Mobile Computing with System z

July, 2013

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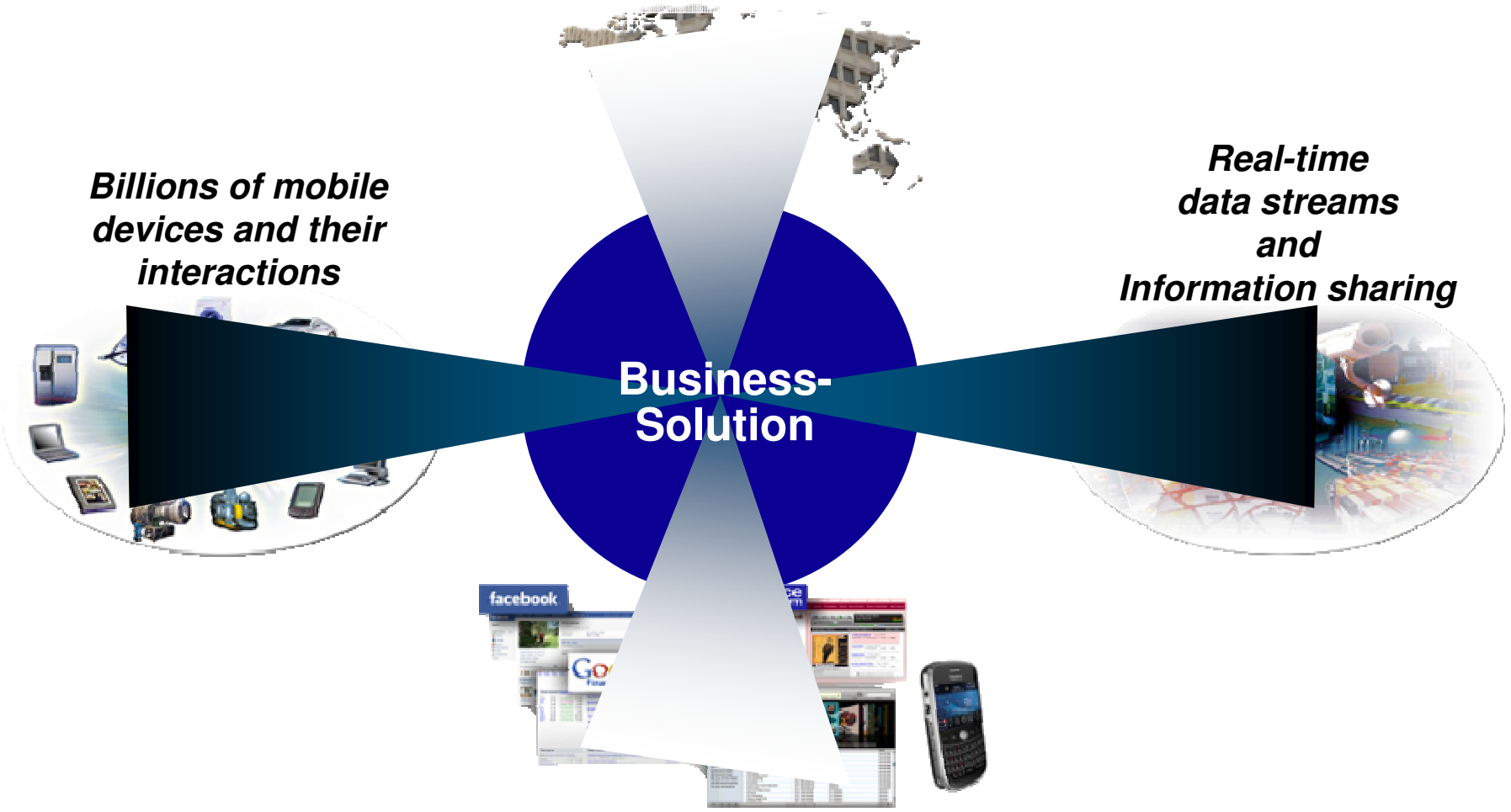
Globalization and Globally Available Resources



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IBM Research The 2013 Global Technology Outlook

Mobile First

- Mobile devices are emerging as **primary design point** for end-user access to IT
- More than a new access point to view existing back-end systems
- Mobile First is about: Behavior like consumer applications
  - constantly connected clients
  - quickly accomplishing single tasks and then move on
- Is accelerating the integration of cloud, social, and analytics

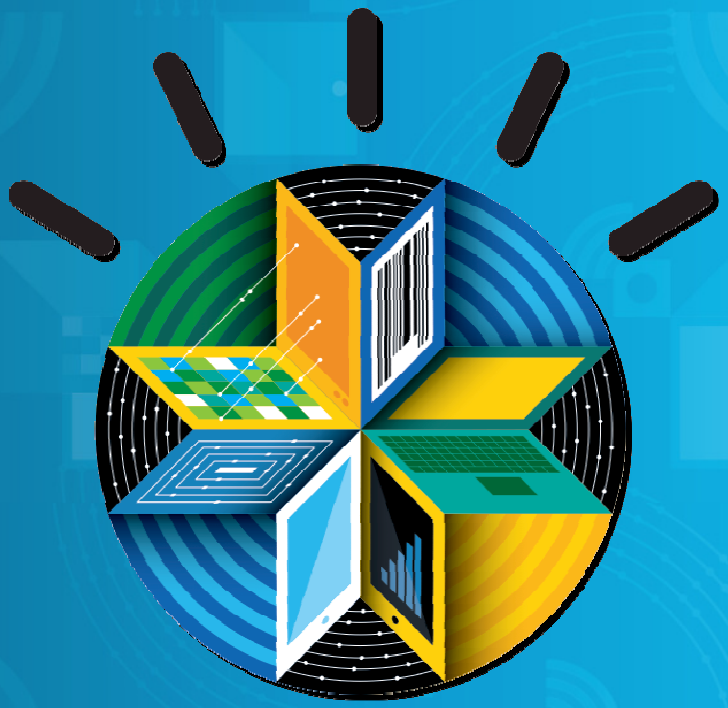
http://www.b2match.eu/system/softwaredays2013/files/Global-Technology-Outlook-2013_IBM.pdf?1366628169

Mobile First - Mobile Applications are Not Miniature PC applications…

	 Mobile Applications	 PC Applications
Usage Context	▪ User may be in the middle of some other activity (e.g. shopping in a supermarket) ▪ Interactions are short and may be interrupted ▪ Users are very impatient	▪ Using the application is the primary activity ▪ Interactions are longer and more focused ▪ Users are impatient
Mode of Interaction	▪ Non-keyboard: touch prevalent, also speech ▪ Typing should be minimized ▪ Screen size/real-estate is small	▪ Keyboard and mouse ▪ Typing is okay ▪ Larger screen size for presenting information
Other considerations	▪ Integration with device capabilities (e.g. camera, GPS, accelerometer) ▪ Offline behavior	

IBM MobileFirst

02-2013



The Broadest Portfolio of Mobile Solutions

IBM MobileFirst Platform

- IBM Worklight
- IBM Rational Test Workbench
- IBM Mobile Application Platform Management

IBM MobileFirst Management

IBM MobileFirst Security

IBM MobileFirst Analytics

IBM Worklight - Consistent Mobile End-user Experience

Part of the IBM MobileFirst family - Mobile Application Platform for smartphones and tablets

- Simplifies the development of mobile applications
- across multiple mobile platforms - iOS, Android, BlackBerry, and Windows® Phone

Typical Customer Pain Resolved with Worklight:

•First mobile app was created through expensive native development by 3 parties
•No consistent user experience across mobile platforms
•No code reuse between mobile and PC environments
•User was required to install multiple apps - impossible to update existing app without redeploying the entire native app

Simplified Development – What is Difficult with Mobile Applications ?

Need to use familiar web technologies:

- HTML5, CSS, JavaScript

Plus (Hybrid applications)

Support all major mobile platforms with proprietary tools, languages and APIs:

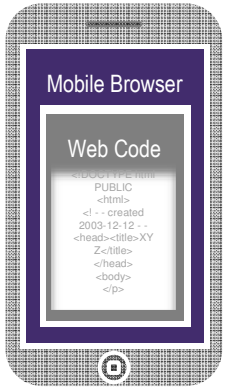
- Android phones and tablets
- Windows 7 and Vista (Deprecated)
- BlackBerry 6 and 7
- BlackBerry 10
- iPad
- iPhone
- Mac OS X Dashboard (Deprecated)
- Mobile Web Application
- Windows 8 desktop and tablets
- Windows Phone 7.5
- Windows Phone 8

Leverage common HTML5 and mobile libraries/frameworks:

IBM Worklight – Support for Different Mobile Application Styles

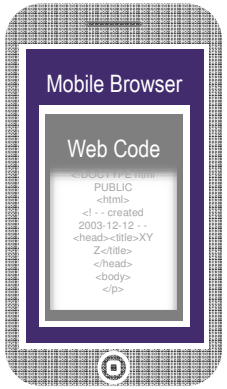
Web

- HTML, JavaScript, CSS
- Accessed from a mobile web browser
- No device-specific capabilities



Mobile Web

- HTML, JavaScript, CSS
- Accessed from a mobile web browser; mobile-optimized UI
- Limited access to lower-level device capabilities

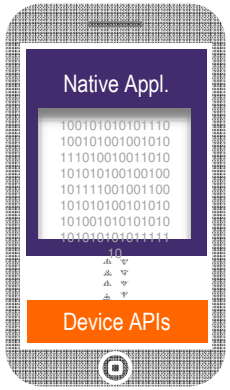


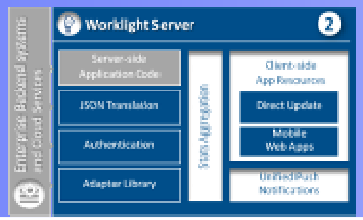
Hybrid Mobile

- HTML, JavaScript, CSS, with optional native code
- Installed and run like a native mobile app; mobile-optimized UI
- Access to lower-level device capabilities

Native

- Native code
- Access to full set of lower-level device capabilities





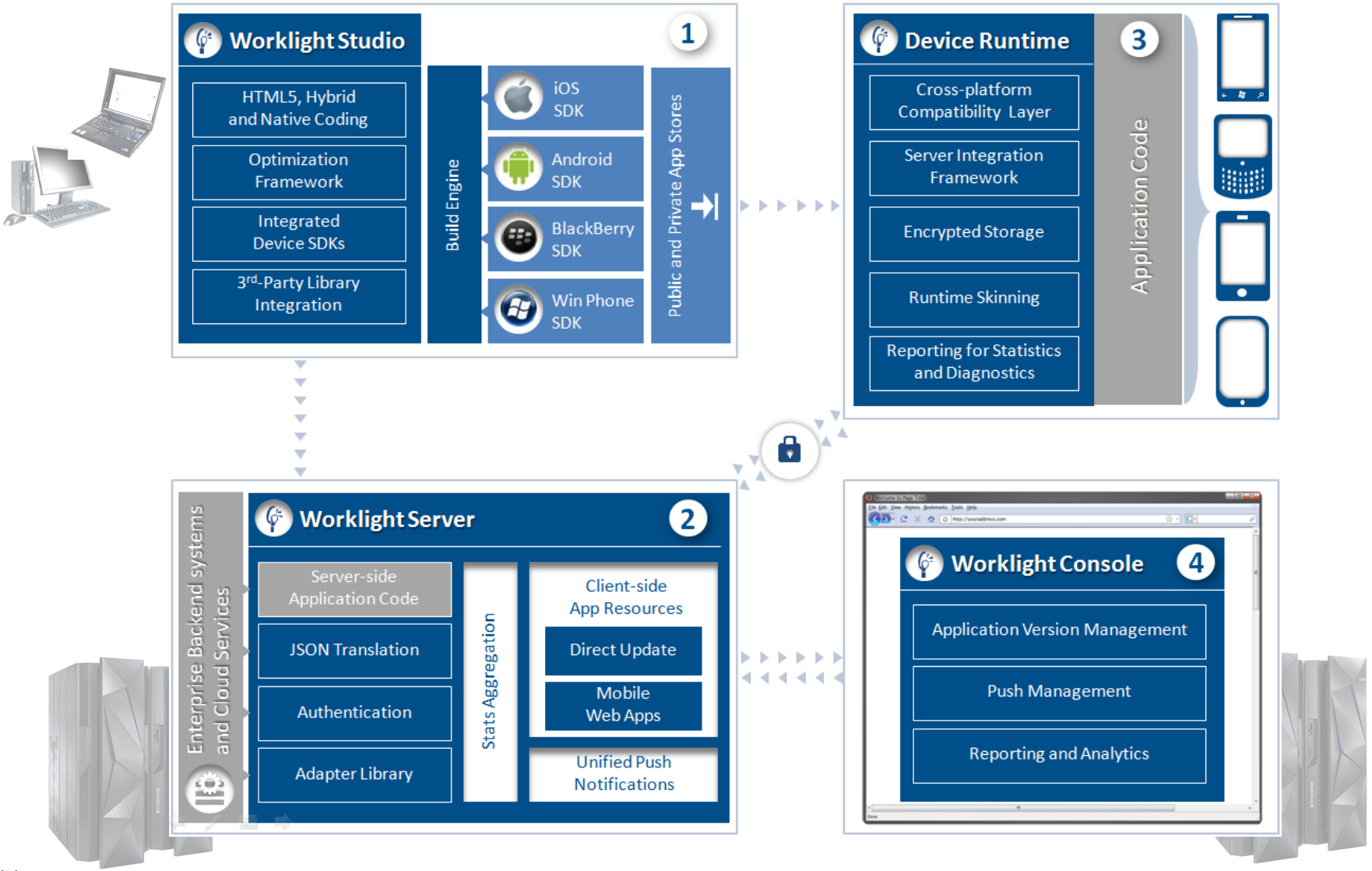
Worklight Server

Mobile middleware offering unified push notifications, version management, security and integration

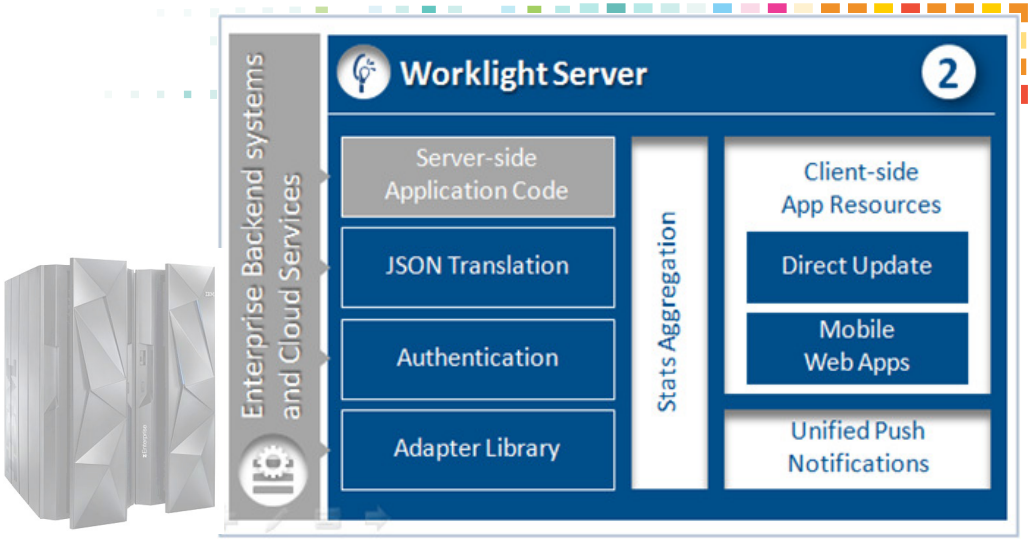
Worklight Console

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

Worklight Components Overview



Worklight Server

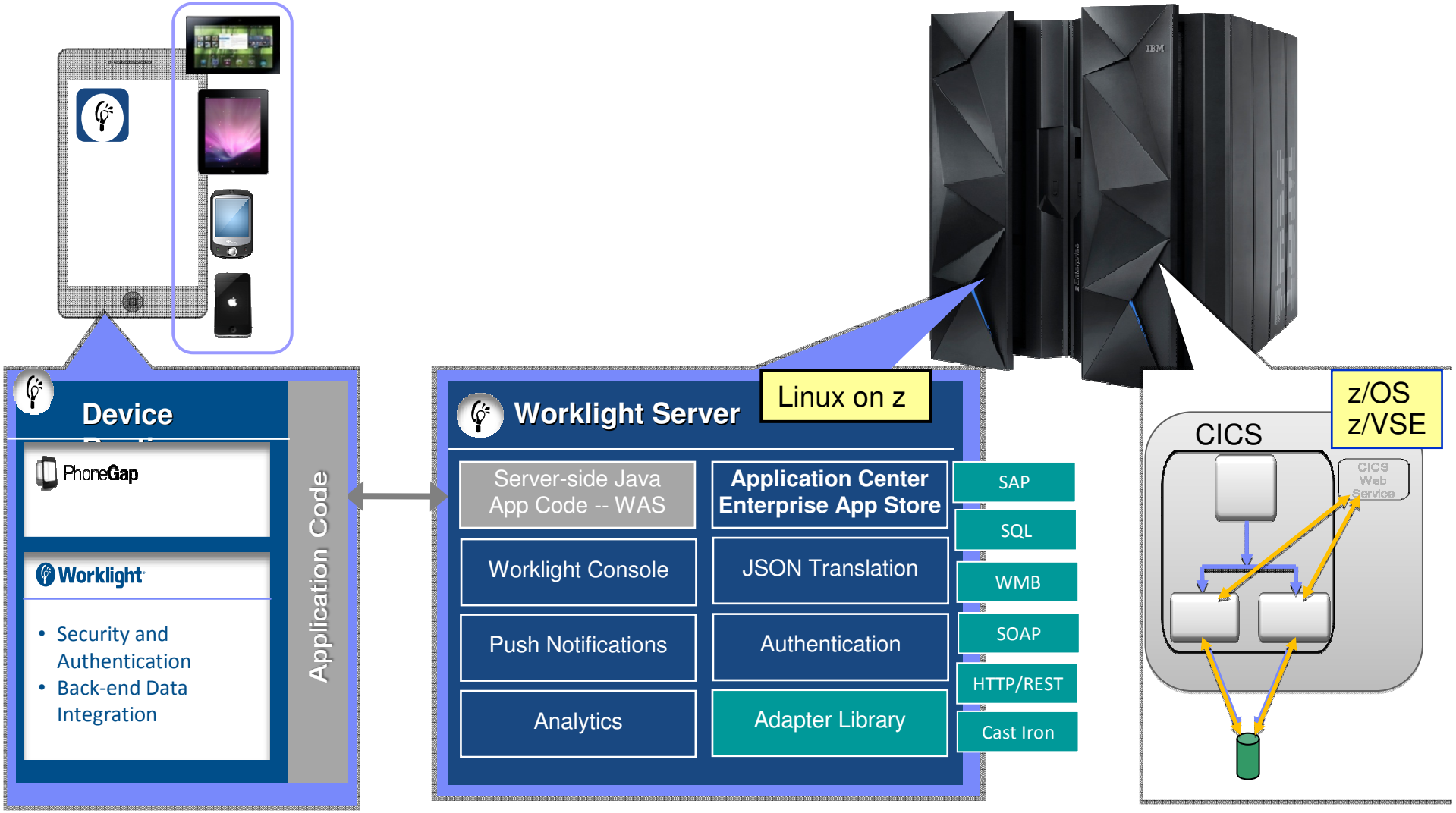


Worklight Server is a **WebSphere Application Server (WAS)/Java application**, supported on **System z Linux** – WAS 7, 8, 8.5 on SLES 10, 11, and RHEL 5, 6

Adapters are used to communicate to back-end services like databases, transaction systems, MQ, etc.

Performs protocol mediation - JSON is used to communicate to mobile devices – translation is done to HTTP or Web Services that are used by server components.

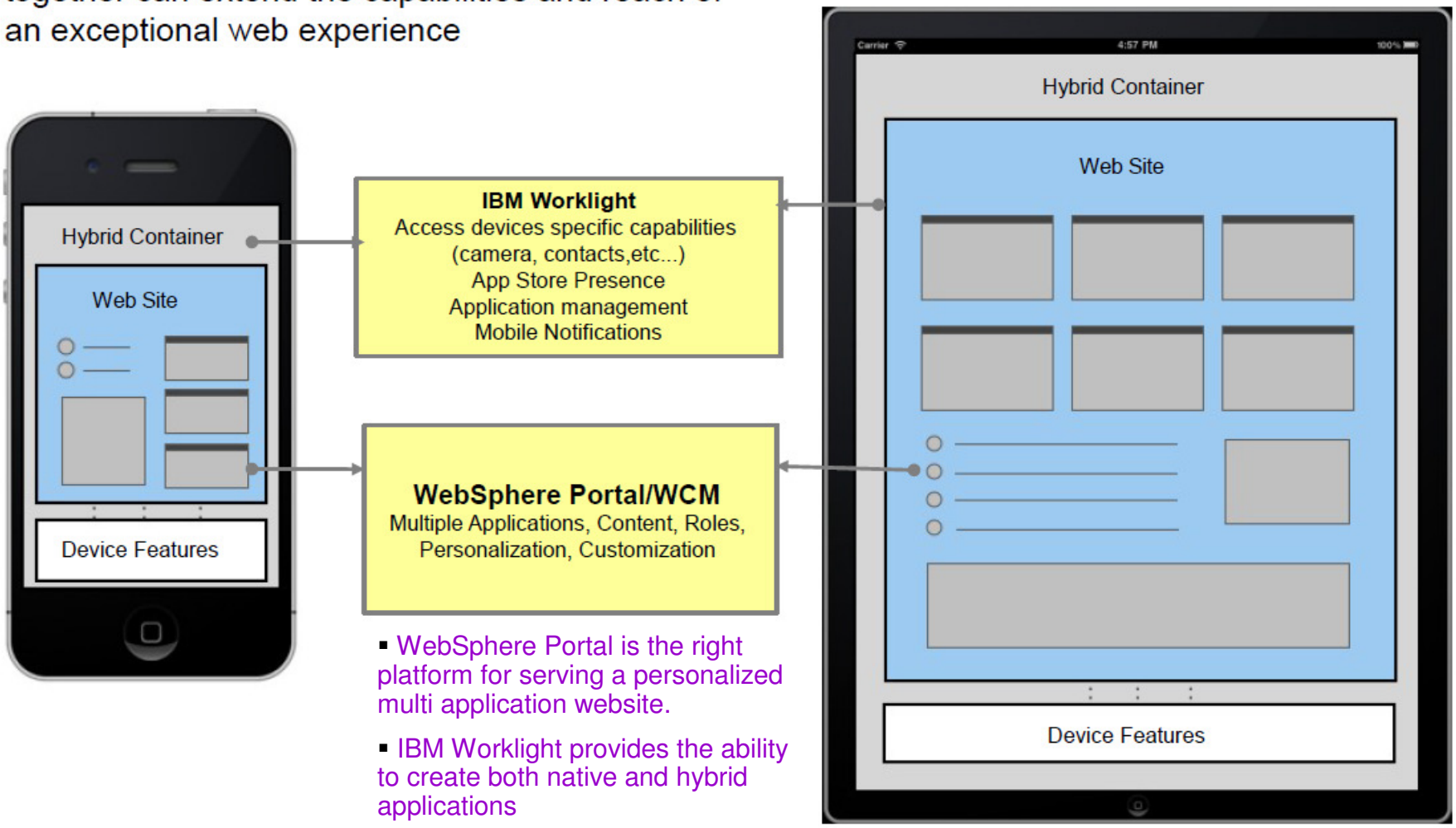
IBM Worklight Server - Architecture on Linux on System z



Worklight Video: http://www.youtube.com/watch?feature=player_embedded&v=zHnFw70XXXo

Hybrid – Worklight and WebSphere Portal together

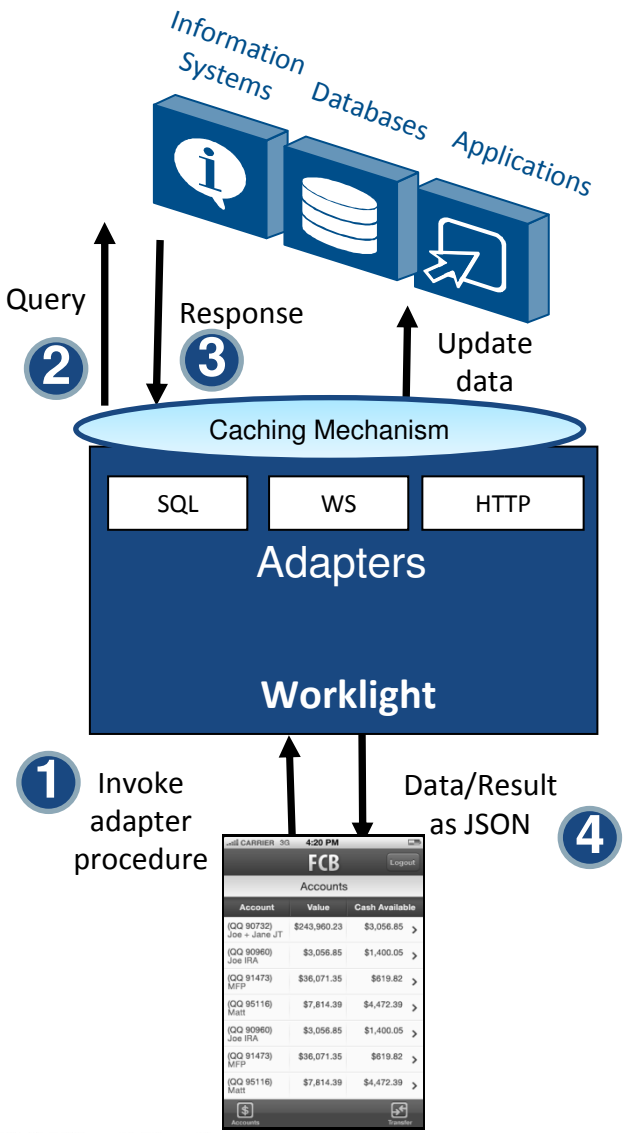
WebSphere Portal/WCM and IBM Worklight used together can extend the capabilities and reach of an exceptional web experience



- WebSphere Portal is the right platform for serving a personalized multi application website.
- IBM Worklight provides the ability to create both native and hybrid applications

WCM = Web Content Manager

Worklight Server- Adapters



Universality

- Supports multiple integration technologies and back-end information systems

Read-only & Transactional Capabilities

- Adapters support read-only and transactional access modes to back-end systems

Security

- Flexible authentication APIs for back-end connections
- Connected user identity control

Caching

- Leveraged to store data retrieved from back-end

Transparency

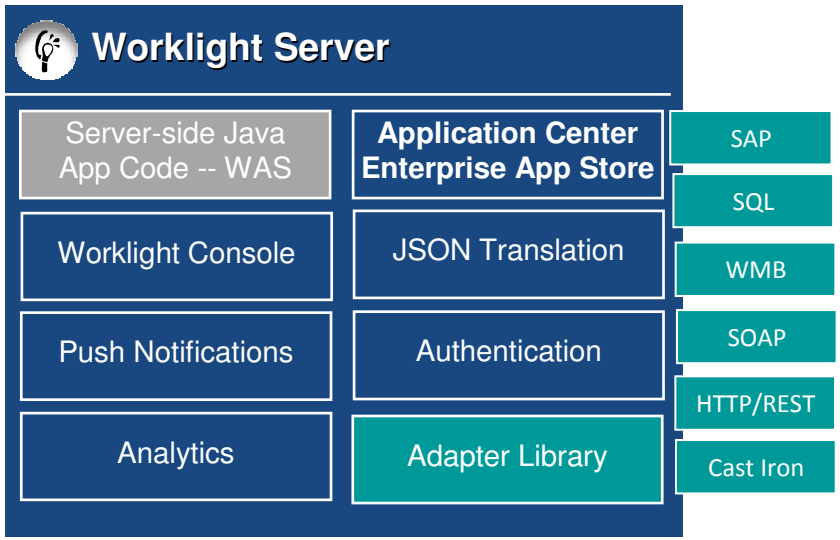
- Uniform exposure of back-end data for all adapter types

Fast Development

- Defined using simple XML syntax
- Easily configured with JavaScript APIs

Worklight Studio - developing adapters

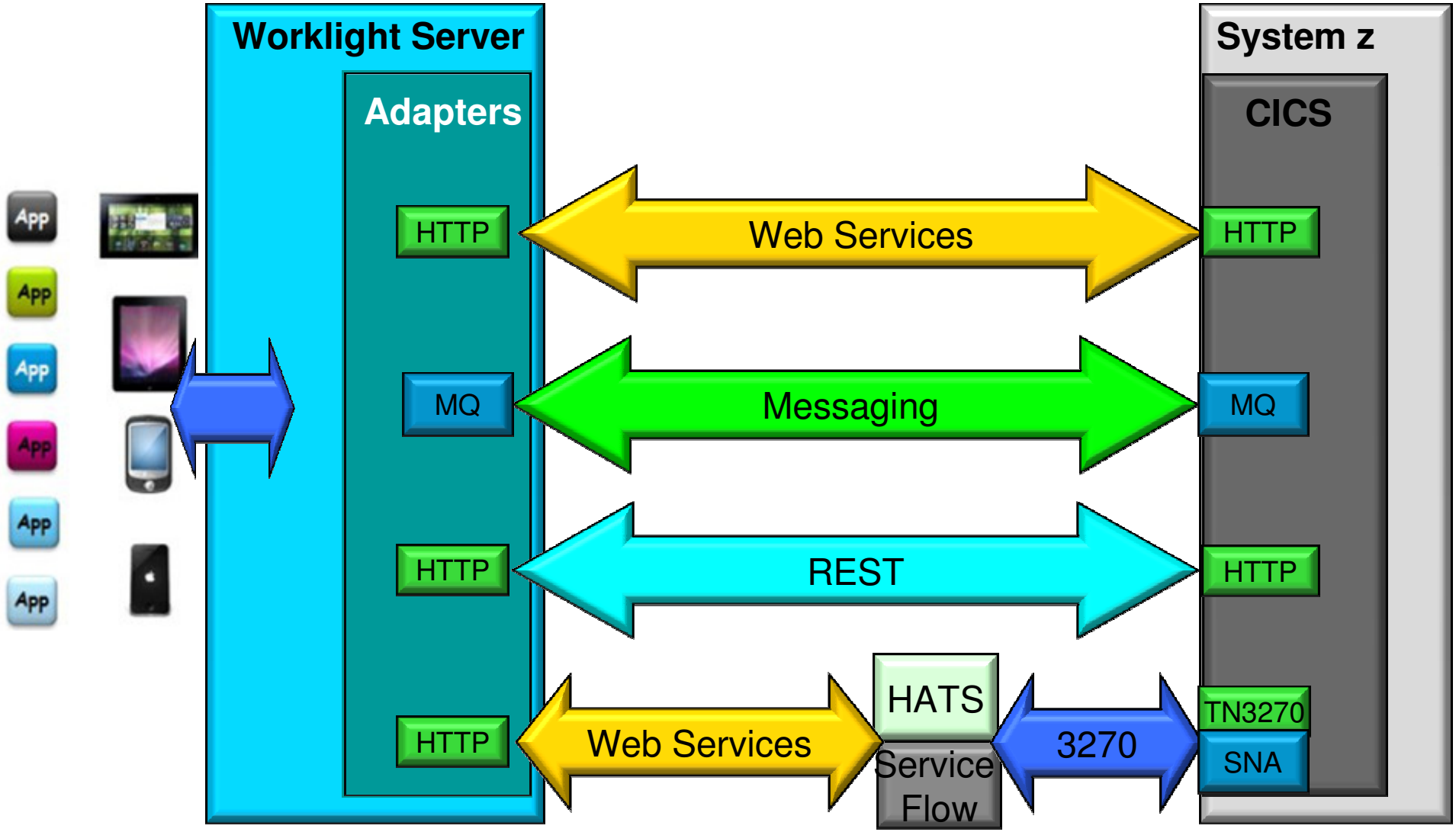
- An Adapter is a transport layer used by the Worklight Platform to connect to various back-end systems.
  - Executed on Worklight server
  - Implemented in JavaScript by default
    - Can be custom-coded in Java
  - Simple client-side JavaScript invocation model through Worklight client API



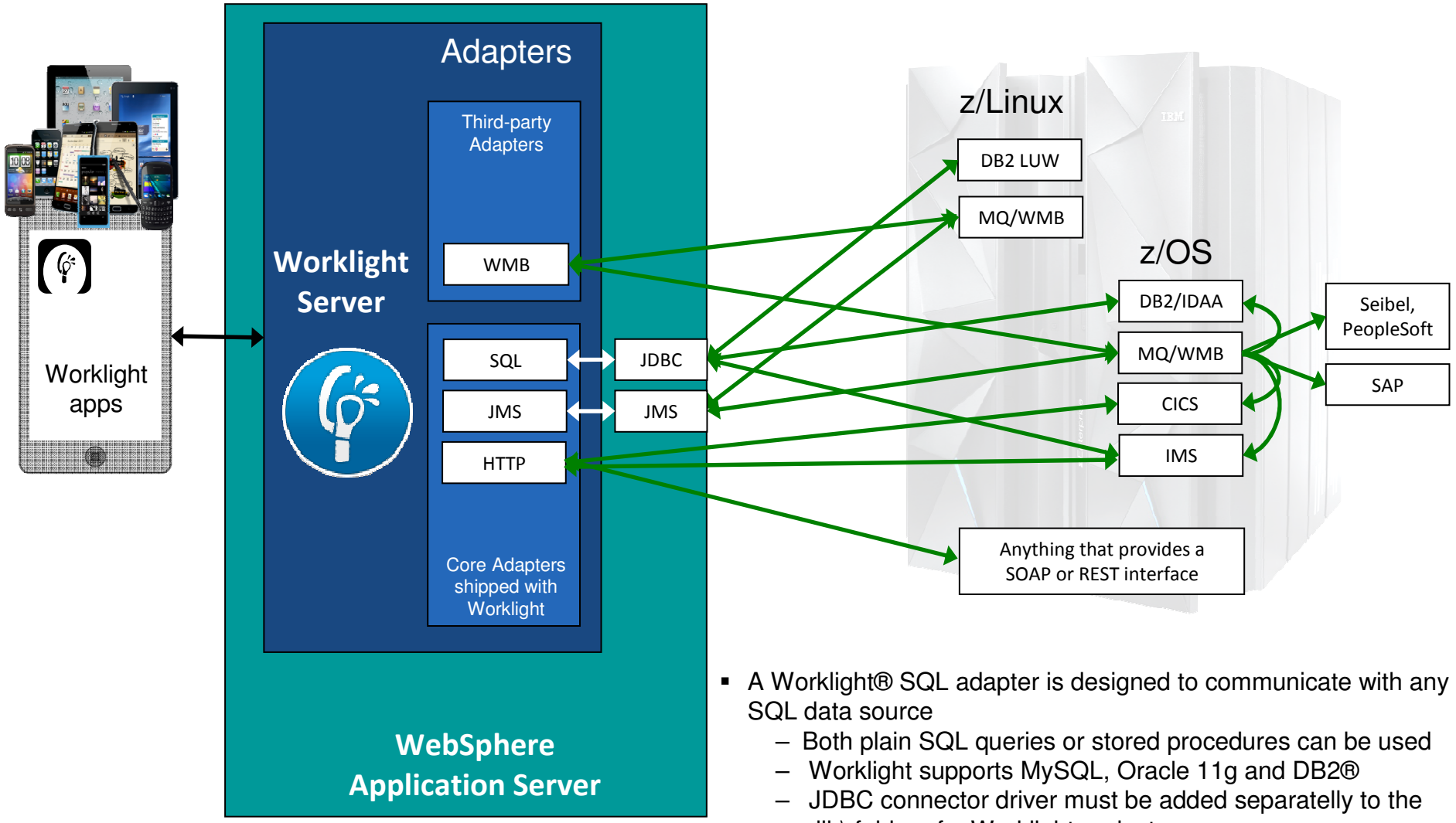
- Adapters are used for:
  - Retrieving information
  - Performing actions

- Out of the box Adapter support:
  - HTTP Adapter (supports both REST and SOAP)
    - You can use the HTTP adapter to send GET, POST, PUT, and DELETE HTTP requests and retrieve data from the response body. Data in the response can arrive in XML, HTML, or JSON formats. JSON (JavaScript Object Notation) is the newest format developed for mobile communications.
  - Messaging (WMB, MQTT)
  - SQL Adapter

CICS Connectivity Options with Worklight

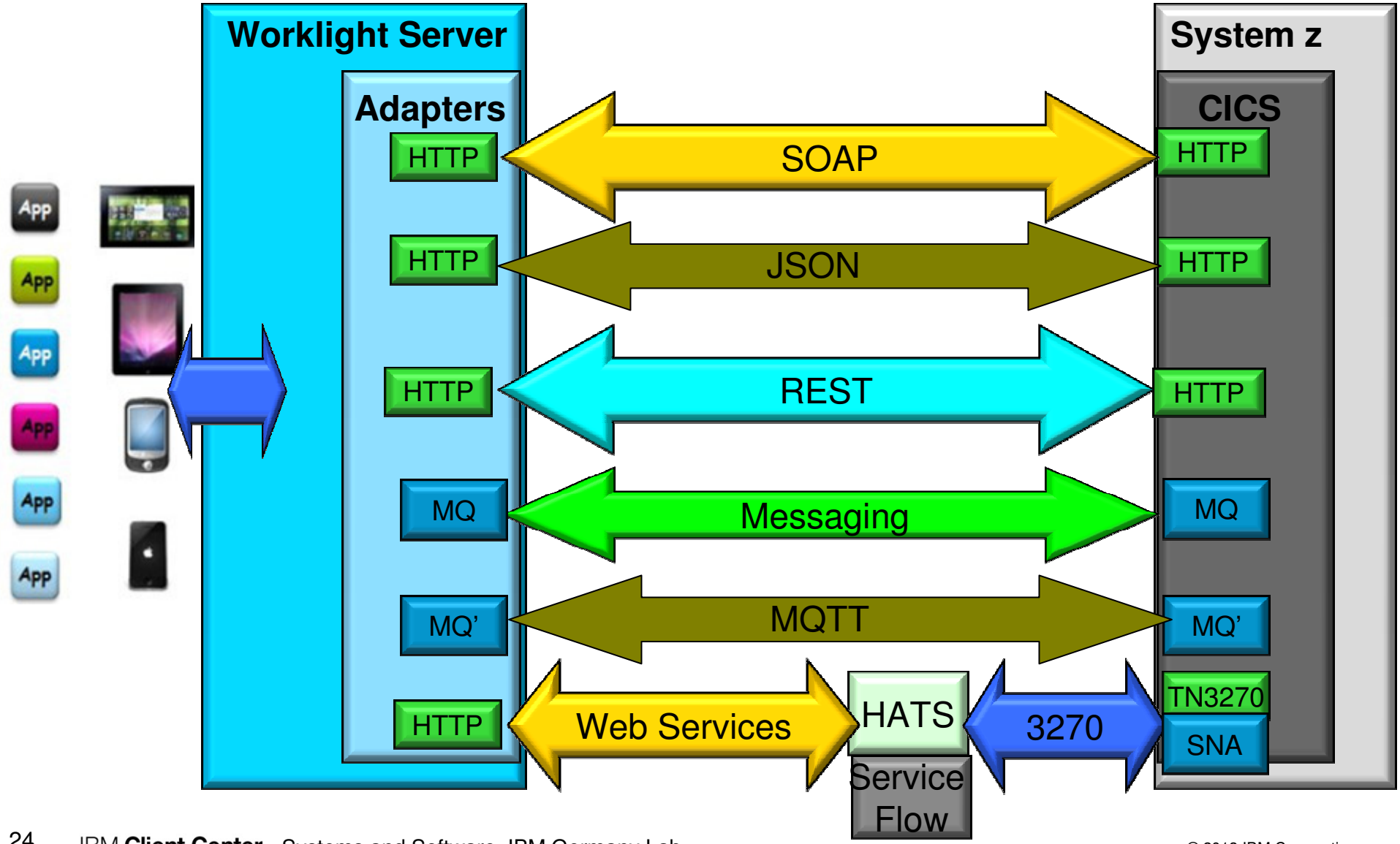


Mobile App Connectivity to System z - via Worklight Adapters

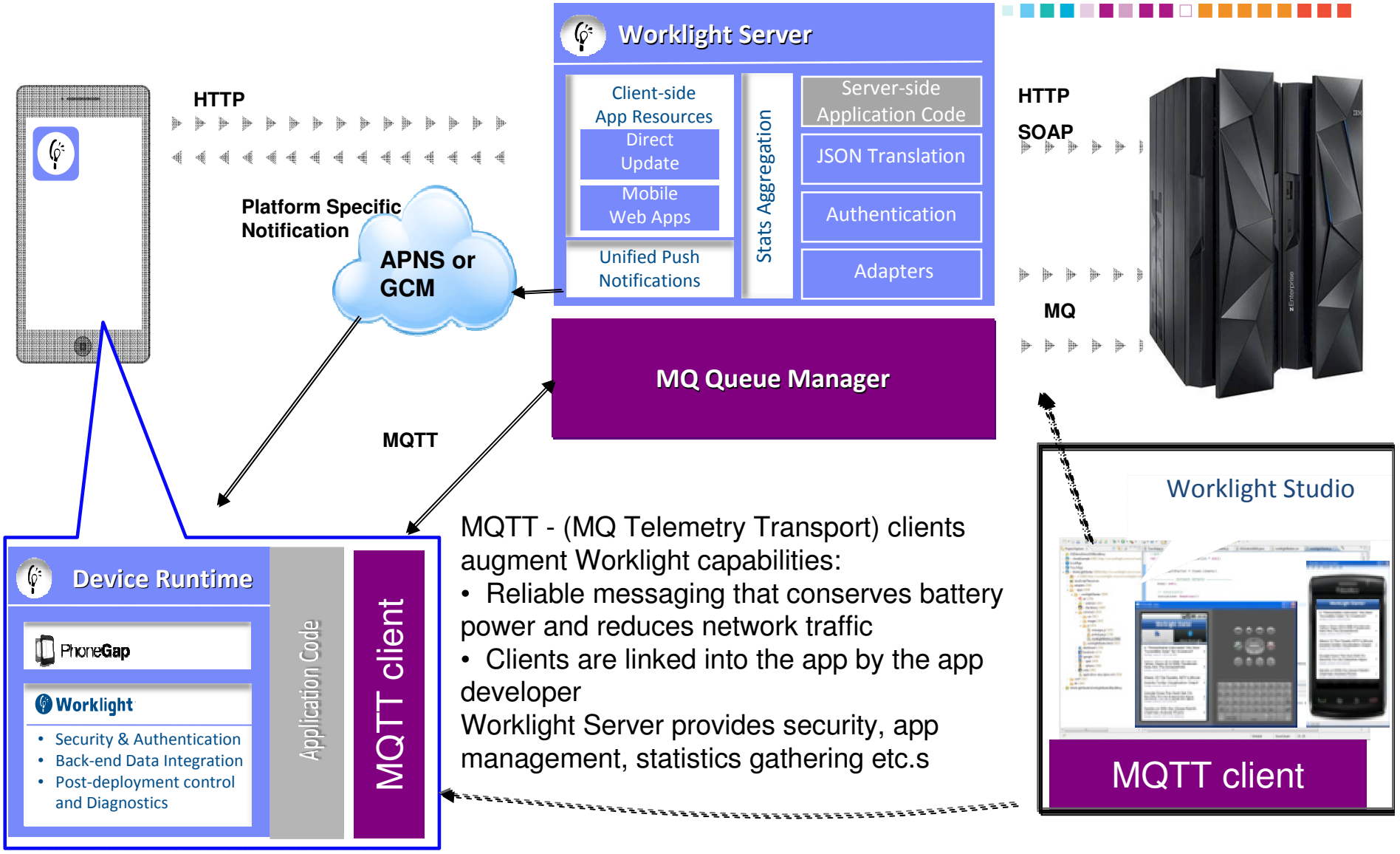


- A Worklight® SQL adapter is designed to communicate with any SQL data source
  - Both plain SQL queries or stored procedures can be used
  - Worklight supports MySQL, Oracle 11g and DB2®
  - JDBC connector driver must be added separatelly to the lib\ folder of a Worklight project

CICS Connectivity Options with Worklight



Lightweight MQ for Key Enterprise Messaging (MQTT)

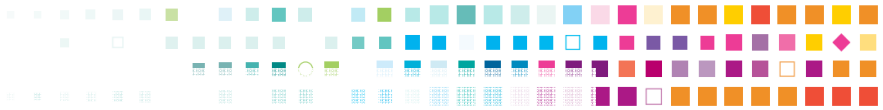


MQTT - (MQ Telemetry Transport) clients augment Worklight capabilities:

- Reliable messaging that conserves battery power and reduces network traffic
- Clients are linked into the app by the app developer

Worklight Server provides security, app management, statistics gathering etc.s

APNS - Apple Push Notification Service
GCM - Google Push Notification



JSON – JavaScript Object Notation

http://en.wikipedia.org/wiki/JSON-6-2013

- **JavaScript Object Notation (JSON) - H**uman-readable data interchange
- Open standard - derived from the JavaScript for representing simple data structures
- Used together with JavaScript on Demand (JOD), Ajax or WebSockets for transmission of data between client and server

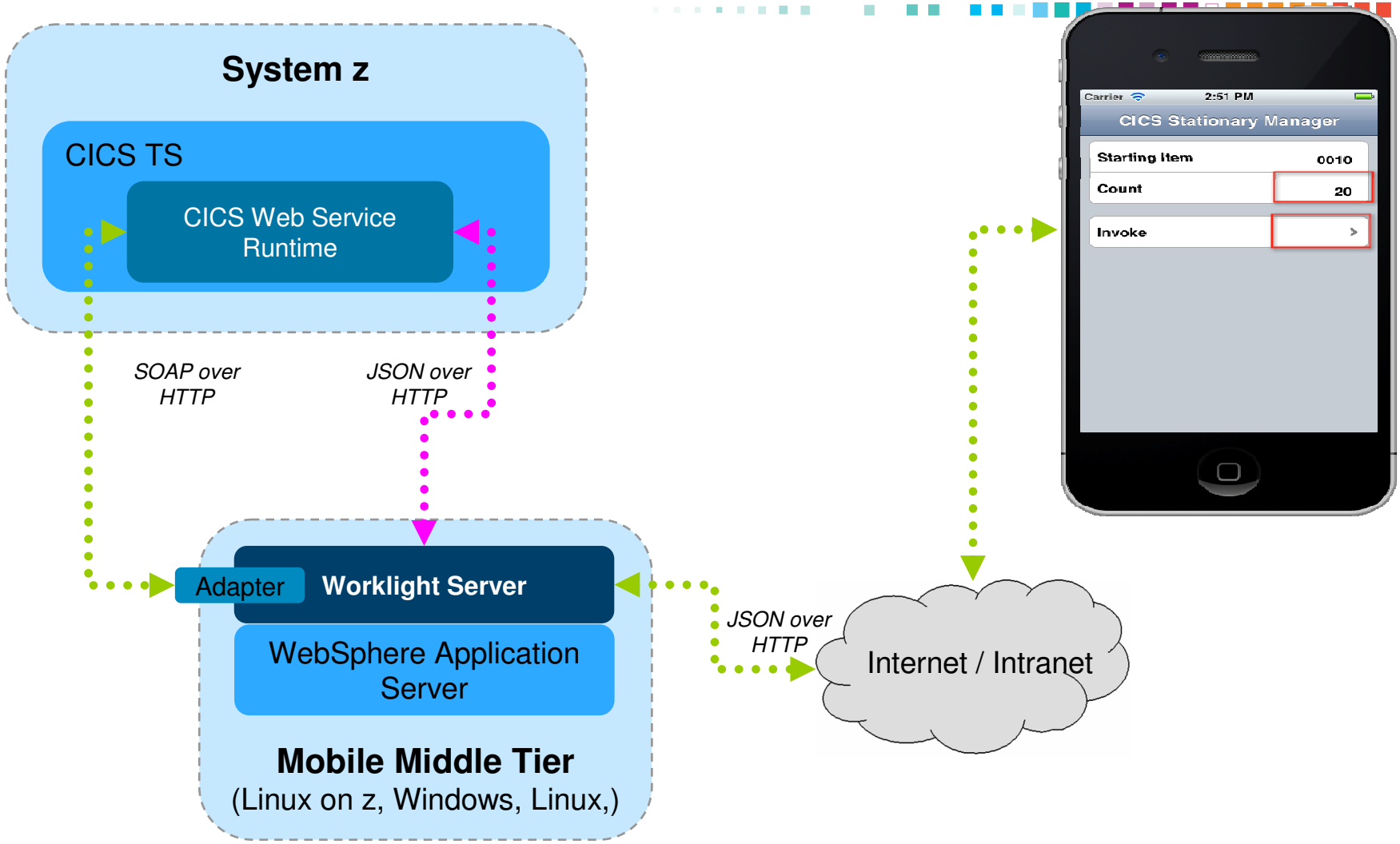
CICS Transaction Server Feature Pack for Mobile Extensions V1.0

The CICS TS Feature Pack for Mobile Extensions V1.0 enables you to extend the reach of your existing COBOL, C/C++, and PL/I programs to mobile devices, without having to make costly changes to your applications. The feature pack adds support for web service requests using JavaScript Object Notation (JSON) and the conversion between JSON and high-level language data structures, creating an efficient method of consuming enterprise data on a mobile device.

- Ideal for companies that wish to build mobile applications to exploit existing enterprise services hosted within the robust and scalable CICS environment
- Uses existing CICS web service technology: a separate WSBIND file provides the mapping from the COBOL, C/C++, or PL/I language structures to JSON, or from JSON back to the language structure
- Requests are process by CICS in a web service pipeline, taking advantage of the proven web service infrastructure within CICS Transaction Server
- JSON greatly simplifies connectivity to mobile devices, particularly when using IBM Worklight Server, as you no longer need to write extensive custom adapter code to invoke CICS services

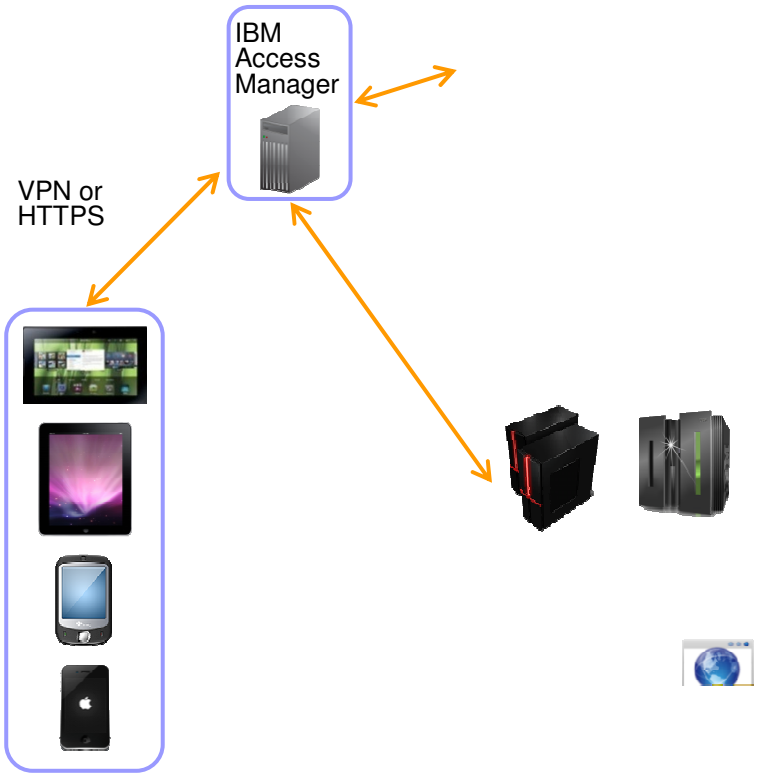
The CICS TS Feature Pack for Mobile Extensions V1.0 is available for CICS TS V4.2 and CICS TS V5.1

CICS TS – Easier Communication via JSON



Mobile Access Security

IBM Security Access Manager for Cloud and Mobile *extends user access protection to mobile and cloud environments using federated SSO, authenticating and authorizing the user and their device*



Client Challenge

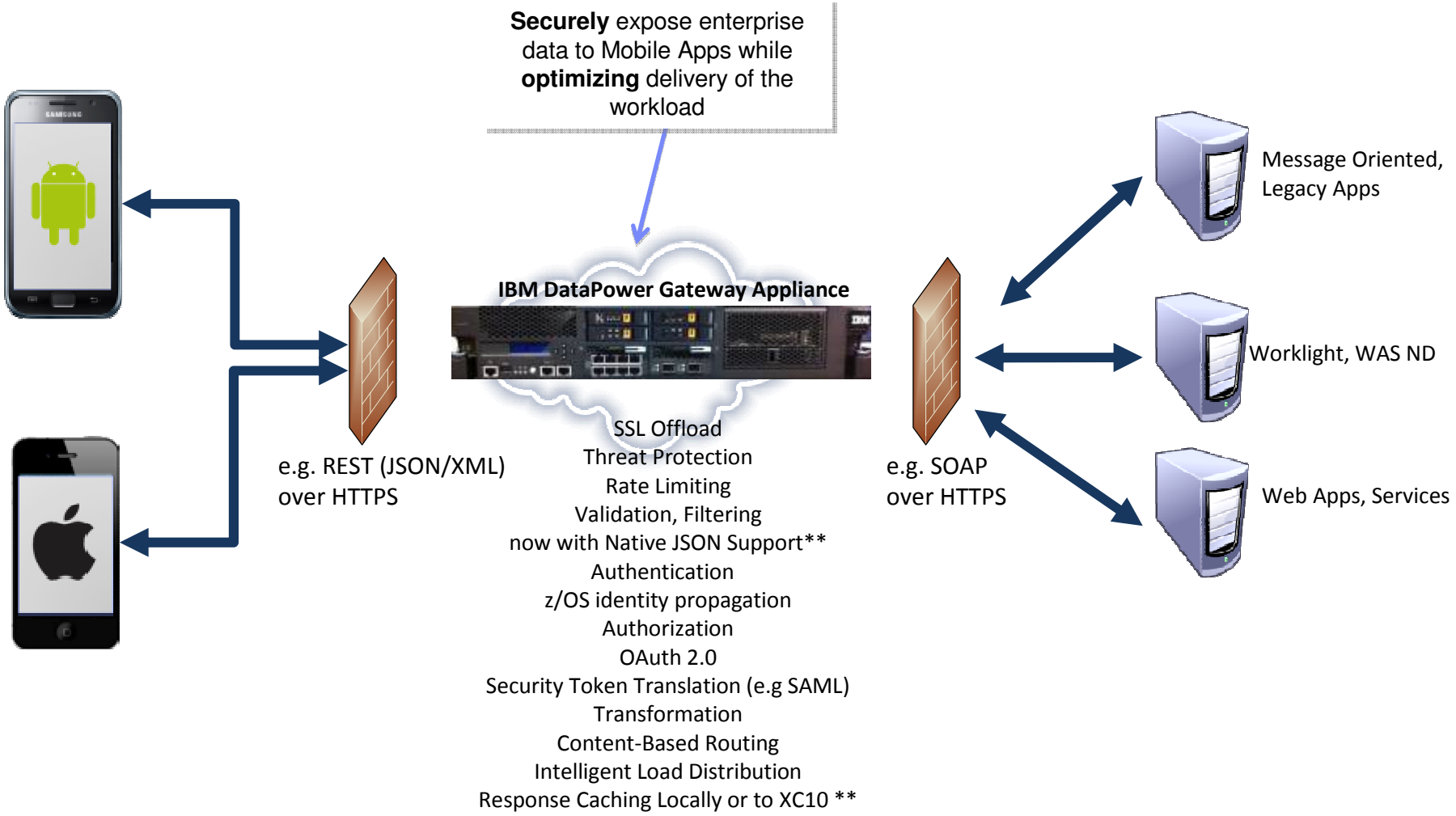
Ensuring users and devices are authorized to access enterprise resources from that specific device.

Key Capabilities

- Satisfy complex context-aware authentication requirements
- Reverse proxy, authentication, authorization, and federated identity
- Mobile native, hybrid, and web apps
- Flexibility in authentication: user id/password, basic auth, certificate, or custom
- Supports open standards applicable to mobile such as OAuth
- Advanced Session Management

Connect Mobile Apps with Enterprise Apps & Services

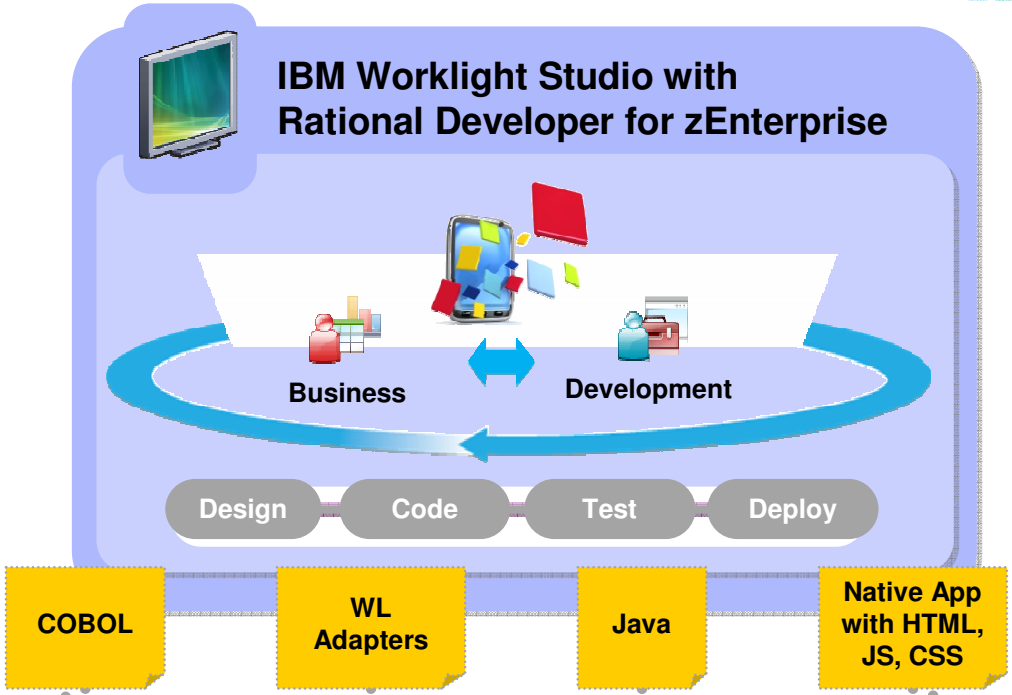
Security, Control, Integration & Optimization of mobile workload



Enhanced form-based authentication support for quick integration with **Worklight applications** running on mobile devices **
Ready-to-use configuration pattern as reverse proxy & security policy enforcement point in front of **Worklight Server****

*** Available in DataPower firmware version 6.0***

Development for IBM Worklight on System z



- Built on Eclipse
- Common code base across all mobile platforms (with ability to override at platform level)
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with third-party SDKs (e.g. Android Development Tools)

System z

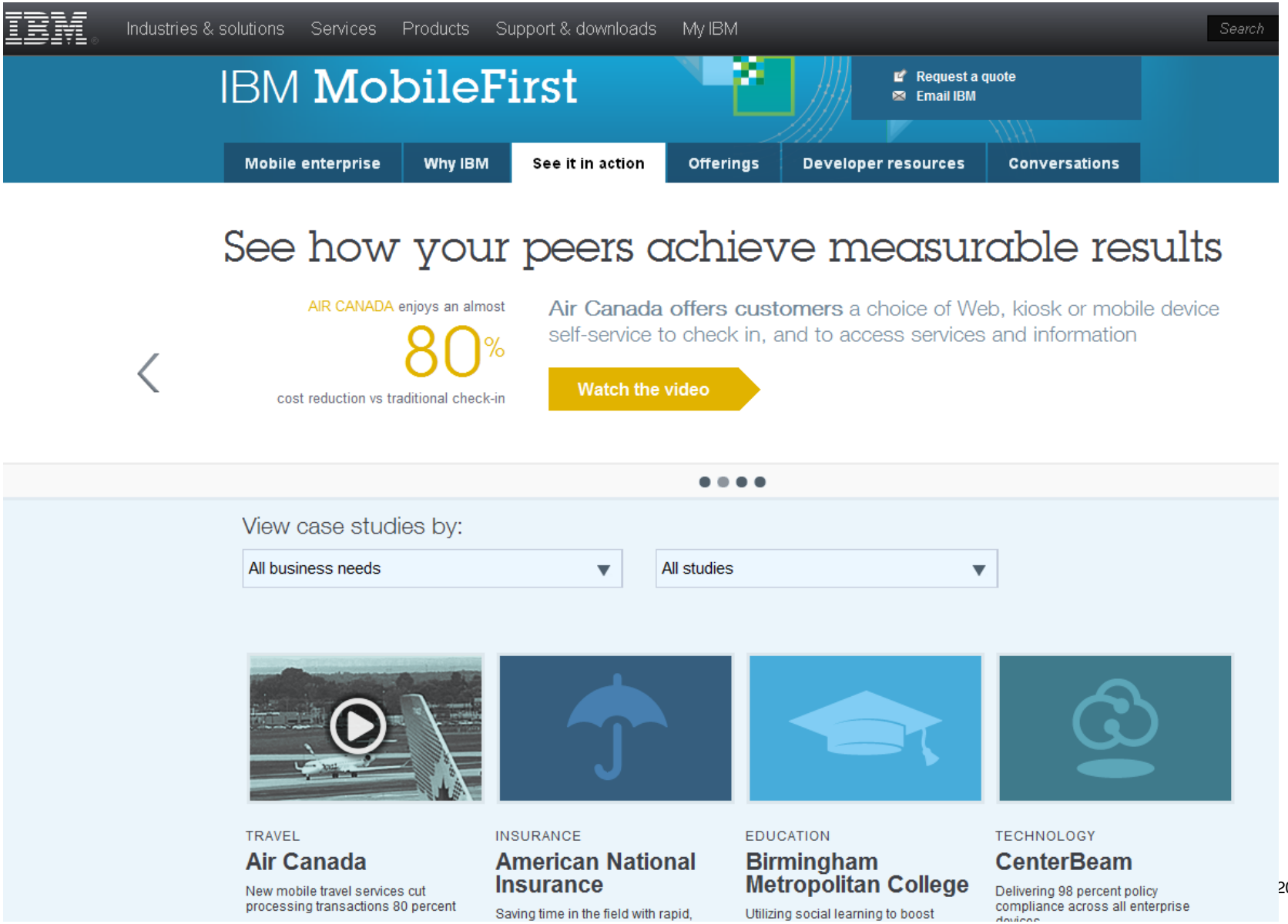
WebSphere Application Server with IBM Worklight Server

Worklight
An IBM company

Mobile

IBM MobileFirst in Action

http://www.ibm.com/mobilefirst/us/en/see-it-in-action/



Summary – System z meets the Mobile Challenge

- **Mobile First** – Mobile devices enable new business opportunities
  - System z sub-systems as well as system management SW are being prepared for mobile access
    - CICS TS Feature Pack for Mobile Extensions
    - JSON support for CICS TS
    - Rational Developer with Worklight Toolkit
    - Business Process Manager

60%

of large companies are making their internal line-of-business applications accessible to workers on smart phones and tablets.

- Mobile Support Server will become a **business critical** application
  - **System z** RAS (Reliability-Availability-Serviceabiity) capabilites make business sense
  - z/VM Scalability – management of huge spikes in concurrent mobile access invocations

There will be more mobile phones than humans by 2015.

- Adapter & Integration story
- Security will become key challenge
  - Worklight Server on System z Linux runs where the business data & transactions reside
  - Leverage hipersocket, IEDN (Intra Ensemble Data Network) for back-end system communication
  - Crypto card for SSL off-load

The 2013 Global Technology Outlook

Questions?

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Additional Info

- System z – Meeting the Mobile Challenge: http://www-01.ibm.com/software/os/systemz/mobility/
- InfoCenter IBM Worklight: http://pic.dhe.ibm.com/infocenter/wrklight/v5r0m5/index.jsp?topic=%2Fcom.ibm.help.doc%2Fwl_home.html
- University of Florida – Helping students with mobile app based on CICS: http://www-01.ibm.com/software/success/cssdb.nsf/CS/CPAR-8Z8N47?OpenDocument&Site=default&cty=en_us&lc&lc

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