

Mobility on System z

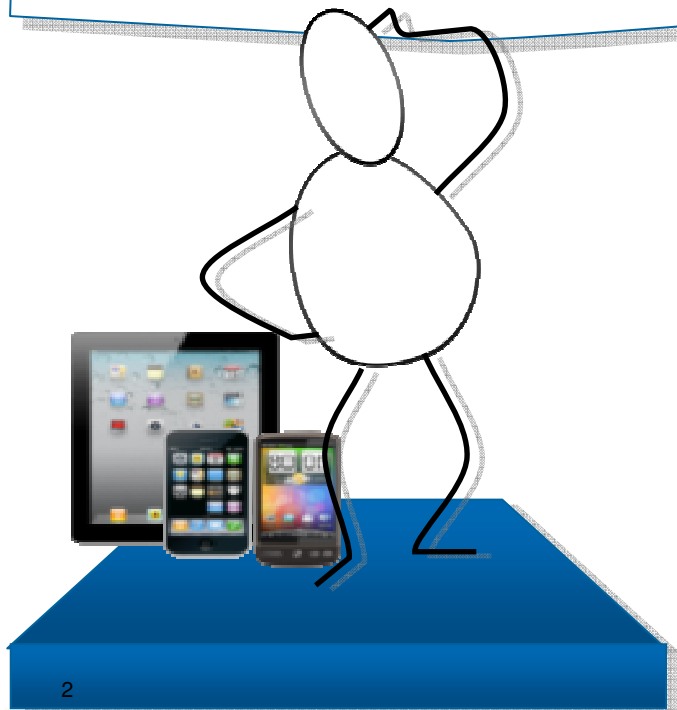


Wilhelm Mild
Executive IT Architect
IBM Germany

What about the mainframe?

The mainframe...

- Home to business critical applications and data
- How do we bridge the gap?



Mobile is changing the way information is used

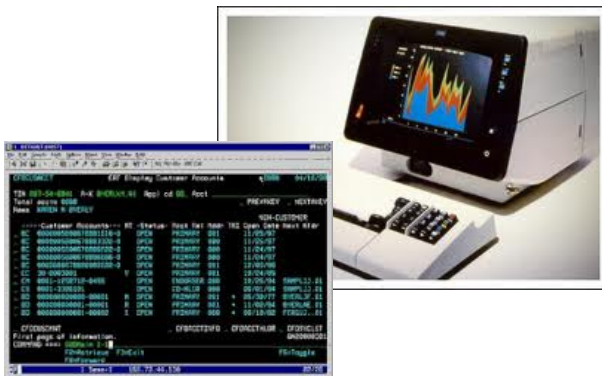


Mobile First

Information developed using multiple platforms and transformed into web services



Information restricted and developed in the data center



Mobile First



- Mobile devices are emerging as **primary design point** for end-user access to IT
- Consumer access to enterprise data creates an increasing need for enterprise-level security and control
- 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

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

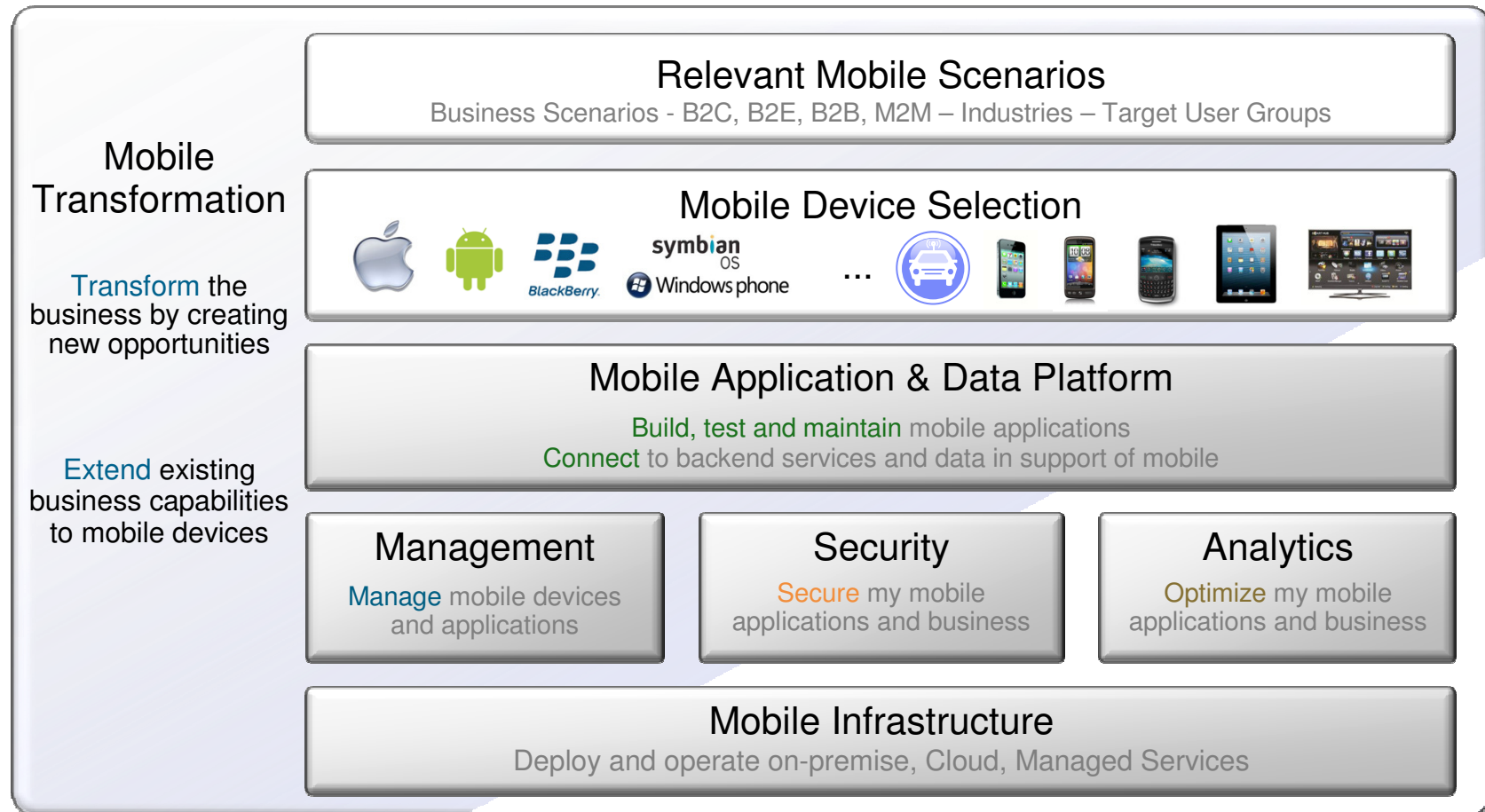


Typical Customer Pain Resolved with Worklight:

- 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



IBM MobileFirst Enterprise Blueprint

A Guideline to Defining Your Optimized MobileFirst Strategy



Scenario based Discovery and Architecture Definition, Leading to an Optimized Mobile Strategy

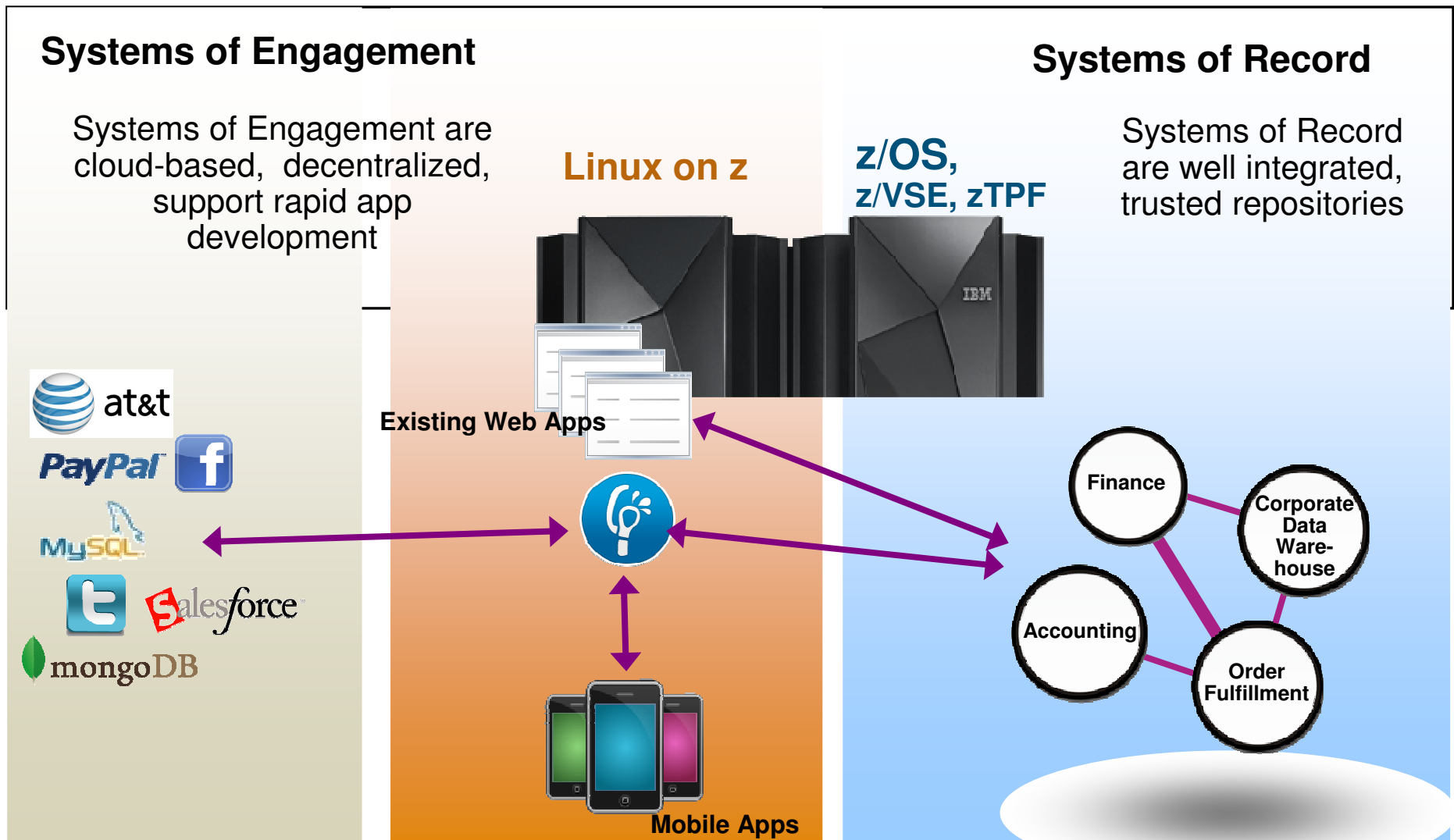
Mobile Applications are Not Miniature PC applications...

<div data-bbox="413 394 525 555" data-label="Text"><p>1 m</p></div> <div data-bbox="758 384 942 592" data-label="Image"></div> <div data-bbox="657 625 1031 670" data-label="Section-Header"><h2>Mobile Applications</h2></div> <div data-bbox="491 698 1190 963" data-label="List-Group"><ul style="list-style-type: none">• 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</div> <div data-bbox="1346 448 1617 570" data-label="Image"></div> <div data-bbox="1419 625 1738 670" data-label="Section-Header"><h2>PC Applications</h2></div> <div data-bbox="1226 698 1938 963" data-label="List-Group"><ul style="list-style-type: none">• Using the application is the primary activity• Interactions are longer and more focused• Users are impatient</div> <tr><td data-bbox="130 979 466 1274"><div data-bbox="210 1088 405 1169" data-label="Section-Header"><h2>Mode of Interaction</h2></div></td><td data-bbox="466 979 1203 1274"><ul style="list-style-type: none">• Non-keyboard: touch prevalent, also speech• Typing should be minimized• Screen size/real-estate is small</td><td data-bbox="1203 979 1955 1274"><ul style="list-style-type: none">• Keyboard and mouse• Typing is okay• Larger screen size for presenting information</td></tr> <tr><td data-bbox="130 1274 466 1456"><div data-bbox="176 1336 443 1417" data-label="Section-Header"><h2>Other considerations</h2></div></td><td data-bbox="466 1274 1203 1456"><ul style="list-style-type: none">• Integration with device capabilities (e.g. camera, GPS, accelerometer)• Offline behavior</td><td data-bbox="1203 1274 1955 1456"></td></tr>	<div data-bbox="210 1088 405 1169" data-label="Section-Header"><h2>Mode of Interaction</h2></div>	<ul style="list-style-type: none">• Non-keyboard: touch prevalent, also speech• Typing should be minimized• Screen size/real-estate is small	<ul style="list-style-type: none">• Keyboard and mouse• Typing is okay• Larger screen size for presenting information	<div data-bbox="176 1336 443 1417" data-label="Section-Header"><h2>Other considerations</h2></div>	<ul style="list-style-type: none">• Integration with device capabilities (e.g. camera, GPS, accelerometer)• Offline behavior	
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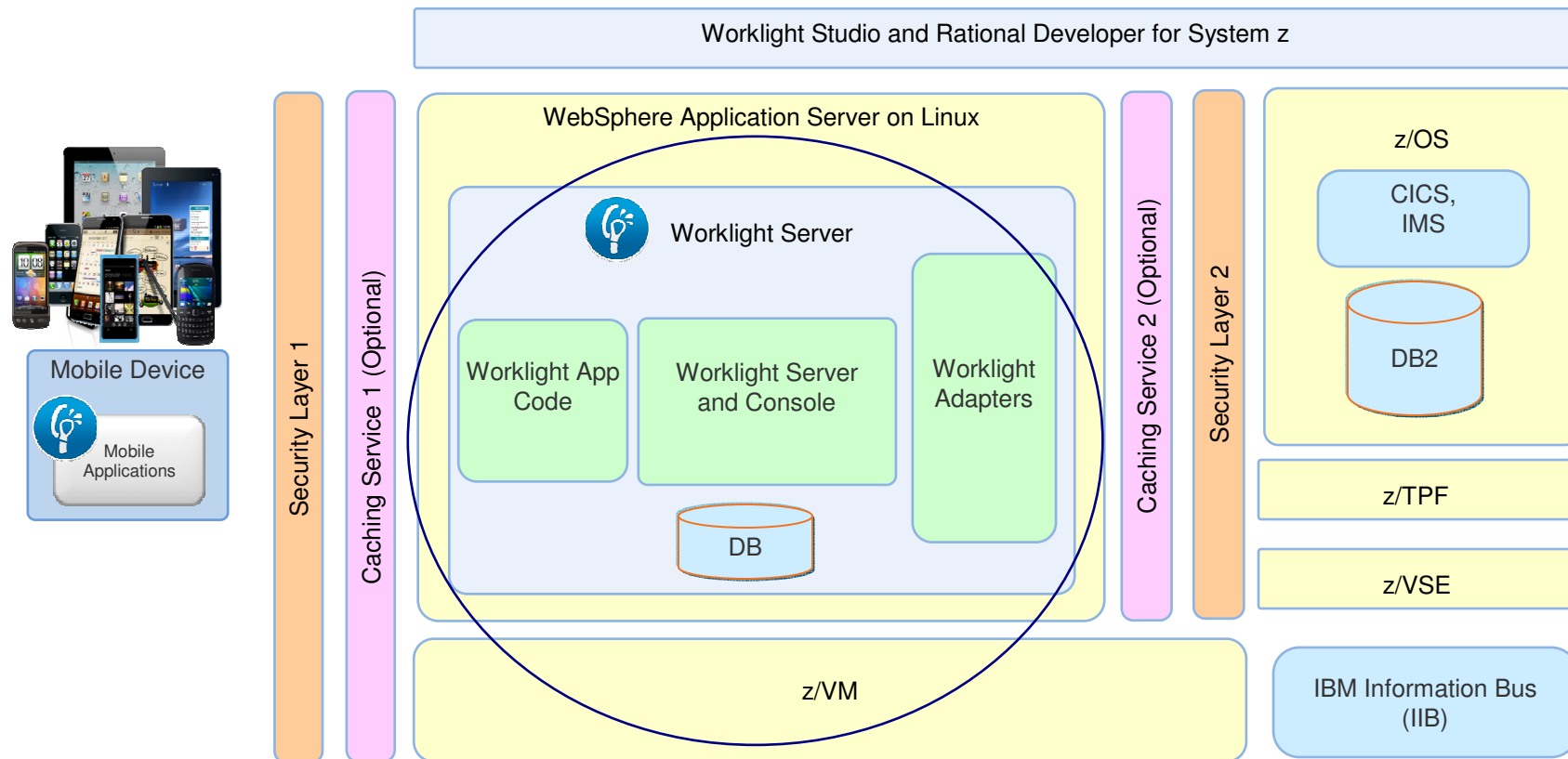
Multi-tier Mobile Apps - Specific Challenges



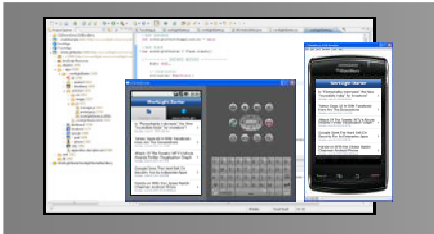
System z - Bridge Systems of Record and Systems of Engagement



Mobile Architecture Overview for System z

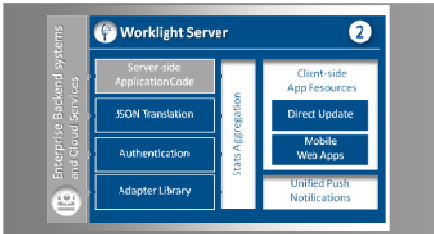


Worklight overview



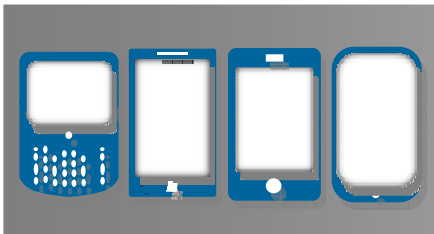
Worklight Studio

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



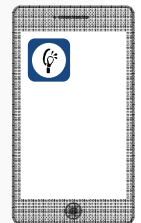
Worklight Server

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



Worklight Runtime Components

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

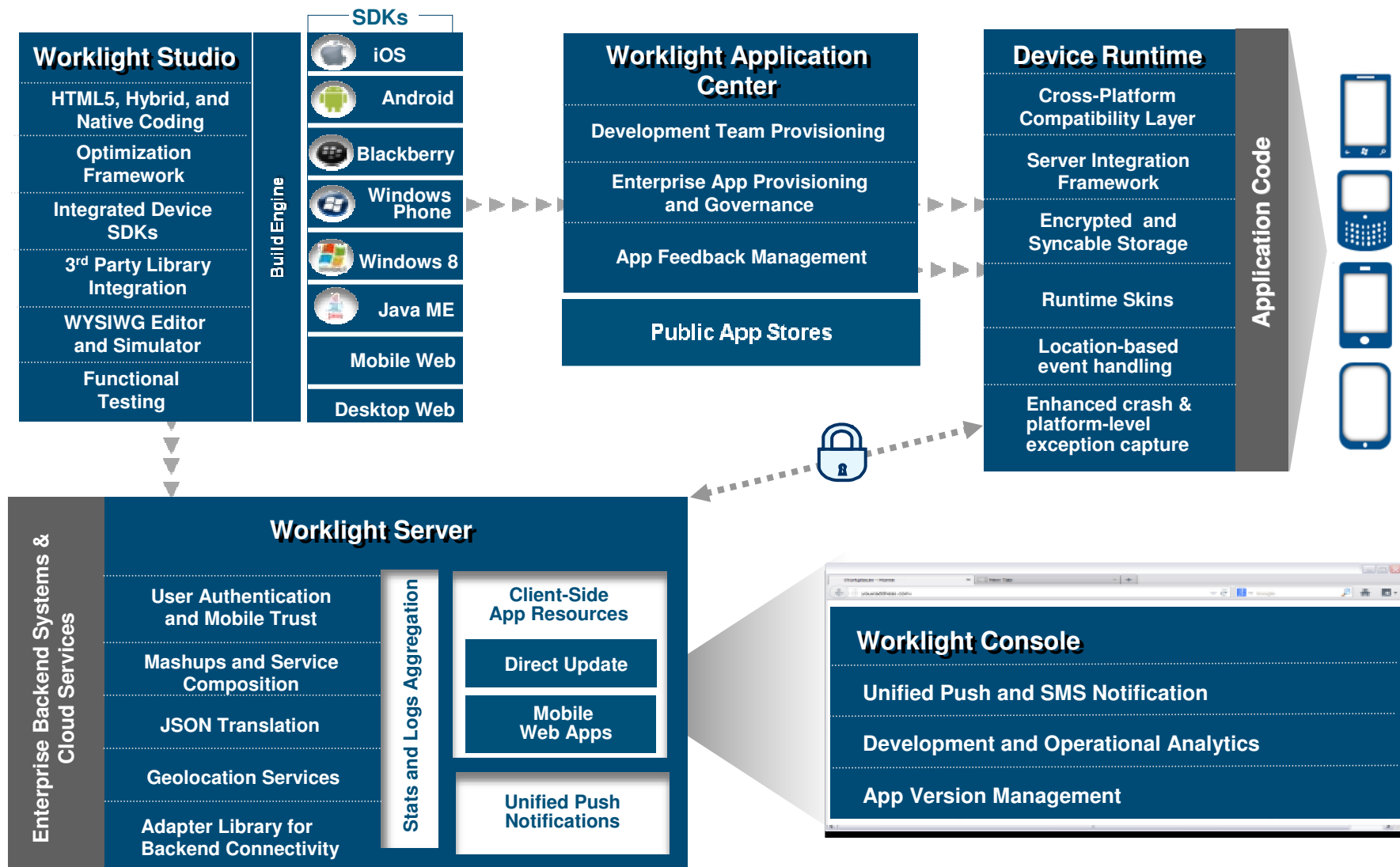


Worklight Console

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



IBM Worklight Components Overview

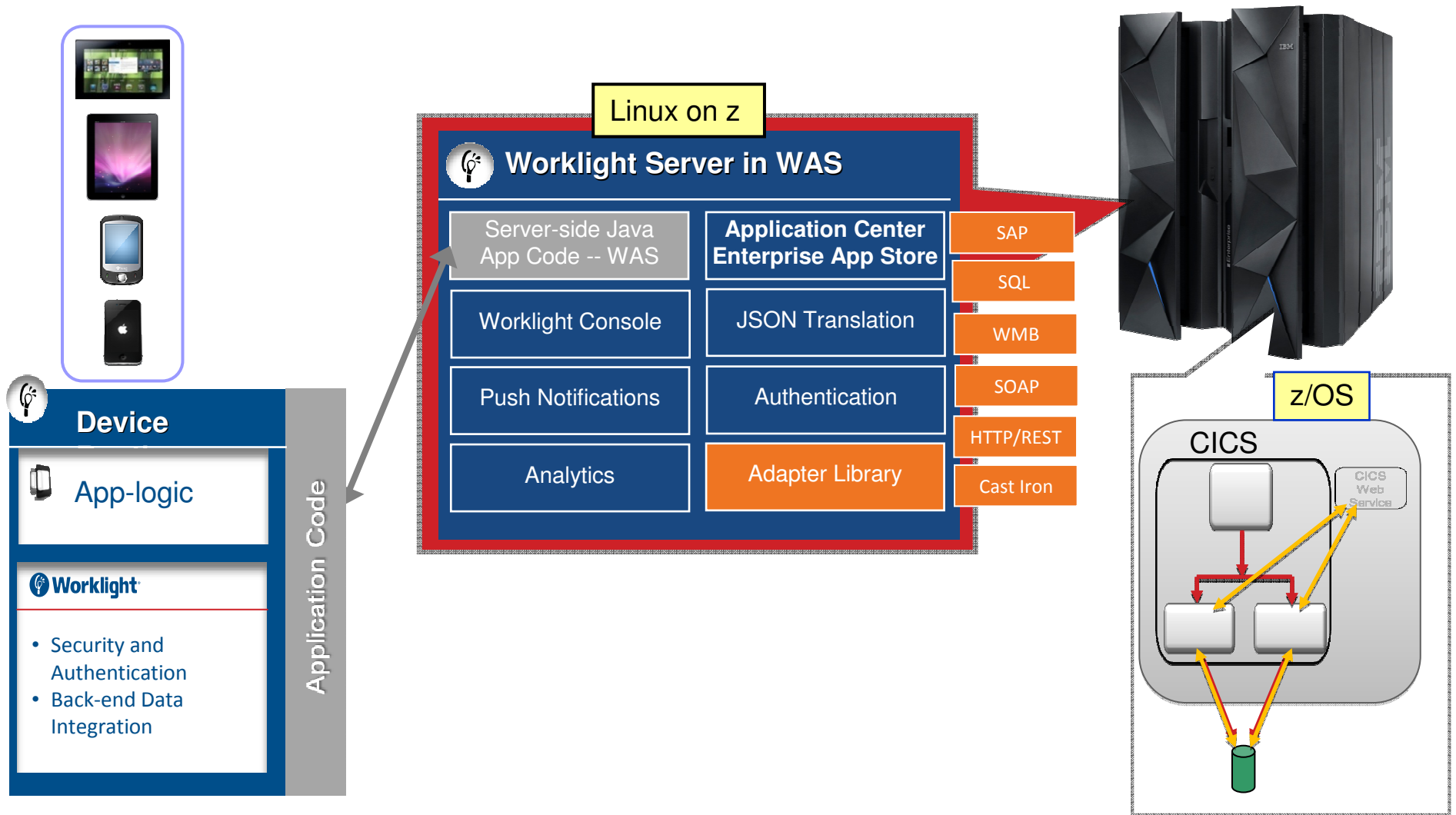


IBM Worklight 6.1 Platform Support for System z

- Supported application server
 - WebSphere 7 & 8 (Distributed | System z Linux)
 - WebSphere 8.5 Liberty Profile (included for Dev only), ND/Base (not included)
 - Apache Tomcat 7 (Linux | Windows | Mac OS X [development])
- Supported databases
 - DB2 Enterprise Server Edition V9.7 or later (DB2 LUW)
 - Apache Derby, SDK 10.8 (included), or later
 - Oracle 11g Database server, Standard or Enterprise Editions, release 1 or later
 - MySQL 5.5
- Supported OS
 - System z Linux SLES 10,11, RHEL 5,6.
 - Apache Ant 1.8.1

<http://publib.boulder.ibm.com/infocenter/prodguid/v1r0/clarity-reports/report/html/softwareReqsForProduct?deliverableId=66C745D01E8711E28ACF6F870925FE36&osPlatform=Linux>

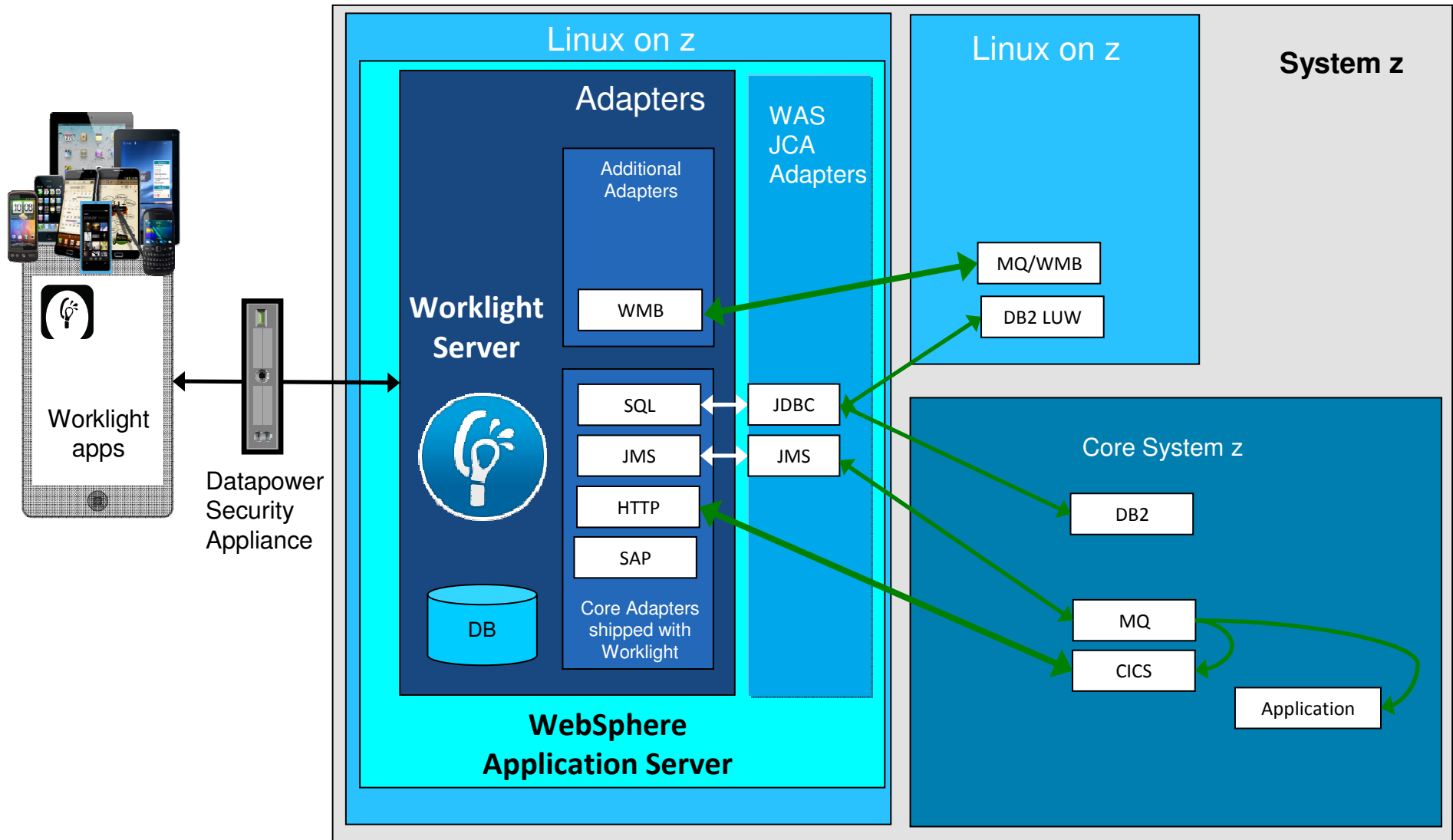
IBM Worklight Server



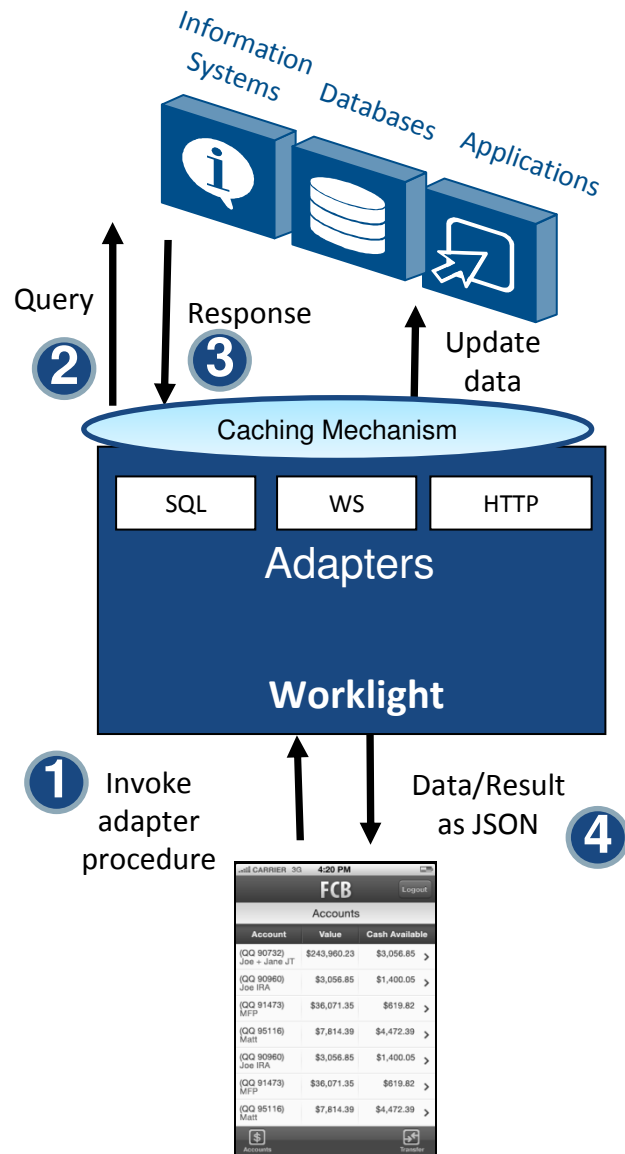
Worklight Video: http://www.youtube.com/watch?feature=player_embedded&v=zHnFw70XXXo

Implementation of a Mobile environment on System z

- Functional diagram with WAS and Worklight Adapters



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

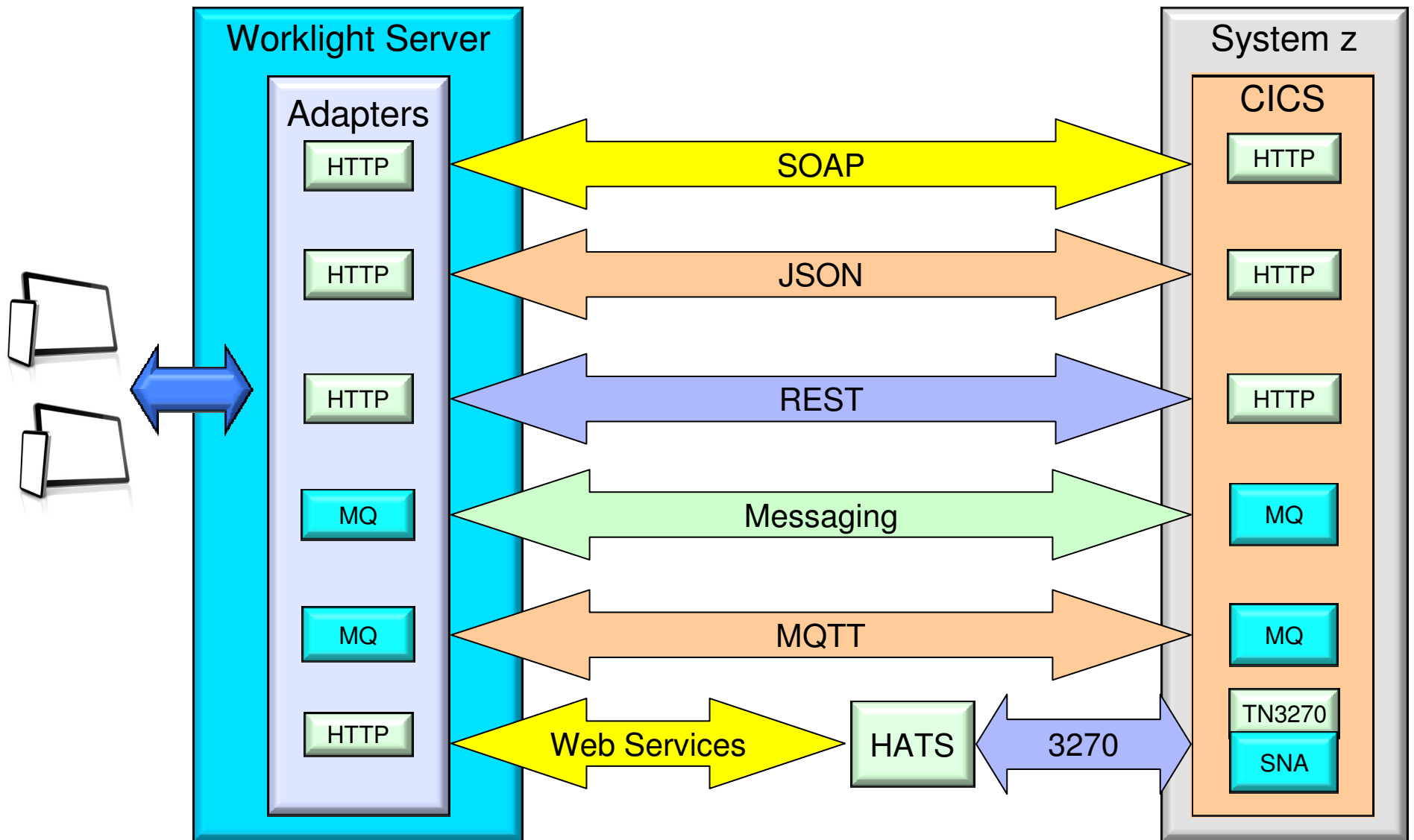
Transparency

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

Fast Development

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

CICS Connectivity Options with Worklight



Java Script Object Notation (JSON)

- Lightweight Web Services

- The growth in mobile helped boost the popularity of JSON
- The lightweight data format is ideally suited to mobile data transfer
- As a result numerous tools and frameworks now support JSON...



IBM Worklight uses JSON:

- For communication between a mobile application and the Worklight Server
- Provides a JSON Store for offline storage of data
- Automatically converts Webservice SOAP replies into JSON



Numerous other frameworks depend upon JSON data...

Eg. jQuery & dojo use JSON:

- JSON Store
- Ajax calls
- All data interchange

z/OS CICS Transaction server Feature Pack for Mobile Extensions 1.0

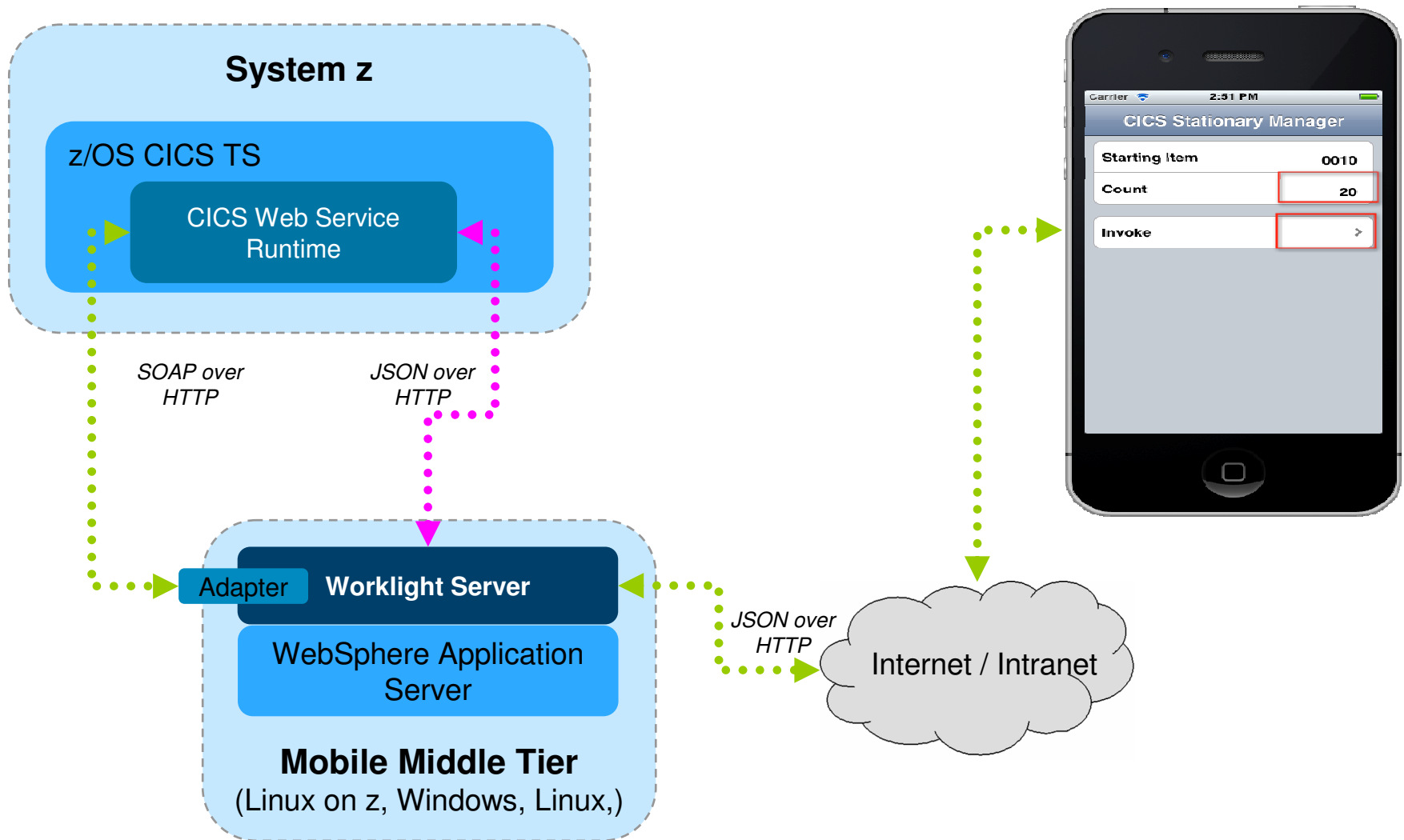


The CICS TS Feature Pack for Mobile Extensions V1.0 enables you to extend the reach of your existing COBOL, C/C++, and PL/I programs to mobile devices, without having to make costly changes to your applications. The feature pack adds support for web service requests using JavaScript Object Notation (JSON)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

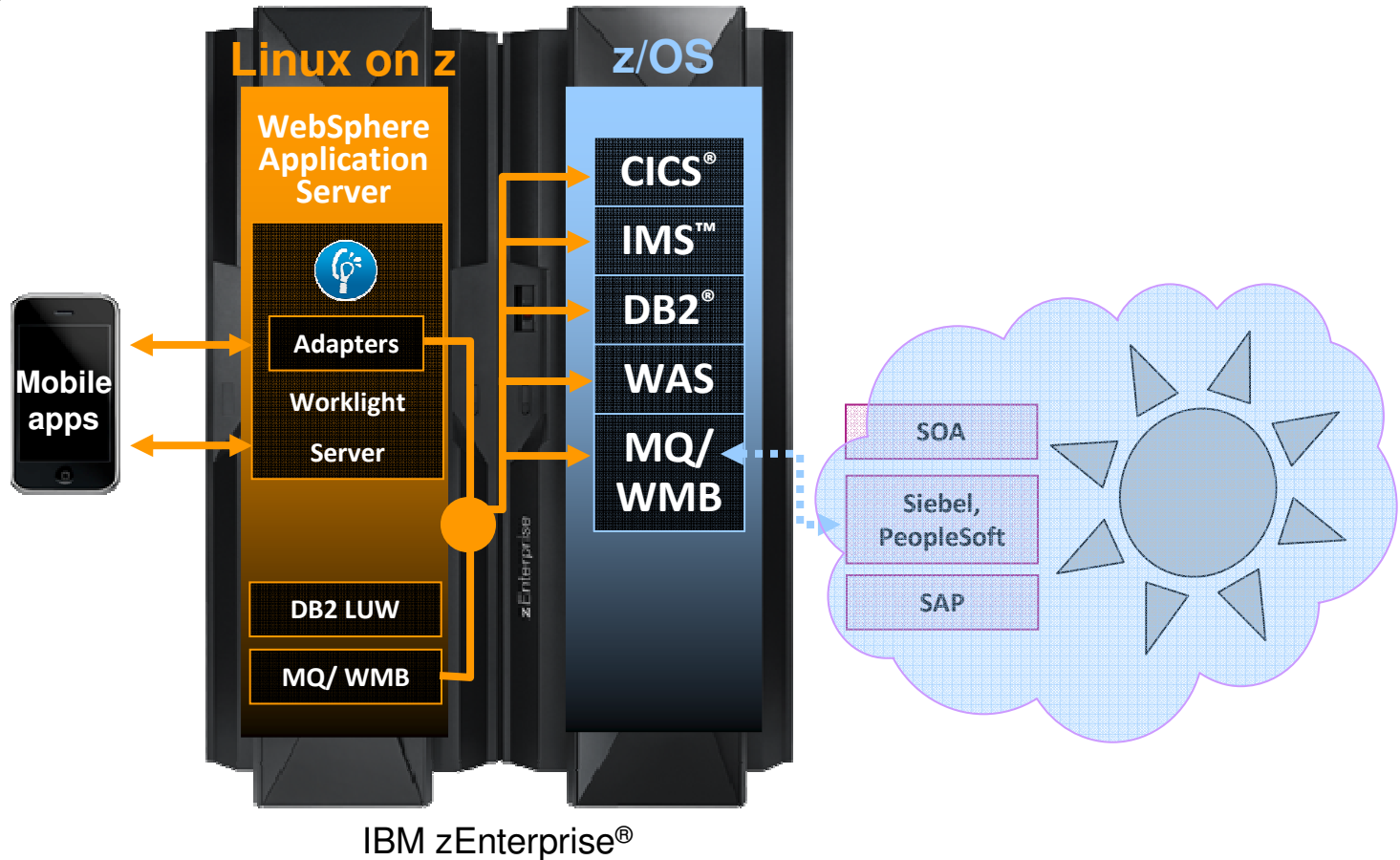
- Ideal for companies that wish to build mobile applications to exploit existing enterprise services hosted within the robust and scalable CICS environment
- Uses existing CICS web service technology: a separate WSBIND file provides the mapping from the COBOL, C/C++, or PL/I language structures to JSON, or from JSON back to the language structure
- Requests are processed 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

z/OS CICS TS – Easier Communication via JSON (JavaScript Object Notation)



Mobile Environment on zEnterprise connecting to Core Systems

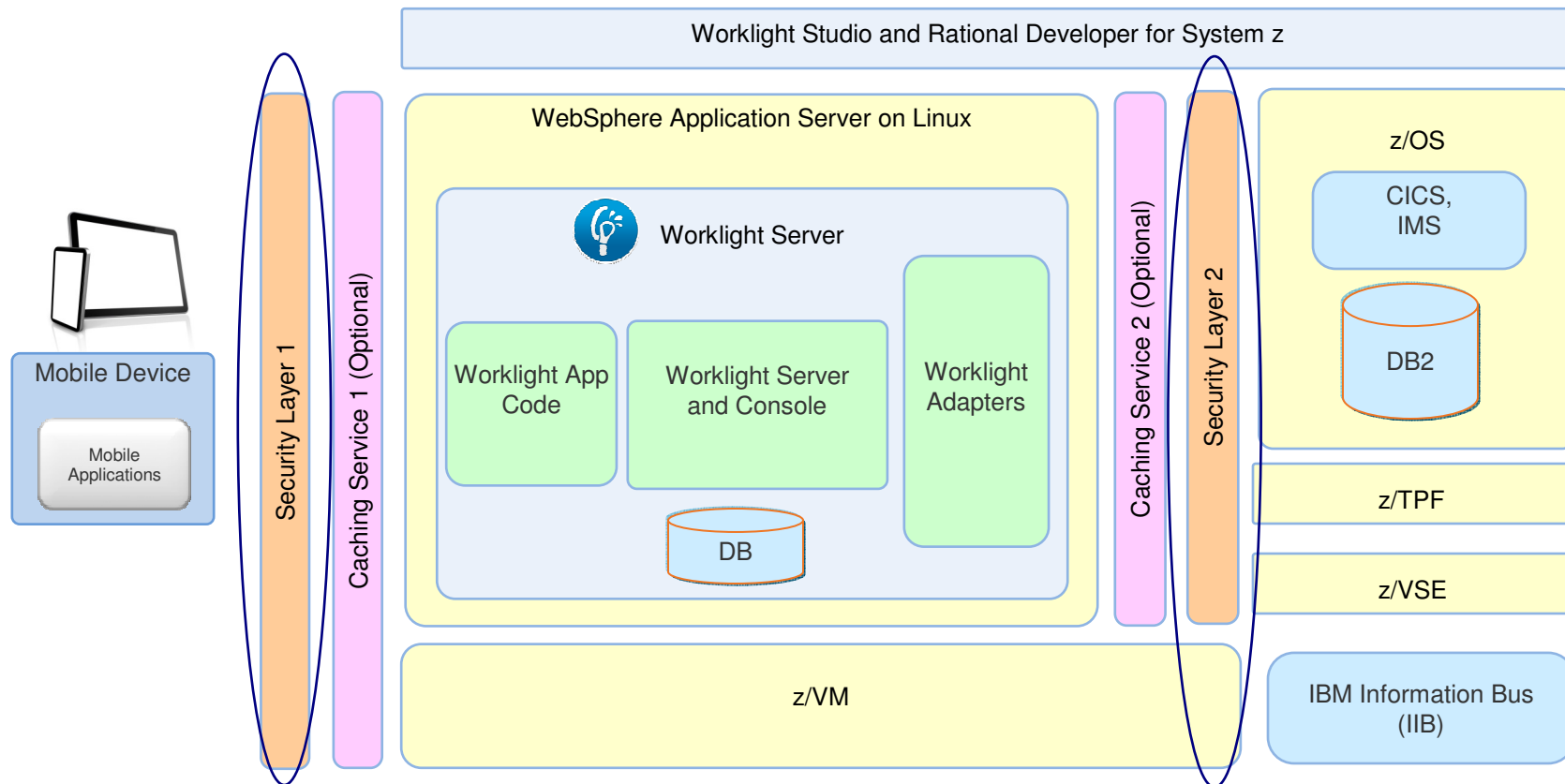


- **Server side software components and adapters for channeling System z to mobile devices** with IBM Worklight Server

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

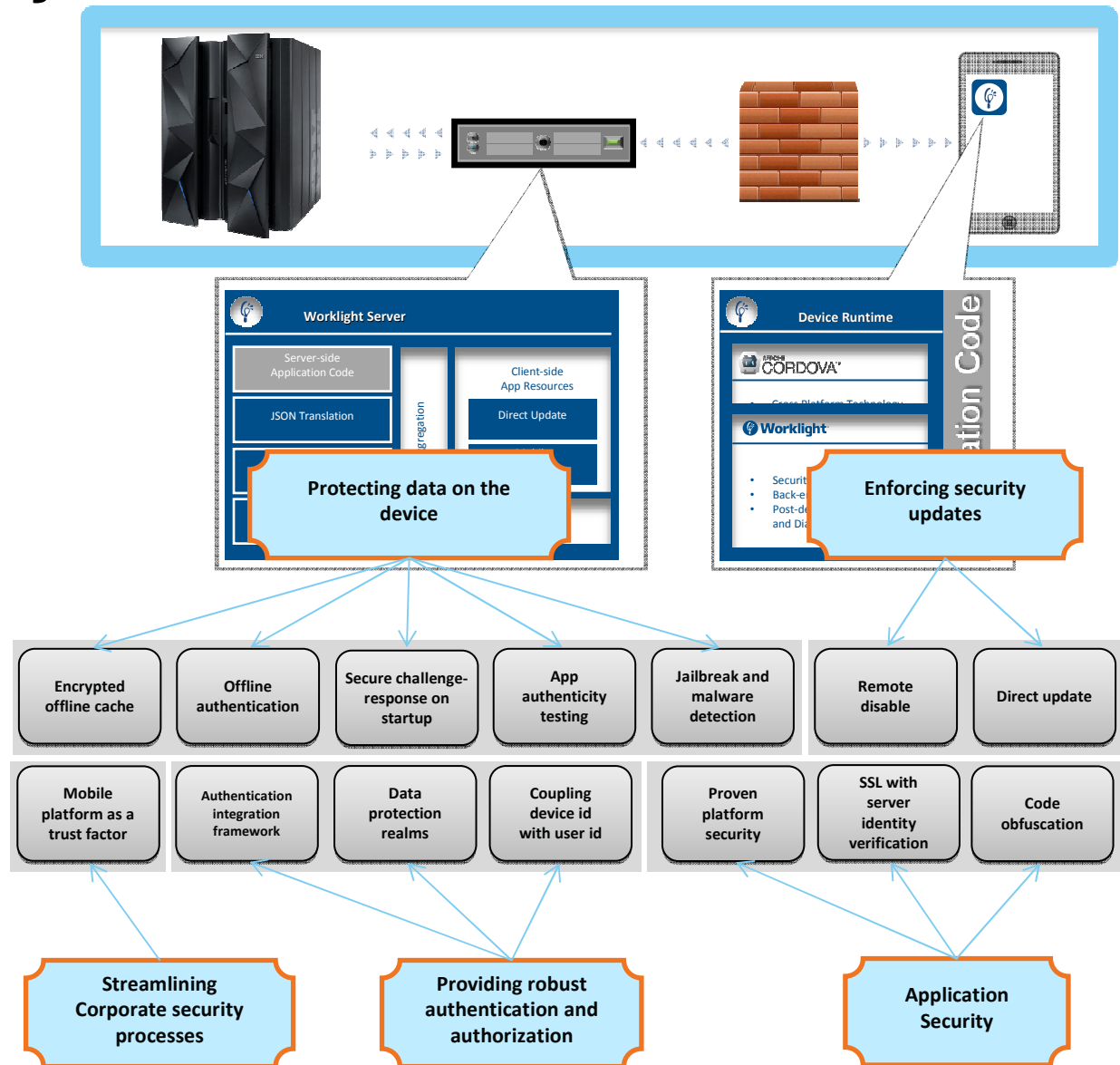
- **Mobile protocol connectivity with core System z applications** including CICS, IMS, TPF, MQ, WMB and DB2

Mobile Architecture Overview for System z



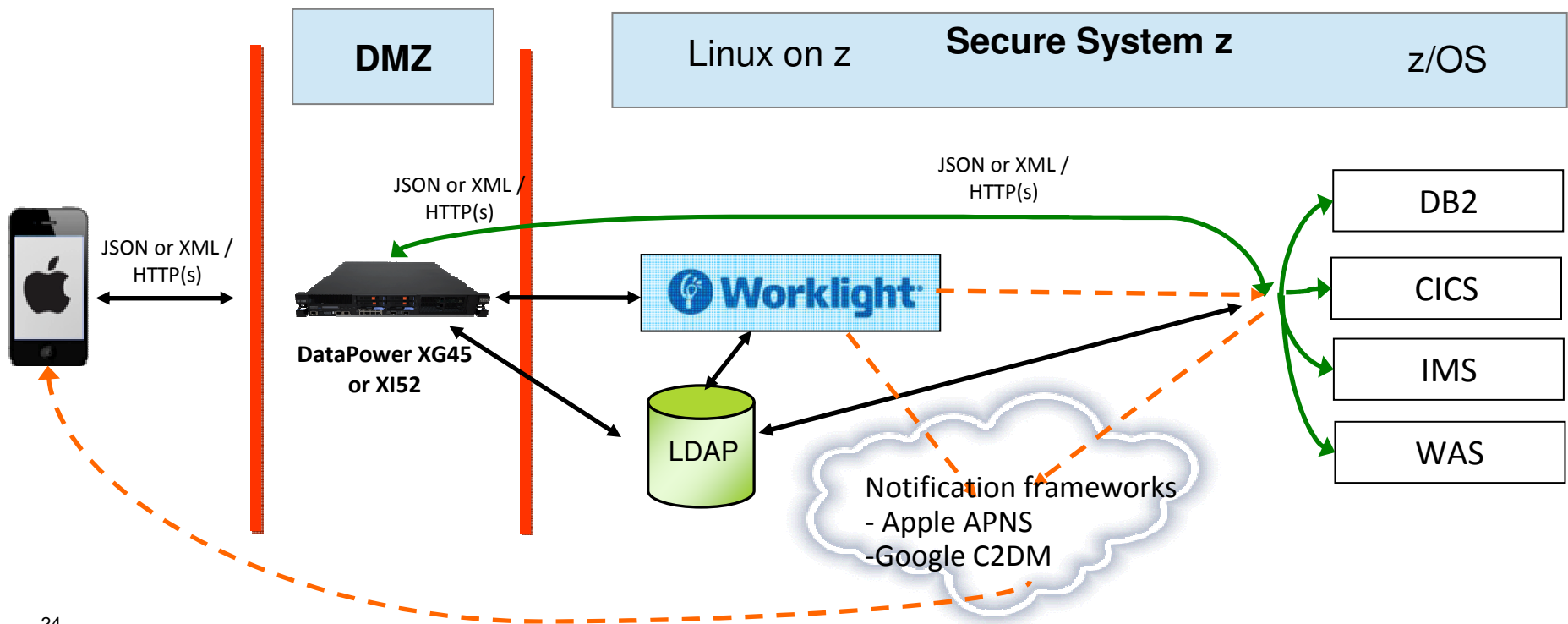
Worklight Security Features

- Ensure that only specific applications on specific devices can connect to enterprise systems
- Extensible framework for authentication of mobile application users
- Encrypt data on the device
- Enforce security updates
- Propagate identity to enterprise systems

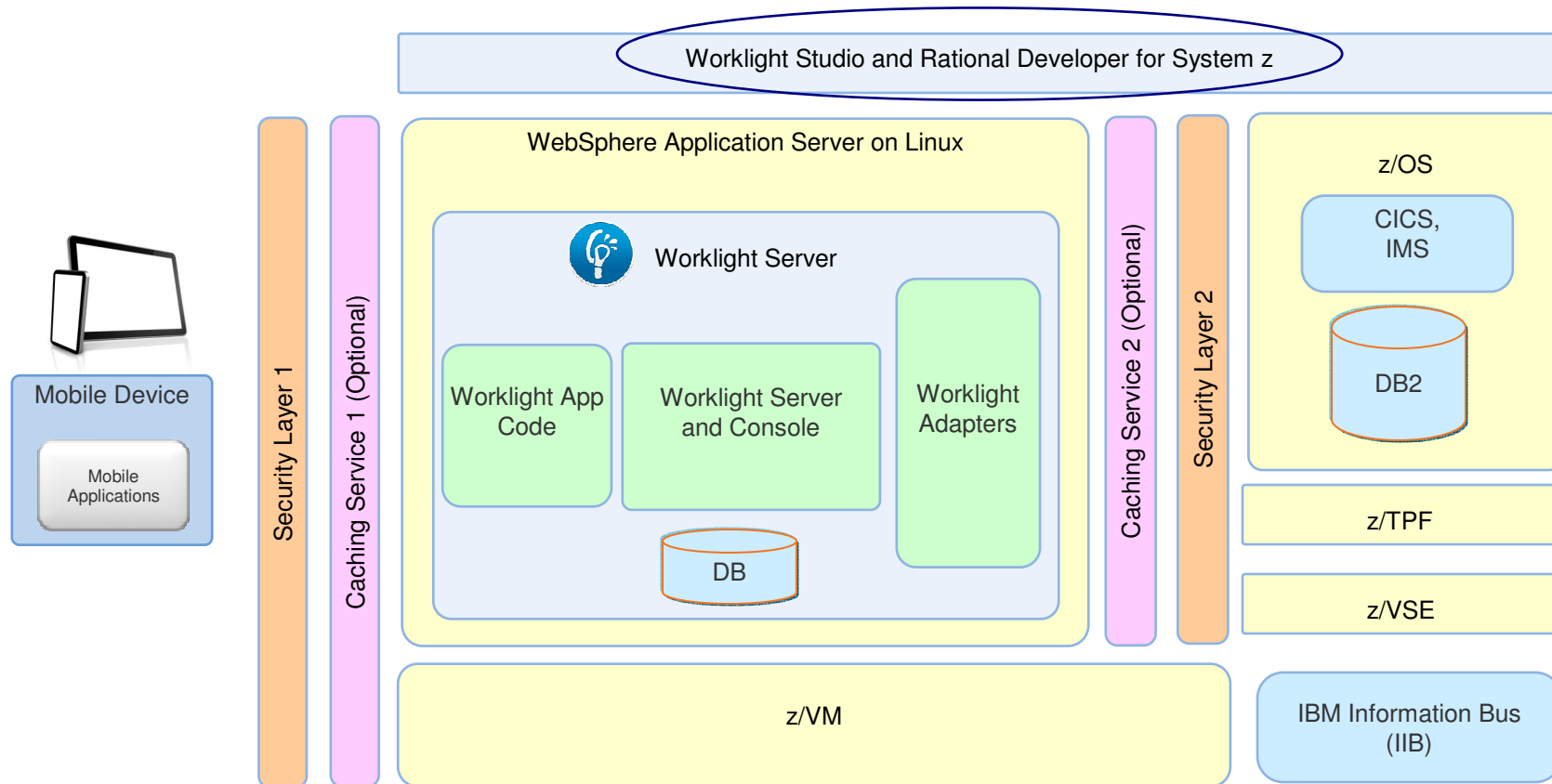


Security Topology – DataPower as security layer

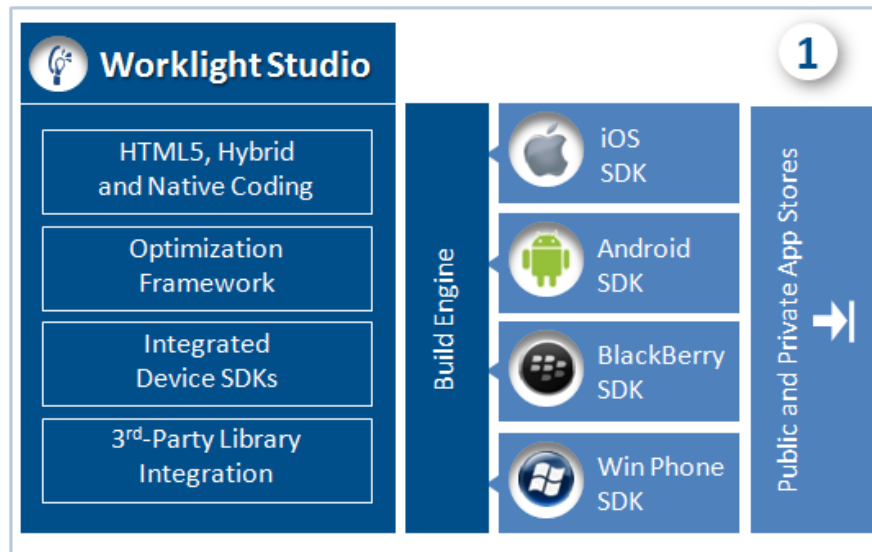
Capabilities	Deployment scenarios	System z benefits
<ul style="list-style-type: none"> DataPower contains the same functionality as a stand-alone device or virtual appliance, but can benefit from co-location with System z services. Defence in depth 	<ul style="list-style-type: none"> For offload of security processing (e.g SSL) and to perform identity mapping Secure proxy for push notifications from Worklight server to the mobile device 	<ul style="list-style-type: none"> DataPower acts as an additional security layer for backend services IEDN provides a secure private network for communication between zLinux and z/OS



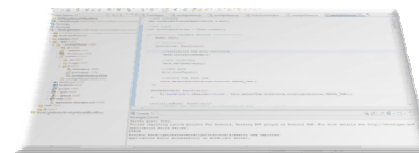
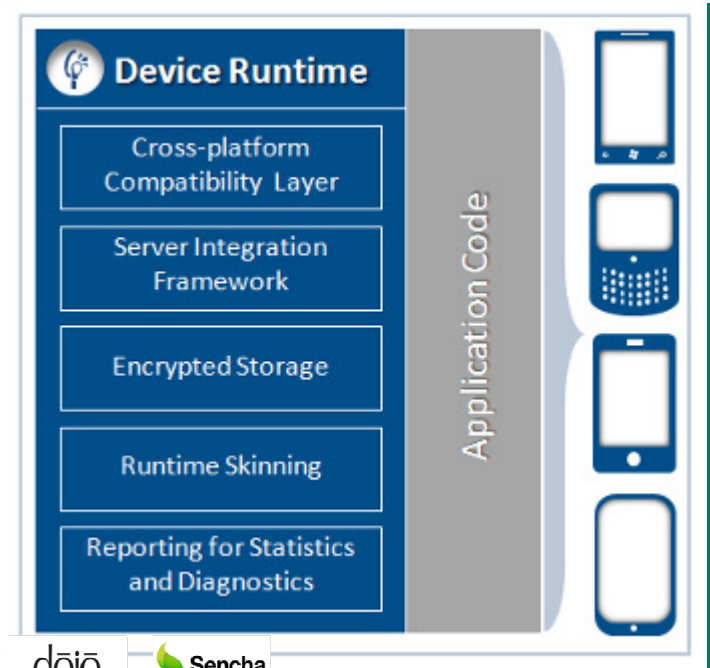
Mobile Architecture Overview for System z



IBM Worklight Studio & Device Runtime



Eclipse based mobile **Integrated Development Environment (IDE)**



IBM Worklight – Support for Different Mobile Application Styles

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



Web

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



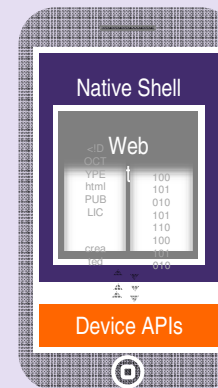
Mobile Web

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



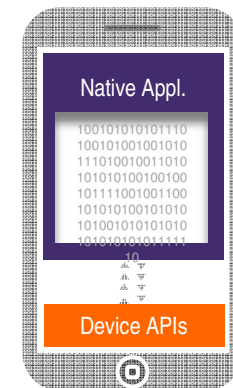
Hybrid Mobile

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



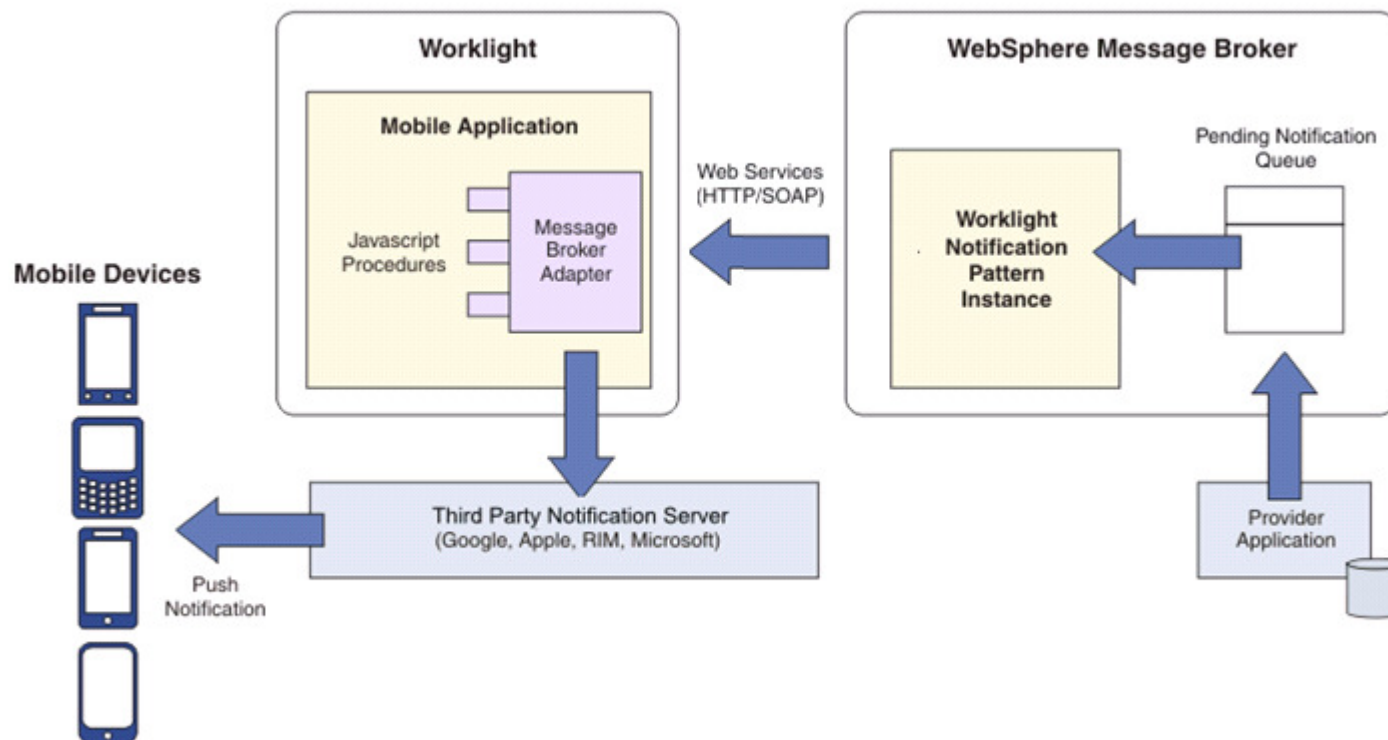
Native

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



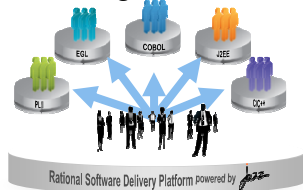
Worklight Push Notification from WebSphere MQ

- Creates a push notification adapter from a WebSphere MQ queue
 - Generates a web service implementation which is deployed to Message Broker
 - Builds a Worklight integration adapter which polls for pending notifications
 - Pending notifications are written to a WebSphere MQ queue by a provider application
 - The adapter converts the notifications into JSON and arranges delivery to the mobile



Worklight Studio with RDz a complete set of System z and Mobile Development capabilities

Integration with Team
Concert for Lifecycle and
Source Management



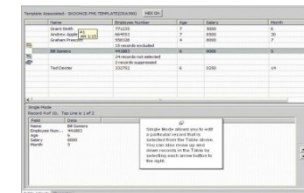
Access to typical System
z sub-system functionality
in z/OS, CICS, IMS, DB2,
WAS



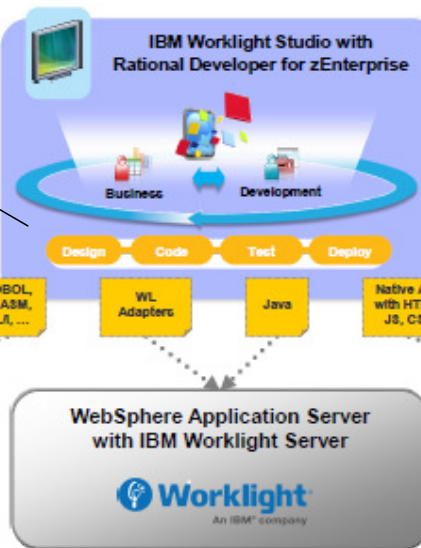
Robust Mobile Development
in conjunction with Worklight



Integration with File
Manager and Fault
Analyzer for file and test
data handling and Dump
Analysis

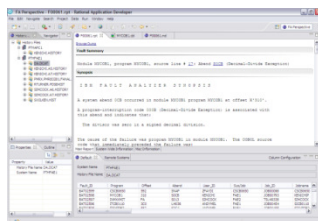


Integration with RD&T for
flexible access to System z
environment

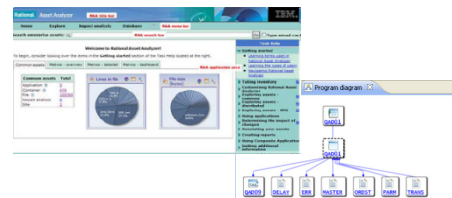


- Built on Eclipse
- Common tool set for end to end development
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with third-party SDKs (e.g. Android Development Tools)

Integration with Fault
Analyzer for Dump Analysis

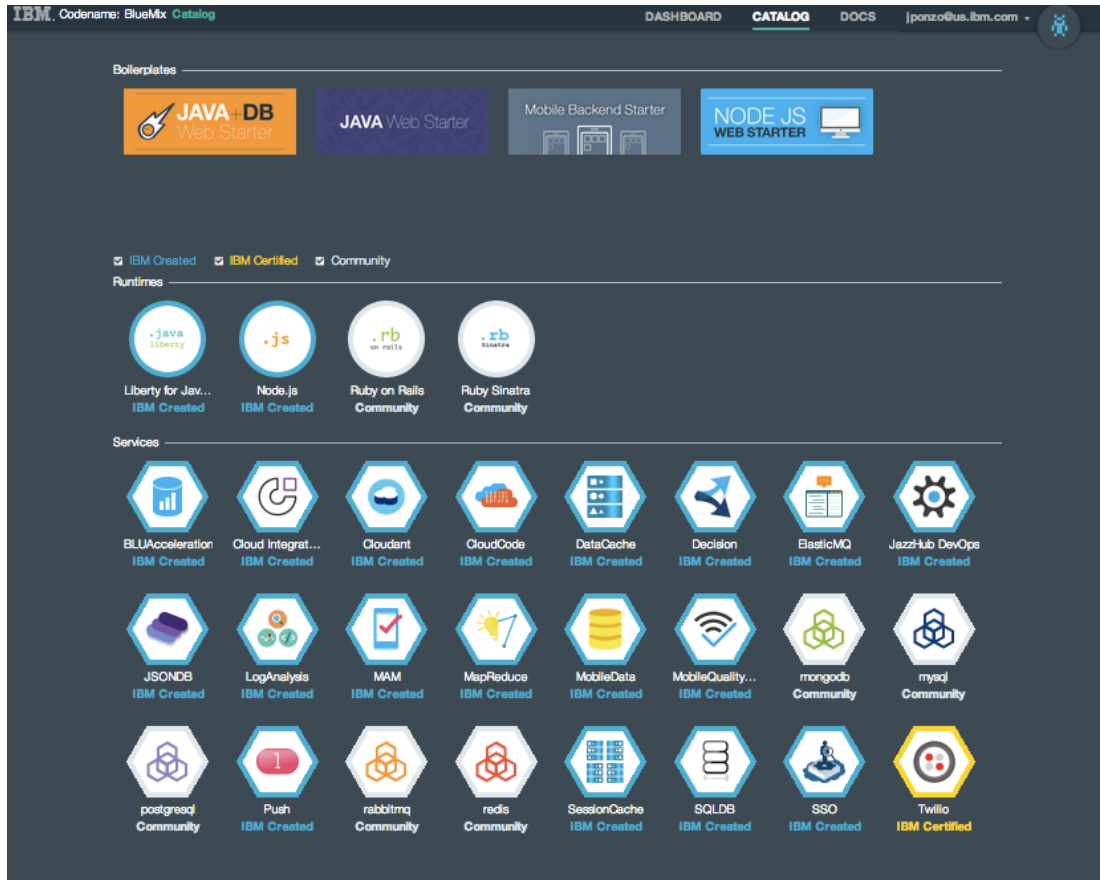


Integration with Asset Analyzer
for Application Understanding
and Impact Analysis



In quick summary, BlueMix on IBM SoftLayer

Delivering a Composable Services development environment including Mobile



Run Your Apps

The developer can choose any language runtime or bring their own. Just upload your code and go.

DevOps

Development, monitoring, deployment and logging tools allow the developer to run the entire application

APIs and Services

A catalog of open source, IBM and third party APIs services allow a developer to stitch together an application in minutes.

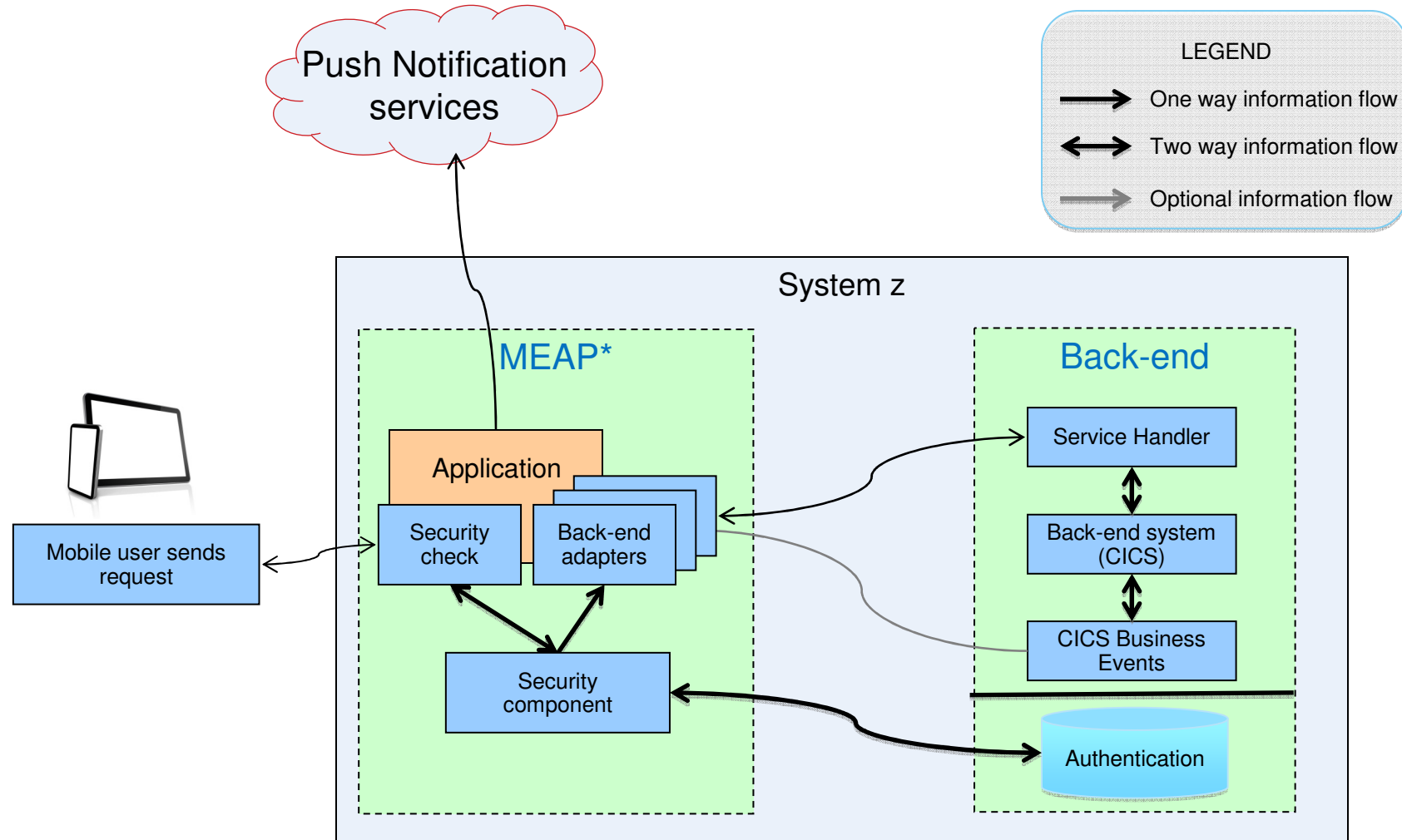
Cloud Integration

Build hybrid environments. Connect to on-premises systems of record plus other public and private clouds. Expose your own APIs to your developers.

Built on IBM SoftLayer

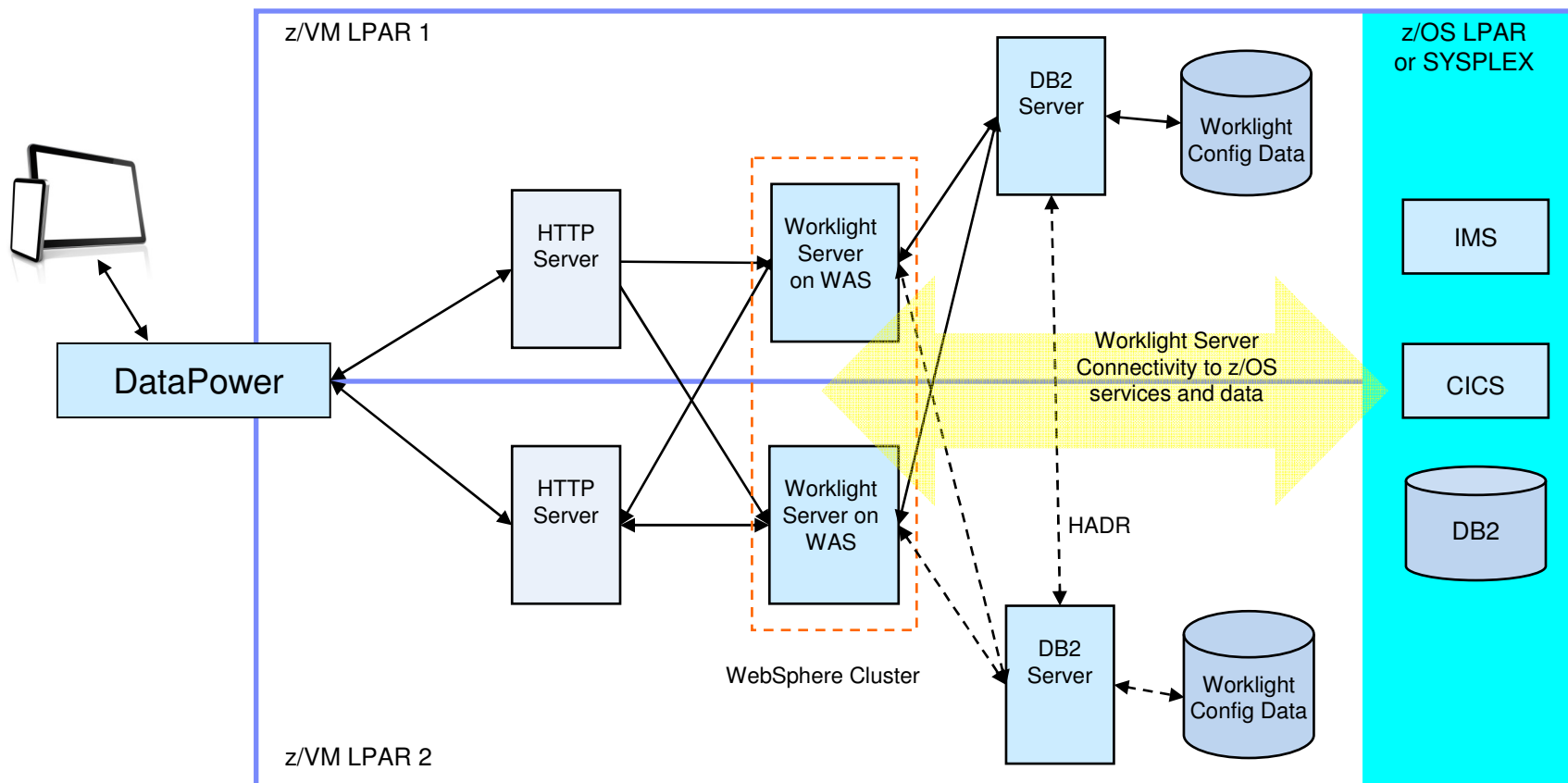
Runs on top of IBM's leading infrastructure as a service.

Operational setup



*MEAP – Mobile enterprise Application Platform

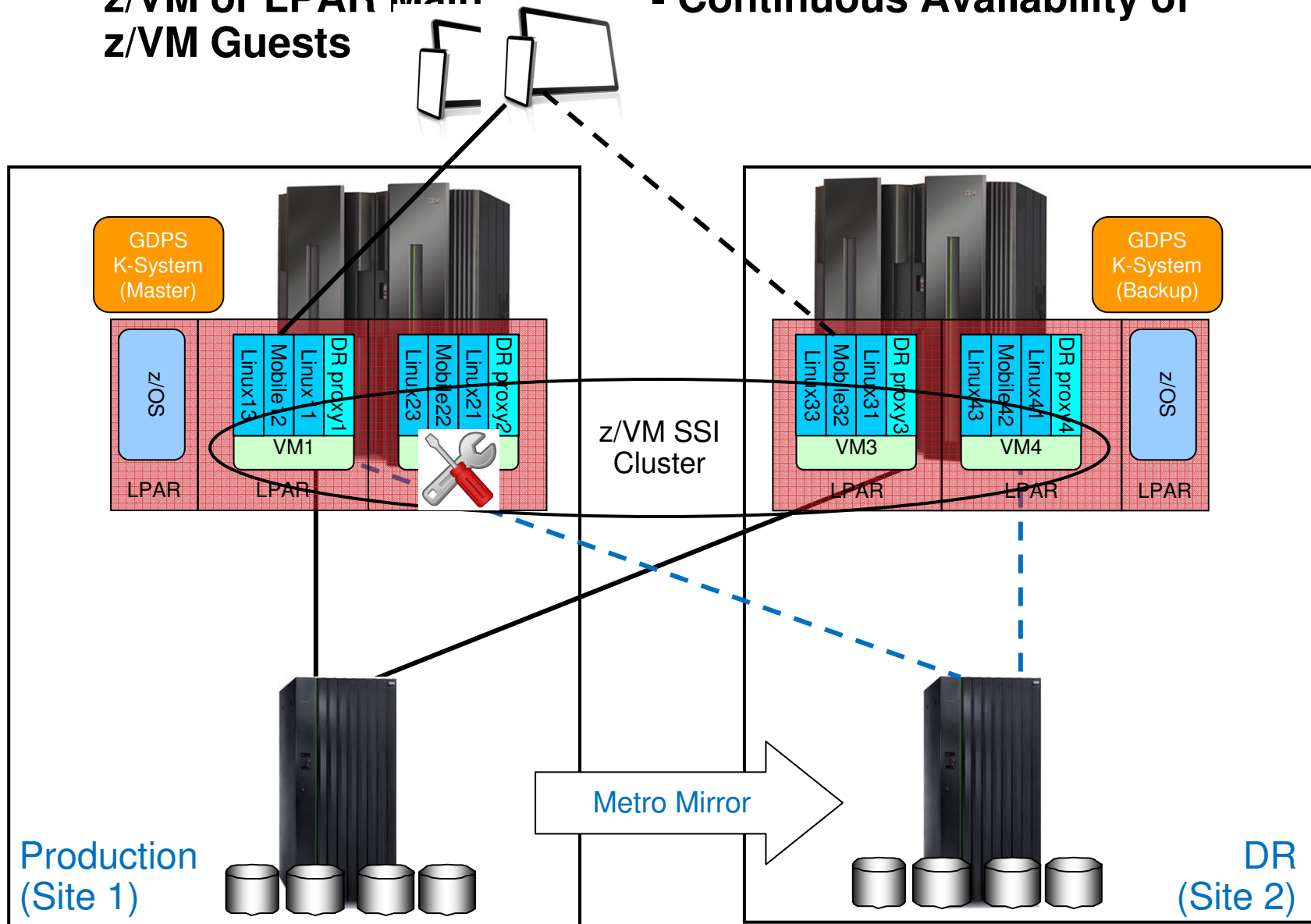
Worklight Server on WebSphere on Linux on System z Production High Availability



Solid Lines denote primary data path, dashed lines denote backup data path.

z/VM SSI and GDPS support

z/VM or LPAR Maintenance - Continuous Availability of z/VM Guests



System z Ha and DR scenario

System z unique Characteristics to support Mobile Applications

- Massive scalability in a single footprint, to handle the workload of millions of devices and sensors
- Workload Management to provide a quick reaction to sharp spikes in demand
- 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 best communication between Worklight apps and z/OS System of Record.
- Hardware encryption speeds SSL applications
- 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.



Mobile: understand IBM System z value

Business challenges

Mobile is about re-imagining your business around constantly connected customers, partners and employees. to sell products or retain customers.

Business solution & Benefits

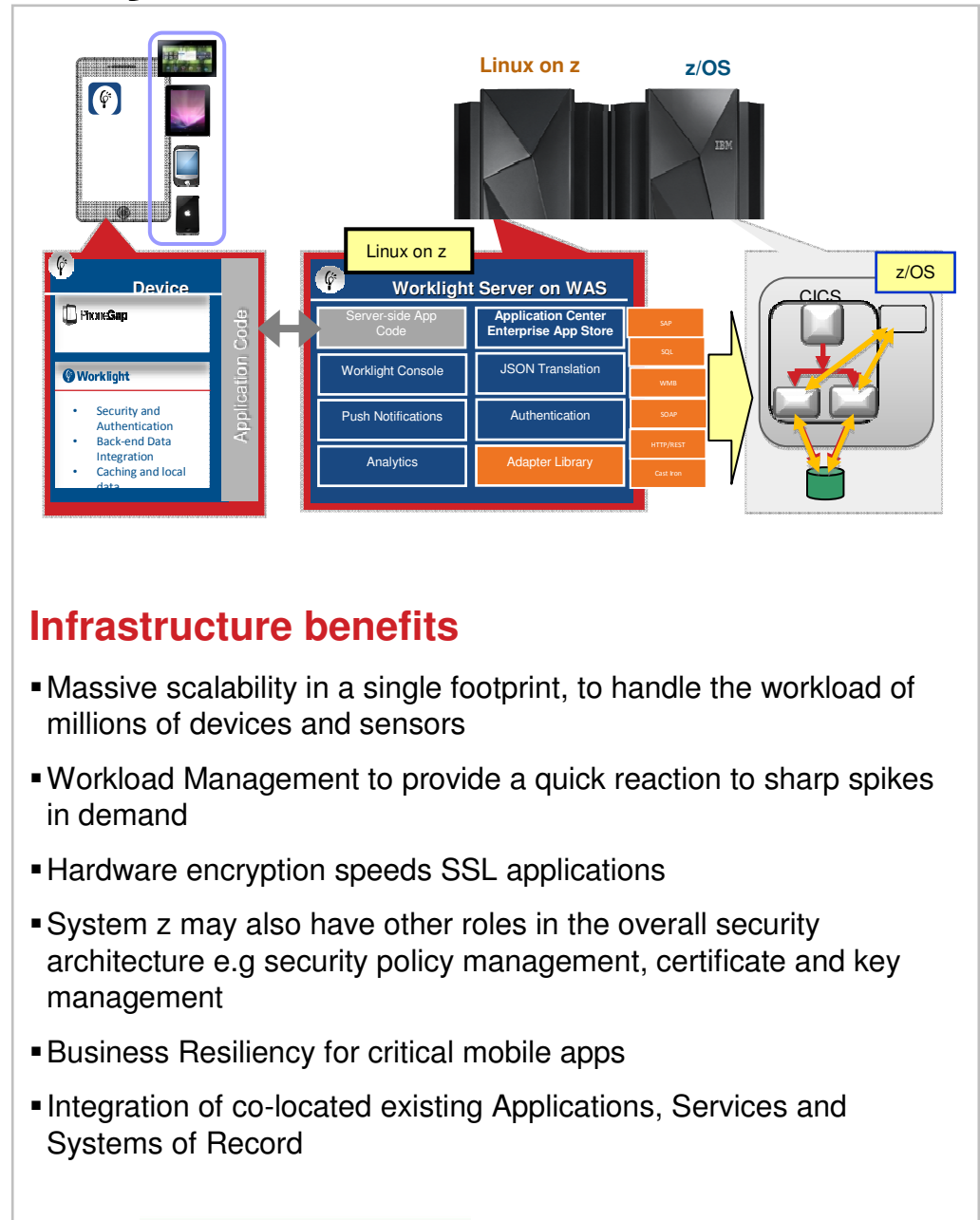
Mobile solutions are pushing companies to rethink the user experience, from the presentation of data to the interaction.

The 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.

IT Challenges

Mobile has characteristics that causes to rethink or redefine IT architectures and implementations.

- Unpredictable workloads that can vary any minute of the day.
- Very high demanding customers that expects 24/7/365 to be serviced. With fast response times.
- The security of Mobile ranges from mobile Endpoint security to prevent malicious attacks on back end systems. And everything in between.
- Integrating mobile apps into existing application landscape.





Environment Setup

Make use of developerworks documents:

<http://www.ibm.com/developerworks/mobile/worklight/getting-started.html#basics>

- **Install IBM Installation Manager**
- **Install a web application server**
 - **WAS Liberty 8.5.5 or WAS Full Profile 8.5 or WAS ND**
- **Install a database for Worklight**
 - **DB2 LUW or Oracle**
- **Install IBM Worklight server**

For development, install on a workstation or Apple laptop:

- **Eclipse Kepler or Eclipse Juno 4.22**
 - **Worklight Studio – will be installed via the Eclipse update/plugin function**
 - **you get a development environment with a full worklight server included**
- **Download the development environment from:**
<https://marketplace.eclipse.org/content/ibm-worklight-developer-edition>

IBM MobileFirst

Mobile is transforming healthcare at The Ottawa Hospital

See the case study

Mobile enterprise

Why IBM

Case studies

Solutions

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Developers

News & events

View case studies by:

All business needs

or

All industries

Travel and transportation



Air Canada

New mobile travel services cut processing transactions 80 percent

[Watch the video](#)

Insurance

American National Insurance

Saving time in the field with rapid, highly secure access to data from mobile devices

[Read the case study](#) (562 KB)

Telecommunications

Avea

Cutting deployment problems almost 30 percent and reducing deployment time for middleware services from four hours to ten minutes

[Read the case study](#) (659 KB)

Technology

Cincom Systems

Projecting a 20 percent reduction in

Technology

CenterBeam

Delivering 98 percent policy

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

Cloud and Mobile Computing

- Consolidated distributed server landscape to **Linux virtual servers running on IBM zEnterprise**
- Created multi-platform private cloud optimized for all workloads

<http://youtu.be/ZygaG7noaDE>

- If you're a Nationwide® customer, **Nationwide Mobile** can help you pay your bill, contact your agent, get an auto policy quote or start the **claims process**



Nationwide Mobile

Nationwide Insurance - September 6, 2013
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Auto Insurance

Enter your zip code

Continue

Retrieve Quote
-OR-
Call 1-866-238-1495
-OR-
Find a Local Agent

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<https://play.google.com/store/apps/details?id=com.nationwide.mobile.android.nwmobile&hl=en>

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



RCBC – Mobile Banking with zEnterprise

http://www.youtube.com/watch?v=_qKzw-YeqMY



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Quick Reference mobile app

for IBM System z

<http://www-03.ibm.com/systems/z/resources/mobileapp/>



New Quick Reference for IBM System z mobile app



Access critical System z information — from the convenience of your Smartphone

The free Quick Reference for IBM System z mobile app, now available for Android, BlackBerry and iPhone, provides quick and easy access to the latest System z product information, success stories, social networks, and z experts.

Key features

- Latest product highlights, descriptions, and specifications
- Client success stories
- Automatic content updates
- Core product content available without connectivity
- Access to relevant social networks, venues, and z experts
- One-touch communication with IBM
- Links to more System z information on the Web
- Sign-up options for additional exciting updates via e-mail or SMS

Download now

The free Quick Reference for IBM System z mobile app is available in the following ways:

- **Android users:**
[Download from Android Market](#) (link resides outside of ibm.com)
- **BlackBerry users:**
[Download](#) (link resides outside of ibm.com)
- **iPhone users:**
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Manage your Systems from your Mobile device

– HMC on System z, System p and Blades

http://ibmremote.com/IBM_Mobile_Systems_Remote/Welcome.html

IBM Mobile Systems Remote

The IBM Austin Research Lab has developed an iPhone and Android application that lets you monitor and manage multiple IBM® BladeCenters® along with their installed blades and components, System x® rack mounted systems, or zEnterprise® ensembles and CPCs.

Email: ibmremote@austin.ibm.com



Additional information in Mobile Redbooks

- [*Transform Your Organization into a Mobile Enterprise with IBM Worklight*](#), *Solution Guide*, published 9 October 2013
- [*Extending Your Business to Mobile Devices with IBM Worklight*](#), SG24-8117-00 *Redbooks*, published 12 August 2013
- [*IBM MobileFirst Strategy Software Approach*](#), SG24-8191-00 *Draft Redbooks*, 5 December 2013
- [*IBM System z in a Mobile World*](#), *Solution Guide*, published 21 February 2014
- [*System z in a Mobile World*](#), REDP-5088-00, *Point-of-View*, 24 January 2014
- [*Implementing IBM CICS JSON Web Services for Mobile Applications*](#), TIPS1066 *Solution Guide*, 9 September 2013
- [*Securing Your Mobile Business with IBM Worklight*](#), SG24-8179-00, 7 October 2013
- [*Enabling Mobile Apps with IBM Worklight Application Center*](#), REDP-5005-00 *Redpapers*, 1 June 2013
- [*Responsive Mobile User Experience Using MQTT and IBM MessageSight*](#), SG24-8183-00 *Draft Redbooks*, last update 18 December 2013
- [*Mobilizing Employees with IBM Notes Traveler*](#), *Solution Guide*, published 19 February 2013

Questions?



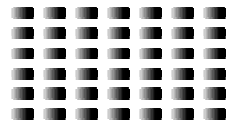
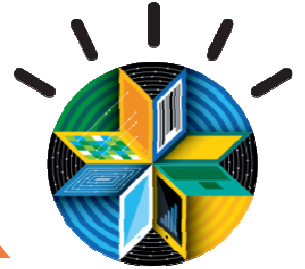
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