System z in a Mobile World

The role of System z in your mobile strategy

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Every second there are

- 250
- 3.600
- 7.000
- 30.000
- 46.000
- 60.000
- 1.150.000

Mobile offers new services … using Mobile technologies

When a suspicious payment has been requested then…

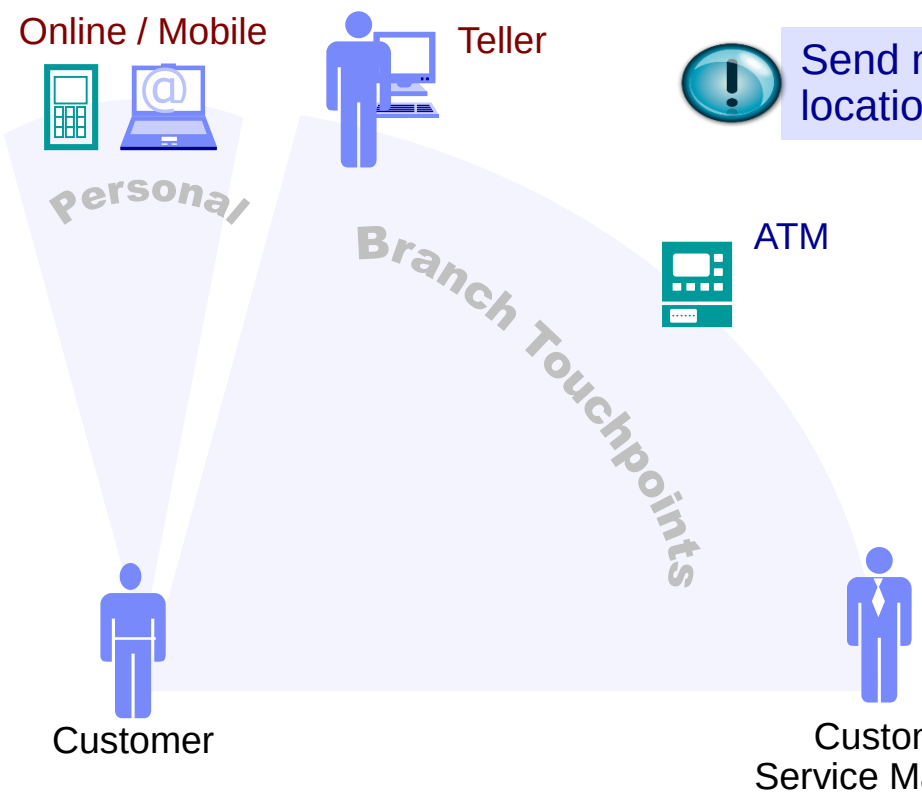
Request additional authentication

When a customer's card is not returned by the ATM then…

Send message with location of nearest branch

When a pending transaction will cause an account to be overdrawn then…

Promote overdraft protection offer

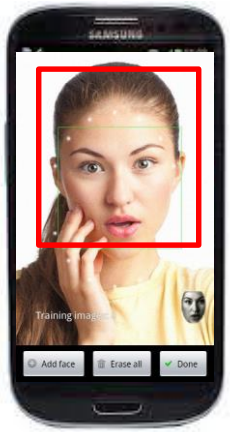


Using a mobile device for two-factor authorization (2FA)

Payment Request →

- Large amount
- Payment is unusual for some reason
- Customer has registered her mobile device

Demand Real Time Confirmation



← Ask Confirmation to Mobile

- Location
- Biometrics

→ Confirmation

Confirmed Payment Accepted

Payment Authorization Engine

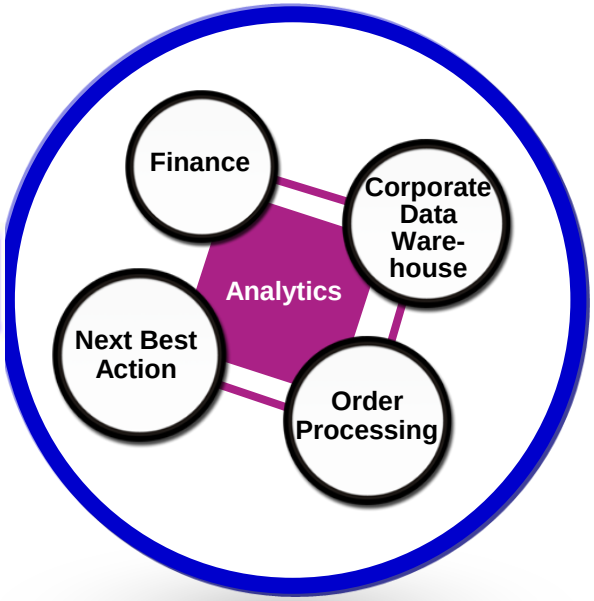
Systems of Engagement

Systems of Record

- User Interaction
- Connectivity
- Platform
- Operational
- …

Systems of Engagement

Systems of Record



Becoming a mobile enterprise

- **To become a mobile enterprise, there are three things you must get right:**

  - **Build an agile approach to deliver applications**

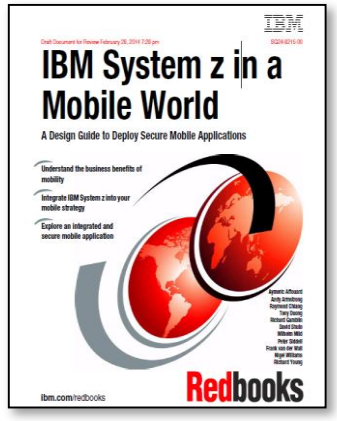
    Transform the operational model to ensure the highest levels of speed, flexibility and quality in the application development and deployment process

  - **Make every transaction secure**

    Design and deliver transactions for all stakeholders that are as high in quality as they are high in frequency—and as secure as they are convenient

  - **Use mobile analytics to improve outcomes at every moment**

    Focus on mobile analytics to optimize processes, enable people and get the most out of technology



Build an agile approach to deliver applications

Transform the operational model to ensure the highest levels of speed, flexibility and quality in the application development and deployment process

Build an agile approach to deliver applications

- Applicat 3,5m now "*eng* 80% and not j 72s specific

*"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."*

- ***Systems of Engagement*** (SoE) that can enhance the user's experience with various service providers and that can also deliver new features at a rate previously unthinkable

- The engagement tier interacts with many sources of data, including the Internet of Things and ***Systems of Record*** (SoR) that often reside on the mainframe

Typical mobile environment

Mobile Devices

- iOS
- Android
- Blackberry
- Windows Phone

JSON

Systems of Engagement

Mobile **E**nterprise **A**pplication **P**latform (MEAP)

- App updates
- Security
- Back-end connectivity
- Mobile Analytics

SOAP

XML

JSON

MQ

HTTP

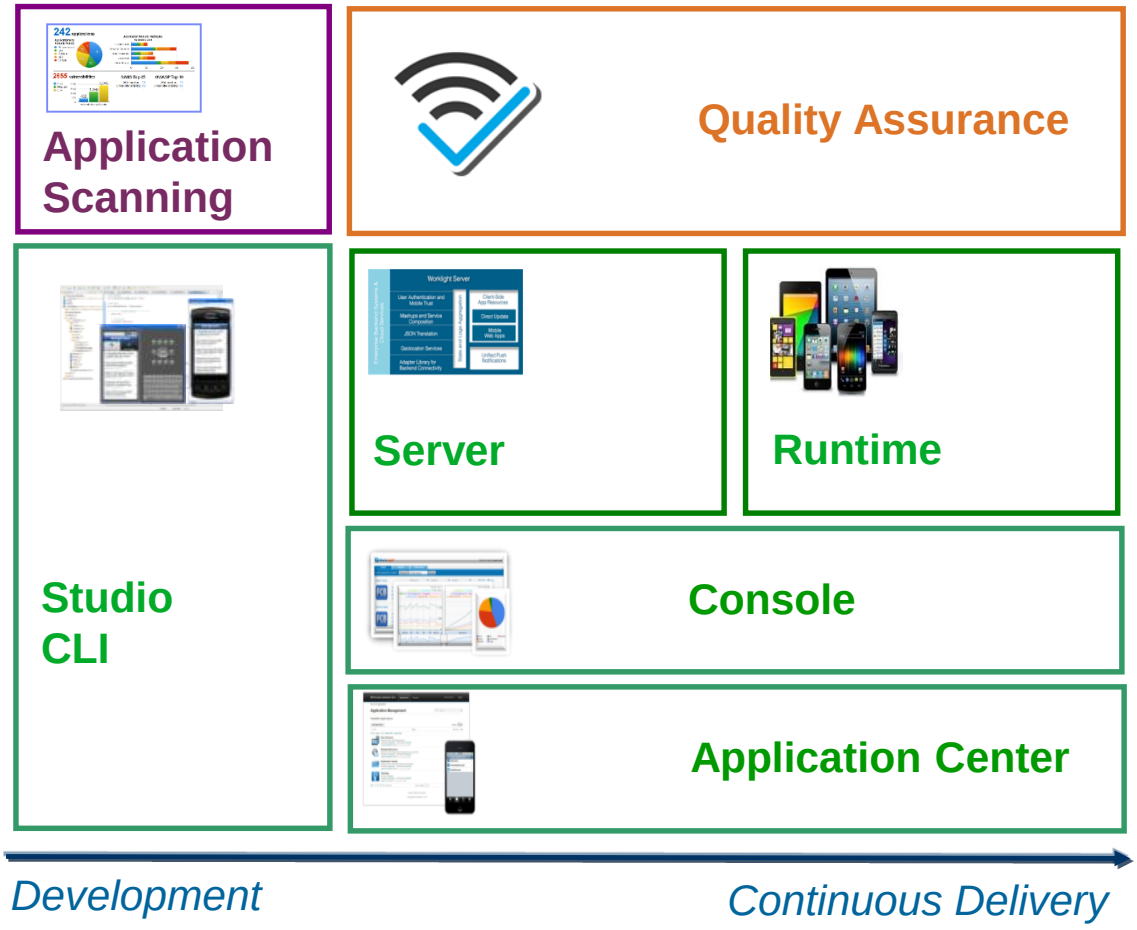
Systems of Record

- CICS
- IMS
- WebSphere AS
- DB2

Analytics

The IBM MobileFirst Platform

Integrated mobile app development with continuous delivery



Application Scanning
Detect code vulnerabilities at the time of development

Quality Assurance
Collect beta test feedback, crashes and analyze user sentiment

Foundation
Development, Runtime, Operations Console & Private Store

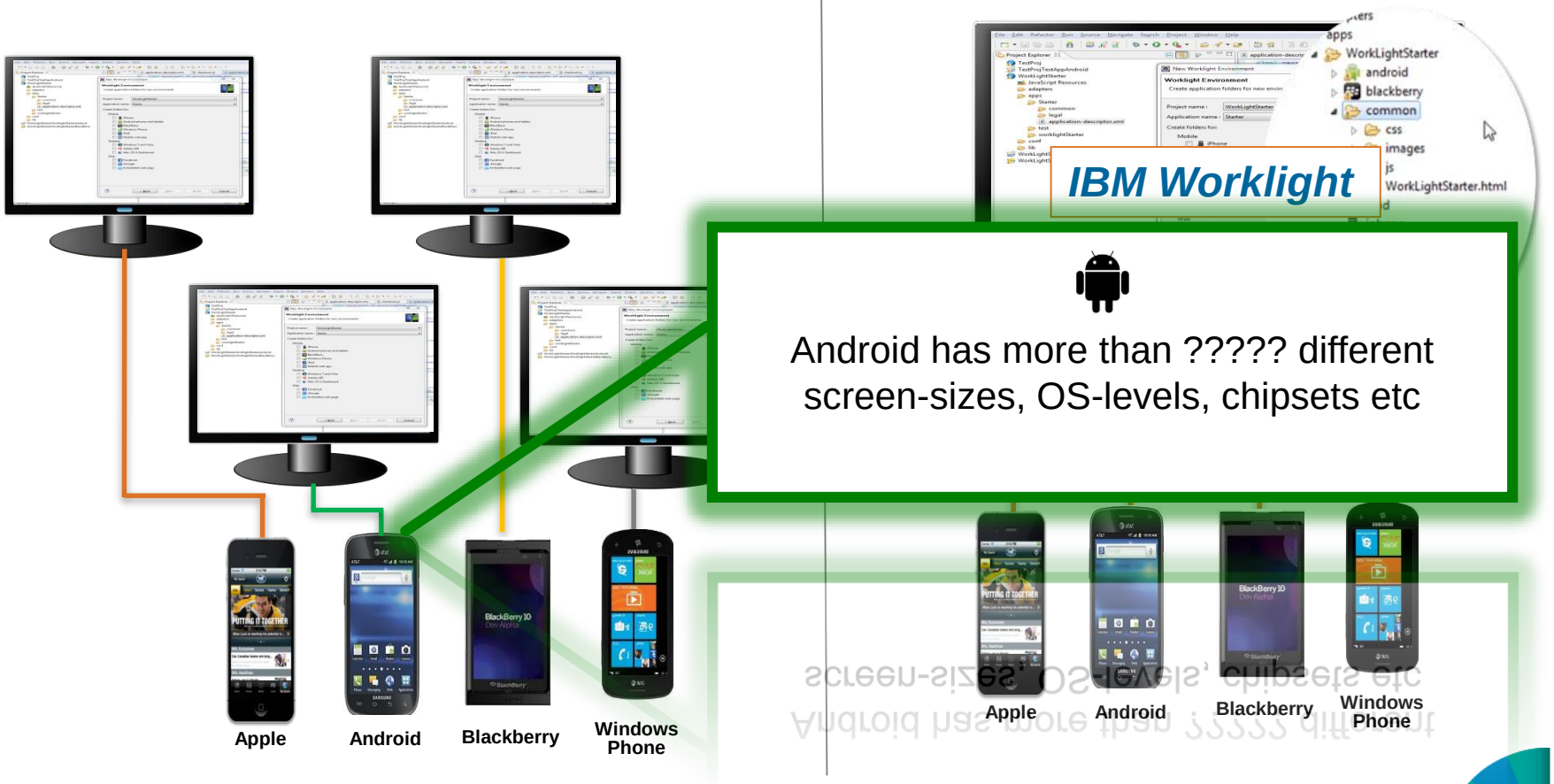
Rapid multi-platform development using a single shared codebase

From the complexity of many…

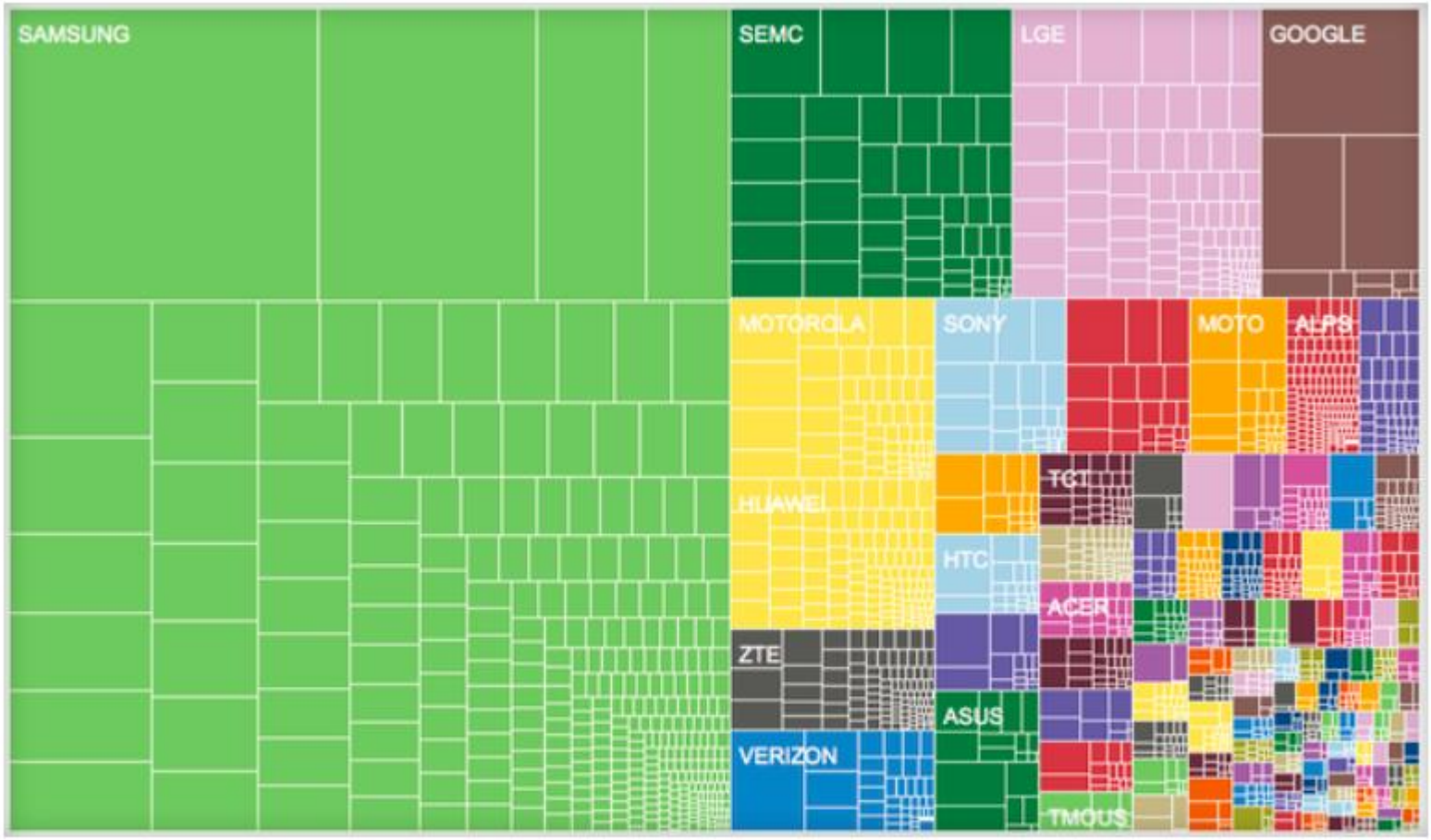
- Multiple sets of tools & frameworks
- Four codebases to develop and maintain

To the simplicity of one

- One development environment
- One codebase to develop and maintain



Unprecedented access, but at the cost of dealing with fragmentation



Brand fragmentation in the Android market is immense, but Samsung still leads the charge with 47.5 percent of the market share.

Open Signal

Running IBM MobileFirst Platform Server on System z

Linux on z

z/OS

Device

PhoneGap

Worklight

- Security and Authentication
- Back-end Data Integration
- Caching and local data

Application Code

JSON

Linux on z

MobileFirst Platform Server

Server-side Javascript	Application Center Enterprise App Store
Worklight Console	JSON Translation
Push Notifications	Authentication
Analytics	Adapter Library

SAP

SQL

WMB

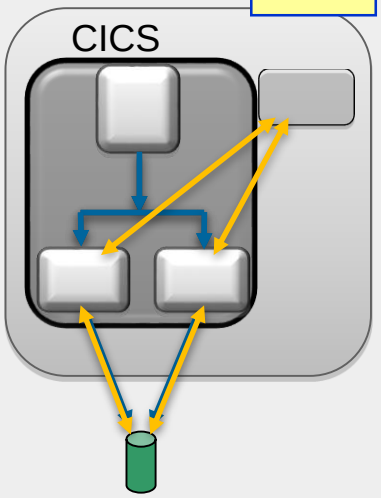
SOAP/XML

HTTP/REST

Cast Iron

z/OS

CICS



Comparing XML with JSON

XML

```
<employees>
        <employee>
                <firstName>John</firstName>
                <lastName>Doe</lastName>
        </employee>
        <employee>
                <firstName>Anna</firstName>
                <lastName>Smith</lastName>
        </employee>
        <employee>
                <firstName>Peter</firstName>
                <lastName>Jones</lastName>
        </employee>
</employees>
```

300 Bytes Approx.

50,000 Example customer records:

XML: ~14 MB
JSON: ~7 MB

JSON

```
var employeesArray = [
  { "firstName":"John" , "lastName":"Doe" },
  { "firstName":"Anna" , "lastName":"Smith" },
  { "firstName":"Peter" , "lastName": "Jones" }
];
```

150 Bytes Approx.

It's the same data, *but 50% smaller!*

System z provides essential services for mobile applications

Leader as System of Record (z/OS)

1. Provide easily consumable mobile access to all the data and transaction in z subsystems (DB2, CICS, IMS, MQ, etc)
   - Including new z/OS Connect services
2. z/OS availability and scalability is crucial for mobile workloads
3. New pricing model for mobile transactions

Key Player as System of Engagement (Linux on z)

1. Tools to satisfy the lifecycle requirements for mobile application development
   - MobileFirst Platform Studio and Server and Rational
2. Linux on System z is a good fit for mobile infrastructure
   - Exploit co-location with z/OS data and transactions
   - Availability and scalability to handle mobile workloads
   - Exploit z security and encryption for use by mobile apps
   - Leverage cloud capability to create new mobile dev and production clouds

Make every transaction secure

Design and deliver transactions for all stakeholders that are as high in quality as they are high in frequency—and as secure as they are convenient

Secure every transaction

- The mobile platform must be able to cope with the additional number of transactions and ‘*spikeyness*’ that mobile enablement brings

> *“Several large banks have told IBM that their **“mobile apps are crushing IT”** and that transactions with relatively low value to the bank are being frequently, almost whimsically, performed morning, noon, and night.”*

- The mobile platform must be able to cope with the additional security risks that mobile enablement brings.

> *“**Securing the mobile transaction end to end** has emerged as the most important concern of the mobile revolution, because the organization’s information and data is distributed beyond the secure perimeter and transactions are executed on mobile devices, which can be shared and are often personally owned.”*

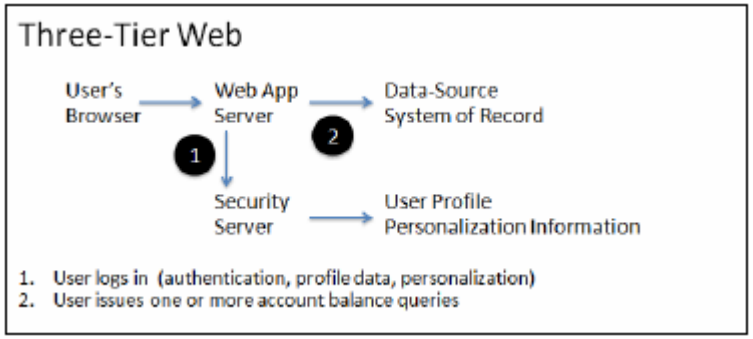
System z unique characteristics to support the mobile workload

- zEnterprise enables massive and simple scalability in a single footprint, to handle the workload of millions of devices and sensors
- Rapid and automatic scalability for mobile workloads that benefit from the virtualization capabilities of Linux on System z
- Local access to services and data on IBM z/OS across a fast and secure HiperSockets connection
- 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

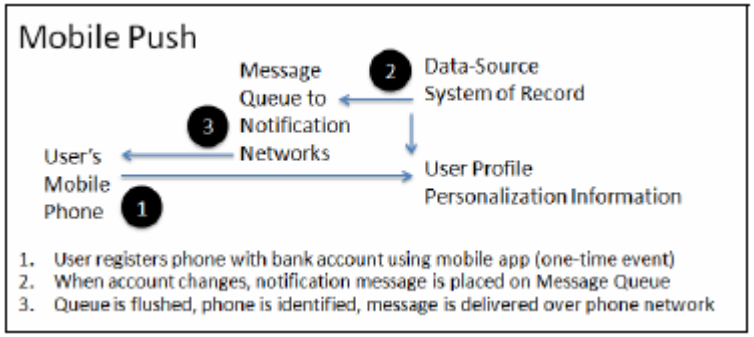
Infrastructure matters for mobile applications. The System z platform's scalability, security, and resilience can enhance critical mobile applications.

Push, Don't pull

- A push model may be more effective for low value transactions like balance inquiries
- Traditional three-tier web '**pull**' model



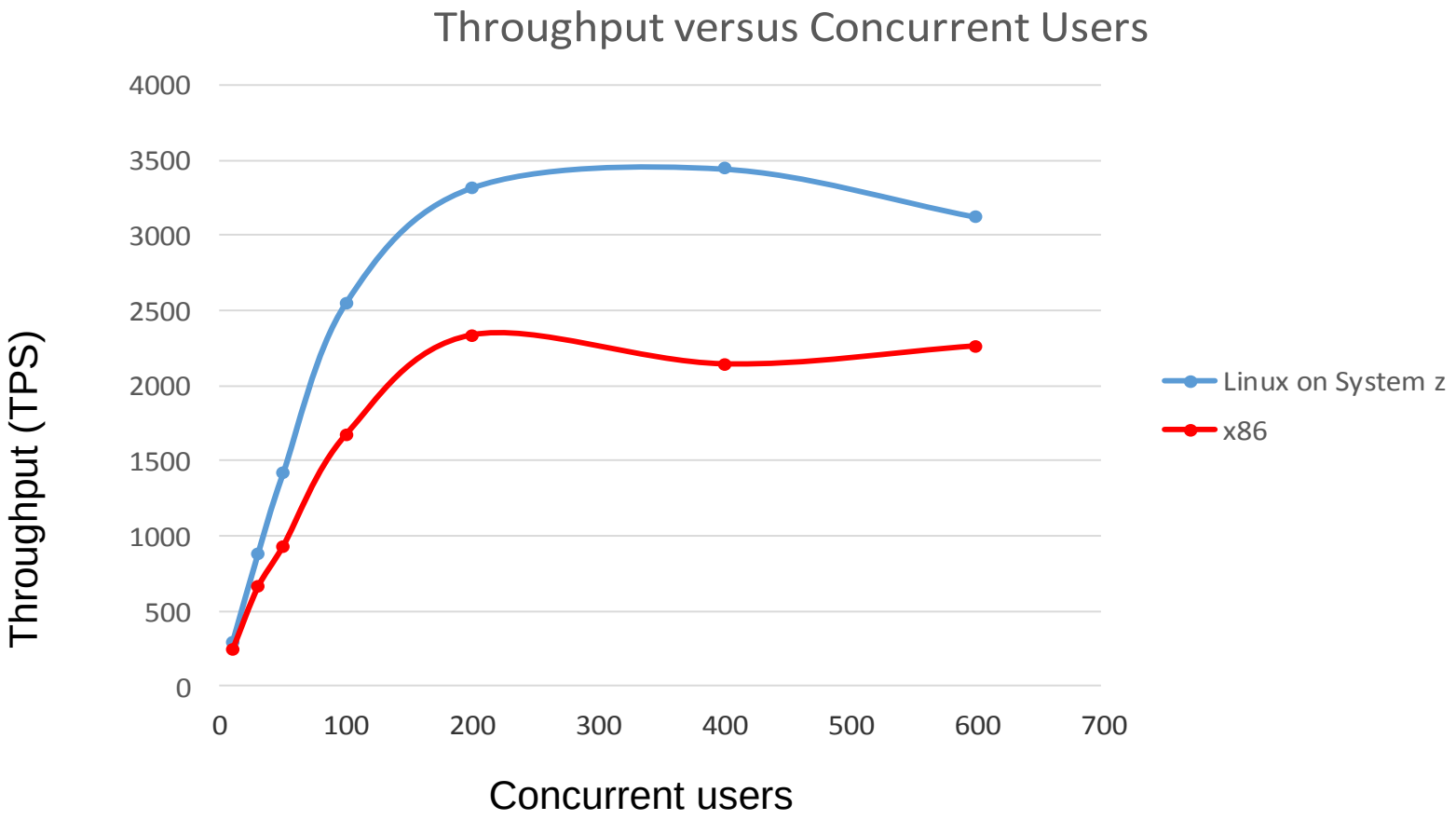
- '**Push**' model



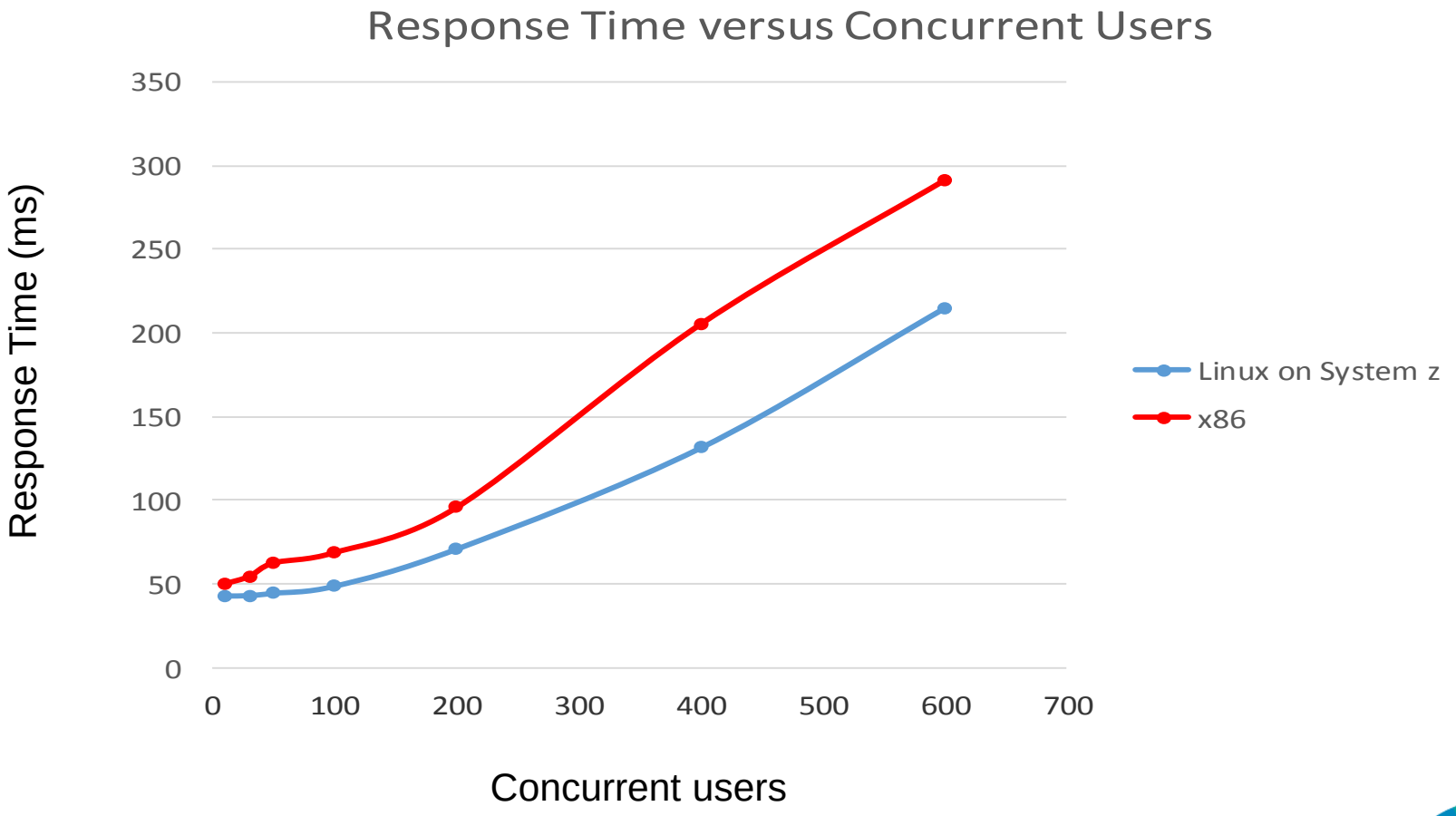
- Push model results in less transactions and transactions are spread out more evenly

See '*Mobile Design Patterns: Push, Don't Pull*', RED-5072
http://www.redbooks.ibm.com/abstracts/redp5072.html?Open

Worklight scales better on Linux on System z than x86



Worklight provides lower Response Time on Linux on System z than x86



What's different about mobile security?

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 / carrier 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, application lists

The Mobile Security Ecosystem

At the Device

Manage device
Set appropriate security policies • Register • Compliance • Wipe • Lock

Secure Data
Data separation • Leakage • Encryption

Application Security
Offline authentication
- Application level controls

Mobile App

Secure Application
Utilize secure coding practices • Identify application vulnerabilities • Update applications

Integrate Securely
Secure connectivity to enterprise applications and services

Manage Applications
Manage applications and enterprise app store

Over the Network

Secure Access
Properly authenticate and identify mobile users and devices • Allow or deny access • Connectivity

Monitor & Protect
Identify and stop mobile threats • Log network access, events, and anomalies

Secure Connectivity
Secure Connectivity from devices

Within the Enterprise

Transaction Security
Properly identity mobile users and transactions

Access control
Control access to critical applications and data

Enterprise Intranet

The Mobile Security ecosystem

At the Device

MaaS360

• Wipe • Lock

Trusteer

Application Security

Offline authentication

MobileFirst Platform Runtime

Mobile App

Secure Application

Utilize secure coding

AppScan for Mobile

Integrate Securely

MobileFirst Platform Server

Manage applications and enterprise app store

Over the Network

Secure Access

Access Manager for Mobile

Monitor & Protect

QRadar

anomalies

DataPower

from devices

IBM Mobile Connect

Within the Enterprise

Transaction systems security

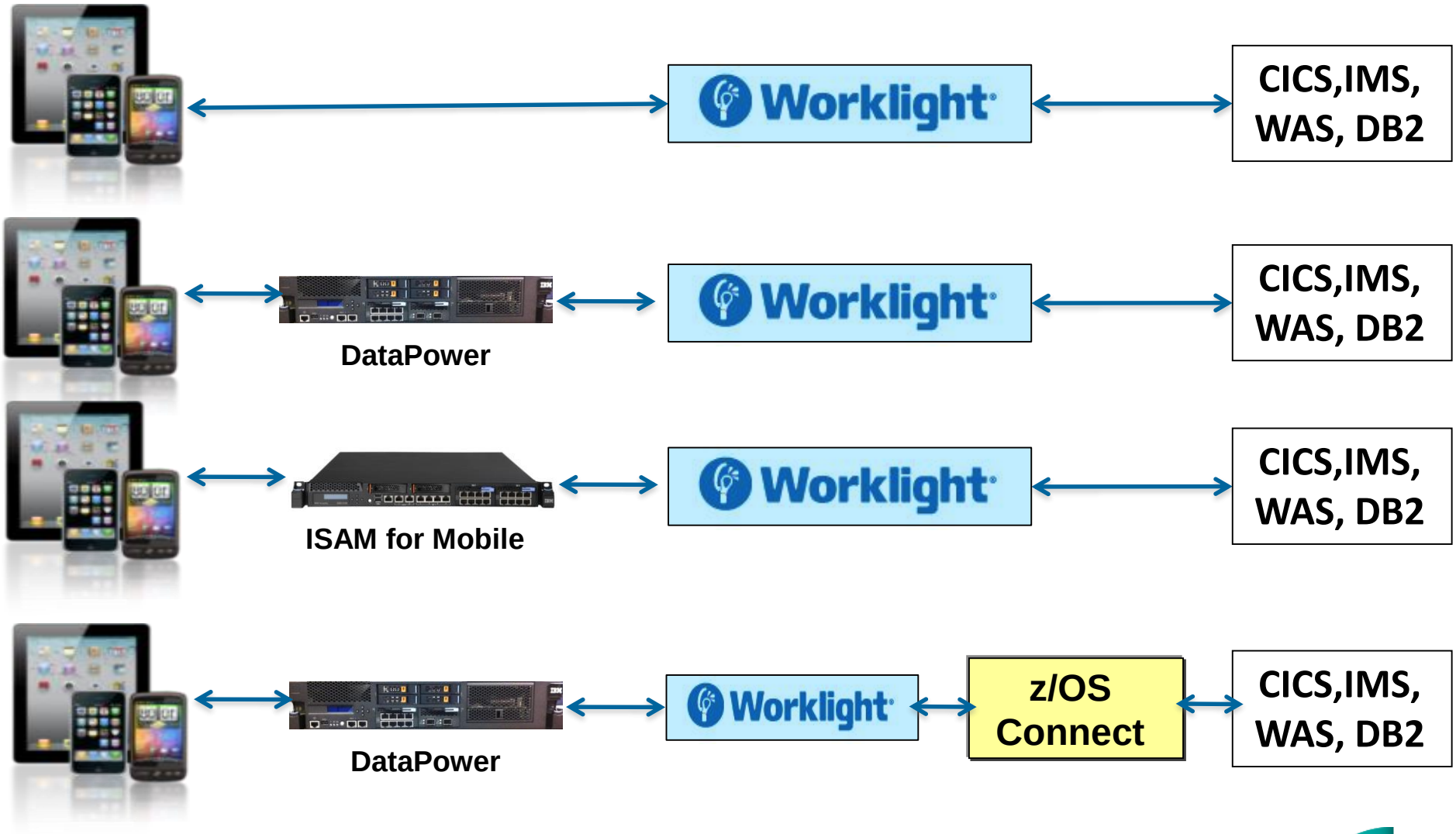
Secure Connectivity

z/OS Connect

RACF, PKI, Hardware crypto.

Enterprise Intranet

Some security topologies



Use mobile analytics to improve outcomes at every moment

Focus on mobile analytics to optimize processes, enable people and get the most out of technology

Use mobile analytics to improve outcomes at every moment

> *"The continuous activity of mobile devices—both human-driven and automated—is creating vast amounts of data about users, networks, device behaviors, physical environments and more."*

- By **capturing and making sense of this data in real time and in context**, organizations can understand customers, partners, employees and processes better than they ever have before
- And by seamlessly transforming those insights into the best mobile-delivered services, these same organizations can enable better, faster, context-driven decisions and actions
- To make the most of mobile analytics, you need to:
  - Build a MEAP that is capable of capturing data from mobile transactions
  - Be able to aggregate on data from back-end systems
  - Act on the data

Can capture data in different places

Mobile Devices

- iOS
- Android
- Blackberry
- Windows Phone

JSON

Systems of Engagement

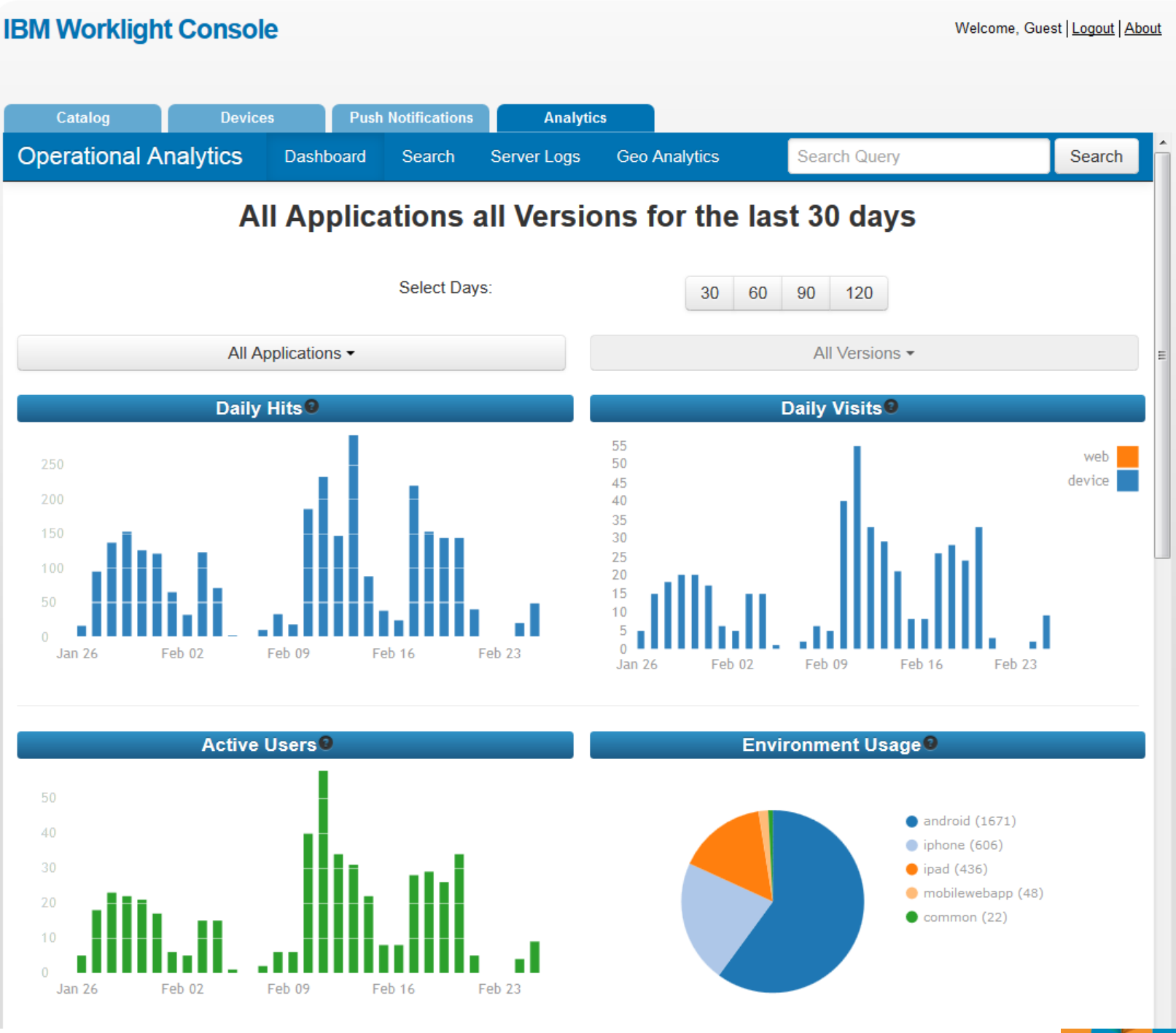
Mobile Enterprise Application Platform (MEAP)

- Security
- Back-end connectivity
- Protocol conversion
- Mobile Analytics

SOAP
XML
JSON
MQ
HTTP

Systems of Record

- CICS
- IMS
- WebSphere AS
- DB2
- Analytics


IBM Worklight Console
Welcome, Guest | Logout | About
Catalog
Devices
Push Notifications
Analytics
Operational Analytics
Dashboard
Search
Server Logs
Geo Analytics
Search Query
Search
All Applications all Versions for the last 30 days
Select Days:
30
60
90
120
All Applications
All Versions
Daily Hits
250
200
150
100
50
0
Jan 26
Feb 02
Feb 09
Feb 16
Feb 23
Daily Visits
55
50
45
40
35
30
25
20
15
10
5
0
web
device
Active Users
50
40
30
20
10
0
Environment Usage
android (1671)
iphone (606)
ipad (436)
mobilewebapp (48)
common (22)

Enterprise Modernization Workshop – 3 Main Components

Integration

Protect your investments in core business applications leveraging tools and services to modernize your enterprise.

Security

Reuse and extend existing investments to increase business value with technologies that Mobile brings, while maintaining a high level of Security and Agility.

Workload Management

Deploy agile and secure Mobile solutions to empower LOB with context and Mobile Analytics and IT teaming to use nd enable dynamic management of the business processes

Wrap-up

Enterprises face unique mobile challenges

Connecting apps with enterprise systems

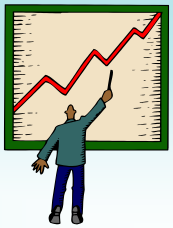
- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable

Accelerated time to market requirements

- A strategic approach to app delivery requires a ***Mobile Enterprise Application Platform*** (MEAP)
- Accelerated development demands instant provisioning of development servers

Managing the mobile workload

- Mobile apps increase the number of transactions
- Spikey mobile traffic demands highly scalable infrastructures



Device management and mobile security

- Highly fragmented set of devices and platforms requires a mobile device management (MDM) solution
- How to secure the mobile transaction end to end

Unique System z capabilities can help …

- Development tools that integrate System z data and transactions
- New **z/OS Connect** offering that provides uniform way for mobile devices to interact with System z

- **MobileFirst Platform** provides open, comprehensive platform to build, run and manage apps
- Running MFP on **Linux for System z** benefits from virtualization capabilities

- System z can deliver an IT infrastructure that keeps pace with the **increased workload** that results from mobile engagement

- Take advantage of **security capabilities** of System z platform, EAL 4+ certification, hardware crypto, Hipersockets, RACF, zSecure …