

Mainframe and Mobile – Are your back end apps ready?

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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 restricted and developed in the data center

Information developed using multiple platforms and transformed into web services

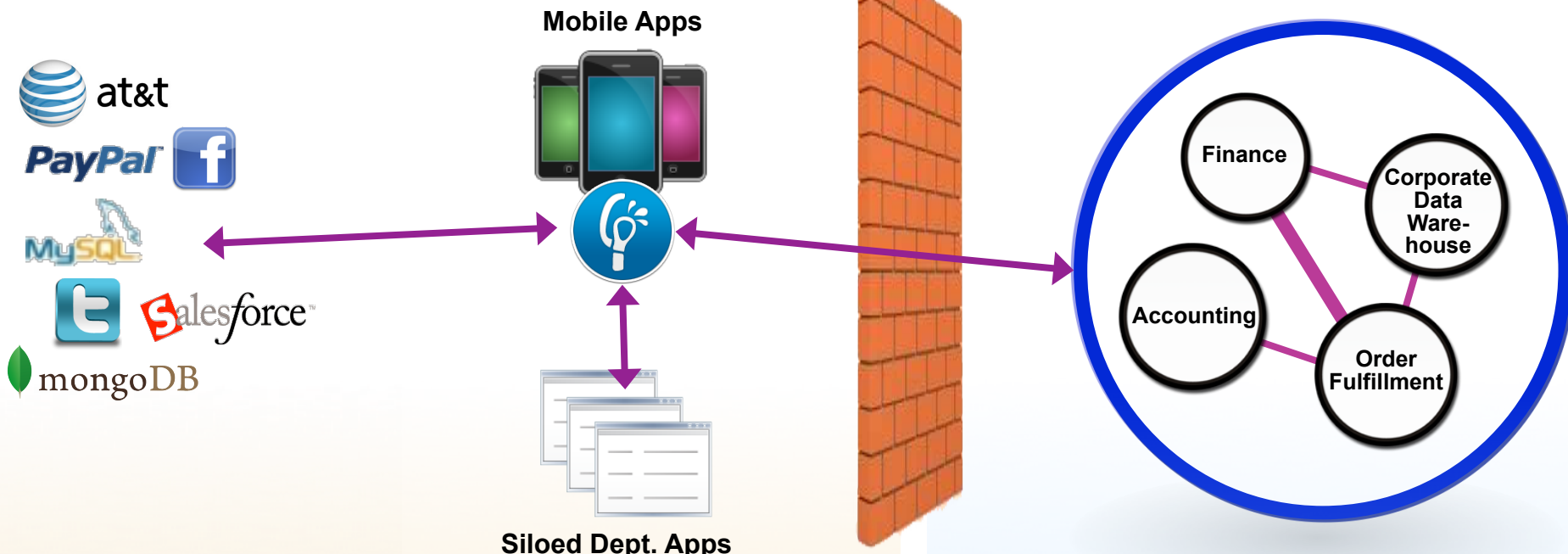
Information developed and controlled by users for mobile devices



System z bridges Systems of Record and Systems of Engagement

Systems of Engagement

Systems of Record



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

Linux on IBM System z®

z/OS®

Systems of Record are well integrated, trusted repositories.



Client drivers for mobile solutions span all industries

Finance & Banking

Manage their investment portfolios and accounts from anywhere for complete bank transactions



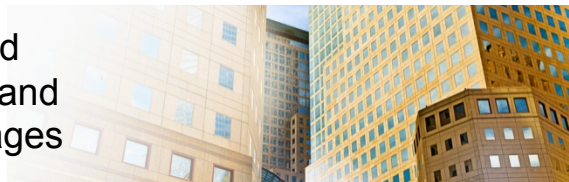
Construction & Manufacturing

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



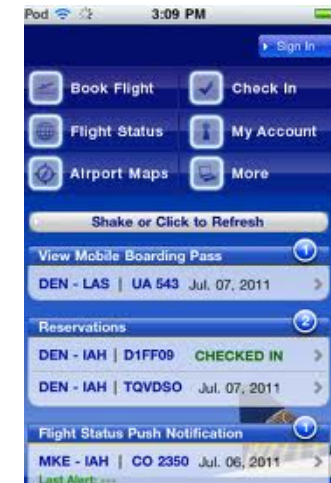
Consider the typical business traveler today...



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 for 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 our mobile enterprise capabilities

10

Acquisitions to strengthen our position in mobile since 2006

125+

Patents for wireless inventions in 2012, bringing the total to 270

Doubling

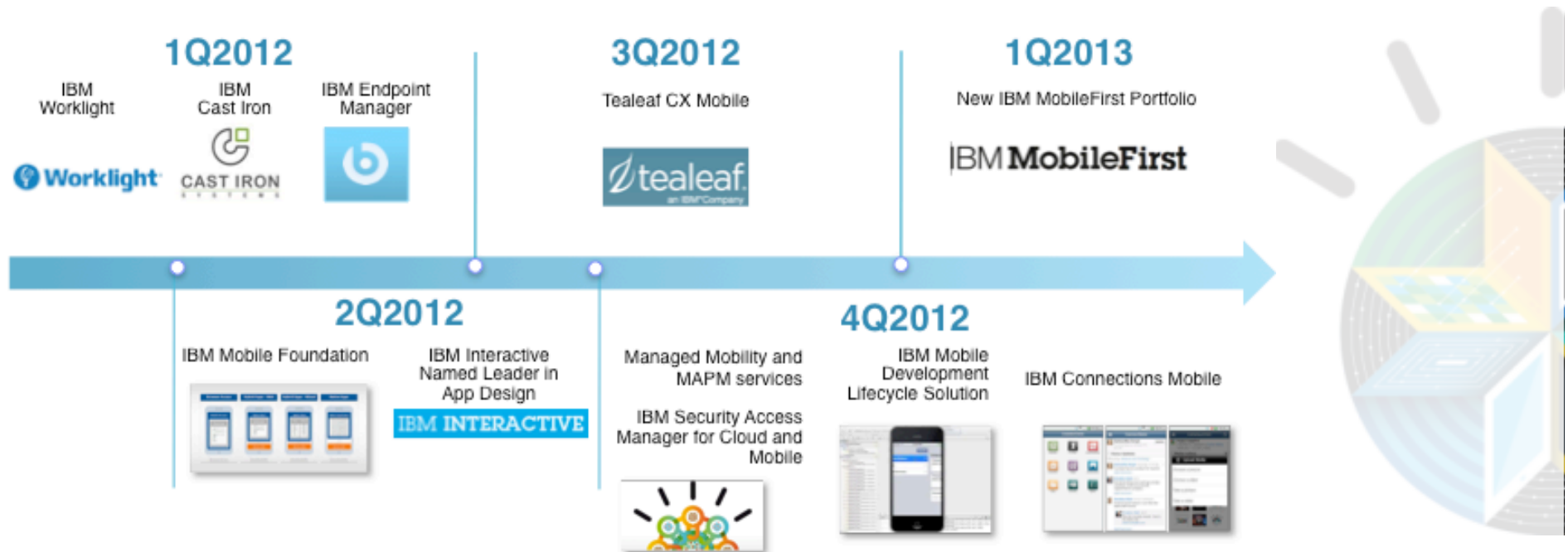
2013 investment in mobile solutions

200+

IBM Software apps available in app stores; ~ 1M downloads

Leader

In app design and managed services by Forrester and Gartner



IBM MobileFirst Platform is shaping enterprise mobility



IBM MobileFirst

| | | |
|--|---|--|
| 1 The Broadest Portfolio of Mobile Solutions | 2 The Deepest Set of Services Expertise | 3 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**



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

Mobile devices **have multiple personas**



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

Mobile devices **are diverse**



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

Mobile devices **are used in more locations**



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

Mobile devices **prioritize the user**



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

And even more challenges for the data center

18M

people use mobile devices
for bank transactions
making up 8% of
bank 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 difficult to predict
- **Increased system load**
Increase in overall transaction rates due to ease in accessing the 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 support 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 apps vary and can impact the data used

Browser Access

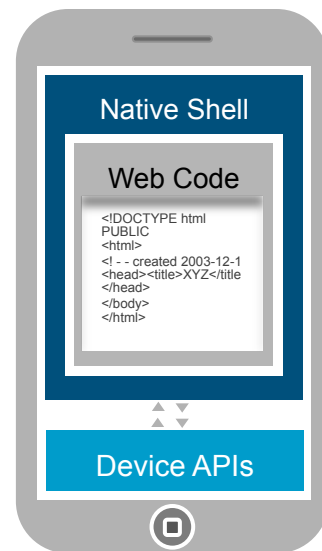
Written in HTML5 JavaScript and CSS3. Quick and cheap to develop, but less powerful than native.



Browser Access

Hybrid Apps - Web

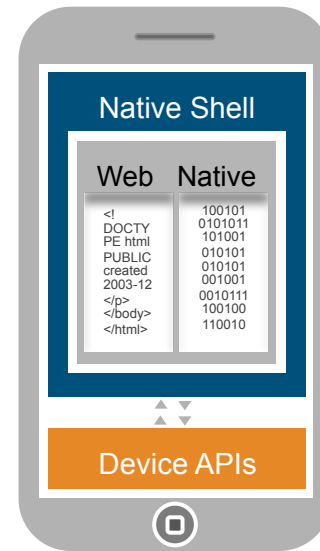
HTML5 code and runtime libraries packaged within the app and executed in a native shell.



Downloadable

Hybrid Apps - Mixed

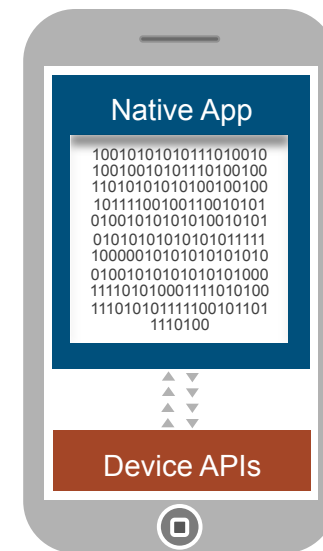
User augments web code with native language for unique needs and maximized user experience.



Downloadable

Native Apps

Platform-specific. Requires unique expertise, pricey and long to develop. Can deliver higher user experience.



Downloadable

Building and connecting apps to the 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

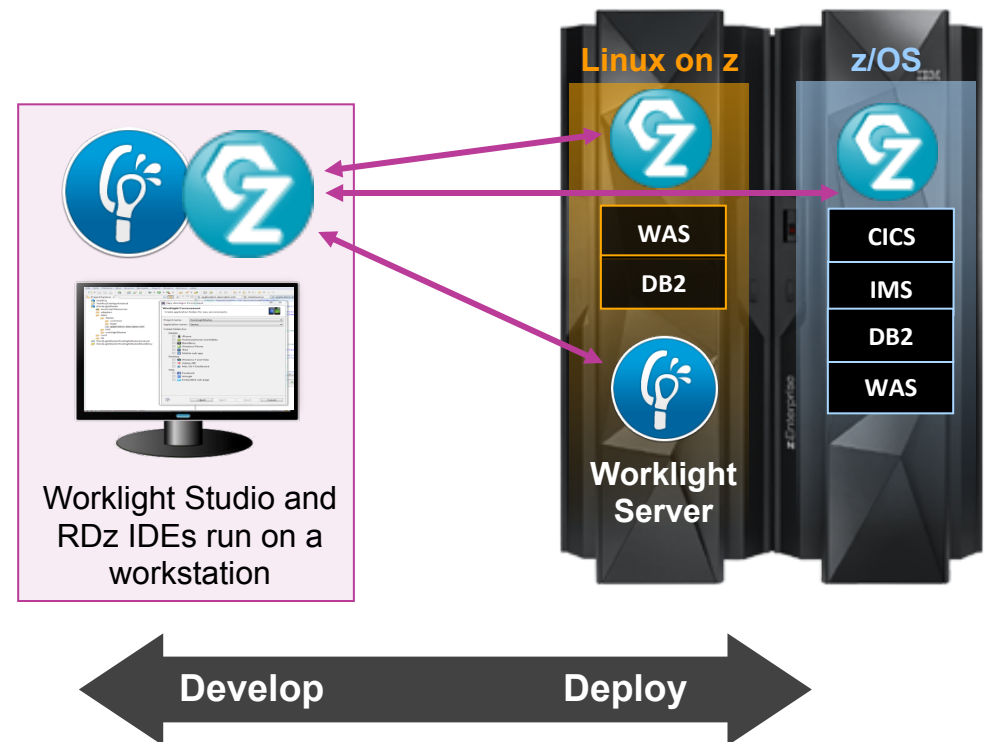
Lifecycle management



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

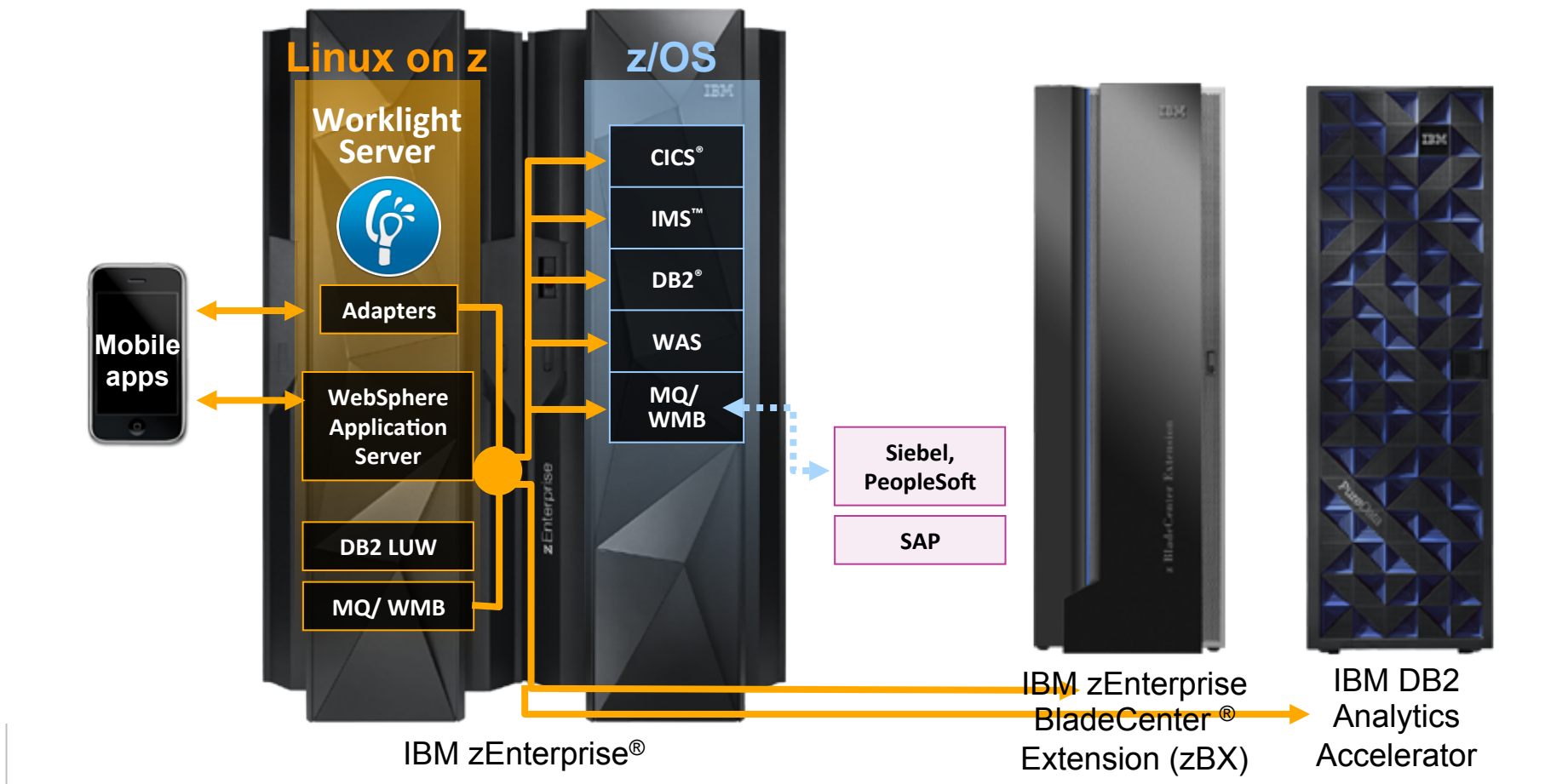
Building mobile apps on the zEnterprise

- **Eclipse-based IDE for creating mobile applications** with IBM Worklight Studio integrated with Rational® Developer for System 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



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

Connecting mobile apps on the 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**

City and County of Honolulu keeps citizens informed



Technological transformation to increase citizen participation

Real time information for citizens

Mobile formatted information of government data from department budgets to planning and permitting

[Video](#)

IBM Solution

IFLs deploying Linux on zEnterprise 114 to cloud-oriented applications using Maximo® to help citizens report city problems and schedule work



Securing and managing apps

\$7.2M

Average organizational cost of a data breached

47%

Of all vulnerabilities are in web applications

31%

Data breaches caused by malicious attacks

Secure and Manage

Mobile governance

Complete lifecycle security

Secure network communications and management with System z



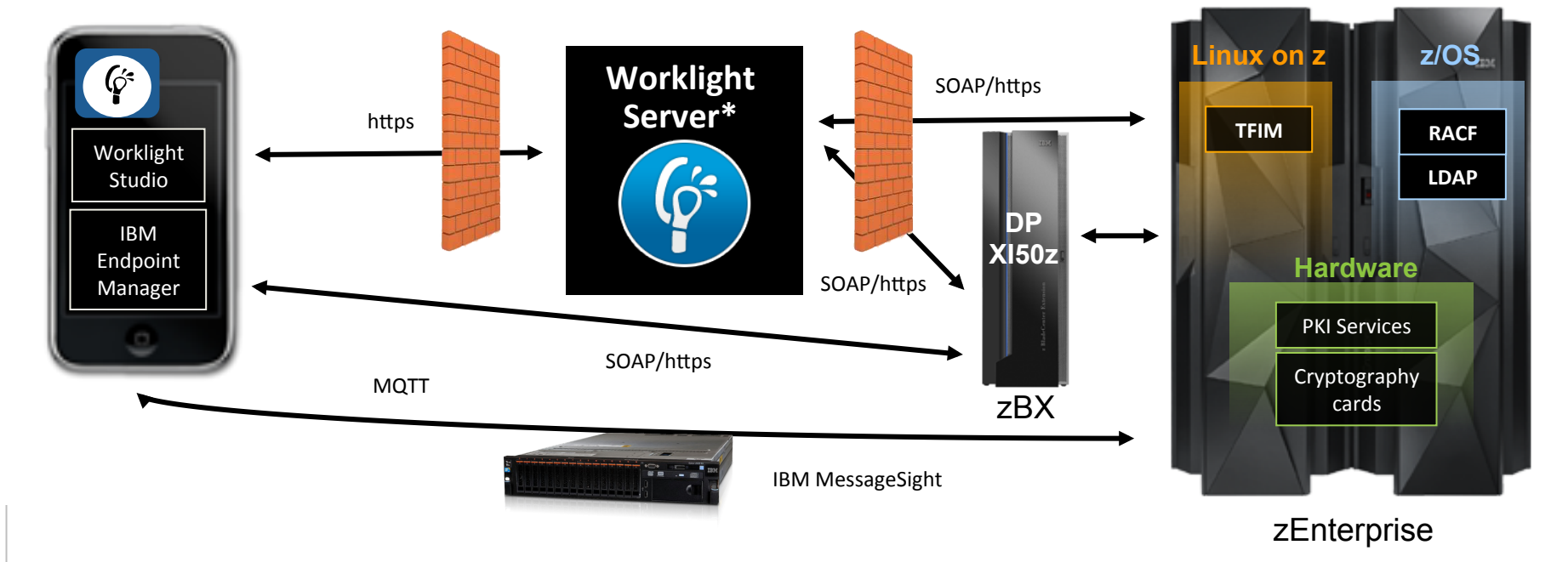
Securing and managing System z data to mobile devices to ensure a secure system for sensitive data

Securing mobile apps 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 white listing
 - 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**

Visiting Nurse Service of New York establishes enterprise connectivity for mobile services



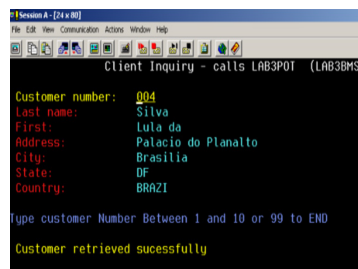
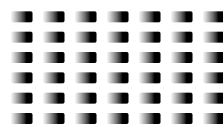
Meeting client demands and continually innovating

Access to data from any anywhere, anyplace, at anytime

With over 40,000 home visits per day, VNSNY is using tablets for staff members to connect with company's system instantaneously

IBM Solution

WebSphere MQ for z/OS moves data from one system to another to connect data for viewing on a tablet as well a updating financial systems



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



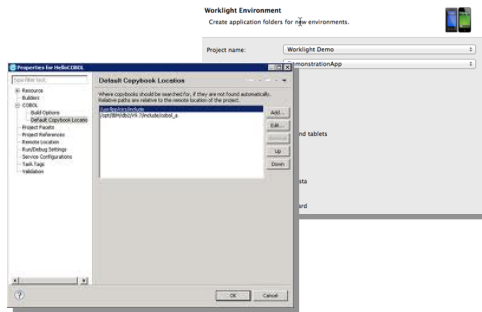
***Extending and transforming System z data to mobile devices
with top CIO initiatives***

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



Mobile and cloud with the zEnterprise



System z applications

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



Infrastructure

Cloud orchestration, provisioning and automation with Tivoli® solutions



Mobile Devices

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

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



University of Florida goes mobile



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

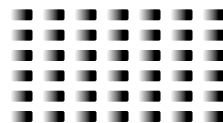
Data provided to students real time

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

IBM Solution

Accessing CICS with System z information via smartphones

Up to **1M** transactions/day



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

