Introduction to Managing Mobile Devices using Linux on System z

SHARE Anaheim – Session 14549

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System z Architecture and Technology

Mobile is the next evolution for connecting to the Data Center

91% mobile users keep their device within arm's reach 100% of the time

75% mobile shoppers take action after receiving a location based message

96% year to year increase in mobile cyber Monday sales between 2012 and 2011

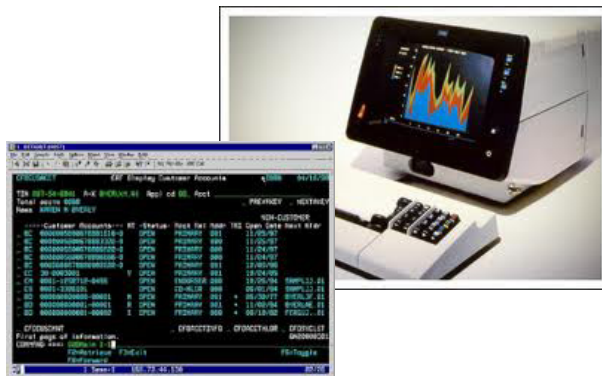**90%** users use multiple screens as channels come together to create integrated experiences

900% increase of global machine-to-machine connections by 2022 (2 billion in 2011 to 18 billion at the end of 2022)

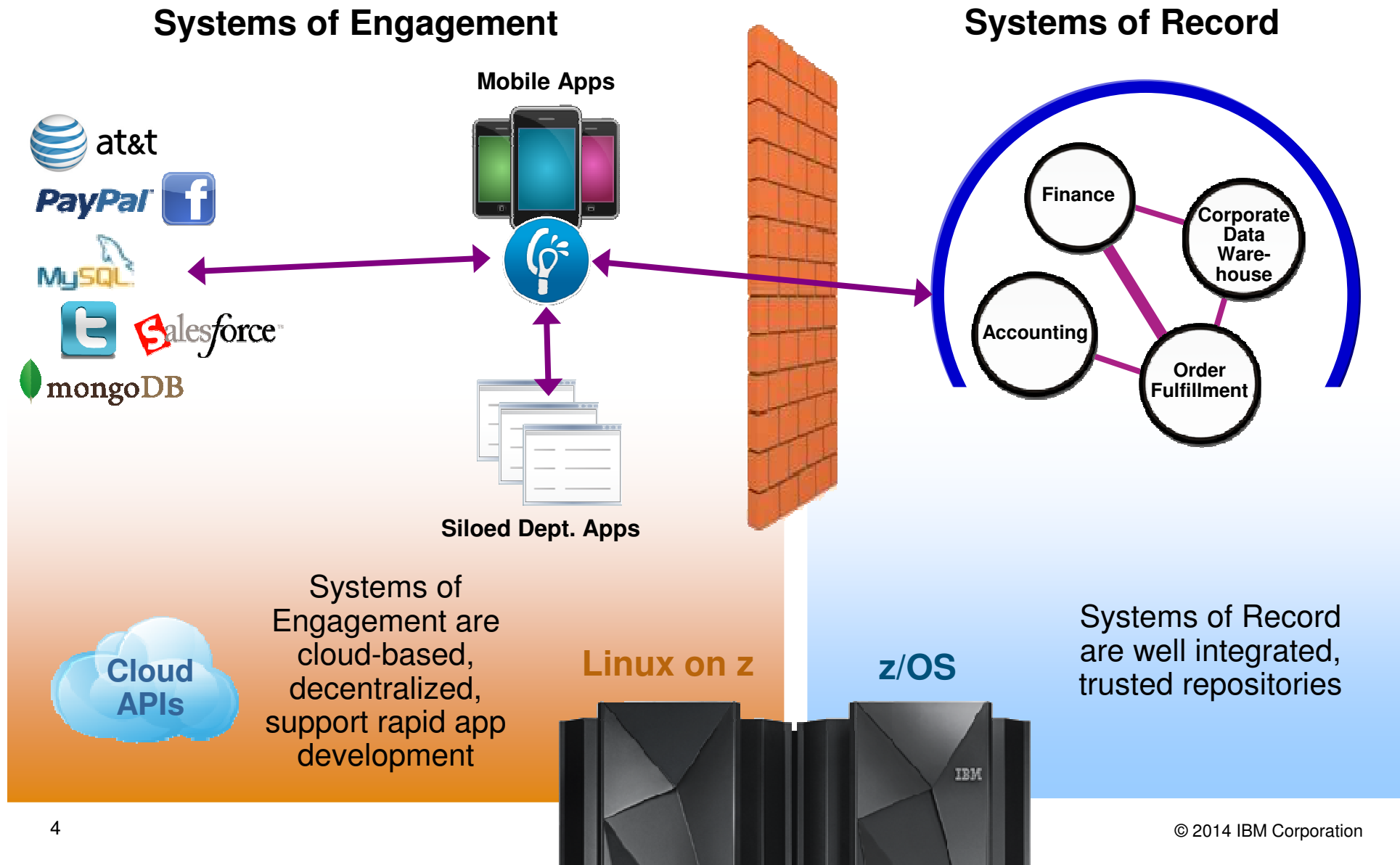# Mobile is changing the way information is used

Information developed and controlled by users for mobile devices

Information developed using multiple platforms and transformed into web services

Information restricted and developed in the data center

System z bridges Systems of Record and Systems of Engagement

Systems of Engagement

Systems of Record

Mobile Apps

Finance

Corporate Data Ware-house

Accounting

Order Fulfillment

Siloed Dept. Apps

Systems of Engagement are cloud-based, decentralized, support rapid app development

Cloud APIs

Linux on z

z/OS

Systems of Record are well integrated, trusted repositories

at&t

PayPal

MySQL

Salesforce

mongoDB

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Client drivers for mobile solutions span all industries

Finance & Banking
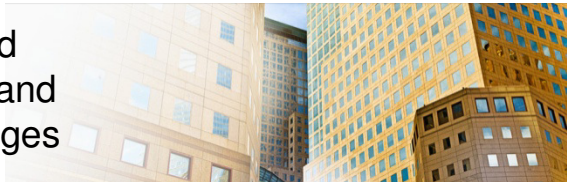Manage their inv
portfolios and ac
anywhere for co
transactions

Construction & Manufacturing
Manage complex projects
and operations on site
and streamline survey
and work order processes

Insurance
File, process and
manage claims and
document damages

Retail
Engage shoppers in new
ways and intelligently target
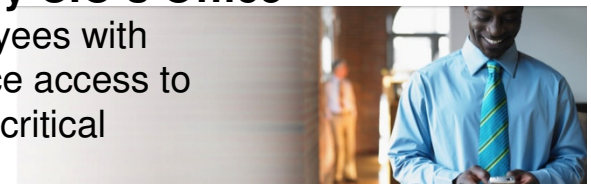personalized and location
sensitive marketing offers

Travel & Transportation
Provide up to date
information specific to their
itineraries and location and
enable customer self-service

Cross-Industry CIO's Office
Empower employees with
anytime, anyplace access to
dashboards and critical
information

Consider the typical business traveler today…

Electronic boarding pass
Traveler views boarding pass prior to leaving, at the airport, and at boarding
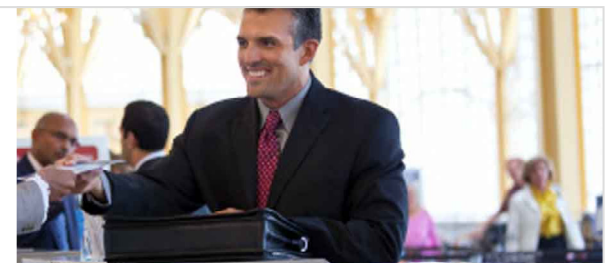
Seating map real time
Traveler views current seat, potential upgrades, capacity of plane

Flight status real time
Traveler views potential flight delays, airport information, connecting flights, notifications pushed to device

All information on the mobile device is connected to the back end and consistent with what airline personnel see

IBM has been building up its mobile enterprise capabilities

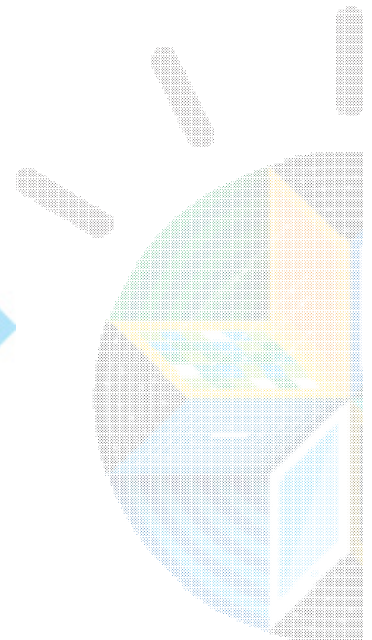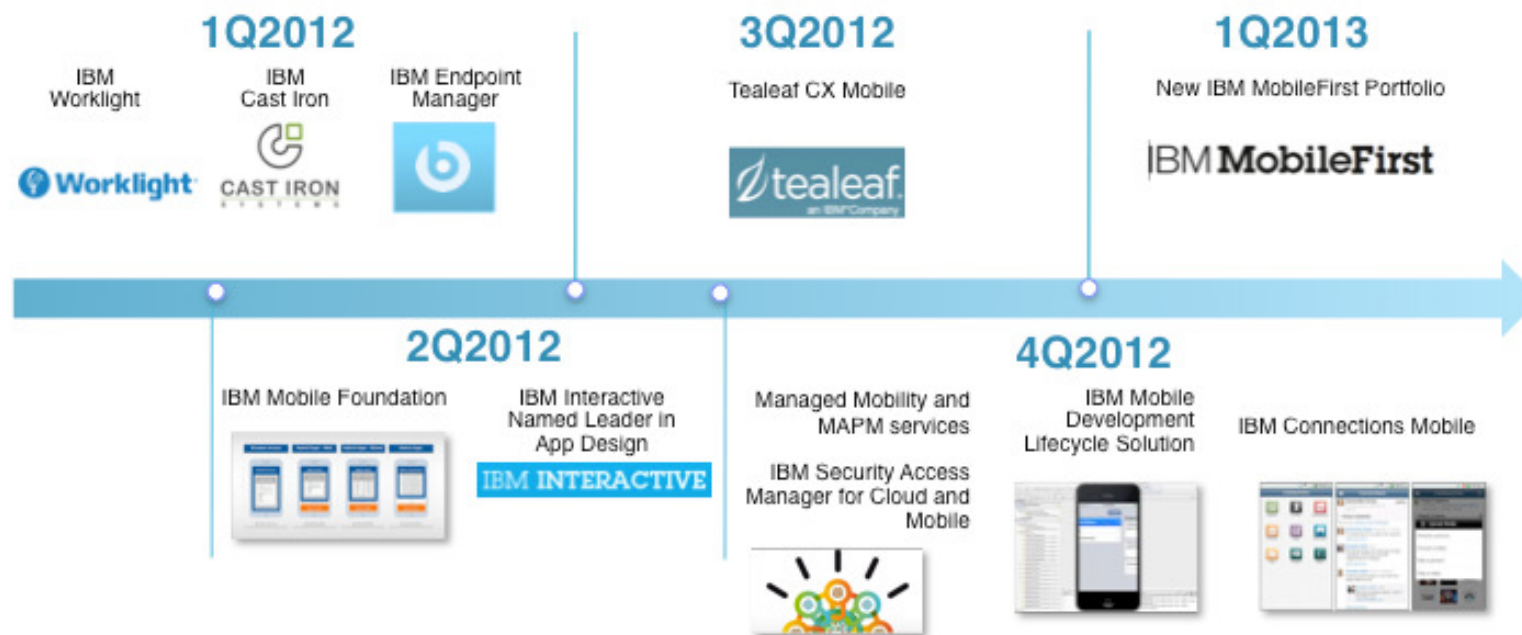| 10+	125+	Doubling	200+	Leader
acquisitions to strengthen IBM's position in mobile since 2006	patents for wireless inventions in 2012, bringing the total to 270	2013 investment in mobile solutions	IBM Software apps available in app stores; ~ 1M downloads	in app design and managed services by Forrester and Gartner

1Q2012

IBM Worklight · IBM Cast Iron · IBM Endpoint Manager

Worklight · CAST IRON SYSTEMS

3Q2012

Tealeaf CX Mobile

tealeaf an IBM Company

1Q2013

New IBM MobileFirst Portfolio

IBM MobileFirst

2Q2012

IBM Mobile Foundation · IBM Interactive Named Leader in App Design

IBM INTERACTIVE

Managed Mobility and MAPM services

IBM Security Access Manager for Cloud and Mobile

4Q2012

IBM Mobile Development Lifecycle Solution · IBM Connections Mobile

IBM MobileFirst Platform is shaping enterprise mobility

◄ A Smarter Planet

IBM **MobileFirst**

1	2	3
The Broadest Portfolio of Mobile Solutions	The Deepest Set of Services Expertise	New Industry Partnerships and Resources for Developers

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

But mobile also brings business and IT challenges

Mobile devices
are shared more often

Mobile devices
have multiple personas

Mobile devices
are diverse

Mobile devices
are used in more locations

Mobile devices
prioritize the user

- Personal phones and tablets shared with family
- Enterprise tablet shared with co-workers
- Social norms of mobile apps vs. file systems

- Work tool with BYOD
- Entertainment device
- Personal organization
- Security profile per persona

- OS immaturity for enterprise mgmt
- BYOD dictates multiple OSs
- Vendor / carrier dictates multiple OS versions

- A single location could offer public, private, and cell connections
- Anywhere, anytime
- Increasing reliance on enterprise WiFi

- Conflicts with user experience not tolerated
- OS architecture puts the user in control
- Difficult to enforce policy, application lists

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And even more challenges for the data center

18M
people use mobile devices
for banking
making up 8% of
banking transactions

41%
IT budget is spent for
mobile computing

90%
of the phones in Africa
are mobile with deposit
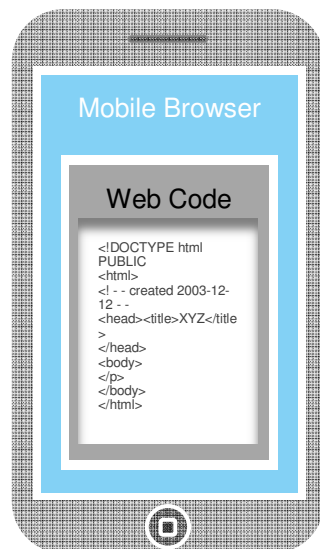of money to mobile
devices anywhere

- **Inconsistent peaks 24/7 are common**
  Peaks of data can occur any time of day as well as exploding micro activity levels and being difficult to predict

- **Increased system load**
  Increase in overall transaction rates due to ease in accessing data anytime

- **New versions of apps occur weekly vs. yearly**
  Customers expect new features weekly vs. once a year

- **Development, control and support of apps and multiple devices is not standard**
  Users are not sophisticated but want the app on their device supported through non traditional methods

- **Employees are bringing their own device to work** ("BYOD")
  200 Million employees do so today with access to confidential data

- **Security is paramount**
  Data must be secured from device to data
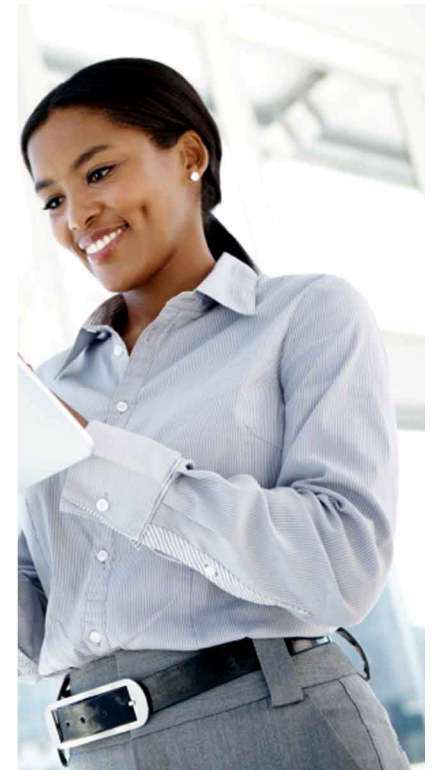
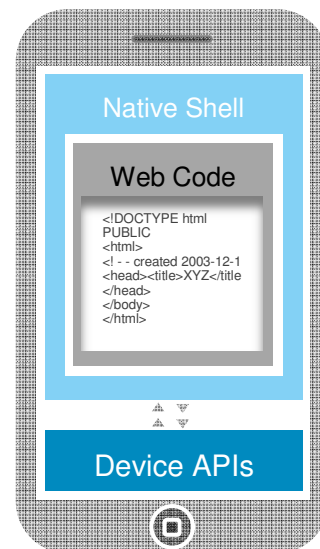# Mobile applications vary and can affect the data used

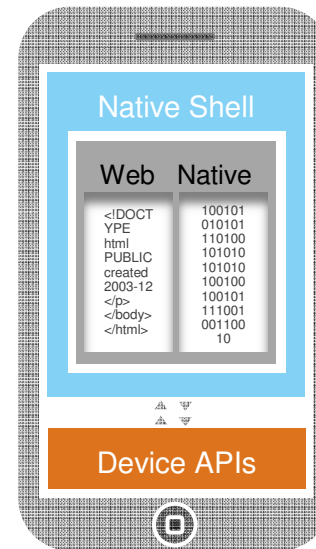| Browser Access	Hybrid Apps - Web	Hybrid Apps - Mixed	Native Apps
Written in HTML5 JavaScript and CSS3. Quick and cheap to develop, but less powerful than native	HTML5 code and runtime libraries packaged within the app and executed in a native shell	User augments web code with native language for unique needs and maximized user experience	Platform-specific. Requires unique expertise, pricey and long to develop but can deliver higher user experience

Browser Access — Mobile Browser — Web Code — `<!DOCTYPE html PUBLIC <html> <!-- created 2003-12-12 --> <head><title>XYZ</title> </head> <body> </p> </body> </html>`

Downloadable — Native Shell — Web Code — `<!DOCTYPE html PUBLIC <html> <!-- created 2003-12-1 <head><title>XYZ</title> </head> </body> </html>` — Device APIs

Downloadable — Native Shell — Web | Native — Device APIs

Downloadable — Native App — Device APIs

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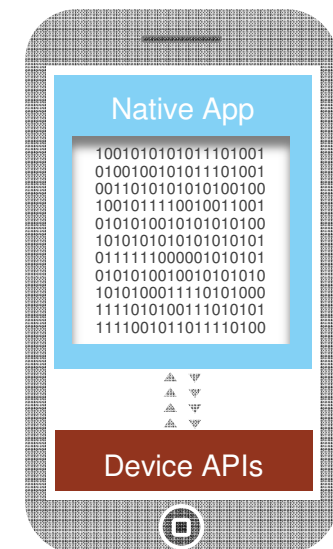
Building and connecting applications to zEnterprise

1.7M+
apps in the
world today

70B
apps will be
downloaded in 2013

6x and 3x
Google and Apple respectively have
released major Android and iOS
versions, than Microsoft has released
major Windows PC versions

Build and Connect

System z mobile web, hybrid,
and native app development
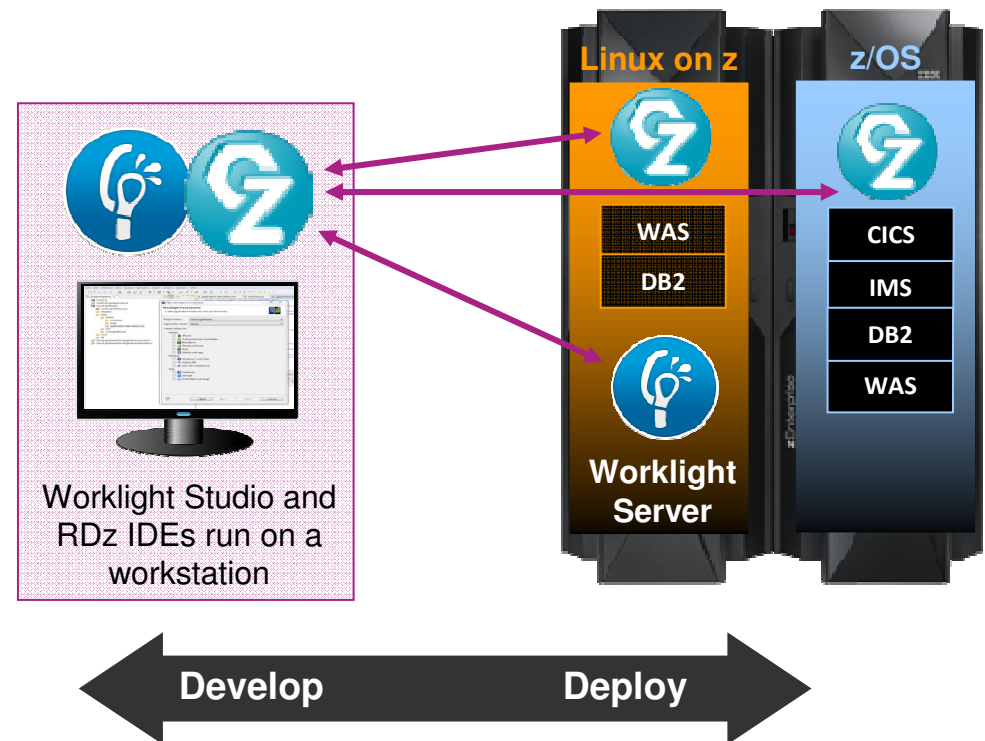
System z data, service and
application integration

Lifecycle management

*Building and connecting System z data to mobile devices
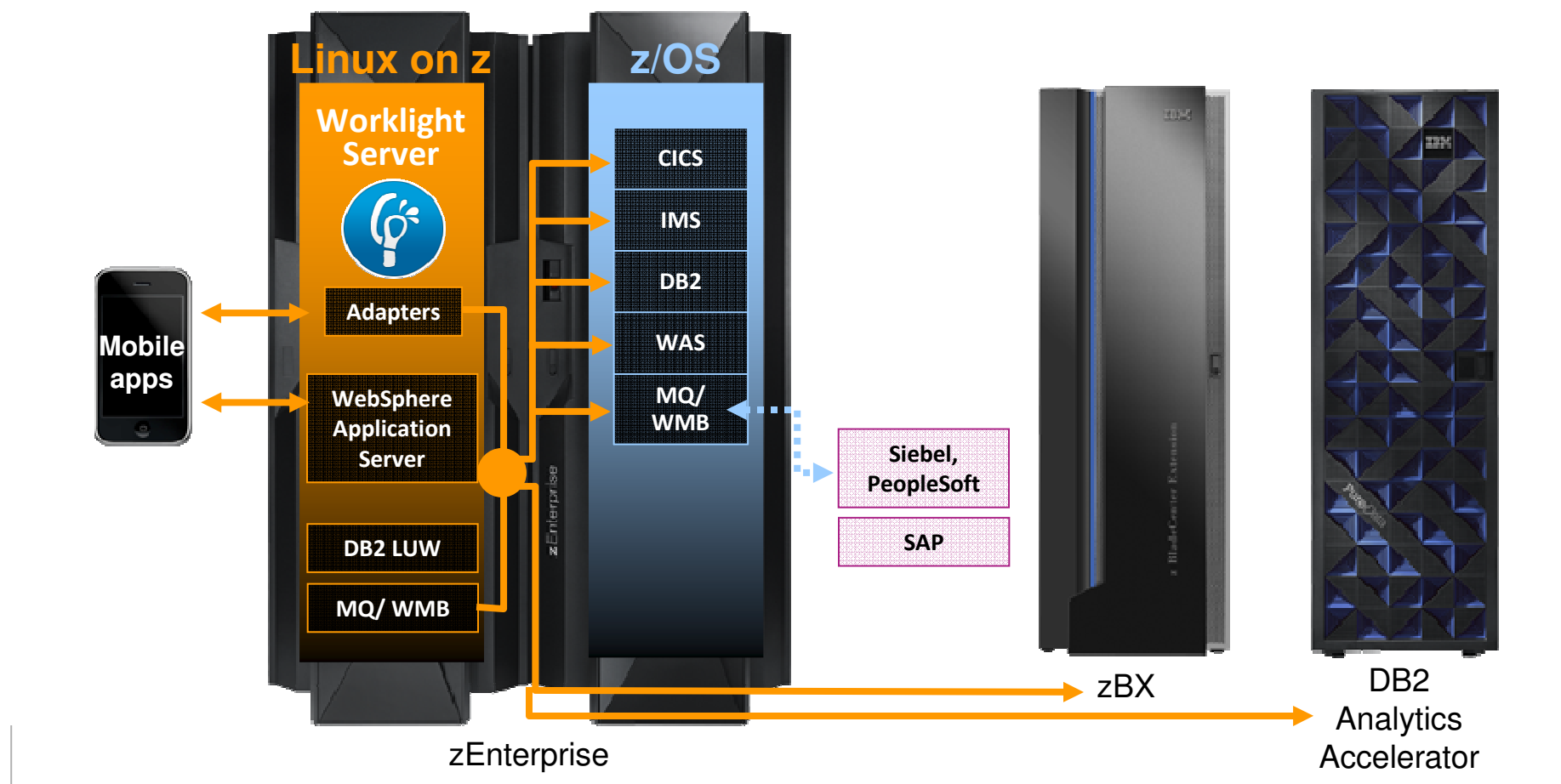to provide a better customer experience*

Building mobile applications on zEnterprise

- **Eclipse-based IDE for creating mobile applications** with IBM Worklight Studio integrated with Rational Developer for z (RDz)

- **Developer mobile tools with programming models** and web support with WAS Developer Tools for Eclipse (WDT)

- **Enterprise mobile application development for WebSphere** Application Server with Rational Application Developer (RAD)

- **Determine which apps need to be modified to support mobile** with Rational Asset Analyzer

Linux on z   **z/OS**

WAS

DB2

CICS

IMS

DB2

WAS

Worklight Server

Worklight Studio and RDz IDEs run on a workstation

Develop   Deploy

IBM Worklight - an open, comprehensive and advanced mobile application platform to build, run and manage mobile applications

Connecting mobile apps on zEnterprise

Linux on z

z/OS

Worklight Server

Mobile apps

Adapters

WebSphere Application Server

DB2 LUW

MQ/ WMB

CICS

IMS

DB2

WAS

MQ/ WMB

Siebel, PeopleSoft

SAP

zBX

DB2 Analytics Accelerator

zEnterprise

- **Server side software components and adapters for channeling System z to mobile devices** with IBM Worklight Server

- **Mobile application support** with WebSphere Application Server on System z

- **Mobile protocol connectivity with core System z applications** including CICS, IMS, TPF, MQ, WMB and DB2

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CICS Mobile Demo

- Worklight on System z Linux

- Talks to CICS

- CICS sends push notifications to mobile devices

- All without changing any CICS transactions

http://youtu.be/6TkQ9PzeevQ

CICS Mobile demonstration with iPad and iPhone and the GENAP…

CICS Hursley · 81 videos   218 views

Subscribe 182   👍 1 👎 0
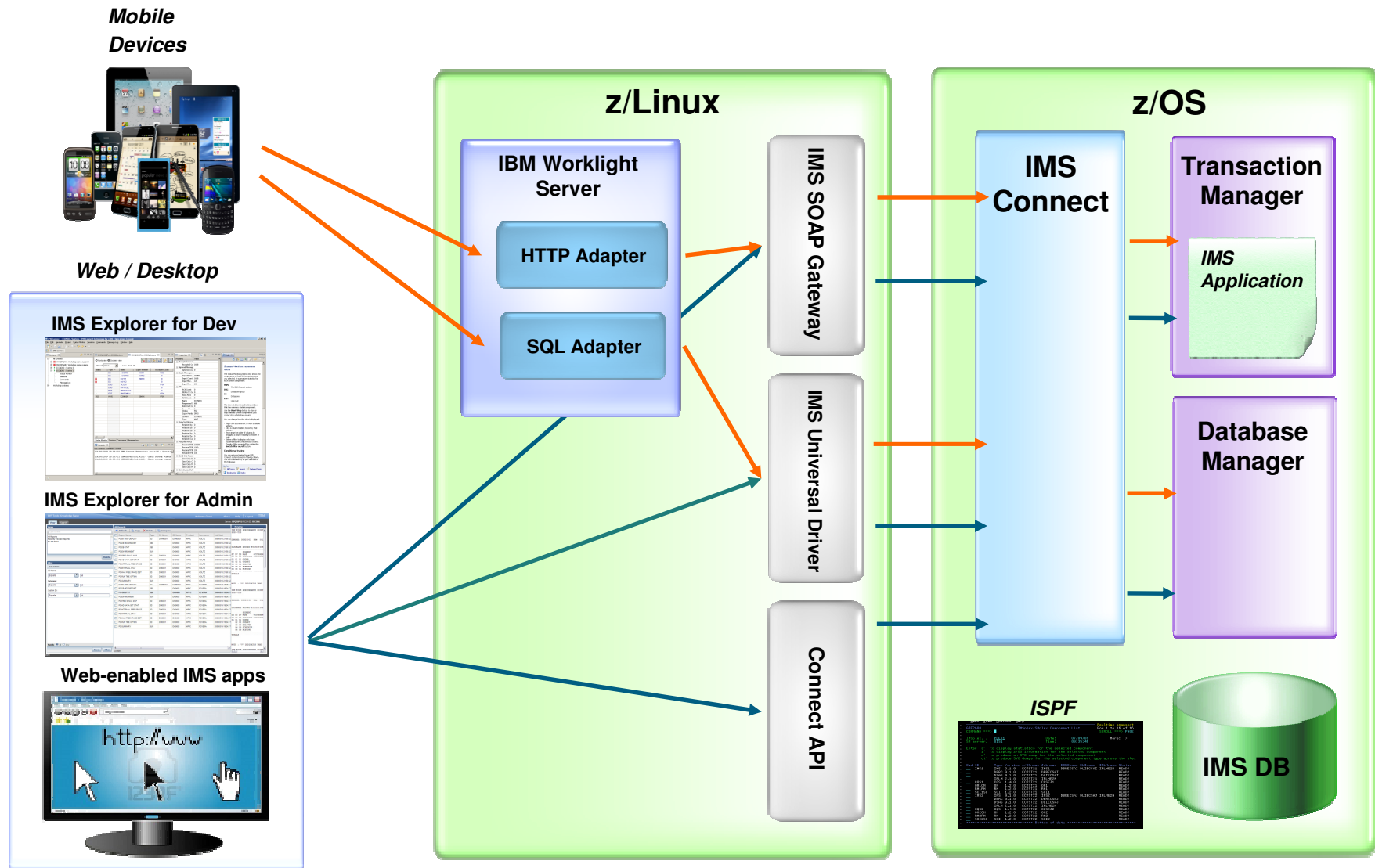
Like   👎   About   Share   Add to

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.

IMS Mobile Enablement

Mobile Devices

Web / Desktop

IMS Explorer for Dev

IMS Explorer for Admin

Web-enabled IMS apps

http://www

z/Linux

IBM Worklight Server

HTTP Adapter

SQL Adapter

IMS SOAP Gateway

IMS Universal Driver

Connect API

z/OS

IMS Connect

Transaction Manager

IMS Application

Database Manager

ISPF

IMS DB

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
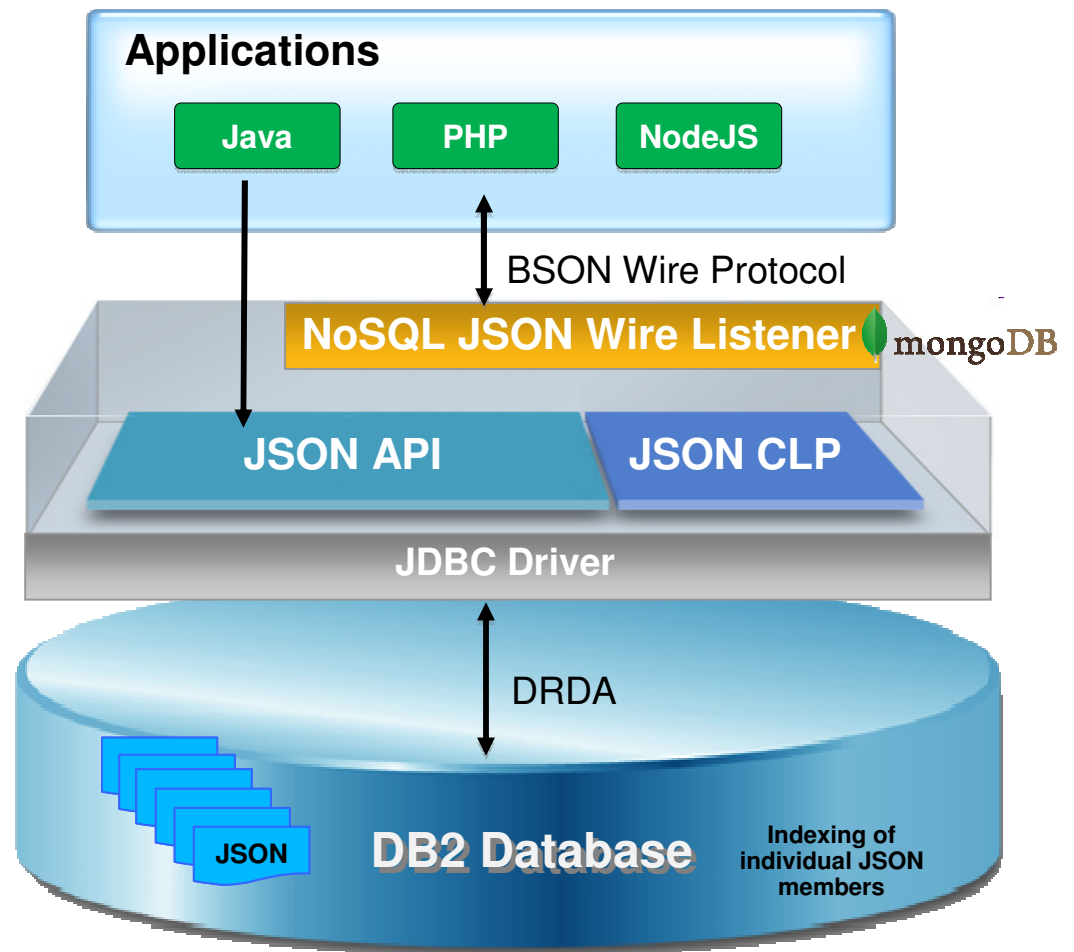- Preserve traditional DBMS Capabilities, leverage existing skills and tools:
  - Multi-statement Transactions
  - Management/Operations
  - Security
  - Scale, performance and high availability
- Extend with advanced features (future)
  - Temporal semantics
  - Full Text search
  - Multi-collection joins
  - Combine with Enterprise RDBMS data
- Implementation leverages open source community drivers
- **Available in DB2 for z/OS V10 now**

Applications

| Java | PHP | NodeJS |

BSON Wire Protocol

NoSQL JSON Wire Listener mongoDB

JSON API | **JSON CLP**

JDBC Driver

DRDA

JSON

DB2 Database

Indexing of individual JSON members

Securing and managing applications

$7.2M	47%	31%
average organizational cost of a data breached	of all vulnerabilities are in web applications	data breaches caused by malicious attacks

Secure and Manage

Mobile governance

Complete lifecycle security

Secure network communications and management with System z

*Securing and managing System z data to mobile devices
to ensure a secure system for sensitive data*

Securing mobile applications for sensitive data

- **Unified management and security control** for all mobile platforms with IBM Endpoint Manager
  - Detecting rooted/jail-broken devices
  - Enforcing security policies

- **Application security** with Worklight Studio
  - Encryption of local device storage
  - Authentication credential caching
  - Application authenticity testing and device whitelisting
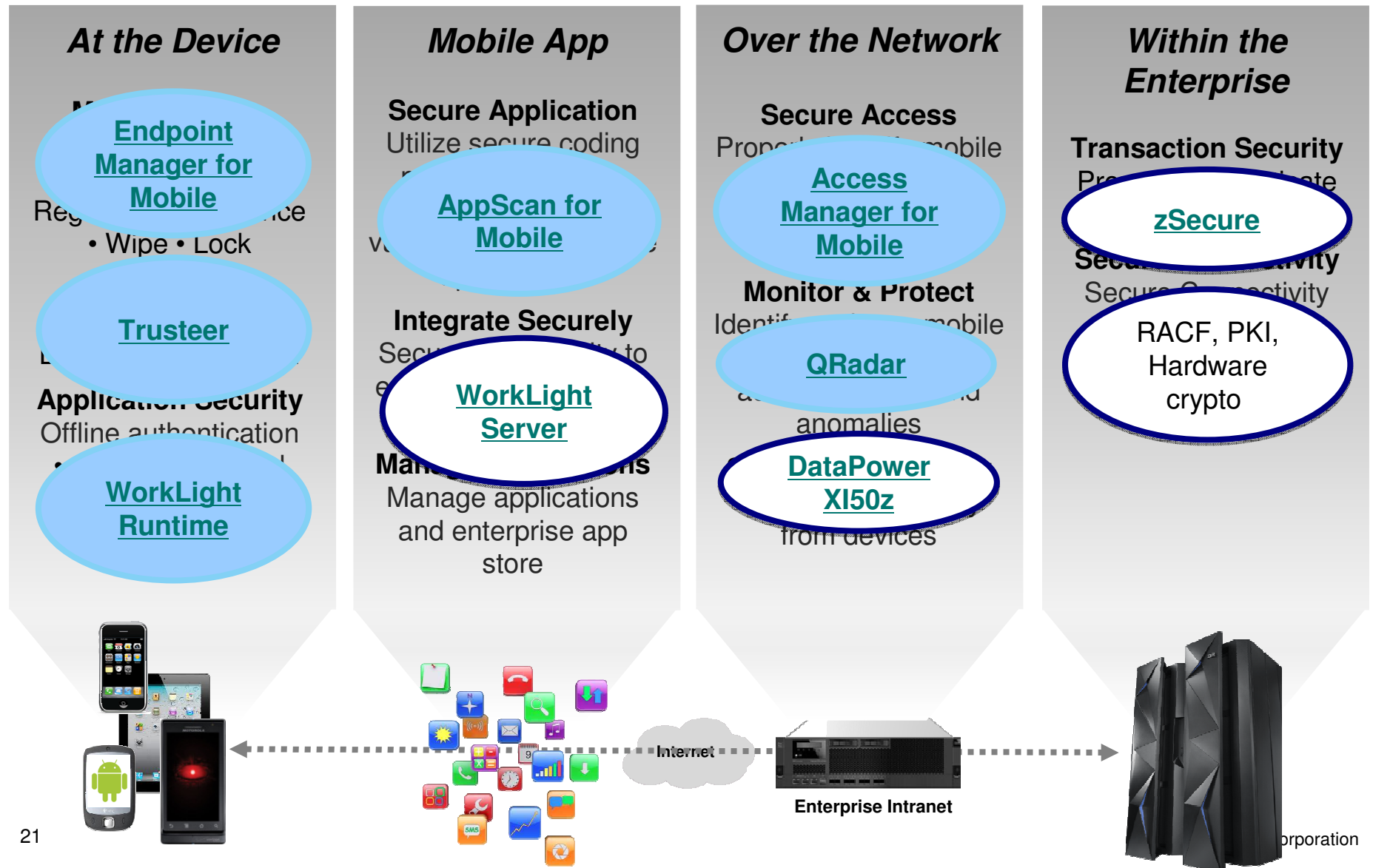 - Integration with enterprise security infrastructure

End to end security from mobile to the mainframe
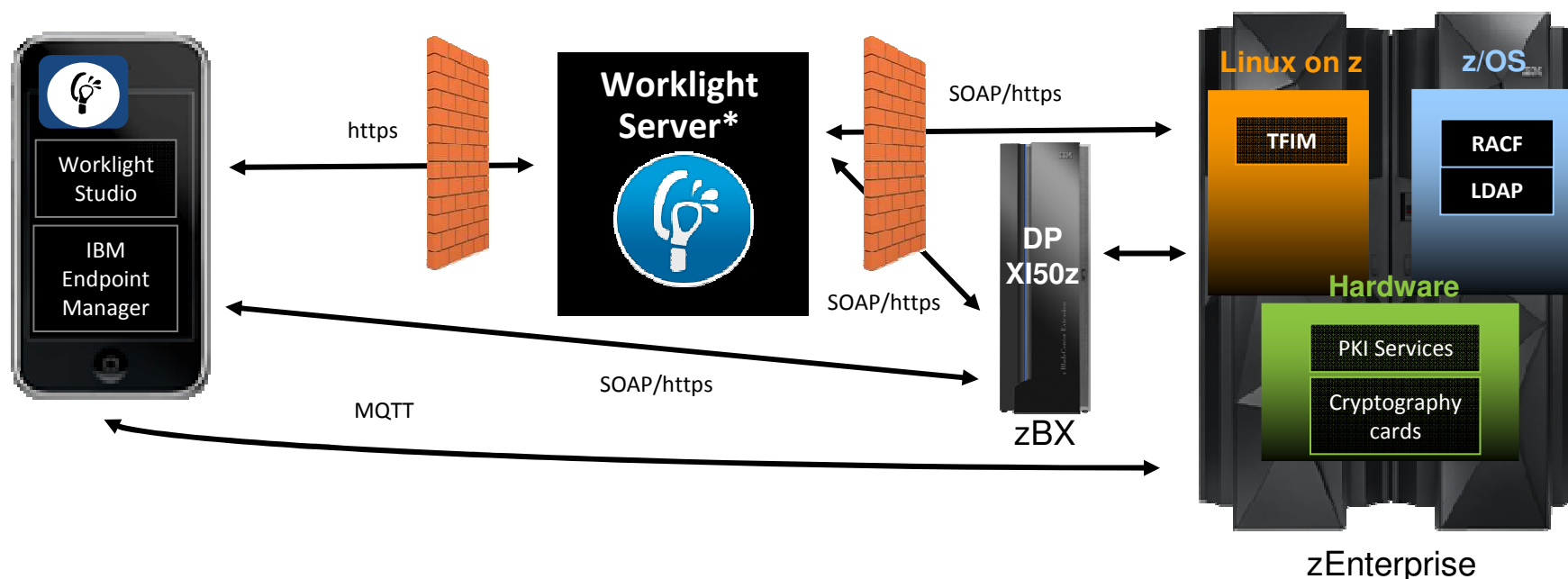
- **End to end capability of mobile users identity permits, auditing of transactions, and simplified identity mapping** with RACF
- **Advanced scalability of encryption processing** with System z cryptography cards
- **Centralized certificate management** with z/OS PKI services
- **Secured integration gateway for System z services, centralized key management and mobile access policy capabilities** with DataPower XI50z
- **High level security to backend applications** via hipersockets or IEDN support with Worklight Server

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Worklight Server can also reside on Linux on z

The Mobile Security ecosystem

Recommend run on z

At the Device

Endpoint Manager for Mobile

Reg... ...ce
• Wipe • Lock

Trusteer

Application Security
Offline authentication

WorkLight Runtime

Mobile App

Secure Application
Utilize secure coding

AppScan for Mobile

Integrate Securely
Secu... ...ty to
e...

WorkLight Server

Man... ...ns
Manage applications and enterprise app store

Over the Network

Secure Access
Pro... ...mobile

Access Manager for Mobile

Monitor & Protect
Identif... ...mobile

QRadar

...
anomalies

DataPower XI50z

...
from devices

Within the Enterprise

Transaction Security
Pr... ...te

zSecure

Sec... ...ivity
Secure C... ...tivity

RACF, PKI, Hardware crypto

Internet

Enterprise Intranet

21

...orporation

E.Sun Bank secures IMS information for mobile banking

Meeting client demands and continually innovating

Banking information on diverse platforms
Mobile phone banking and cloud management for customers as an alternative from traditional banking

IBM Solution
WebSphere drives IMS transactions, accessing IMS and DB2 data to mobile devices

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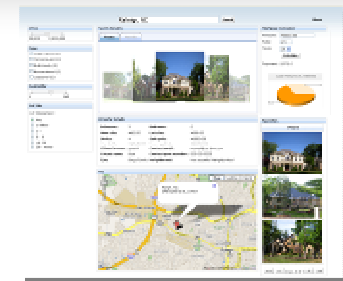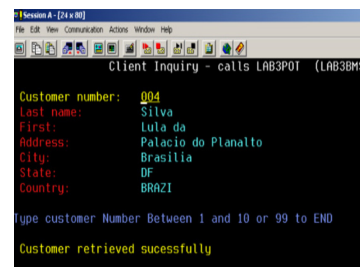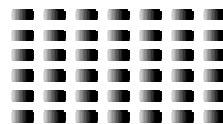
Extend and transform mobile with cloud and analytics

998M
mobile cloud users
by 2014

88%
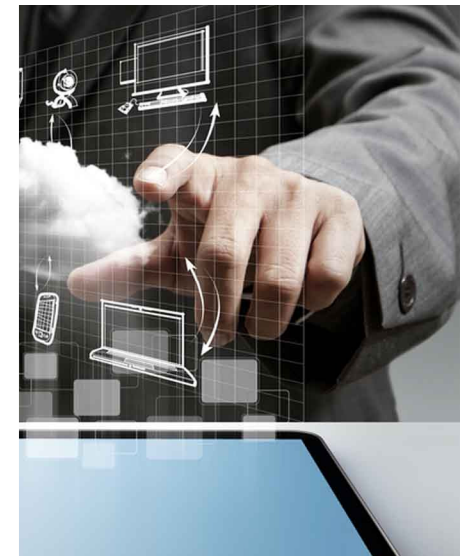growth from 2009 to 2014 of
cloud-based mobile applications

29%
of users are open to scanning
a mobile tag for a coupon

Extend and transform

Sophisticated analytics with trends,
dashboards, etc.

Real time information

Sharing of apps in a cloud
environment

*Extending and transforming System z data to mobile devices
with top CIO initiatives*

Analytics for mobile devices for deeper insights

- **Analyze mobile user behaviors** with Tealeaf
  - Automatically instrumented in IBM Worklight mobile apps
  - Capture and high-fidelity replay of mobile gestures on iOS and Android-based devices

- **Sophisticated dashboards and reports on mobile device** with Cognos Mobile
  - Rich, interactive BI interface.
  - Real-time monitoring, GPS integration and downloadable, offline reports
  - Security protocols protect sensitive and proprietary business information

First National Bank (FNB)

Achieving sub-second response for hundreds of millions of monthly transactions on the mainframe
Mobile and IMS

The need:

The ubiquity and convenience of cellphones and tablets as computing devices represented a clear growth opportunity for FNB; in South Africa, more people have cellphones and smart mobile devices than bank accounts. FNB wanted to launch a reliable, secure and highly responsive mobile channel before its competitors, and looked for a platform that would enable very short time-to-market.

The solution:

FNB integrated a new Java-based mobile front-end directly with tried-and-trusted business logic and core banking services running on IBM® Information Management System (IMS™) on an IBM zEnterprise® EC12 server. IBM IMS Enterprise Suite Connect APIs for Java and C and IBM IMS Enterprise Suite SOAP Gateway manage links between the channel applications and core functionality and data on the mainframe.

The benefit:

- Rapid deployment enabled FNB to gain first-mover advantage in the market, gaining the number one spot for mobile banking

- Ultra-low average end-to-end response times of 30 milliseconds ensure snappy performance for mobile banking users

- Fast, secure and reliable mobile banking generates more business for FNB and reduces its average cost per transaction

"We don't start from the premise that the mainframe is best; rather, we look at the requirements—big data, huge numbers of concurrent processes, high performance, high scalability, high security—and then look at what technology can deliver all of those things. The answer is IBM zEnterprise and IMS."

—Jay Prag, CIO – Hogan Channels, FNB

Solution components:

- IBM® zEnterprise® EC12
- IBM z/OS®

ZSP03833-USEN-00

BMW Group

Develops eco-friendly innovation for smart drivers
Mobile and DB2

The need:

World-leading car manufacturer BMW Group wanted to develop
sustainable and smarter driving strategies, in line with the market's
pressing requests. The company knew that any difficulties in managing
the mountain of data created by these mobile applications would mean
risking to lose business opportunities.

The solution:

BMW Group implemented IBM® DB2® 11 for z/OS®, which offers
optimized management of information and workload and enhanced cost
savings. Furthermore, the company is soon planning to leverage the
latest-generation IBM zEnterprise® EC12 mainframe.

The benefit:

- Enabled BMW Group to allocate resources to the development of
  new mobility strategies, rather than database management

- Supported continuous workload increase on a 24/7 basis

- Reduced CPU use by 8-13 percent, improving cost-efficiency

*"Despite still being very early
in our performance testing, we
have already seen CPU
reductions of 8-13 percent on
some of the workloads, thanks
to the more efficient
decompression algorithms that
IBM DB2 allows us to run."*

— Manager, BMW Group

Solution components:
- IBM zEnterprise® EC12
- IBM DB2® 11 for z/OS®
- IBM z/OS

Rizal Commercial Banking Corp. transforms IT to gain 1.2M customers in one year

RCBC

The need:

RCBC needed an IT infrastructure to support a core-banking system, called Finacle, from IBM Business Partner Infosys Ltd. that would help the bank improve efficiency, launch products faster and attain 10 million customers

The solution:

An IBM® z10™ Enterprise Class platform and a range of IBM middleware products provide scalability, security and consistent performance at the high levels required by Infosys and RCBC, enabling new applications like mobile banking and "MyWallet"

The benefit:

- Reduces new product launch times by 50 percent

- Helps the bank outpace the competition by an estimated two to three years on new product development

- Supports exponential customer growth through the scalability of the IBM System z platform

"The combination of Finacle and IBM gives us the functionality we want on a high-performance platform that is robust and resilient enough to handle the bank's requirements moving forward."

—Dennis Bancod, senior executive vice president and head for IT and operations,

Solution components:

- IBM® DB2® for z/OS

- IBM Rational® Build Forge® Enterprise Edition

- IBM Rational Team Concert™

Mobile and cloud with the zEnterprise
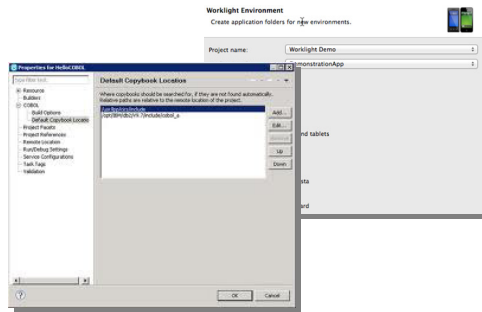
System z applications
Core CICS, IMS, DB2 and other applications and databases cloud and mobile ready

Mobile Devices
developed for the Cloud through web-based shared apps using Worklight

Infrastructure
Cloud orchestration, provisioning and automation with Tivoli solutions

System z service management extending to mobile

- **Network visibility and management important to keeping mobile apps available and performing**
  - OMEGAMON for Mainframe Networks

- **Mobile as an extension of Cloud**
  - Requires end-to-end asset management of mobile applications across distributed and System z

- **Dynamic nature of Mobile drives critical requirement for enhanced automation**
  - 24/7 availability requires high degree of mainframe System and Workload Automation
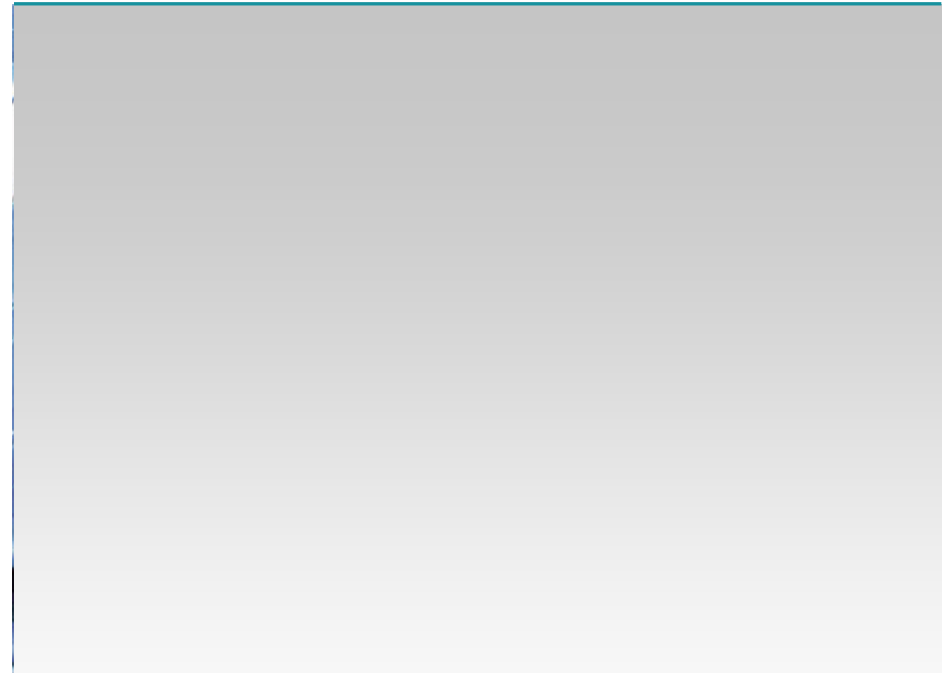
Why System z and mobile?

✓ System z is leader in transaction processing with the ability to handle volumes of critical data

✓ System z secures the data for mobile processing from mainframe to mobile device

✓ System z is the perfect environment for developing a mobile, cloud, and analytics integrated solution

System z
A sophisticated platform for mobile computing

Resources

- 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 applications
  - CICS Genapp.
  - CICS EGUI
  - IBM Remote - Sample application to manage 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

Highlights

- The speed of adoption of mobile devices is significantly faster than previous technology adoptions, including TV, radio, and the internet.
- Today, mobile transactions are part of everyday life for anyone who uses a mobile banking app, for supply chain managers optimizing responsiveness to sales orders, or for hospital staff collaborating on patient care.
- Extending existing enterprise applications onto a mobile platform allows you to capitalize on existing investments without the need to develop completely new solutions to support mobile services.
- Nearly 70% of all enterprise transactions touch a mainframe.
- System z plays an important role in today's mobile world by providing the secure and stable base that you need to extend existing enterprise data and transactions to mobile users.

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.

Redbooks

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