Evolving Mobile Systems of Engagement

Suzie Wendler, IBM
16 March, 2015

IMS Technical Symposium 2015

Acknowledgements and Disclaimers

Availability. References in this presentation to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates.

The workshops, sessions and materials have been prepared by IBM or the session speakers and reflect their own views. They are provided for informational purposes only, and are neither intended to, nor shall have the effect of being, legal or other guidance or advice to any participant. While efforts were made to verify the completeness and accuracy of the information contained in this presentation, it is provided AS-IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, this presentation or any other materials. Nothing contained in this presentation is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software.

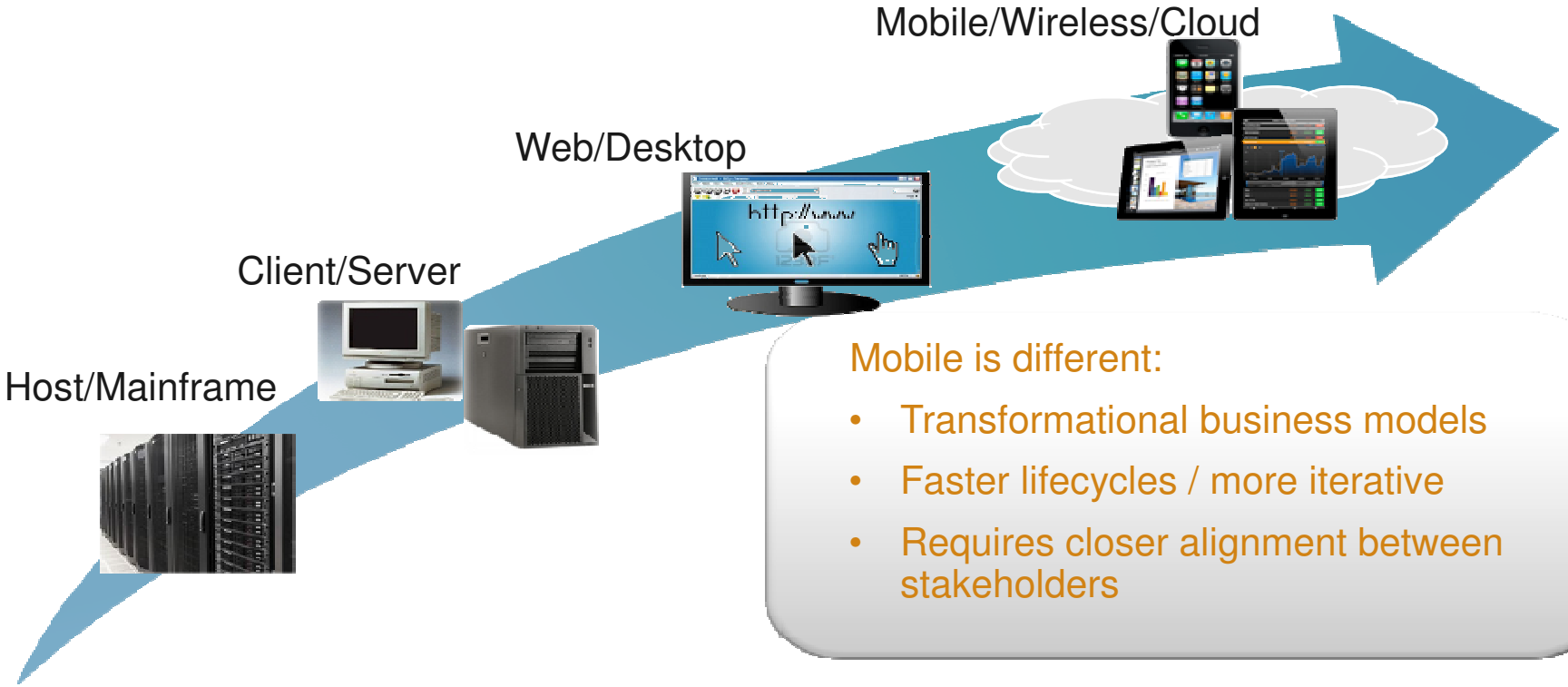
All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth or other results.

Topics

- Mobile Evolution
- MobileFirst
- IMS Interfaces
- DataPower
- Liberty Profile and zOS Connect
  - IMS Mobile Feature Pack

Mobile Computing

- a significant component in the evolution of computing



Mobile is different:

- Transformational business models
- Faster lifecycles / more iterative
- Requires closer alignment between stakeholders

Mobile Adoption = Evolving Priorities

Mobile app development

35% of developers are currently targeting tablets, with more than **90%** plan to develop for tablets in the near future.

Nearly **90%** of developers are currently extending enterprise apps to mobile or plan to in the near future.

More than **200m** people updated to iOS7 in the first week

29% of mobile developers currently focus on Hybrid app development.

In the next 12 months **77%** of developers will be focused on Hybrid application development.

25+ Almost all expect to deploy more than 25 mobility applications in the next two years

Source: Evans Data Mobile Developer Survey Mobile Development Report 2012 Volume
Source: Business Insider (September 2012)

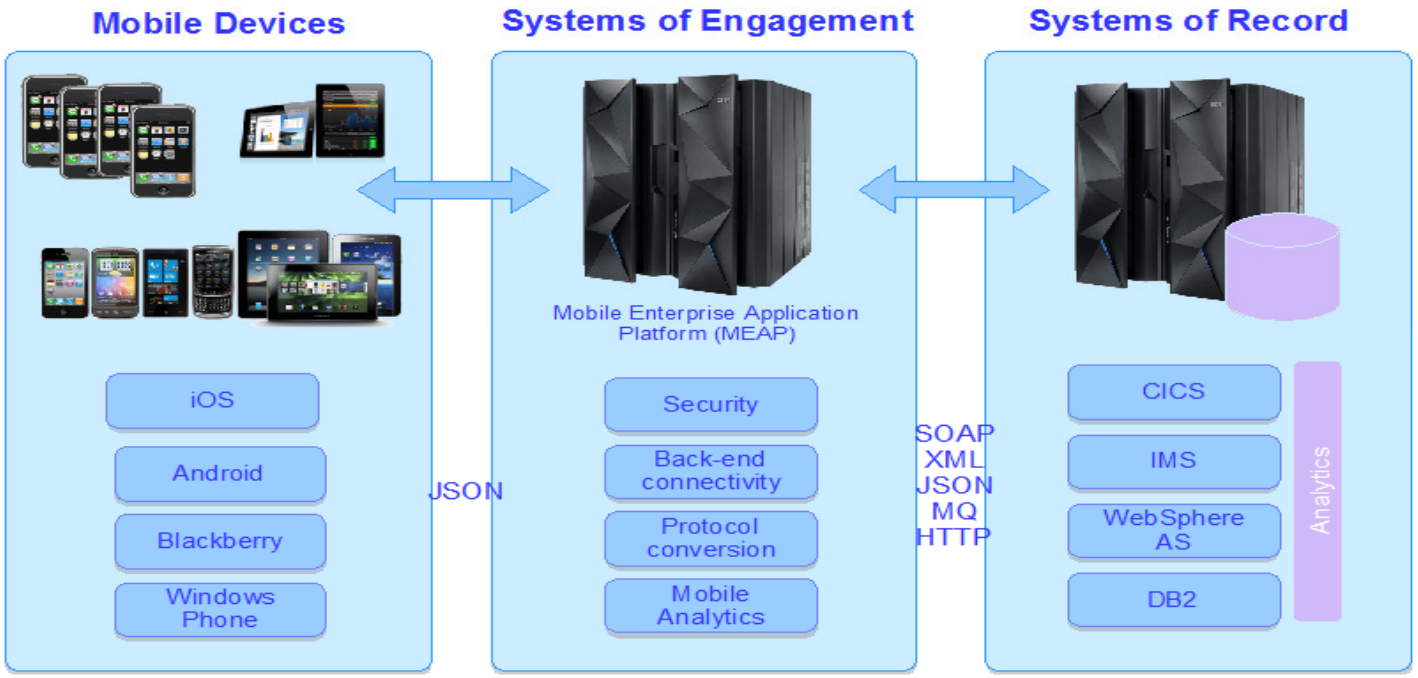
Along with Other Requirements

Real-time, 24x7 Business Analytics

- **Business execs need to know the health of their business 24/7/365**
- The “mobile office” supporting timely, confident decision making - delivering business insight any time any where

- **Mobile drives real time business analytics**
- Customer experience influenced by content -geo-specific offers and coupons while consumers are in the store

Multi-Tier Mobile Environment



Systems of Record: zEnterprise

Volumes of Data Enabled for Mobile Consumption

- A large percent of the data and transactions accessed originates/resides on IBM zEnterprise
  - 80% of world's corporate data
  - 2/3 of business transactions for U.S. retail banks
- Businesses that run on zEnterprise
  - Top 66 worldwide banks
  - 24 of the top 25 U.S. retailers
  - Top 10 global life/health insurance providers
- Massive data warehouses for business analytics
- EAL 5 encryption and cryptographic hardware to secure data in motion and at rest

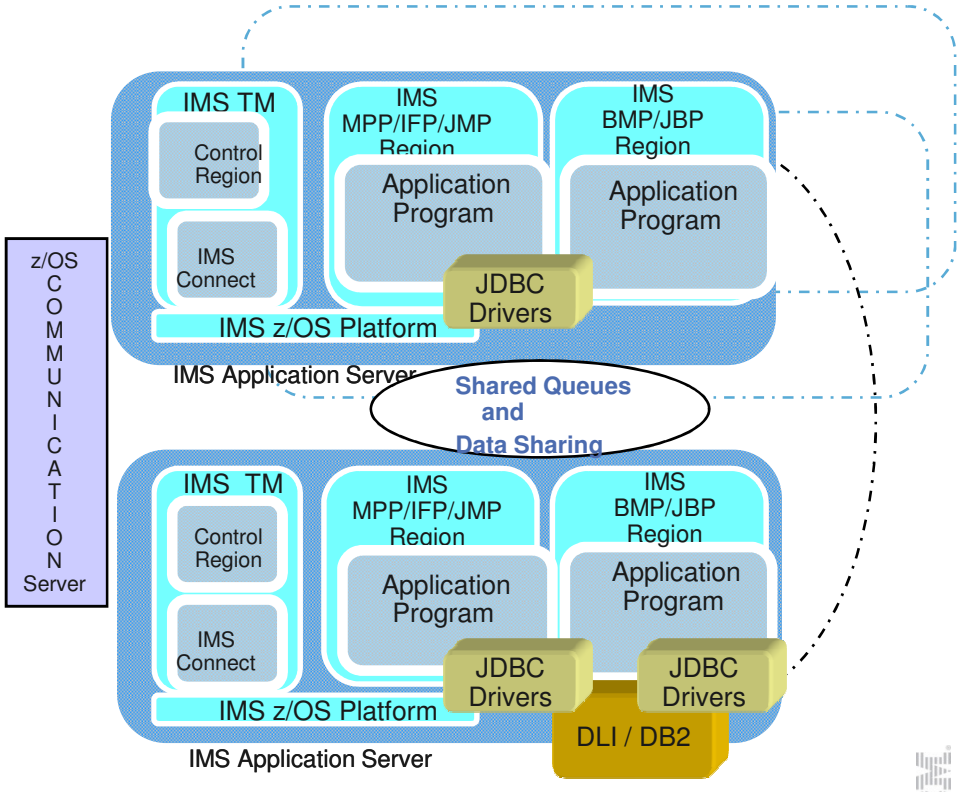
- The downtime of an application running on System z equates to approximately 5 minutes per year
- Run over a thousand virtual Linux images
- Virtualization of services for cloud implementations

Systems of Record: zEnterprise → IMS

IMSPlex – Parallel Server Environment
Cloud + Mobile workload support

- IMS is a dynamic and configurable platform
- Provides standard interfaces to access resources

- Does not require application program recompiles even if the IMS release is changed
- Does not require application program changes even when the Network or DB structure changes



Mobile Evolution - MQTT

- MQ Telemetry Transport
  - Optimized messaging for smart sensors and telemetry devices
  - An open message protocol
    - Examples of usage includes: Facebook Messenger, iPhone, Android, and Windows apps

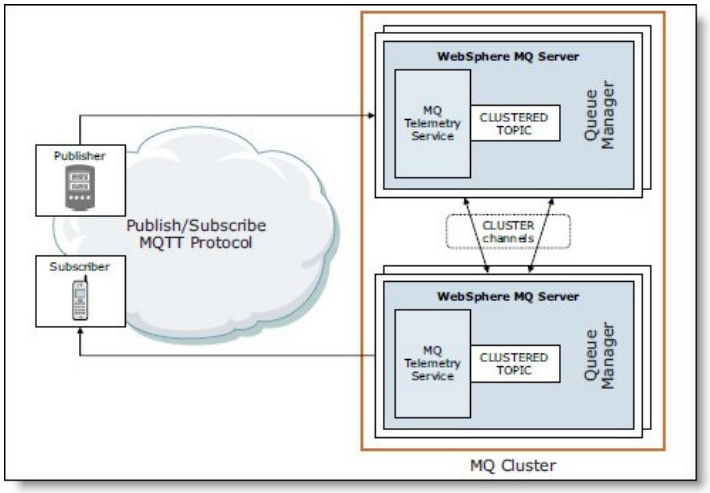
Telemetry can be used to extend the enterprise to mobile devices

- Direct device integration into back office
- Tiny messaging optimized for resource-constrained devices & gateways (RTUs)
- Terse protocol & compact header for fragile & pay-per-byte networks
- Advanced device level data buffering
- Event-driven publish-and-subscribe delivery of only significant information
- Open protocol encourages widespread device enablement
- Last Will & Testament for automated handling of device failures or outages

Mobile Evolution – MQTT…

- With MQ Telemetry, instrumented devices that are located anywhere in the world can connect to each other
- And with WebSphere MQ, they can connect to enterprise applications and web services
  - MQ Telemetry uses the MQTT protocol to send and receive messages between devices or applications and the WebSphere MQ queue manager
  - From the WebSphere MQ queue manager, messages can be exchanged with other messaging applications

- Other IBM products that have applications and devices that communicate using the MQTT protocol
  - IBM Information Bus (formerly WebSphere Message Broker)
  - WebSphere Application Server
  - IBM Operational Decision Management (IBM ODM)

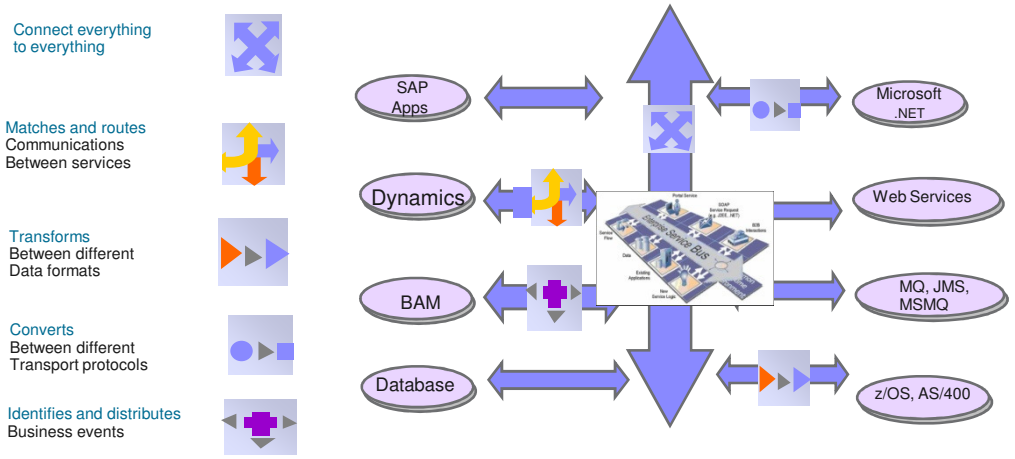


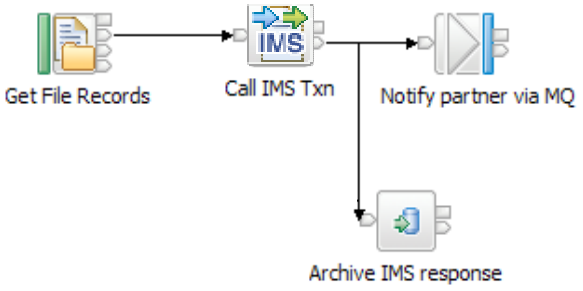
Mobile Evolution …

- IBM Information Bus (IIB)
  - Formerly called WebSphere Message Broker
  - A powerful solution driven by business rules
    - Messages are formed, routed, and transformed according to the rules that you define
    - Allows diverse applications to exchange information in dissimilar forms
      - With brokers handling the processing required for the information to arrive in the right place in the correct format
      - The applications do not need to know anything except their own conventions and requirements
  - Implementation of an enterprise service bus architecture
    - Nodes
      - Communication points to external resources
      - Points in the message flow which define a set of actions

Mobile Evolution …

- IBM Information Bus (IIB) …
  - Provides two nodes to access IMS
    - MQ Node
      - Takes advantage of the WMQ support - MQPUT / MQGET
    - IMSRequest Node
      - Takes advantage of the IMS TM Resource adapter
        - » Accesses IMS through IMS Connect



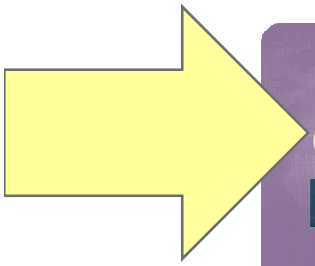


IBM MobileFirst

- A suite of mobile technologies and services (rebranding)
  - Focused on helping enterprises make the move into enterprise mobility

    - IBM MobileFirst Strategy & Design Services, including IBM Interactive, mobile infrastructure strategy and planning, and a mobile strategy accelerator
    - IBM MobileFirst Platform, a selection of IBM infrastructure for the enterprise
      - Including IBM Mobile Foundation (IBM Worklight - Enhanced and IBM WebSphere Cast Iron), IBM MessageSight, and other IBM testing and design tools
    - IBM MobileFirst Management, including endpoint management, service assurance, and telecommunications expense management
    - IBM MobileFirst Security, including app scanning, access management, and a VPN
    - IBM MobileFirst Analytics, covering mobile and digital analytics tools
    - IBM MobileFirst Development & Integration Services, including development, integration, and application management for enterprise mobile technologies

IBM MobileFirst

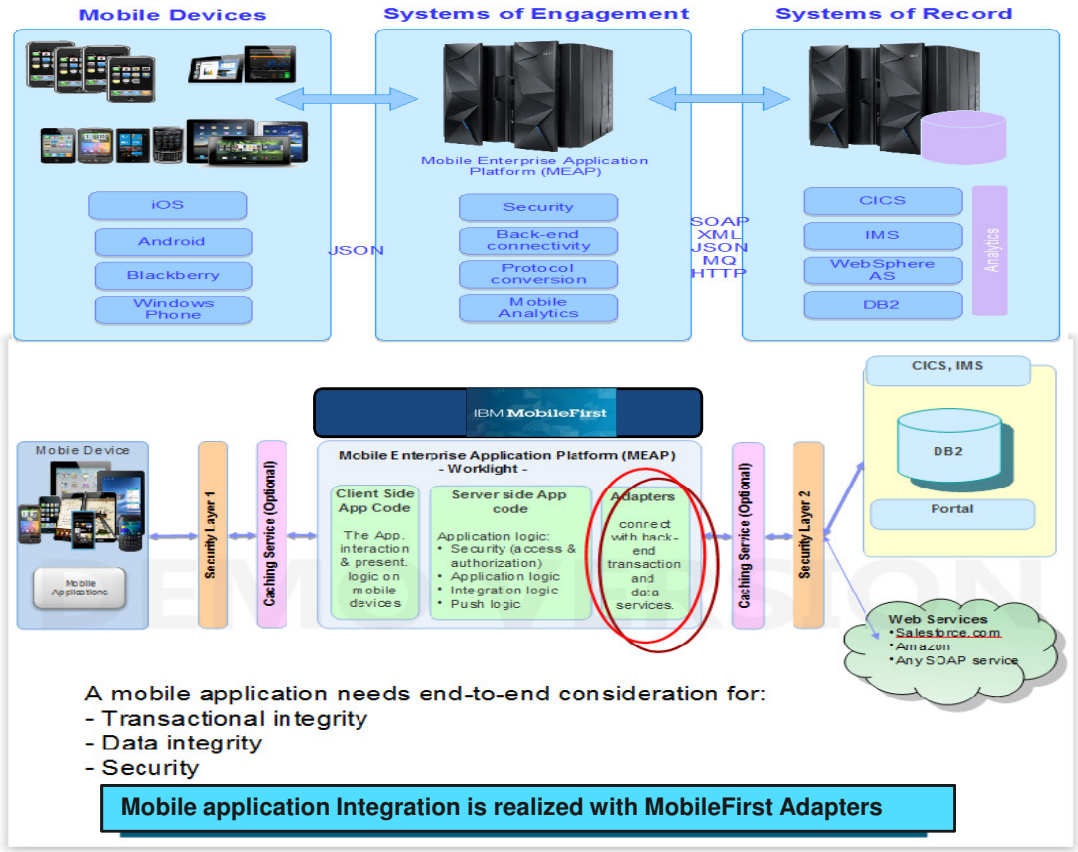


- Packaging of several existing IBM tools with → cross-platform mobile development and integration capabilities
  - A mobile product family that allows organizations to:
    - Develop HTML5, hybrid and native apps once and deploy to multiple mobile environments without manual porting
    - Manage and secure network-connected devices, including mobile endpoints
    - Integrate mobile applications to enterprise systems and cloud services

- **Apps Development**
  - Build once. Run anywhere.
  - Android, iOS, Blackberry, Microsoft, iGoogle, Facebook app, …
  - Runtime Skins for different resolutions
  - Standards based language
  - Application Lifecycle Management
  - Centralized Build Process
- **Security**
  - Secured offline access
  - On device encryption of user data
  - Single sign-on mechanism
  - SSL encryption
  - Protection against reverse engineering vulnerabilities
  - Multi-factor authentication

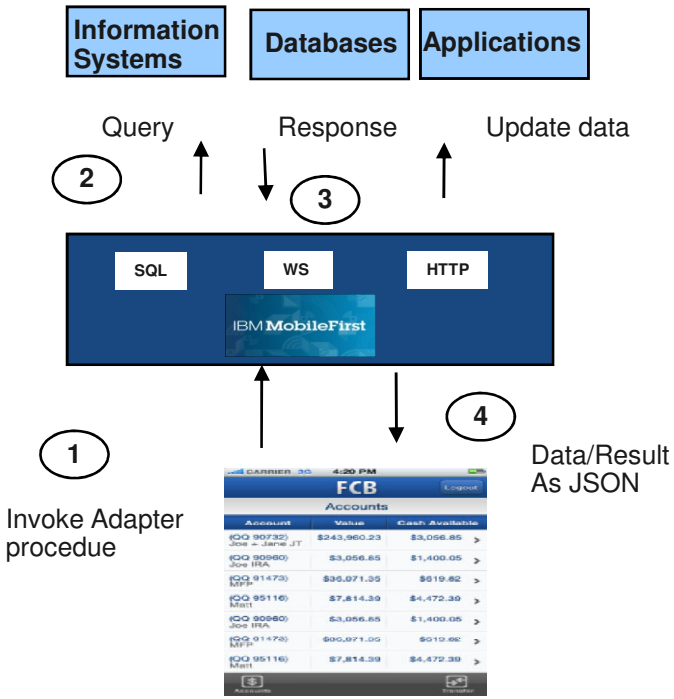
- **Enterprise Integration**
  - Direct access to back-end systems
  - Leverage existing SOA services
  - Server-side caching
  - Adapters with support for SAP, SOAP, REST, SQL and more
- **Application Management**
  - App distribution & Version management
  - Remote disabling apps
  - Direct Update
  - Push Notification service management
  - Analytics and Usage report
- **Middleware**
  - WebSphere Application Server
  - Reliable, Highly Available and Scalable

IBM MobileFirst …



IBM MobileFirst …

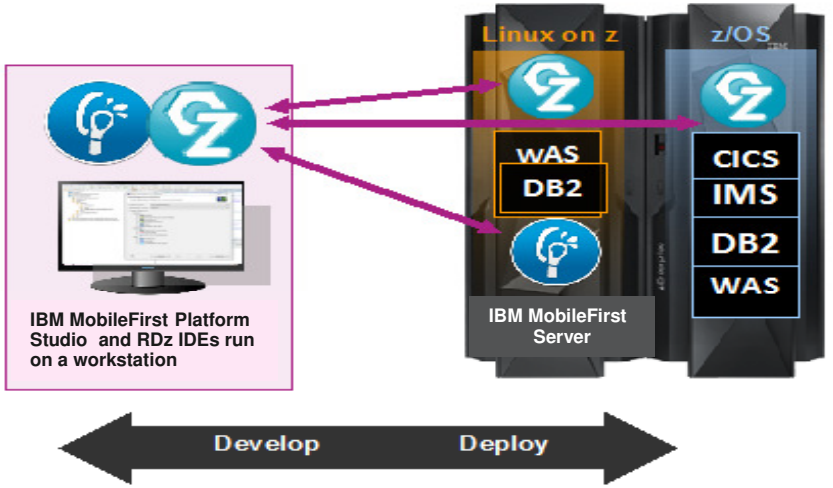
- Includes Integration Adapters which
  - Allow the MobileFirst platform to connect to back-end systems
    - Retrieve information and Perform actions
  - Are provided with the product
    - HTTP adapter (supports REST and SOAP)
    - Cast Iron Adapter
    - SQL adapter
  - Support data retrieval as either raw or preprocessed



IBM MobileFirst – Building mobile apps

Tooling – IBM MobileFirst Platform Studio

- Eclipse-based IDE for creating mobile applications
- 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

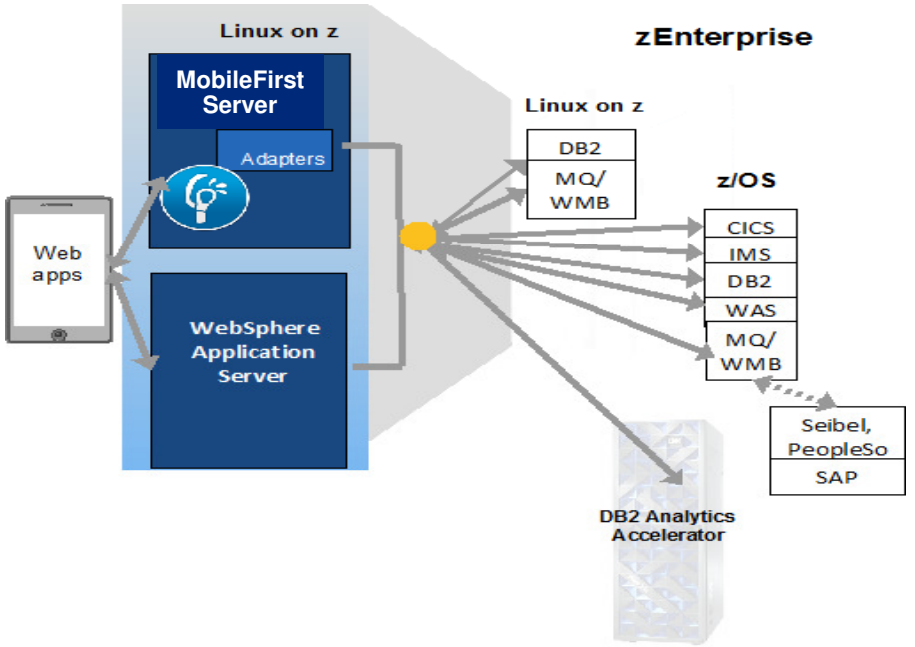


IBM MobileFirst – an open, comprehensive and advanced mobile application platform to build, run and manage mobile applications

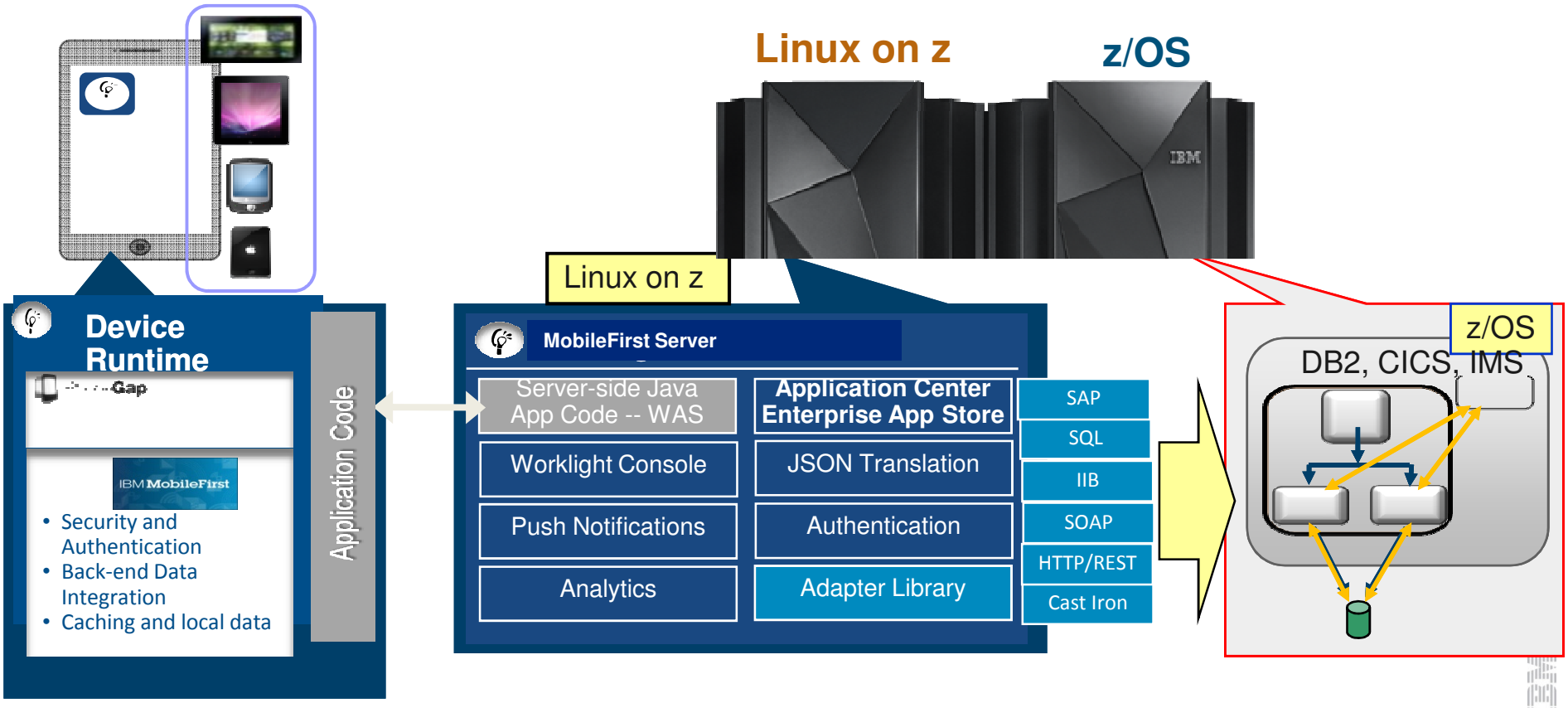
IBM MobileFirst – Connecting mobile apps

zEnterprise Server support

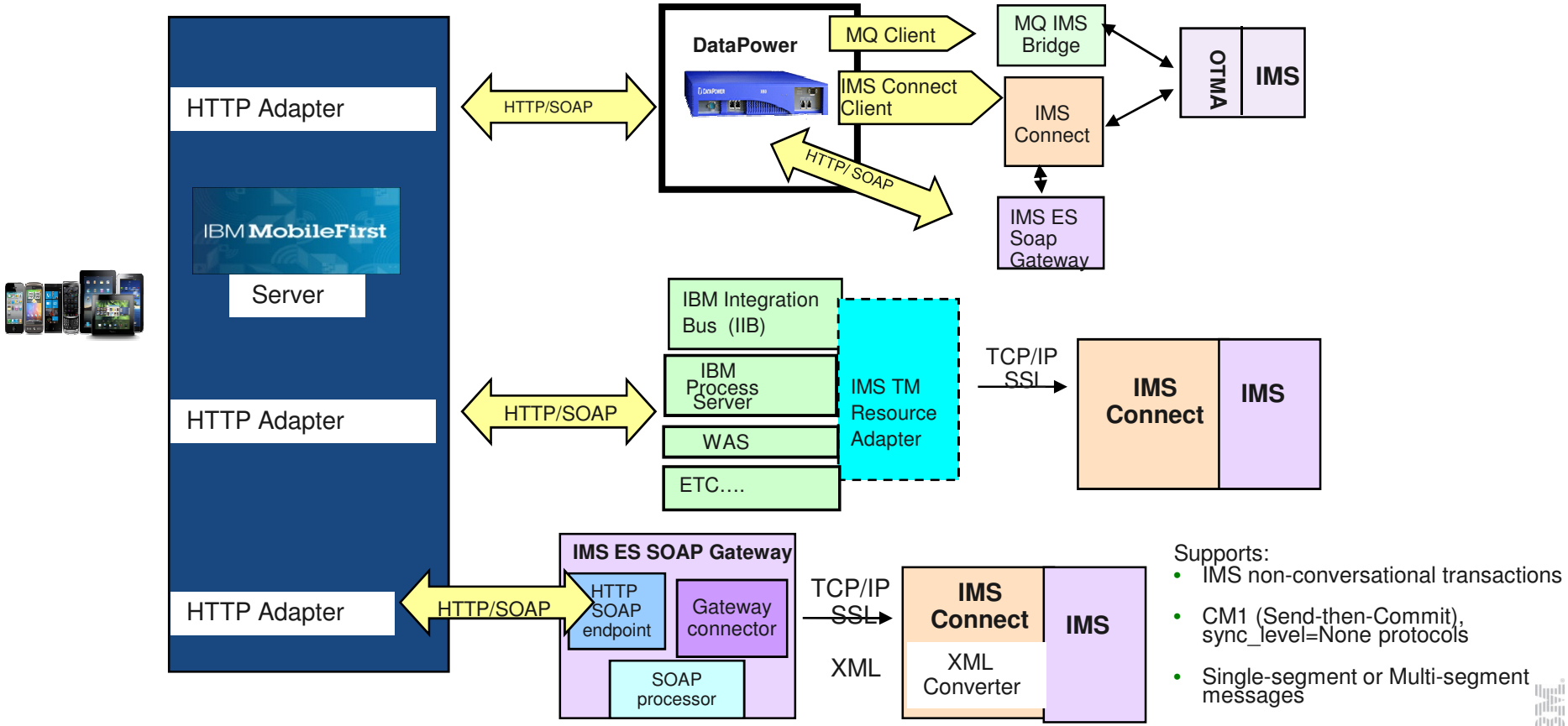
- Server side software components and **adapters** for channeling System z to mobile devices with IBM MobileFirst Server
- Mobile application support with WebSphere Application Server on System z
- Mobile protocol connectivity with core System z applications including CICS, IMS, MQ, IIB(WMB) and DB2



IBM MobileFirst Server zEnterprise



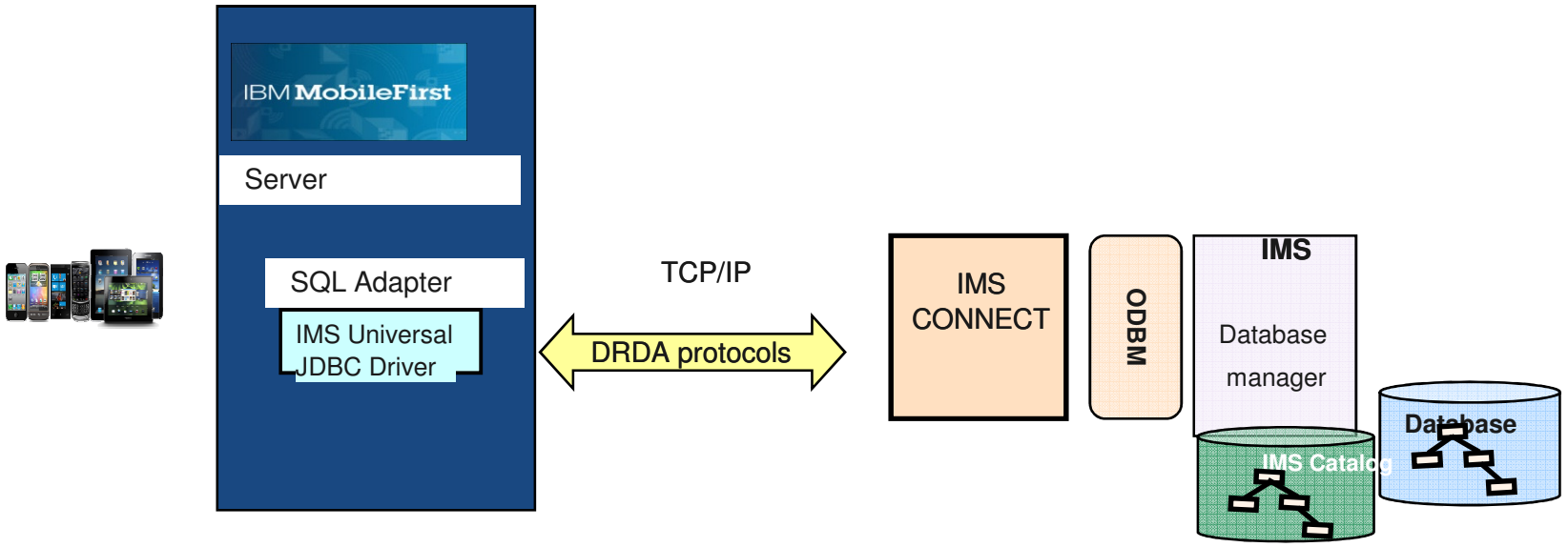
IBM MobileFirst and IMS Transactions



Supports:

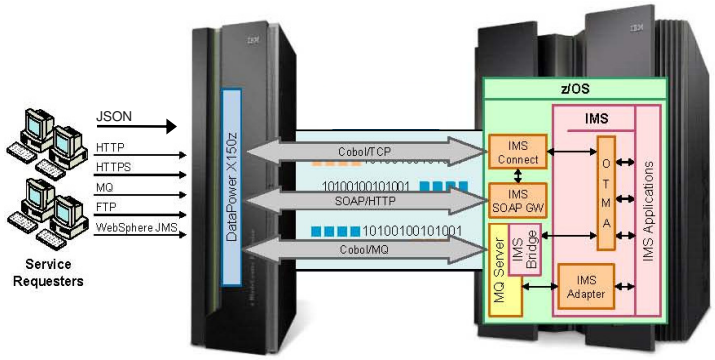
- IMS non-conversational transactions
- CM1 (Send-then-Commit), sync_level=None protocols
- Single-segment or Multi-segment messages
- WS-Security

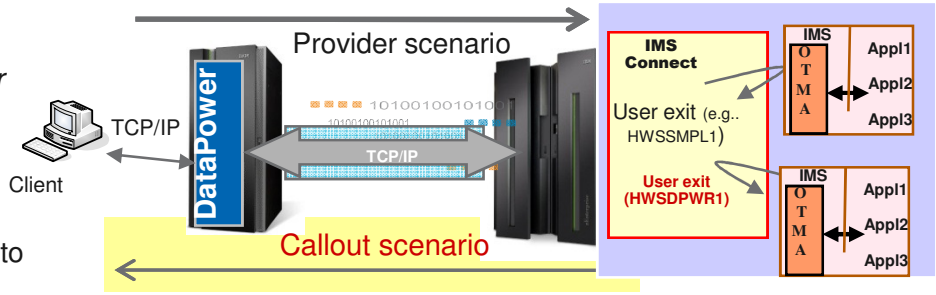
IBM MobileFirst and IMS Databases



DataPower and IMS Transactions

- *DataPower integration to IMS as a Service Provider (XI50, XI50B, XI50z, XI52, XB60, XB62...)*
  - ***Interfaces to get to IMS transactions:***
    - ***IMS Connect Client***
      - *Access to IMS applications using a DataPower embedded IMSClientConnect handler to IMS Connect*
        - *CM1, Sync=none (Firmware 3.6.1)*
        - *Support for >32k with LLLL (3.8.0)*
        - *CM1, Sync=confirm (3.8.1)*
    - ***Soap***
      - *Access to IMS web services via the IMS SOAP Gateway*
    - ***MQ Client***
      - *Access to IMS applications using an MQ server on system z and the MQ Bridge for IMS*
- *Enhanced capability with V6.0*
  - An "IMS Callout" front-side handler that natively connects to IMS Connect as service consumer

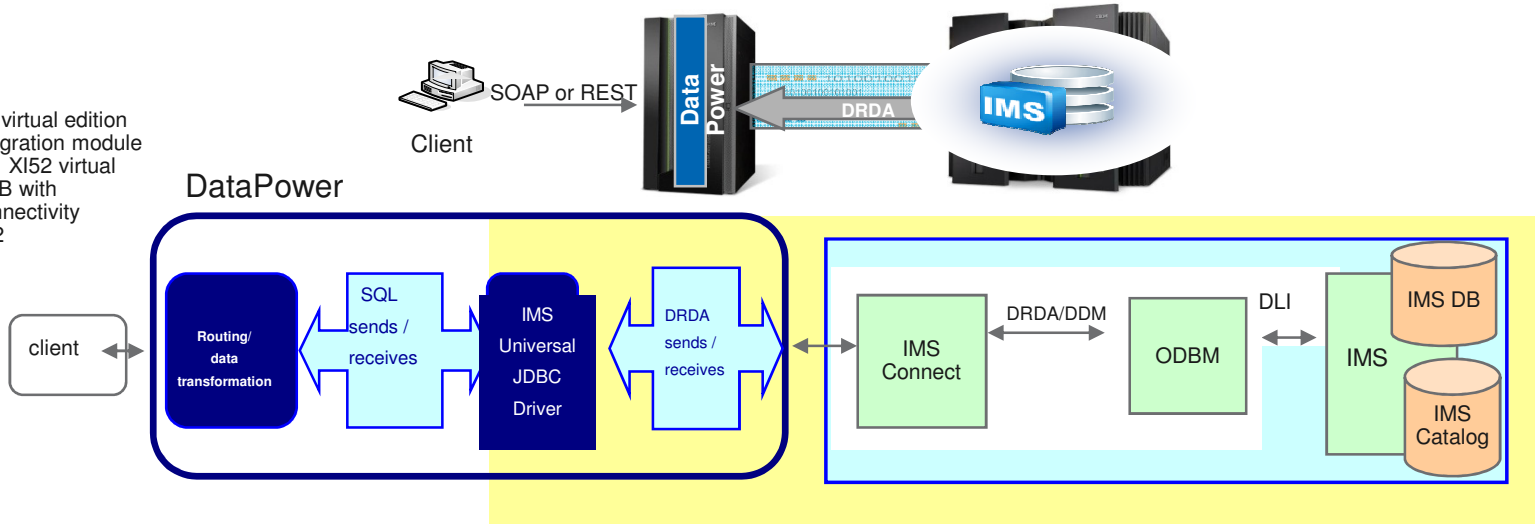




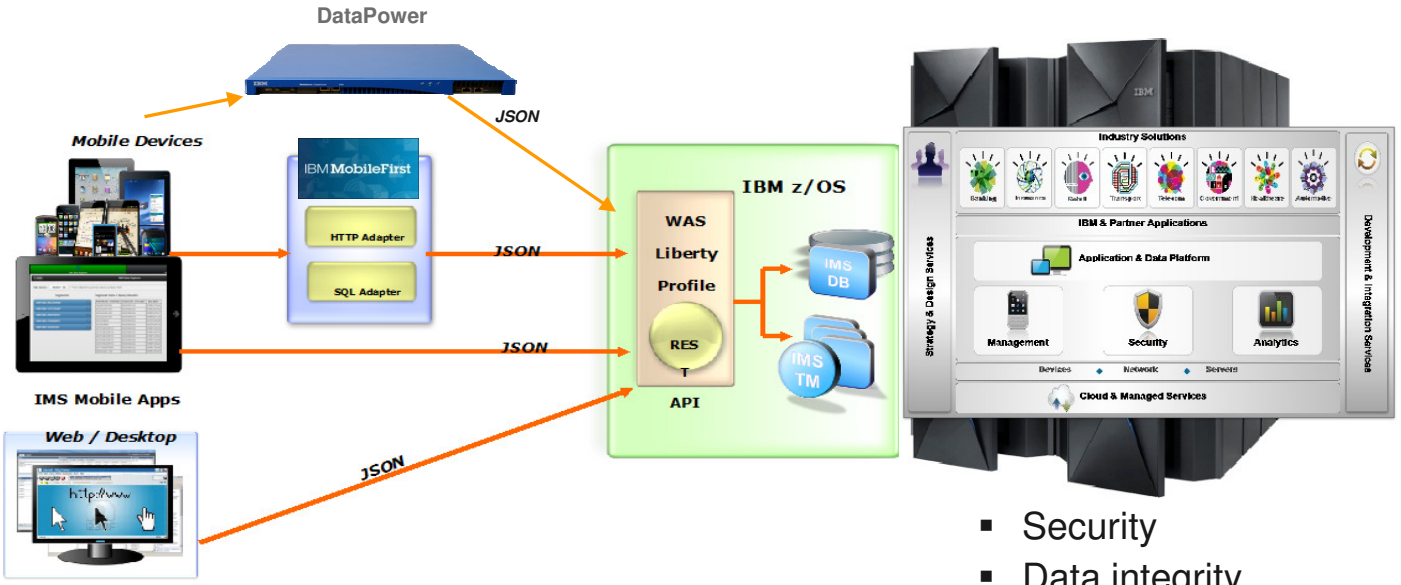
DataPower and IMS Databases

- *DataPower integration to IMS Databases*
  - *SOAP or REST call is mapped to a JDBC (DRDA) invocation*
    - *Access to IMS DB leverages existing and proven technology*
    - *IMS Universal JDBC driver*
    - *IMS DRDA server: IMS Connect/ODBM*
    - *IMS Catalog*

XG45, XG45 virtual edition with data integration module feature, XI52, XI52 virtual edition, XI50B with database connectivity feature, XB62



And now, *a new strategy*
…expanding the z Systems leverage
for JSON and RESTful services



- Security
- Data integrity
- Business resilience
- Optimized performance

zEnterprise

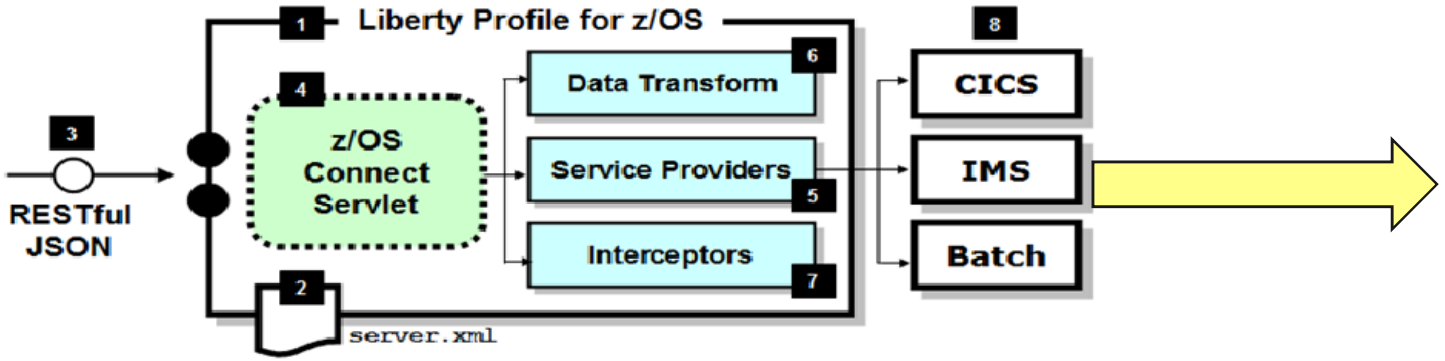
… With unique characteristics to support mobile applications

- 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
- Distributed security capabilities integrate 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 z Systems scalability, security, and resilience can enhance critical mobile applications.

z/OS Connect

WebSphere Liberty Profile z/OS that provides a REST and JSON Interface (or a "gateway") to z/OS programs and applications



1 z/OS Connect is software function that runs in Liberty Profile for z/OS.

2 z/OS Connect is described and configured in the Liberty `server.xml` file

3 z/OS Connect is designed to accept RESTful URIs with JSON data payloads

4 One part of z/OS Connect is a servlet that runs in Liberty Profile z/OS.

5 A 'Service Provider' is software that provides the connectivity to the backend system

6 z/OS Connect provides the ability to transform JSON to the layout required by backend

7 'Interceptors' are callout points where software can be invoked to do things such as SAF authorization and SMF activity recording

8 Initially the backend systems supported will be CICS, IMS and Batch

And to interface with IMS

- ***IMS Mobile Feature Pack***
  (Available with IMS Enterprise Suite 3.1.1 – GA June 13, 2014)

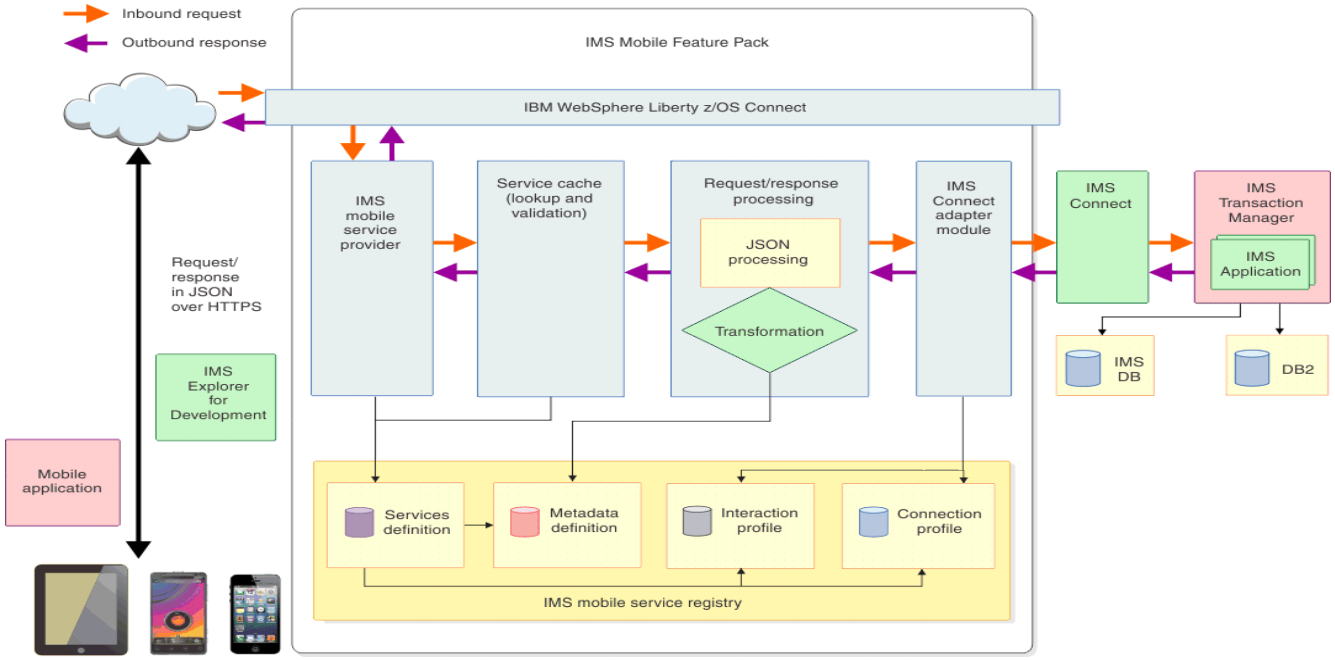
Plugs into z/OS Connect

– Delivers IMS resources to mobile and cloud developers in a secure, governed, and optimized way through:

» An integrated platform that supports full discovery, modeling, enablement, and deployment of both IMS transactions and IMS data

» A singular approach for System z clients using WAS, CICS, IMS, and DB2

IMS Mobile Solution V 3.1.1



The IMS Mobile Business

- Addresses the challenge of expanding mobile workloads
  - With ***a comprehensive offering*** for different phases of mobile development
    - Addressing skills, TCO, continued ROI on the IMS investment, and System z qualities of service
    - An OTC pricing model that provides flexibility in managing costs
      - IMS Value Unit Edition (VUE) offerings
        - »IMS TM VUE (announced on May 20, GA May 23, 2014)
        - »IMS DB VUE (announced and available in 2013)
      - IMS TM VUE and IMS DB VUE are included in the Mobile Workload Pricing (MWP) Defining Programs – MWP was announced on May 6, 2014

IMS Mobile Strategy

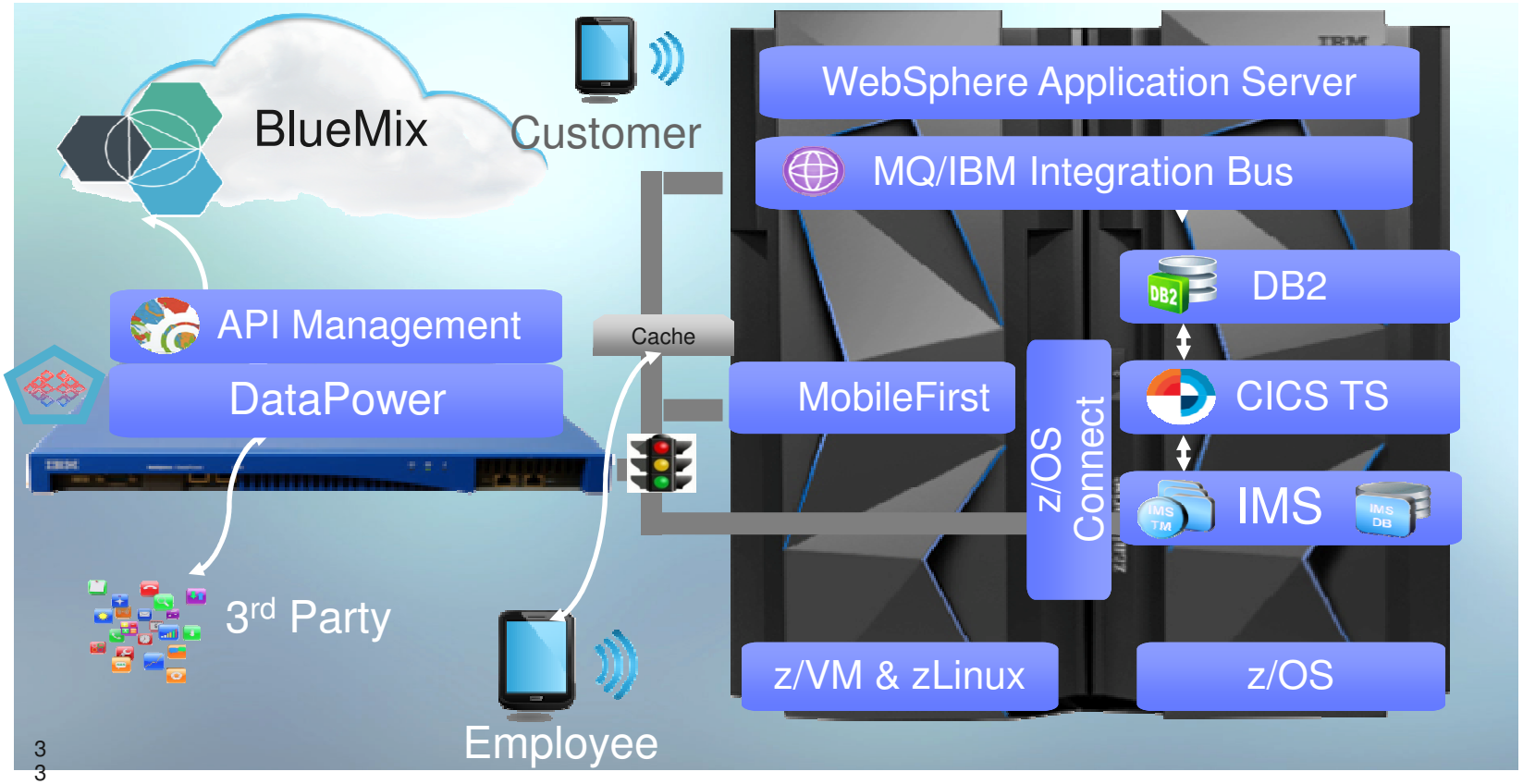
- Expands the IMS ecosystem via delivery of mobile infrastructure
  - provides a strategic and dependable mobile foundation
  - Offers an integrated platform for full discovery, modeling, deployment and execution of both transaction and data assets for mobile consumption
    - REST interface with JSON wire protocol
      - *JSON* (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate.

74% of CIOs say mobile solutions are part of their vision for increasing competitiveness

IMS Mobile – Ecosystem and Beyond

- IMS Mobile complements existing roll-your-own mobile solutions as well as mobile solutions that use either **IBM MobileFirst**, or IBM **DataPower**, or both
- Leverages the WAS Liberty Profile and its z/OS Connect feature
  - Requires a WAS licensed copy for z/OS Liberty Profile V8.5.5.2 or later,
    - If WAS for z/OS Liberty Profile is already installed, the IMS Mobile Feature Pack can be downloaded and installed as a feature
    - Or, when the IMS Mobile Feature Pack is ordered through Shop z as part of IMS Enterprise Suite V3.1.1, it includes a limited use copy of WAS for z/OS Liberty Profile
- z/OS Connect enables IMS as a provider of Systems of Record to front-end consumers and cloud application providers.

IMS Mobile – Ecosystem and Beyond



IMS … perfect for mobile connectivity

IMS 13

Delivering the highest levels of performance, availability, security, scalability and connectivity in the industry

- **Breaking through 100k TPS** 800% greater than IMS 12
- **CPU reductions up to 62% for Java Apps**
- **SQL access to IMS data from Java and COBOL applications**
- **Greater flexibility and faster deployment**
- **Database versioning for dynamic data definitions**
- **Big data exploitation** of Hadoop / Big Insights, MDA, Watson Explorer…
- **Simplified mobile access** with JSON, JDBC, IMS Connect….