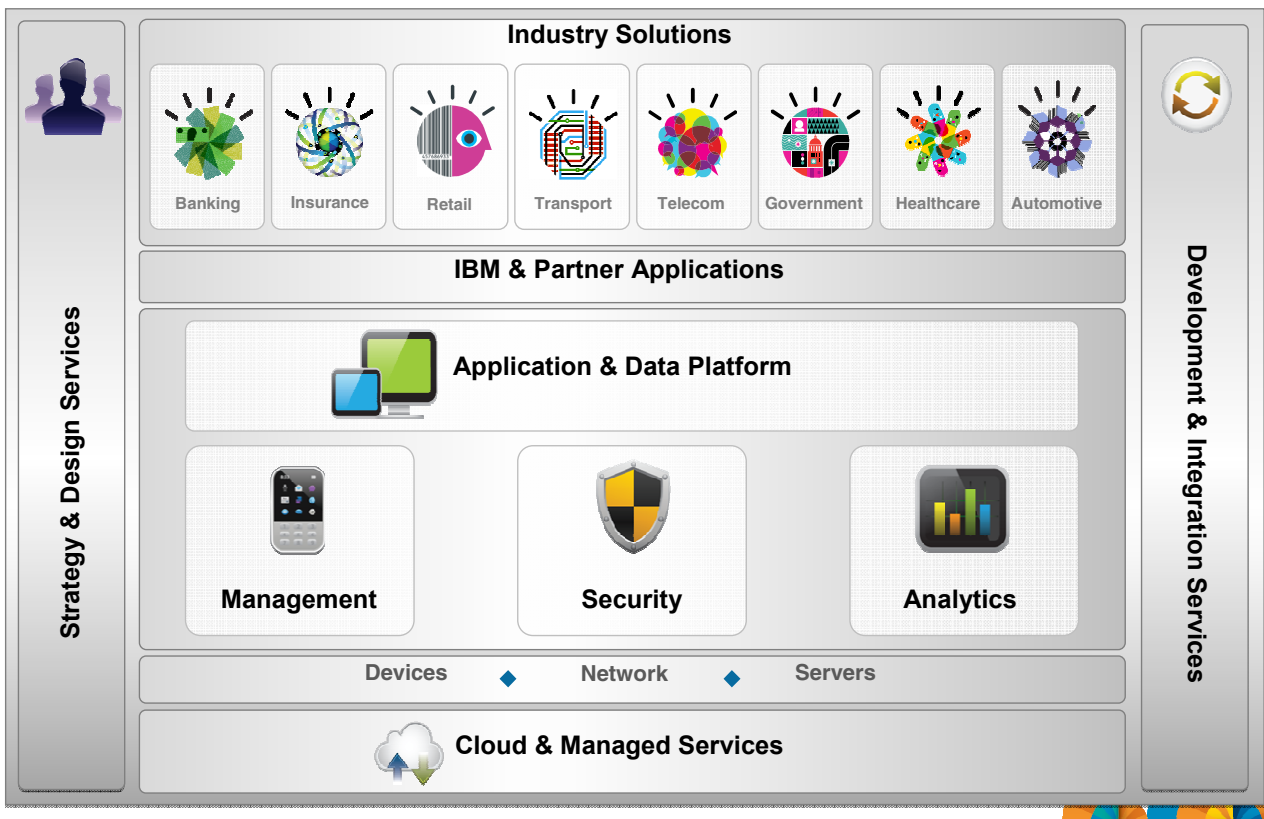


## Five mobile trends with significant implications for the enterprise





## IBM MobileFirst offering portfolio



## IBM MobileFirst Application & Data Platform

### For clients who need to:

- Quickly develop and deploy high quality mobile apps across multiple platforms
- Seamlessly connect rich mobile applications to enterprise data and services
- Provide mobile collaboration within the enterprise



### Key offerings:

- **IBM Worklight**
- IBM Rational Developer (and **RDz**)
- IBM Rational Test Workbench
- IBM MessageSight & MQTT
- **IBM Collaboration – Connections, Portal, Notes/Traveler**

### IBM MobileFirst Platform offers:

- ✓ Native, web, or hybrid app development
- ✓ Tools to build & test high quality apps for many devices
- ✓ Management, security, continuous delivery & distribution of apps
- ✓ Easy connectivity to existing data & services for mobile usage
- ✓ On-premises or managed service delivery



## IBM MobileFirst Management

### For clients who need to:

- Implement BYOD with confidence
- Manage secure sensitive data, regardless of the device
- Manage, track and optimize mobile expenses
- Handle multi-platform complexities with ease



### Key offerings:

- IBM Endpoint Manager for Mobile Devices
- Fiberlink Maas360
- IBM Emptoris Rivermine Telecom Expense Management
- IBM Mobile Enterprise Services for managed mobility

### IBM MobileFirst Management offers:

- ✓ Unified management across devices
- ✓ Selective wipe of corporate data
- ✓ Configuration & enforcement of password policies, encryption, VPN access & camera use
- ✓ Streamlined workflow between development & operations with an integrated Enterprise App Store
- ✓ Optimize telecom expenses with detailed usage analyses
- ✓ End-user portal for management of mobile equipment, carrier plans, and usage tracking
- ✓ On-premises or managed service delivery





## IBM MobileFirst Security

### For clients who need to:

- Protect devices and data
- Safeguard mobile apps
- Defend the network
- Preserve user experience without compromising security
- Ensure secure access



### Key offerings:

- IBM Security Access Manager for Cloud and Mobile
- IBM Security Appscan
- **zSecure**
- **QRadar**

### IBM MobileFirst Security offers:

- ✓ Context aware risk – based access control
- ✓ Mobile threat protection
- ✓ Strong session management & Single Sign-on
- ✓ Vulnerability analysis for mobile apps
- ✓ Visibility and analysis of security events from the device, network, user end app behavior



## IBM MobileFirst Analytics

### For clients who need to:

- Optimize digital & mobile experiences to drive online conversion
- Analyze mobile behaviors and quantify business impact of user struggles
- Improve customer service resolution and drive loyalty



### Key offerings:

- IBM Tealeaf CX Mobile
- **Cognos Mobile**

### IBM MobileFirst Analytics offers:

- ✓ Automatic detection of customer issues through user and mobile device data
- ✓ User behavior drill down with high fidelity replay & reporting of the user experience
- ✓ Correlated customer behavior with network and application data
- ✓ High conversion and retention rates with quantifiable business impact analysis



## IBM MobileFirst Strategy & Design Services

### For clients who need to:

- Ensure mobile projects yield measurable business value
- Link mobile investments to ROI and IT strategy
- Establish plans for growth and maturity of mobile initiatives



### Key offerings:

- Mobile Strategy Accelerator
- IBM Interactive
- IBM Mobile Infrastructure Strategy and Planning Services

### IBM MobileFirst Strategy & Design Services offer:

- ✓ Customer journey mapping for mobile engagement
- ✓ Accelerated mobile strategy & business case creation
- ✓ Vision and delivery of compelling mobile web experience
- ✓ Detailed strategies for infrastructure for mobile enterprise IT & communication initiatives



## IBM MobileFirst Development & Integration Services

### For clients who need to:

- Develop new mobile applications
- Integrate mobile applications with enterprise IT systems
- Manage and secure mobile environments
- Maintain visibility, control and automation of mobile devices



### Key offerings:

- IBM Mobile Application Development from the Cloud
- IBM Mobile Application Management Services
- IBM Mobile Enterprise Services - Mobile Application Platform Management

### IBM MobileFirst Development & Integration Services offer:

- ✓ Fast cycle development of mobile applications across platforms
- ✓ Mobile app integration for seamless connectivity and data management
- ✓ Secure and seamless wired, wireless, cellular and WiFi network access including increased network bandwidth required for voice, data and video
- ✓ Secure mobile device and application management



## Cloud and Managed Services

### For clients who need to:

- Manage complex IT infrastructures and/or multi vendor mobile environments
- Optimize IT resources across the extended enterprise
- Address shortages or gaps in mobile IT skills



### Key offerings:

- IBM Mobile Enterprise Services for managed mobility
- IBM Mobile Application Development from the Cloud
- Fiberlink Maas360

### IBM Cloud and Managed Services offer:

- ✓ Flexible and scalable compute power with access to greater network bandwidth
- ✓ Predictable allocation of, and investment in, current skills and IT resources that support mobile initiatives
- ✓ Multi-vendor integration and device support
- ✓ Highly efficient coordination of global mobile projects



## Enterprises face unique mobile application challenges

### Fragmentation and developing for multiple mobile platforms

- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations



### Accelerated time to market requirements

- Accelerated development demands instant provisioning of development servers.
- Spikey mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.



### Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.



### ...and Unique z Requirements

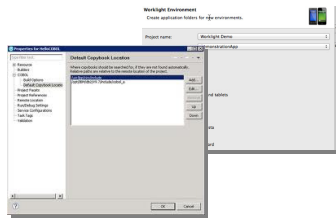
- Development tools that seamlessly integrate z data and trans.

- Mobile tools supported in Cloud-based development and production environments.

- Easy access to z data and trans.
- End to end trans security.
- Low incremental MIPS cost.

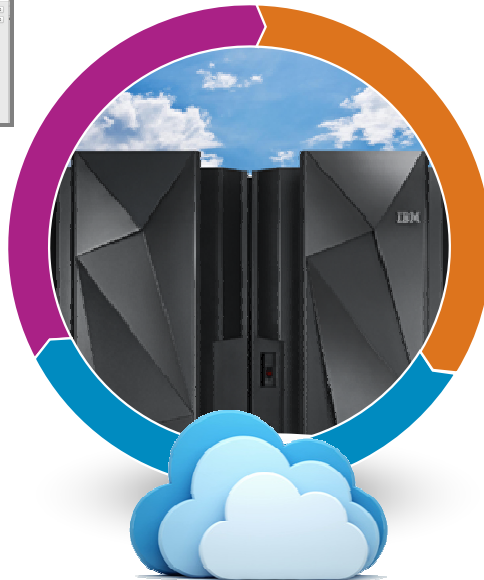


## Mobile and Cloud with zEnterprise



### System z applications

Core CICS, IMS, DB2 and other applications and databases cloud and mobile ready



### Mobile Apps

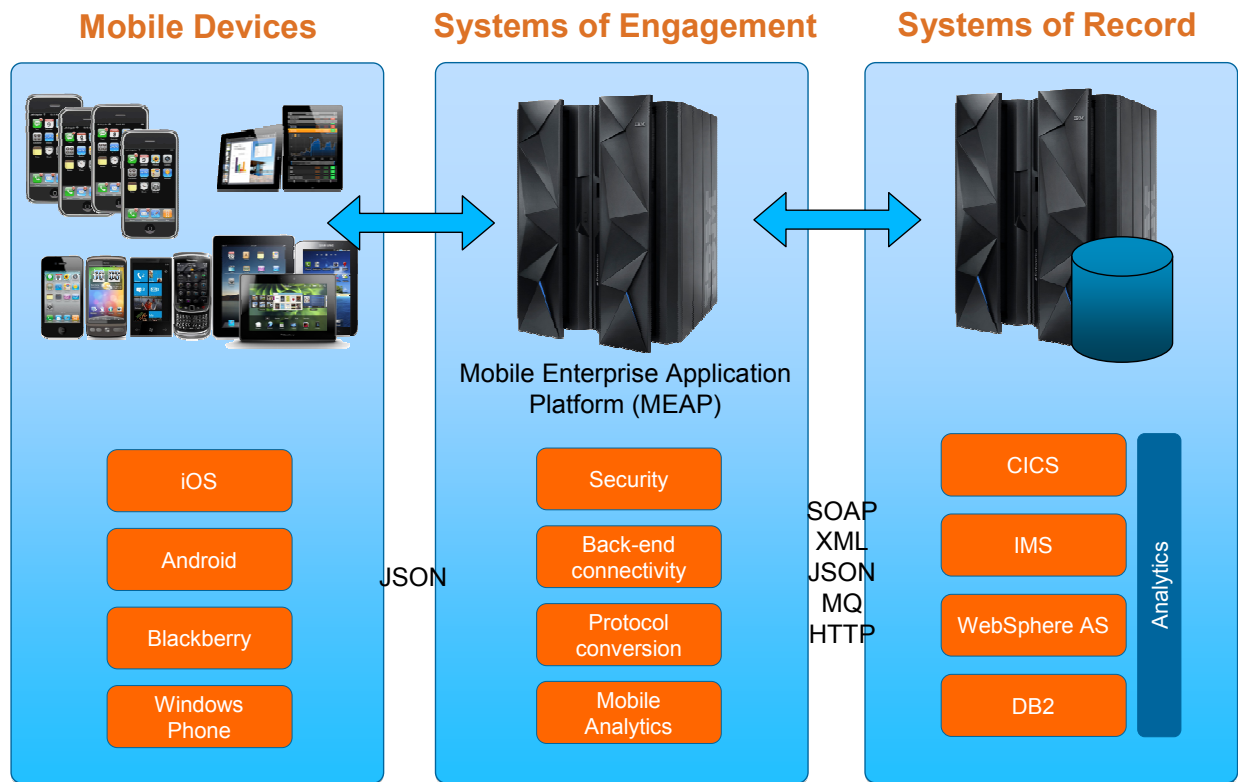
developed using Worklight for flexible, secure, low-latency access to z/OS data.

### Infrastructure

Massive scalability in a single footprint for both z/OS and Linux environments. Secure your customers private data. Cloud orchestration, provisioning and automation with Tivoli® solutions



# Typical mobile environment

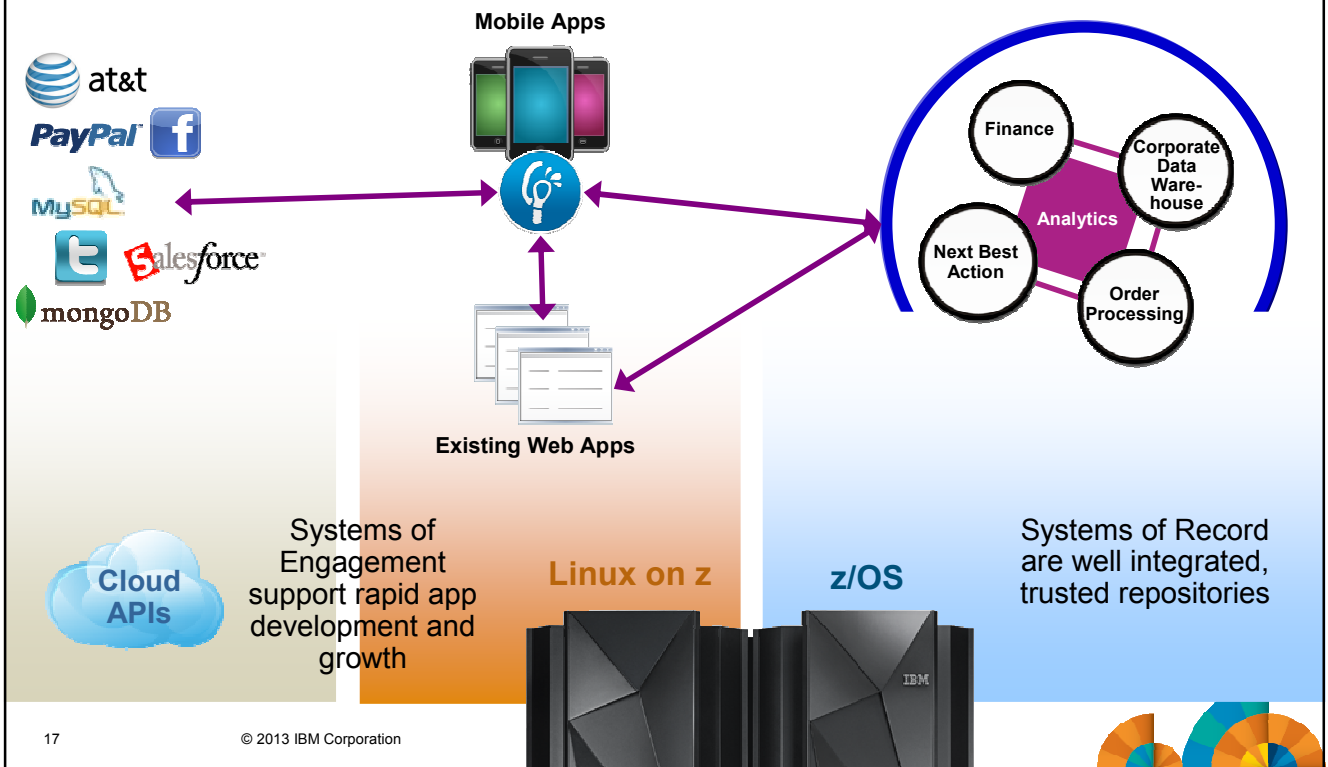




## System z bridges Systems of Record and Systems of Engagement

### Systems of Engagement

### Systems of Record



## System z provides essential services for mobile applications

### We are a Leader as System of Record (z/OS)

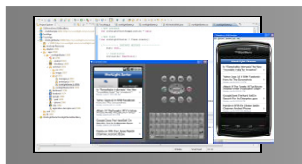
1. We provide easily consumable mobile access to all the data and transaction in z subsystems (DB2, CICS, IMS, MQ, etc)
  - Customer can create engaging mobile apps *today* using existing z transactions.
2. z/OS availability and scalability is crucial for mobile workloads.

### We are a Key Player as System of Engagement (Linux on z)

1. We have the tools to satisfy the lifecycle requirements for mobile application development – Worklight studio and server, Rational, UrbanCode.
2. Linux on System z is a good fit for mobile infrastructure
  - Availability and scalability to handle mobile workloads.
  - Exploit z security and encryption for use by mobile apps.
  - Exploit co-location with z/OS data and transactions.
  - Leverage our cloud capability to create new mobile dev and production clouds

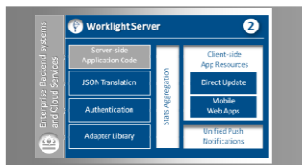


## IBM Worklight overview



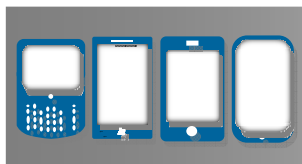
### Worklight Studio

The most complete, extensible environment with maximum code reuse and per-device optimization



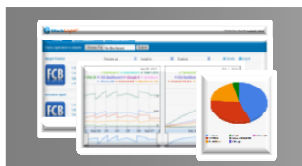
### Worklight Server

Unified notifications, runtime skins, version management, security, integration and delivery



### Worklight Device Runtime Components

Extensive libraries and client APIs that expose and interface with native device functionality



### Worklight Console

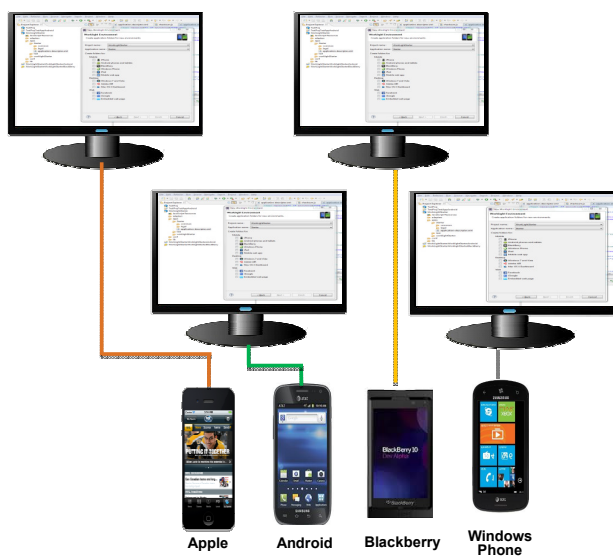
A web-based console for real-time analytics and control of your mobile apps and infrastructure



## Rapid multi-platform development using a single shared codebase

### From the complexity of many...

- Multiple sets of tools & frameworks
- Four codebases to develop and maintain

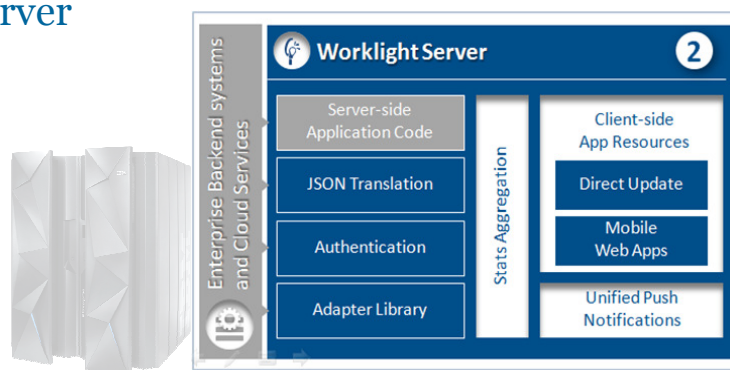


### To the simplicity of one

- One development environment
- One codebase to develop and maintain



## Worklight Server

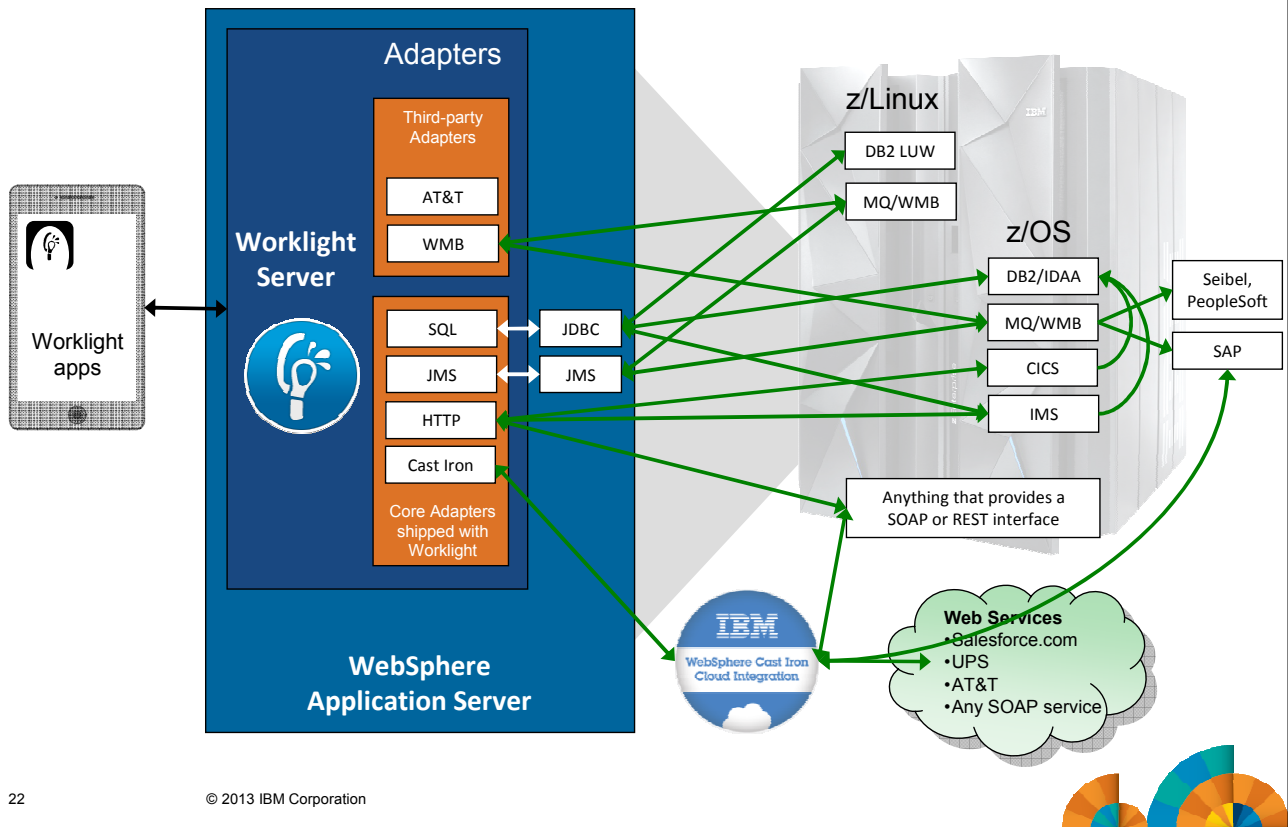


Worklight Server is a **WebSphere Application Server (WAS)/Java application**, supported on **System z Linux** – WAS 7, 8, 8.5 on SLES 10, 11, and RHEL 5, 6. It provides:

- **Adapters** are used to communicate to back-end services like databases, transaction systems, MQ, etc.
- **Data Transformation** - JSON is used to communicate to mobile devices – translation is done to HTTP or Web Services that are used by server components.
- Server and device **Security** control
- Controls Application Deployment and **Versioning**
- **Push Notification** administration
- **Analytics** including user adoption and usage data
- An **Enterprise App Store** for your B2E applications.

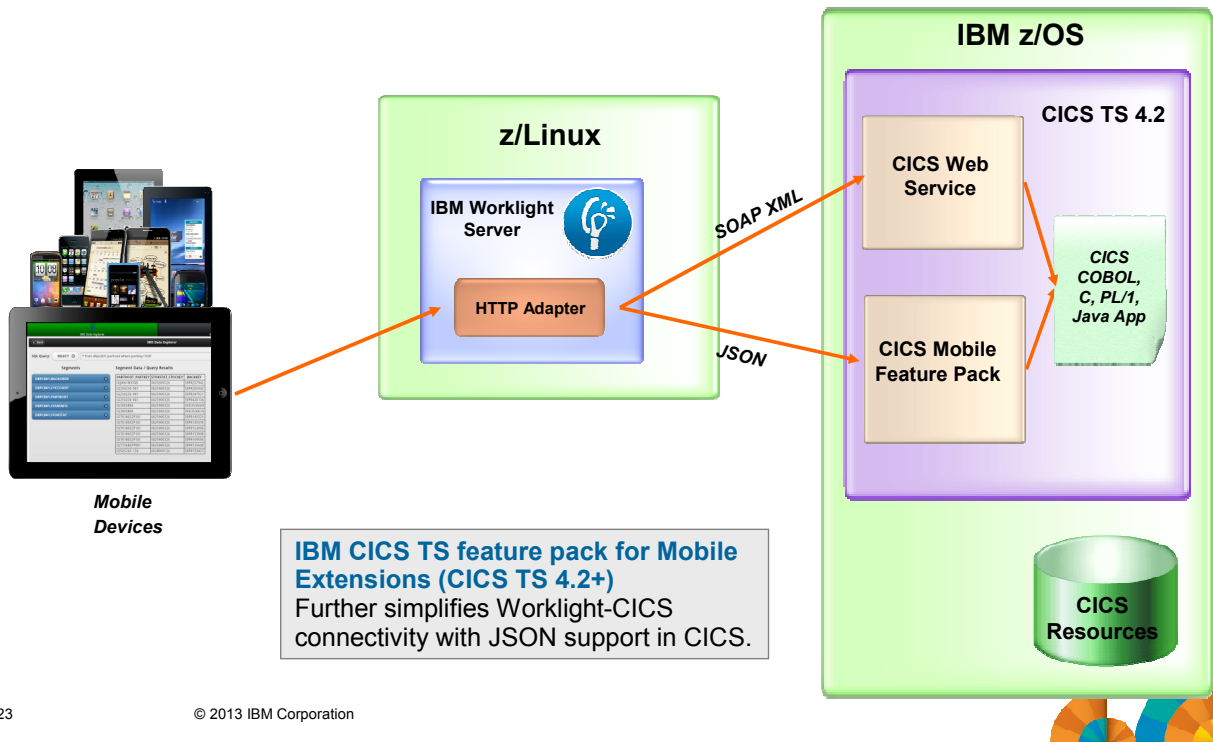


# Mobile Apps can connect to System z today -- via Worklight

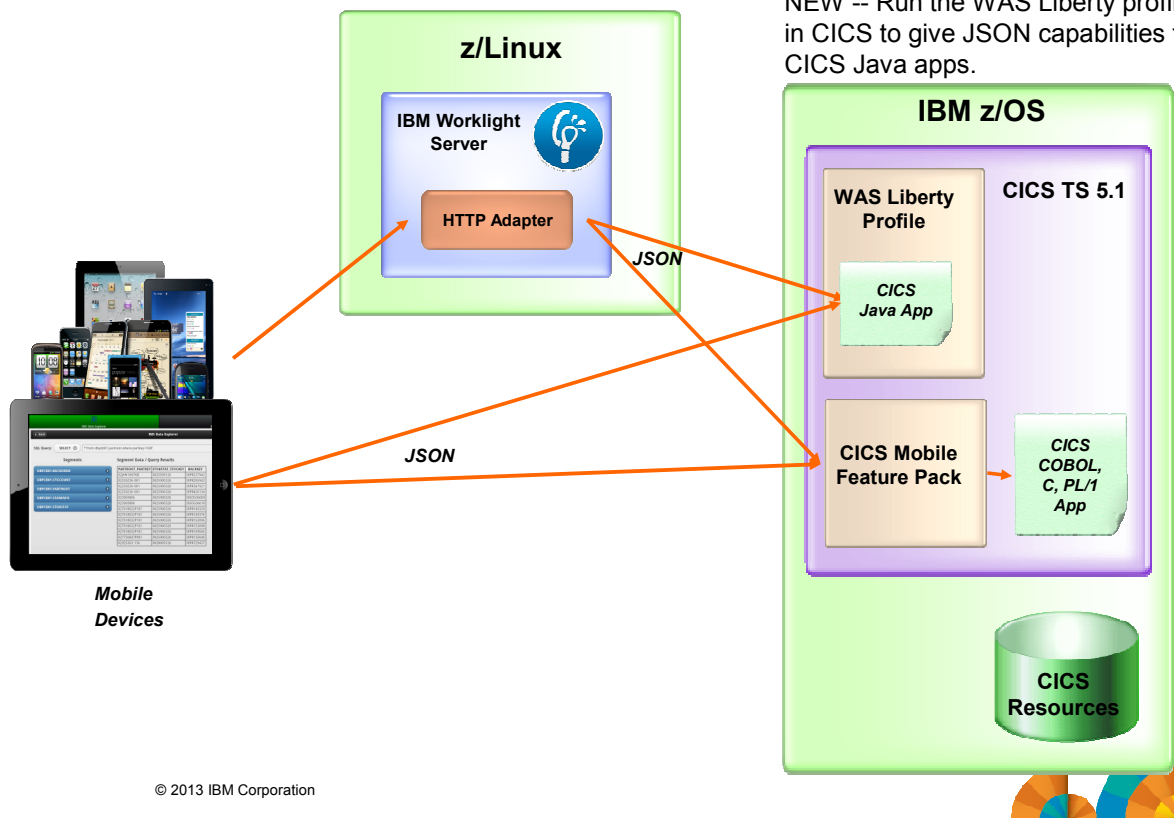


## Worklight gives a Mobile UI to CICS Services

NEW – CICS Mobile Feature pack provides direct JSON connection to CICS.



## CICS Mobile Enablement (CICS TS 5.1)



NEW -- Run the WAS Liberty profile in CICS to give JSON capabilities to CICS Java apps.



## CICS Mobile Demo

- Worklight on System z Linux.
- Talking to CICS
- CICS Sending push notifications to mobile devices.
- All this done without changing any code in the CICS transactions.

CICS Mobile demonstration with iPad and iPhone and the GENAP...

CICS Hursley · 81 videos 218 views

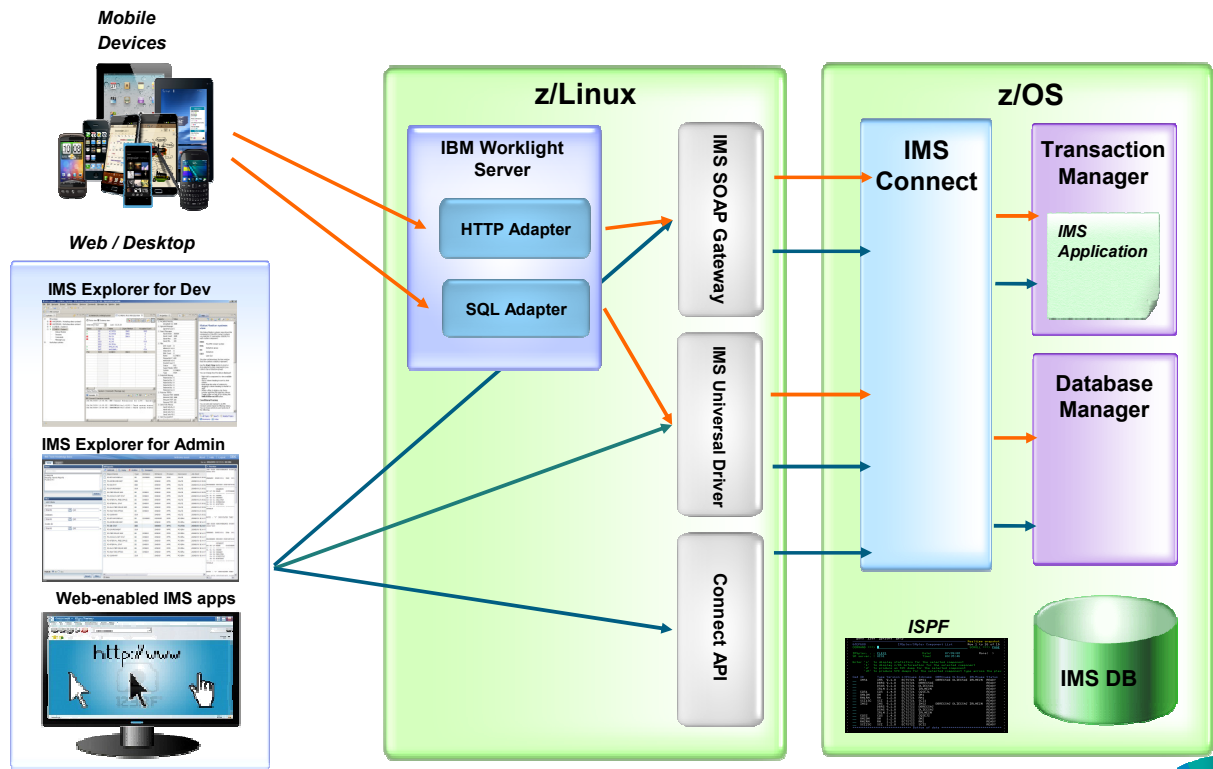
Like Dislike **About** Share Add to Print Analytics Flag

**Published on Oct 15, 2013**  
Short video from Andy Armstrong of the CICS Development team illustrating how CICS with the JSON Mobile extensions Feature Pack can run CICS applications from mobile devices.

<http://youtu.be/6TkQ9PzeevQ>



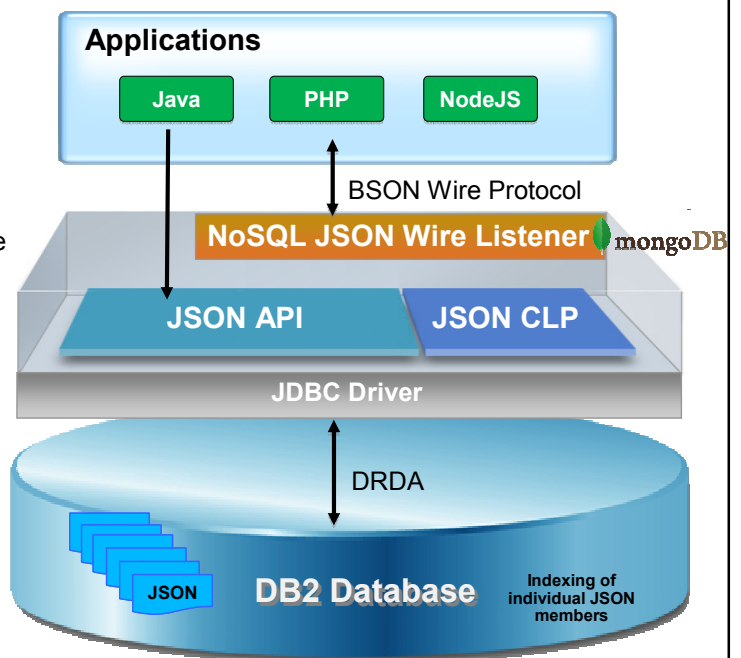
# IMS Mobile Enablement



## DB2 NoSQL (MongoDB) JSON Support



- **The best of both worlds – NoSQL agility and flexibility built on the trusted foundation of DB2**
  - Write applications using Mongo APIs to access data on DB2.
  - Flexible schemas allow rapid delivery of applications
- **Preserve traditional DBMS Capabilities, leverage existing skills and tools:**
  - Multi-statement Transactions
  - Management/Operations
  - Security
  - Scale, performance and high availability
- **Extend with Advanced features (future)**
  - Temporal semantics
  - Full Text search
  - Multi-collection joins
  - Combine with Enterprise RDBMS data
- **Implementation leverages open source community drivers.**
- **Available in DB2 z/OS V10**



## The Mobile Security ecosystem

### *At the Device*

#### **Manage device**

Set appropriate security policies • Register • Compliance • Wipe • Lock

#### **Secure Data**

Data separation • Leakage • Encryption

#### **Application Security**

Offline authentication • Application level controls

### *Mobile App*

#### **Secure Application**

Utilize secure coding practices • Identify application vulnerabilities • Update applications

#### **Integrate Securely**

Secure connectivity to enterprise applications and services

#### **Manage Applications**

Manage applications and enterprise app store

### *Over the Network*

#### **Secure Access**

Properly identify mobile users and devices • Allow or deny access • Connectivity

#### **Monitor & Protect**

Identify and stop mobile threats • Log network access, events, and anomalies

#### **Secure Connectivity**

Secure Connectivity from devices

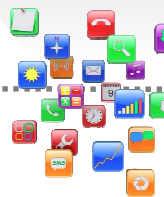
### *Within the Enterprise*

#### **Transaction Security**

Properly authenticate mobile users

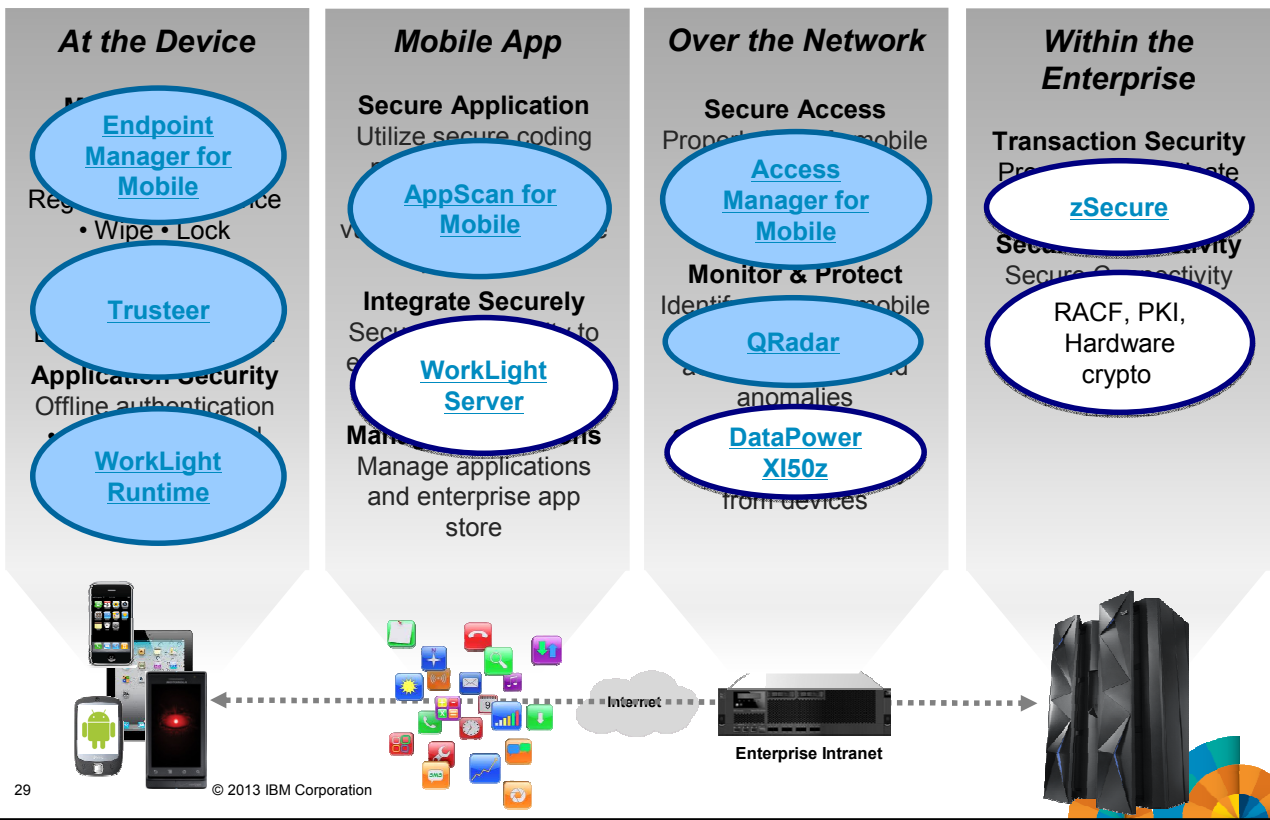
#### **Secure Connectivity**

Secure Connectivity from devices



# The Mobile Security ecosystem

Recommend run on z



## System z addresses Enterprise mobile development and delivery challenges

### Fragmentation and developing for multiple mobile platforms

- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations



### IBM Worklight Studio and RDz

- Seamless integration with z data and transactions.
- Device runtime provides mobile device independence.

### Accelerated time to market requirements

- Accelerated development demands instant provisioning of development servers.
- Spiky mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.



### System z Scalability

- System z Linux cloud enables rapid provisioning of Worklight servers.
- z/OS is the leader in transaction processing and easily scalable to handle workload increases.

### Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.



### z/OS is mobile enabled

- z/OS subsystems are mobile-ready, with consumability enhancements planned. Eg: MongoDB API for DB2
- End to end mobile security.
- High-performance access from z/Linux



## Tesco PLC

Tesco gets 16-day ROI for Worklight on System z mobile solution with CICS  
Mobile and CICS

### The need:

Tesco differentiates itself in its network of distribution centers, which use advanced technology to support a modern, efficient and cost-effective supply chain. Distribution center managers had to access this Denver system from a terminal in an office, and then make a number of journeys across the massive facilities to work with their teams in the fulfillment process, and do so without real-time access to data.

### The solution:

Worklight on Linux on System z – used existing CICS transactions -- allowed Tesco's distribution center managers to access warehouse information on a mobile device, accessible at all 25 centers and throughout each 500,000 square foot facility. With the IBM Worklight solution on Linux on System z, Tesco managers will now have contextual data in an easy-to-read, mobile-rendered format, and be able to make accurate deployment decisions with real-time data as they move through the facilities.

### The benefit:

- The indicative results of the POC demonstrated cost savings of about \$2.45 million per year, which equated to an approximate return on investment of only 16 days.



### Solution components:

- IBM Worklight for Linux on System z
- IBM zEnterprise 196



## System z Unique Characteristics to support Mobile Applications

- Easy-to-consume APIs from CICS, DB2, IMS allow you to leverage your investment in z/OS transactions to quickly add a mobile channel.
- z/OS enables massive and simple scalability in a single footprint, to handle the workload of millions of devices and sensors
- Worklight security integrates with z/OS security providing end-to-end security and data privacy for mobile apps.
- z/OS Workload Management ensures your crucial applications remain responsive during sharp spikes in demand.
- Low-latency I/O. Mobile usage patterns favor short, read-only data requests (Users check account balances) So fast access to operational data, with low latency, is key. The mainframe offers exceptional I/O with dedicated hardware I/O processors. This reduces latency, which increases mobile app response times.
- Business Resiliency for critical mobile apps

Infrastructure matters for mobile applications. The System z platform's scalability, security, and resilience can enhance critical mobile applications.





## Why run Worklight Server on System z Linux?

For the same reasons you run web apps there for over a decade:

- Co-location of the Worklight server application with data and transactions on z/OS **reduces the latency of access to z/OS data**. Hipersockets provides the lowest latency communication between Worklight apps and z/OS SOR. Mobile usage patterns show a surge in short, read-only data requests (Users check account balances often, etc.) So fast access to operational data, with low latency, is key.
- Availability and scalability of z/Linux as an environment for both Worklight dev/test and production.
- Hardware encryption speeds SSL applications
- All the traditional advantages of consolidating multiple distributed servers onto z/Linux -- Reduce data center footprint, WAS software license savings, simpler management, energy savings.

We recommend running Worklight Server in System z Linux for data-rich applications that will heavily leverage data and transactions from z/OS.


[See this wiki for more rationale for WL on z.](#)





## Interested? Next steps...

- Read our [Point-of-View paper](#).
- Request a Demo.
  - Banking, Retail, Government, Insurance
  - Use Worklight on Linux on System z
  - Use z/OS transactions.
- Try the System z Mobile demo apps
  - CICS Genapp.
  - CICS EGUI
  - [IBM Remote](#). Sample App you can use to manage z HMC.
- [System z Mobile home page](#)
  - Customer case studies
  - Analyst reports
  - Customer Videos.



### System z in a Mobile World

An IBM Redbooks® Point-of-View publication by the IBM Client Center, Montpellier

By Nigel Williams, Certified IT Specialist, and Frank van der Wal, Certified IT Specialist

#### Mobile from an enterprise perspective

As organizations engage with customers, partners, and employees who are increasingly using mobile as their primary general-purpose computing platform, these organizations have tremendous opportunity to transact—everything from exchanging information to exchanging goods and services, from employee self-service to customer service. This mobile engagement allows you to build new insight into your customer's behavior so that you can anticipate their needs and gain a competitive advantage by offering new services.

Becoming a mobile enterprise is about re-imagining your business around constantly connected customers and employees. The speed of mobile adoption dictates transformational innovation rather than incremental innovation. Mobile really is a "disrupt or be disrupted" technology.

This brings some specific challenges:


- Reacting to a new set of user expectations about the way they interact with your company
- Delivering high-quality mobile applications quickly and efficiently
- Coping with sudden unexpected increases in mobile-initiated transactions, for example when a new sales offer becomes available
- Managing a wide range of different devices and adapting the existing enterprise security framework to the unique security challenges of a mobile environment

#### Business benefits of mobility

Mobile solutions are pushing companies to rethink the user experience, from the presentation of data to the interaction patterns that are required to integrate new and existing business services. This change in the way that you interact with customers can improve service and enable new business opportunities.

Figure 1 on page 2 shows how mobile enablement can be used to improve customer service in banking. It shows the following scenarios:

1. When a large or unusual payment is captured, the client is asked to authorize the transaction using a mobile device (for example, by using a biometric authentication). This type of solution improves fraud detection and, therefore, potentially saves the bank money.
2. If the client's credit card is not returned by an ATM, a message can be sent informing the client of the location of the nearest branch. This solution limits the risk of customer dissatisfaction.



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## Do you mind if I ask some questions?

- What kinds of mobile applications are you planning, and what part will System z play in the application infrastructure?
- Do you have concerns (technical or otherwise) with implementing mobile applications on System z?
- If System z could do one thing to support your mobile applications, what would it be?

