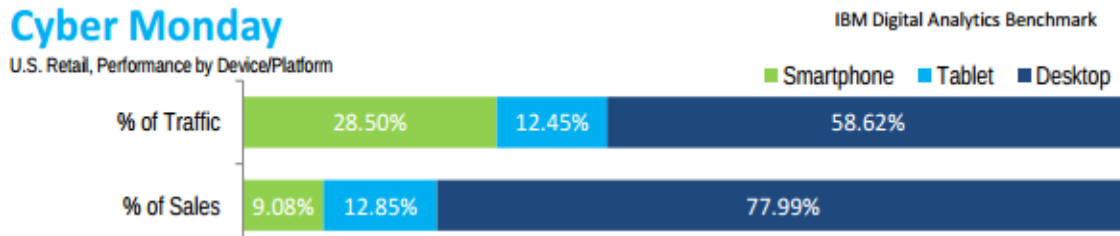


Positioning Your Enterprise for Cloud, Analytics and Mobile Computing

The Mainframe and Mobile Computing: A Perfect Match



The use of mobile devices for all business is *soaring* – as evidenced by Cyber Monday retail sales over the past two years



2013: "Mobile Shopping Soars: Mobile traffic grew to 31.7% of all online traffic, increasing by **45% over 2012**. Mobile sales were also strong, exceeding 17% of total online sales, an increase of 55.4% year-over-year."**

2014: "Cyber Monday Becomes Mobile Monday: Cyber Monday mobile traffic accounted for 41.2% of all online traffic, **up 30.1% over 2013**. Mobile sales were also strong, reaching 22% of total Cyber Monday online sales, an increase of 27.6% year-over-year."*

Department Stores Cyber Monday

Sales ▲ 17.92%

Transaction Metrics	Cyber Monday 2014	Cyber Monday 2014 vs. 2013
Items per Order	3.25	2.20%
Average Order Value	\$146.07	-9.74%
Conversion Rate	5.05%	3.48%
New Visitor Conversion Rate	3.91%	3.17%
Shopping Cart Sessions	16.41%	0.86%
Shopping Cart Conversion Rate	30.51%	3.95%
Shopping Cart Abandonment Rate	69.49%	-1.64%

* <http://www-01.ibm.com/software/marketing-solutions/benchmark-reports/benchmark-2014-cyber-monday.pdf>

** <http://www-01.ibm.com/software/marketing-solutions/benchmark-reports/benchmark-2013-cyber-monday.pdf>

Order value down by almost 10% in 2014

A mobile strategy is critically important to business today

- Enables premium customer service
- Broadens market reach
- Increases revenue
- Increases operational efficiency



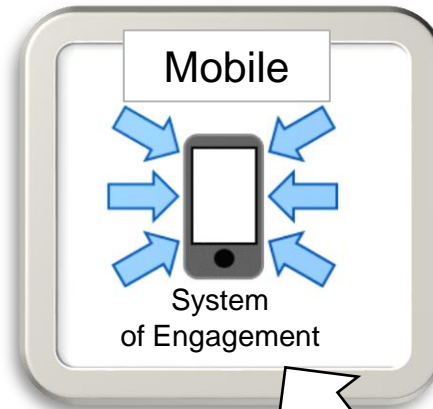
Mobile is a significant component in the evolution of computing

The mobile revolution is putting new demands on business and IT infrastructure

Systems of Engagement

are introduced to handle:

- Agile and social connection to mobile users
- Interface to a vast array of device types
- Very frequent revisions of apps
- Easy-to-use, standards-based app development tools



Systems of Record

must be able to handle:

- Huge increase in system load
- Inconsistent, unpredictable peaks
- New security and privacy requirements



IBM MobileFirst embodies a System of Engagement for mobile computing on z Systems

IBM MobileFirst –

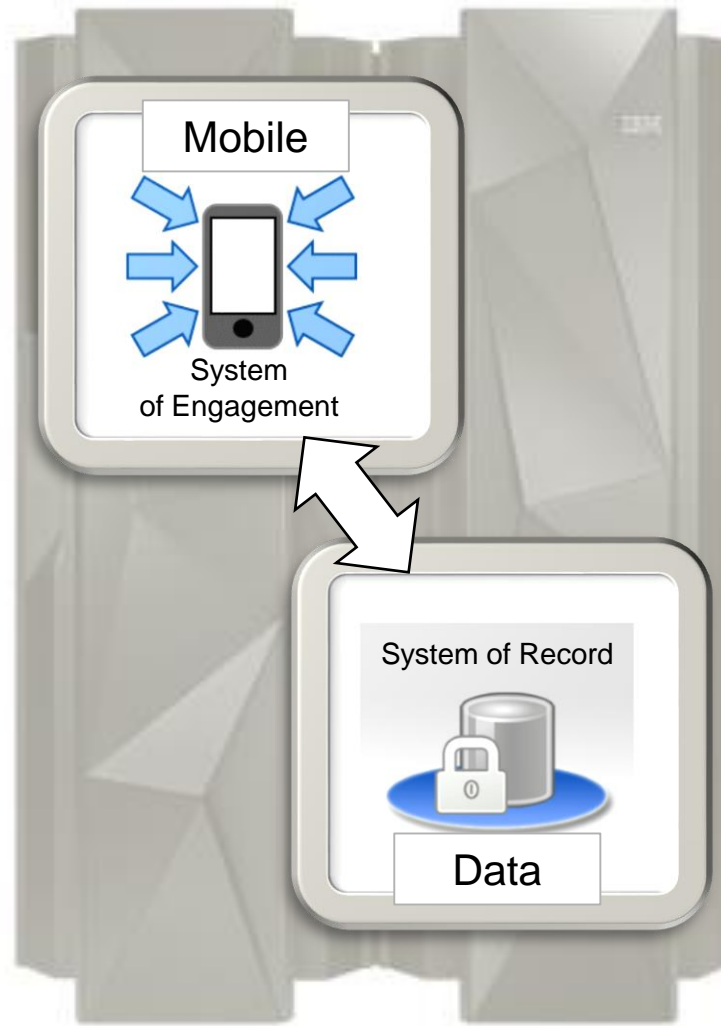
A foundation for exceptional mobile experiences with z Systems

Highest Performance

Complete Integration

Ultimate Security

Low Cost



z Systems delivers unmatched performance for mobile applications

z Systems delivers the capacity and performance to securely, efficiently and reliably support mobile transactions



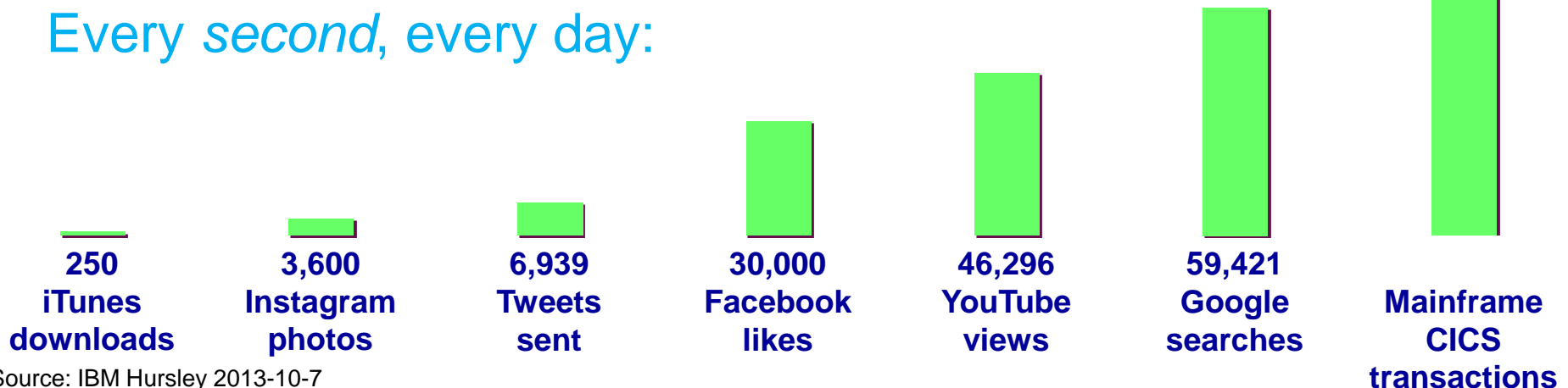
- Support for huge transaction rates
 - A single IMS Fast Path has been benchmarked at over 100,000 TPS, sustained*
- Perfect workload management
 - z/OS Workload Manager insures that high priority jobs meet their service levels
- Massive scalability
 - Parallel sysplex and data sharing provide clustering and load balancing
- Capacity on demand
 - Add physical processors as needed to handle unexpected peaks
- Unparalleled qualities of service
 - Least amount of downtime of any commercially available server; built-in redundancy for highest availability

* <http://www-01.ibm.com/software/data/ims/benchmark.html>

Internet giants *wish* they had the traffic volume handled by z Systems

Let's get some perspective

Every *second*, every day:



Source: IBM Hursley 2013-10-7

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IBM MobileFirst –

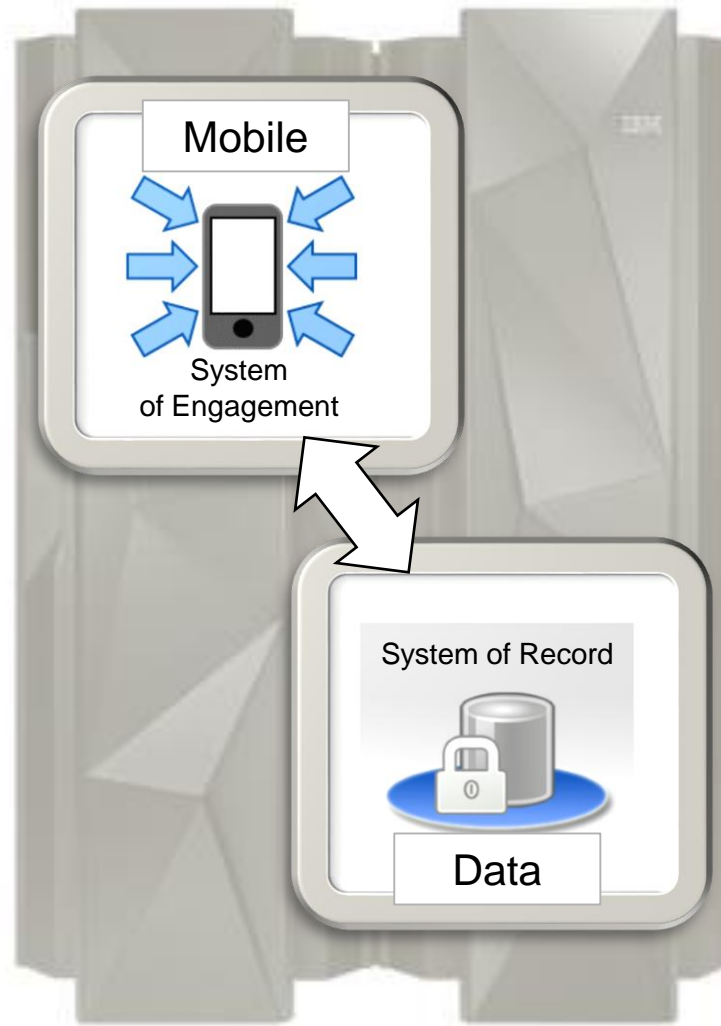
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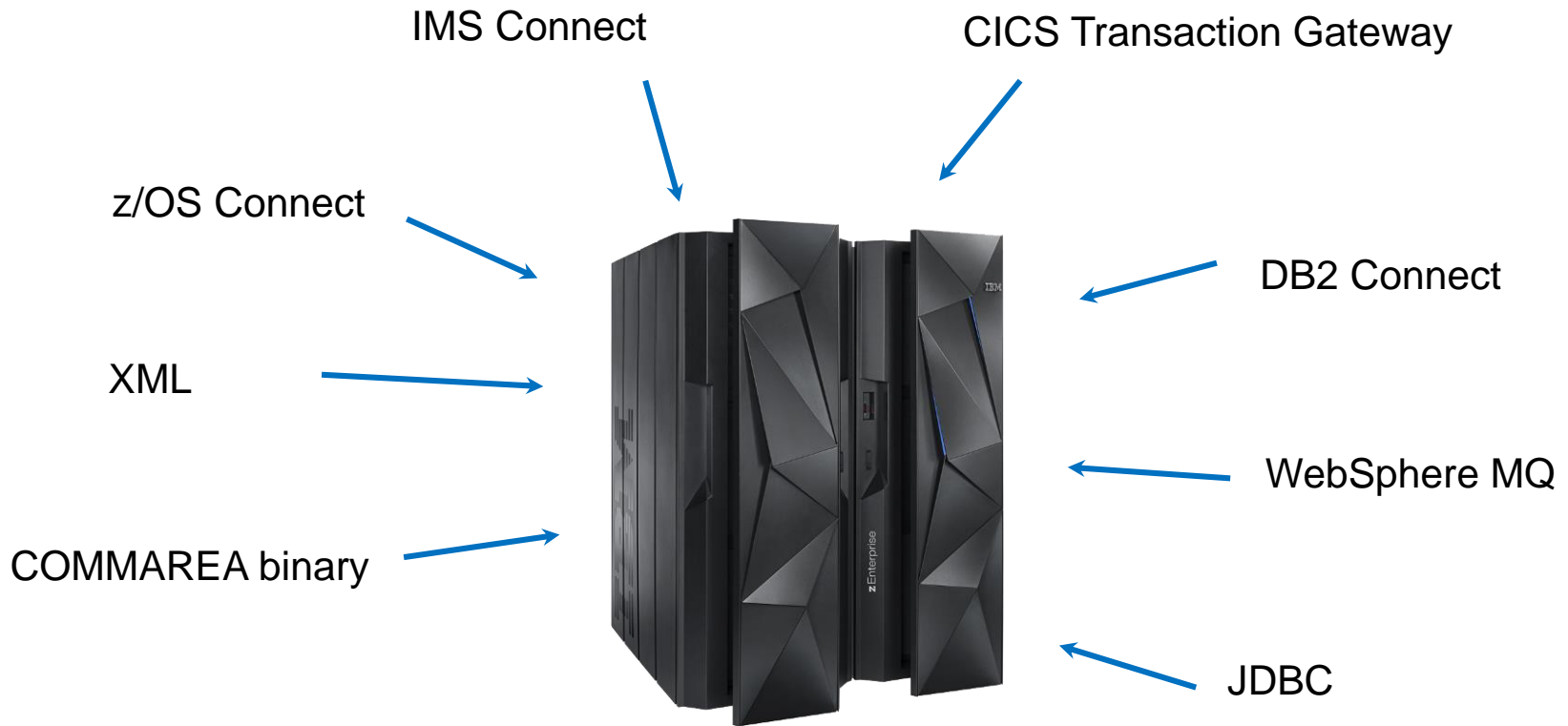
Ultimate Security

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Mobile apps integrate seamlessly with data and business applications

z Systems support a wide variety of formats for mobile app connectivity – including many open standards protocols

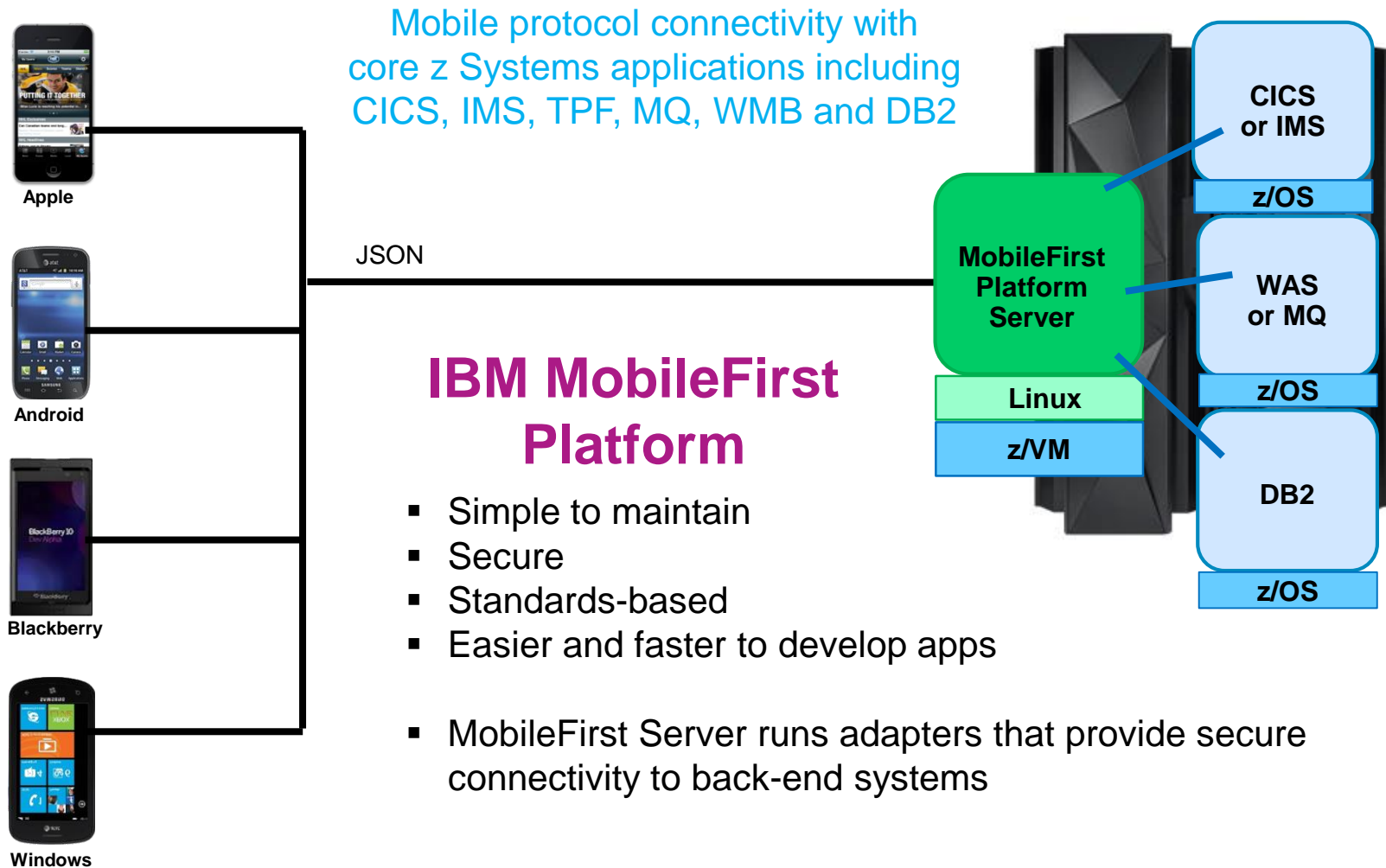


In addition, CICS, IMS and other z Systems middleware support:

SOAP Web Services
RESTful APIs
ATOM feeds

JSON
HTTP

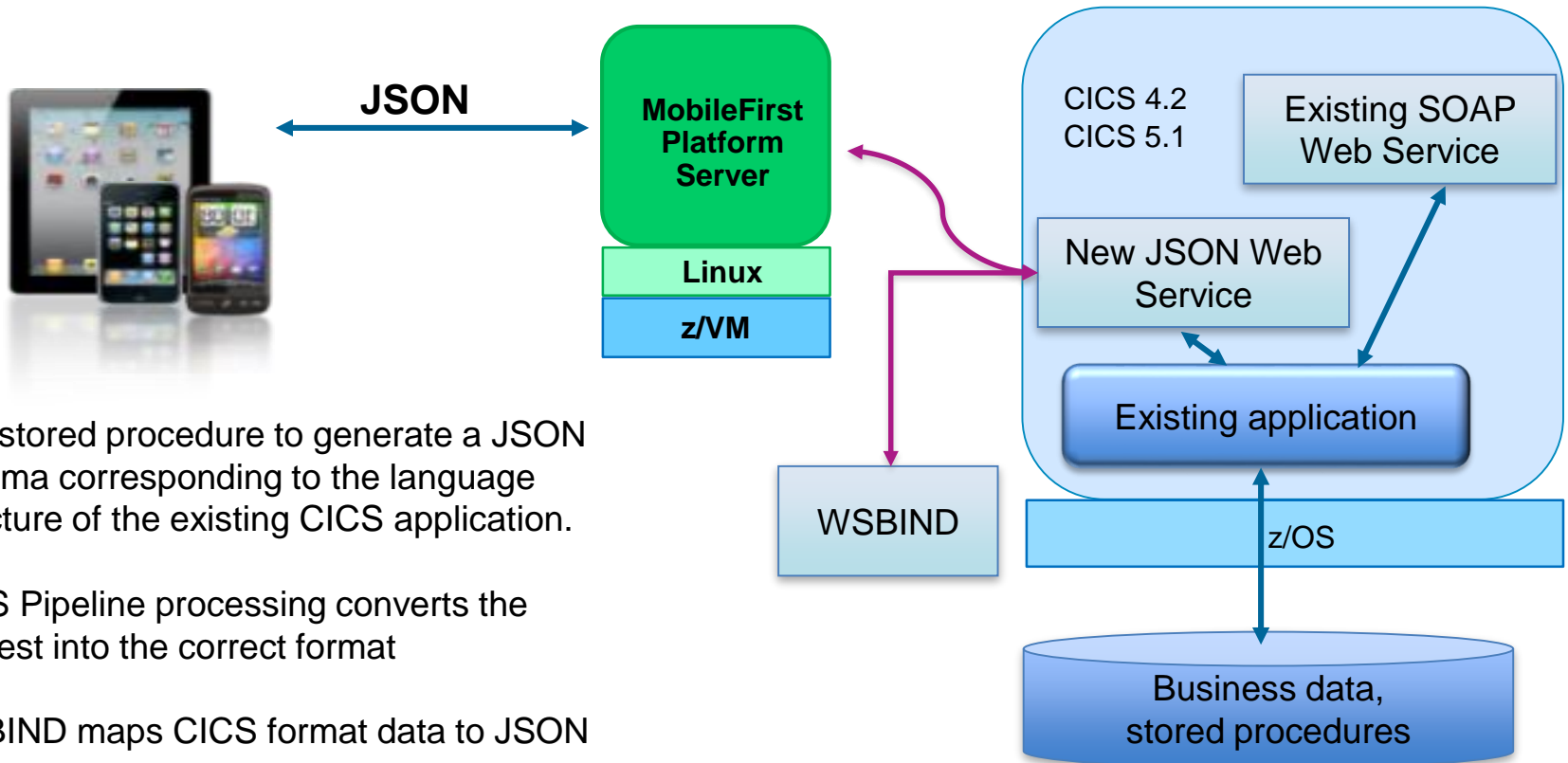
MobileFirst Platform Server – running on Linux on z – provides centralized connectivity to z/OS applications



Legacy business applications can be mobile-enabled using MobileFirst and JSON Web Services

Expose an existing CICS application as a JSON-callable service:

Existing SOAP Web Services remain unaffected by the introduction of new mobile based clients

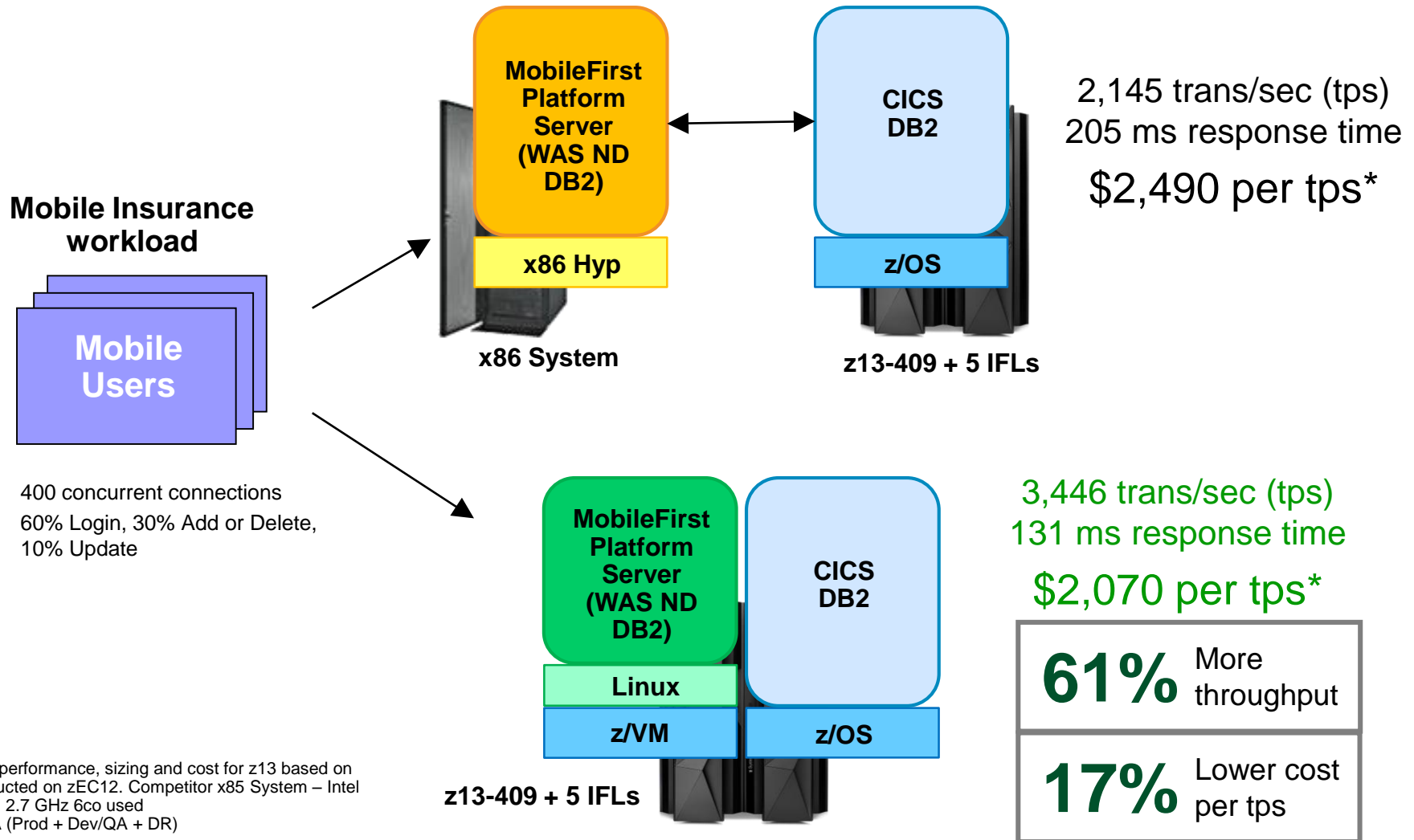


Use stored procedure to generate a JSON schema corresponding to the language structure of the existing CICS application.

CICS Pipeline processing converts the request into the correct format

WSBIND maps CICS format data to JSON

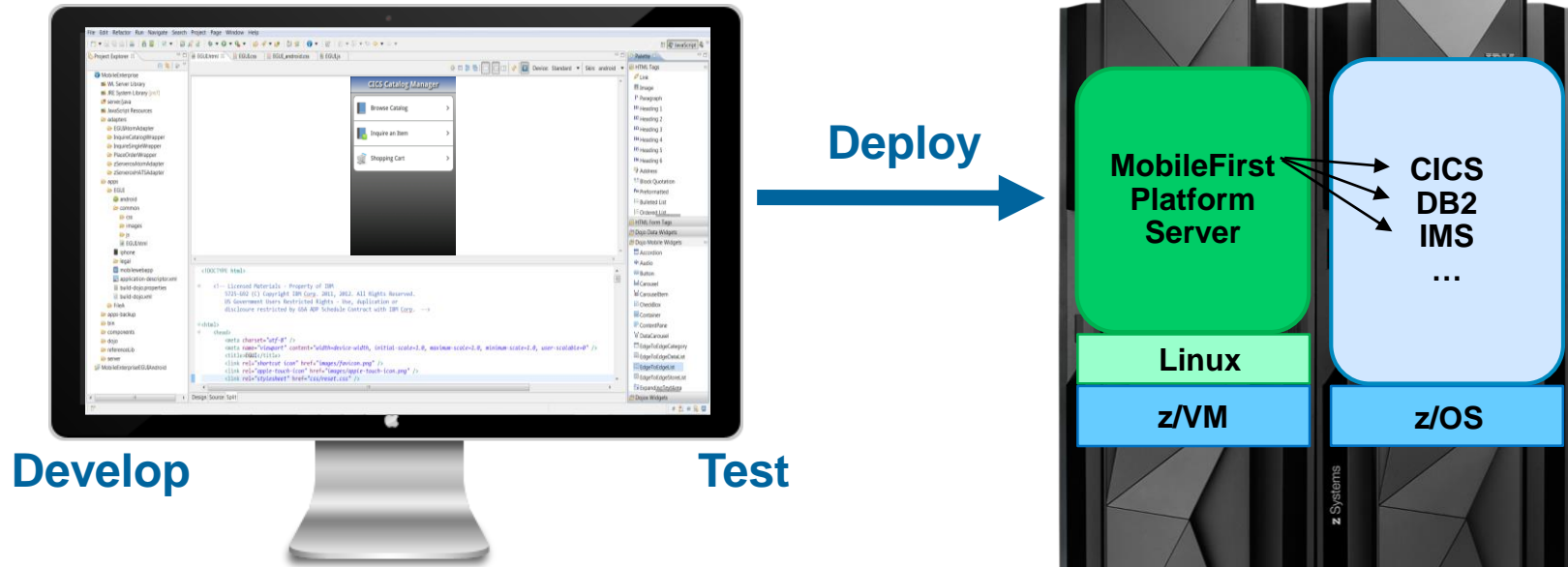
Co-locating MobileFirst Platform Server on z Systems drives more throughput and yields lower cost per workload



Estimated performance, sizing and cost for z13 based on tests conducted on zEC12. Competitor x85 System – Intel E5-2697v2 2.7 GHz 6co used
 * 3 yr. TCA (Prod + Dev/QA + DR)

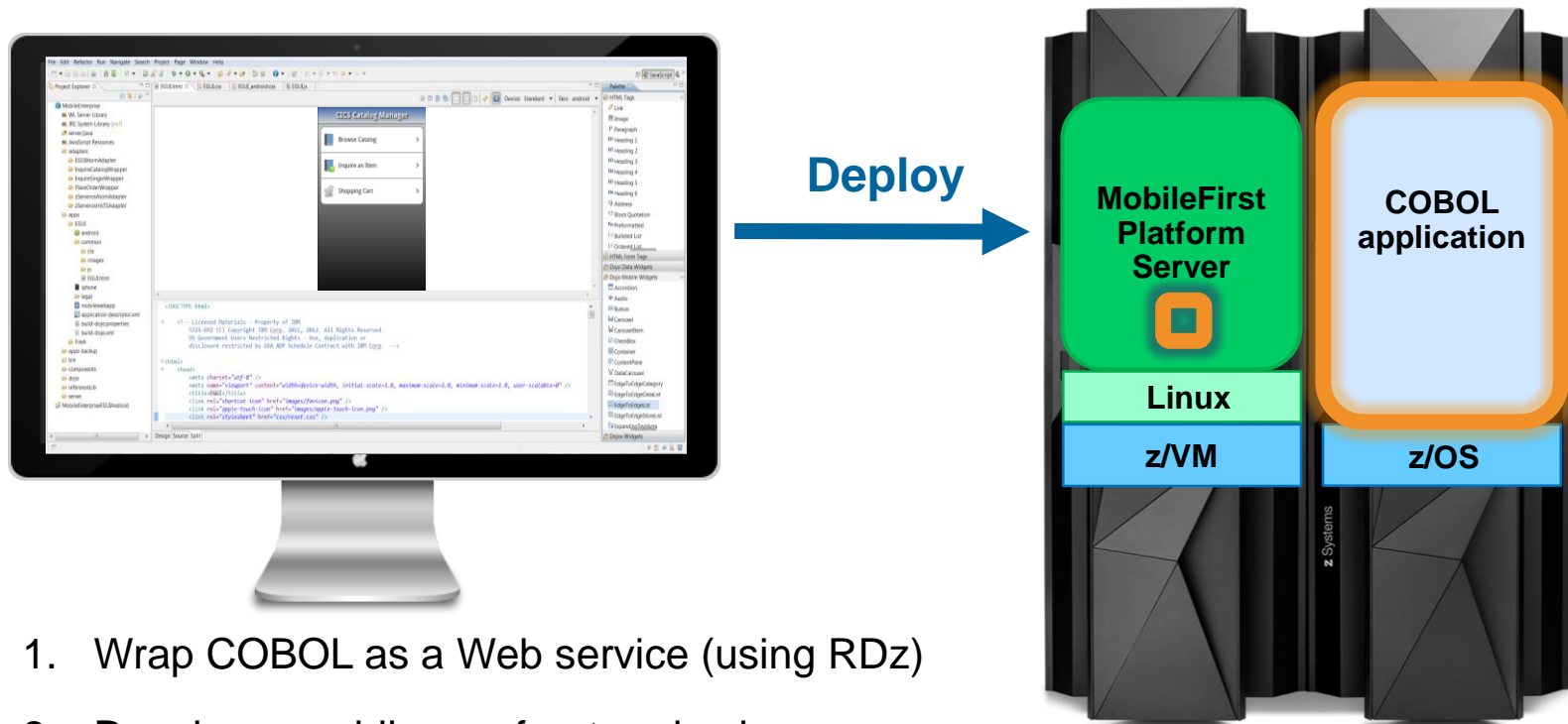
Easily and quickly extend mainframe-based business applications to mobile users

IBM MobileFirst Platform Studio



- **MobileFirst Platform Studio** includes tools for mobile application development, with programming models and web support
- Fully integrated into the RDz Eclipse-based platform

DEMO: Use MobileFirst Platform Studio to mobile-enable a COBOL application



1. Wrap COBOL as a Web service (using RDz)
2. Develop a mobile app front end using MobileFirst Platform Studio (in RDz)
3. Deploy it to the MobileFirst Platform Server
4. Test with MobileBrowser Simulator

Tesco – world's second largest retailer – transforms warehouse management with IBM MobileFirst Platform and z Systems

IBM MobileFirst enables mobile access to an existing CICS warehouse application

IBM Solution

Access CICS with System z information via mobile devices

ROI in less than 1 month

Custom-designed mobile app for Android and iOS
Re-usable adapters for integration

Up to **6M** transactions/day



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IBM MobileFirst –

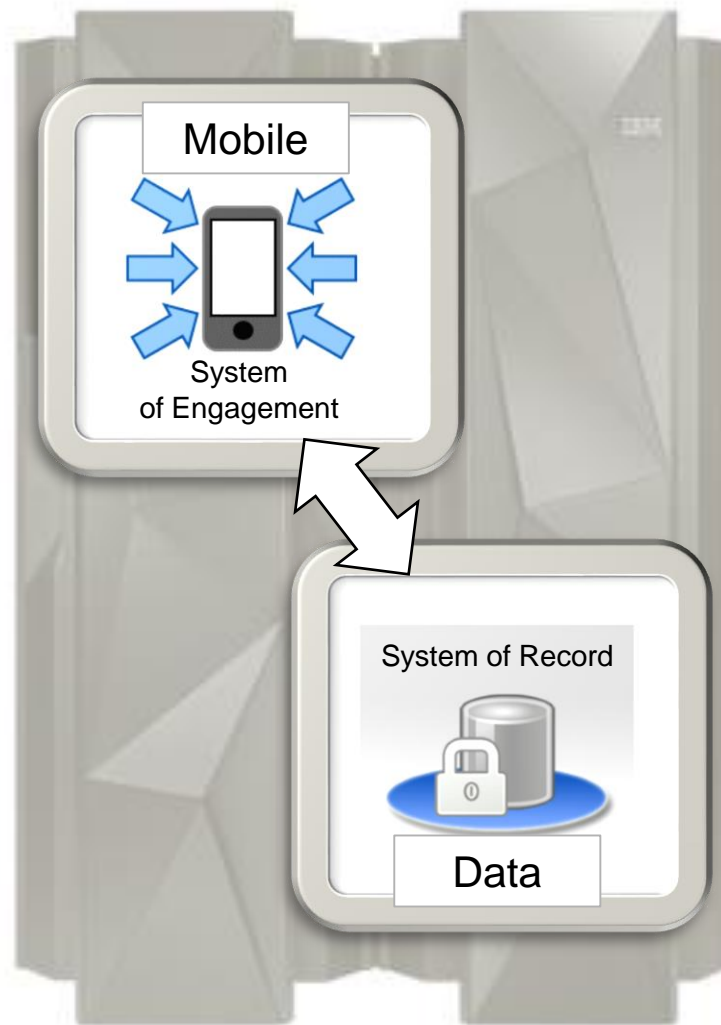
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MobileFirst and z Systems have end-to-end, strong, coordinated security

Failure to secure Mobile apps can cost millions and damage business credibility

Mobile malware grew

155%  in 2011

614%       

from March 2012 to March 2013



73% of all malware exploit holes in mobile payments by sending fraudulent premium SMS messages, each generating around **\$10** USD in immediate profit



Android is responsible for **92%** of all known mobile malware. An increase from **47%** in 2012...

...a significant threat given more than

1 BILLION

Android-based smart phones are estimated to be shipped in 2017*



There are more than **500** third-party app stores containing malicious apps



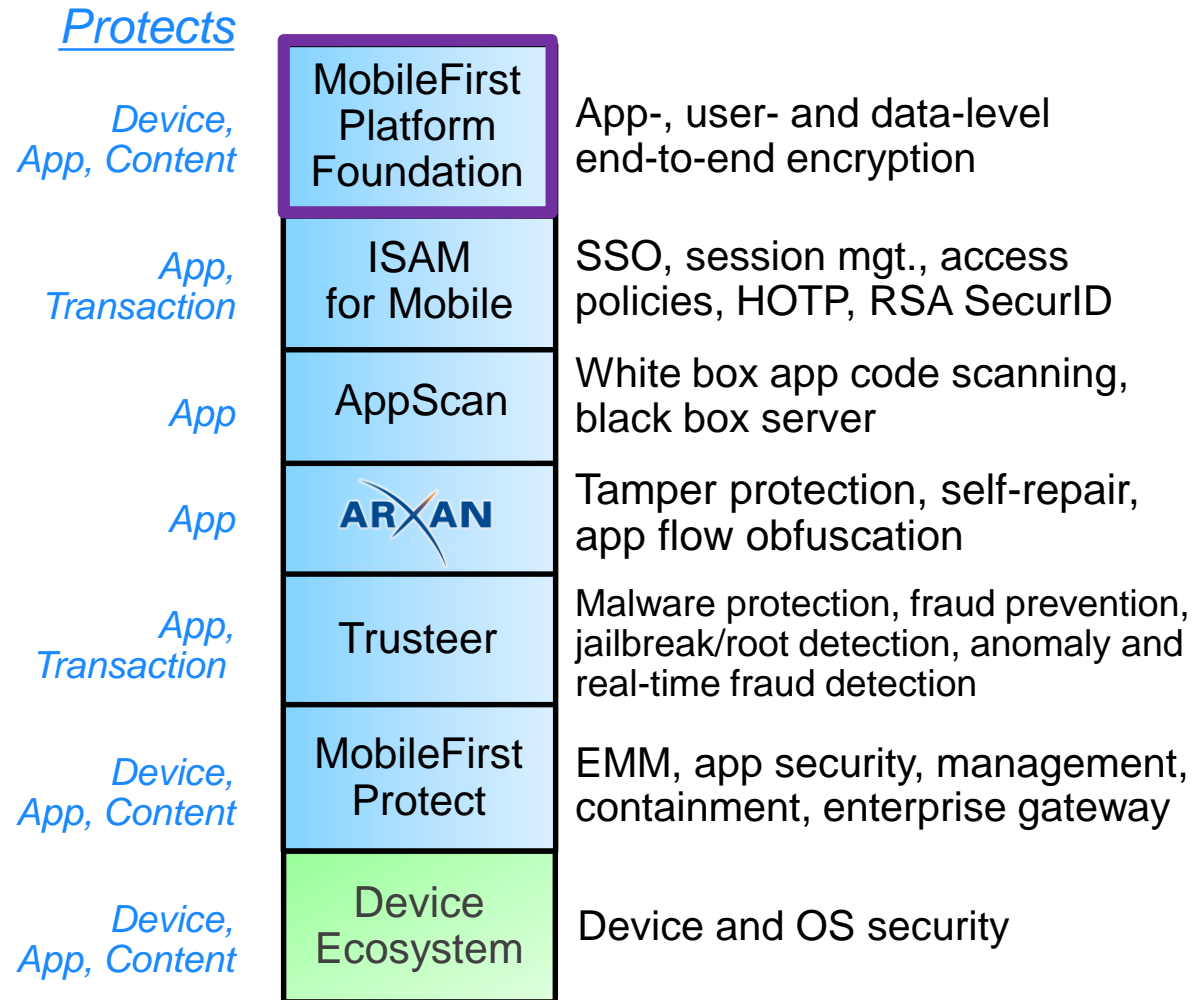
77% of Android threats could be largely eliminated today if all Android devices had the latest OS. Currently only **4%** do

Source: Juniper Mobile Threat Report, 2013; * Canals Smart Phone Report, June 2013

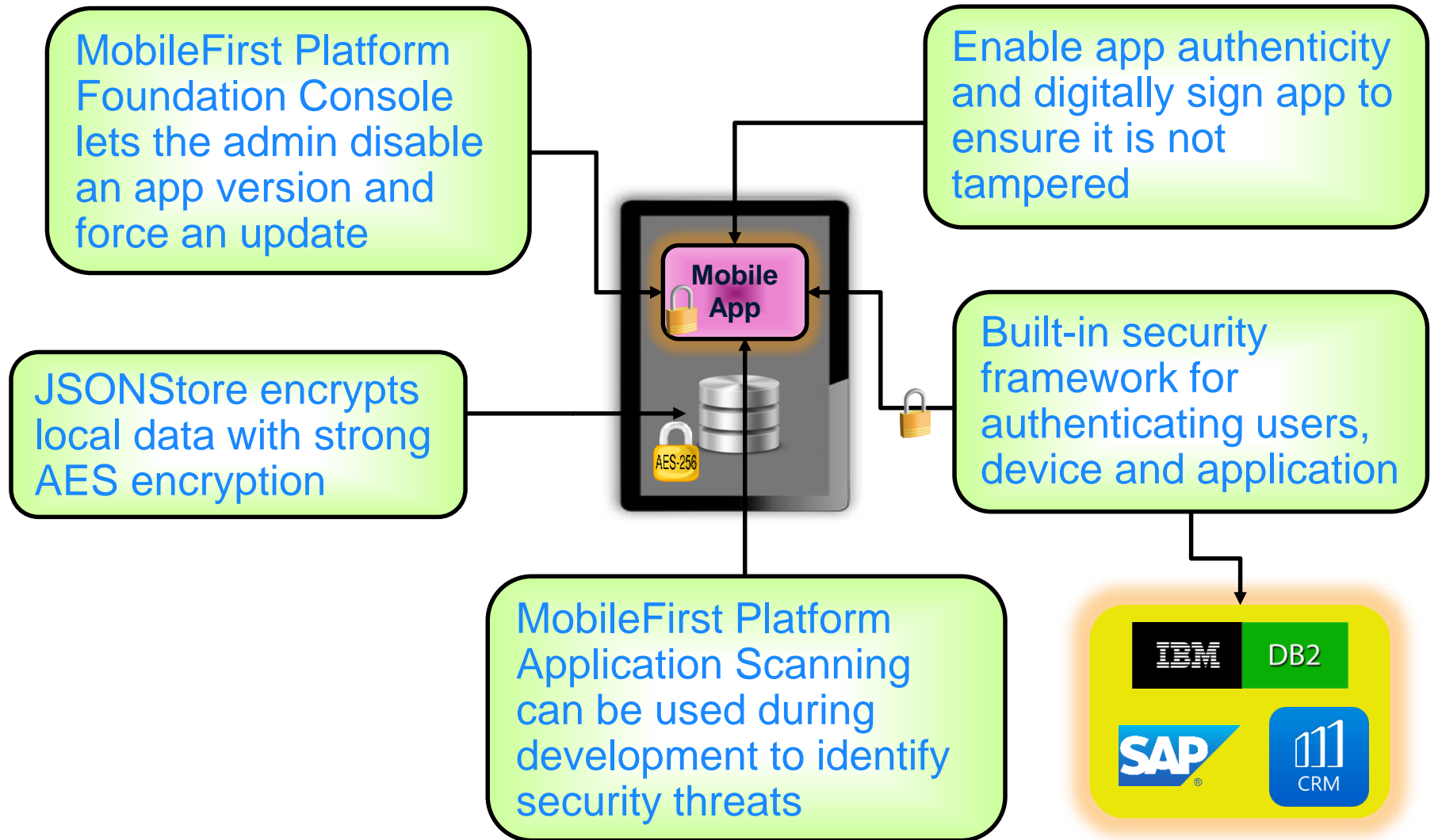
A comprehensive security stack protects the device, content, app and transaction

The IBM MobileFirst security stack

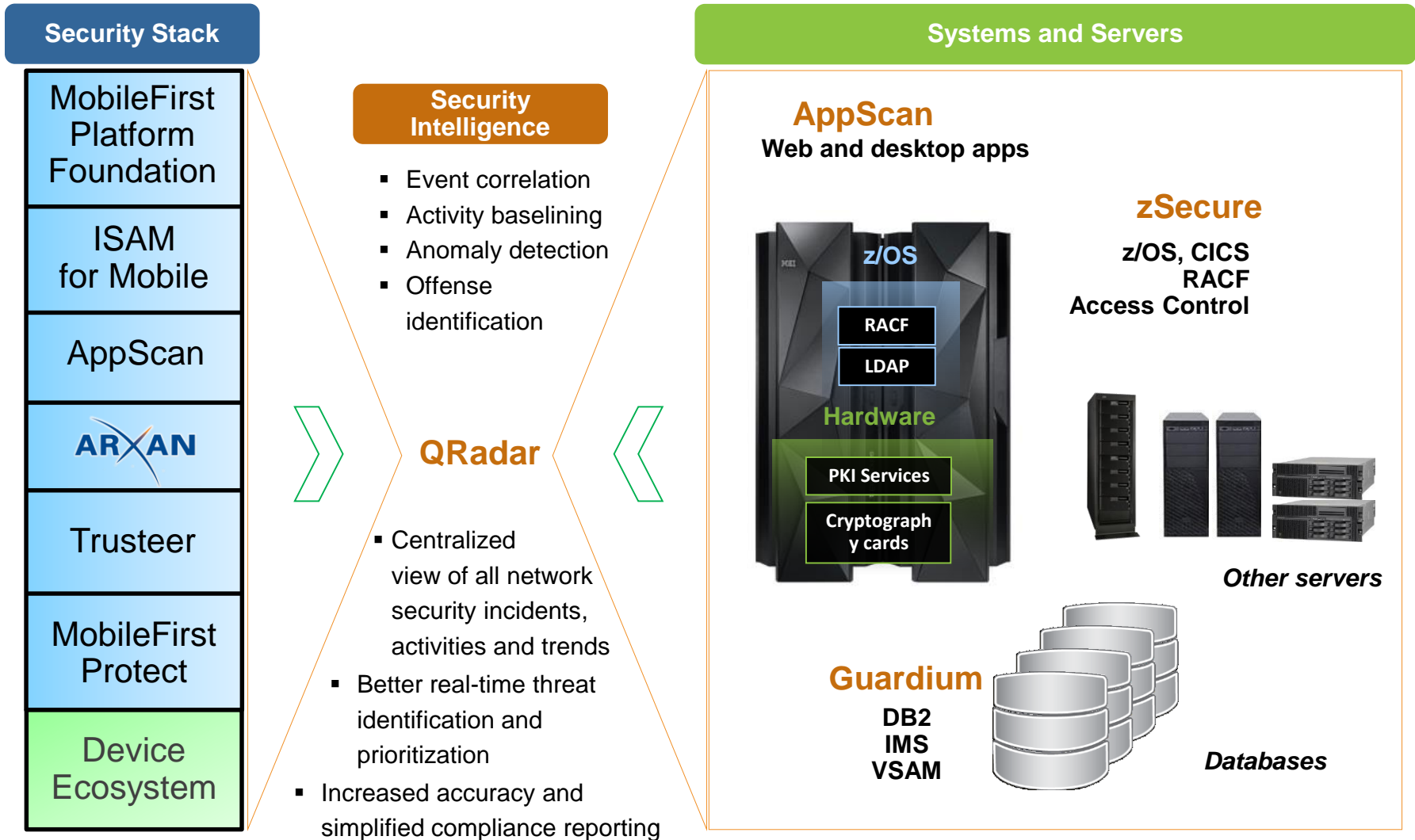
- IBM provides best of breed security layering on top of IBM enterprise hardware and software security
- iOS and Android 5 are examples of a secure mobile OS when not jail-broken or rooted



Use the MobileFirst Platform Foundation to address enterprise security requirements



QRadar adds actionable and comprehensive security intelligence across the entire data center



IBM MobileFirst embodies a System of Engagement for mobile computing on z Systems

IBM MobileFirst –

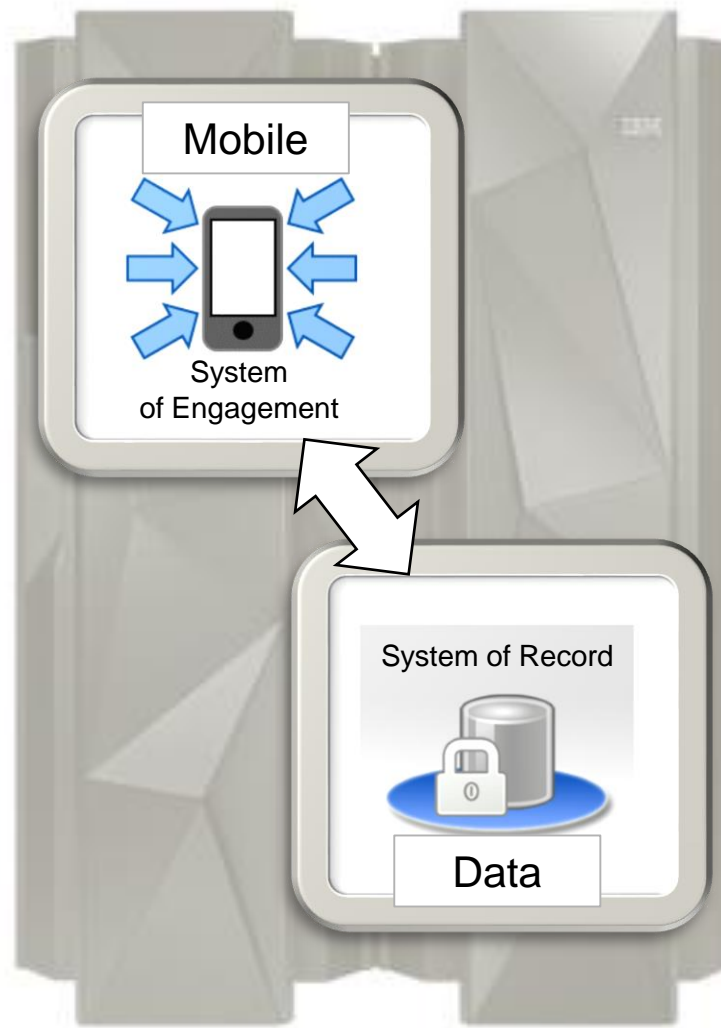
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The cost impact of increased transaction rates from mobile activity is greatly reduced with Mobile Workload Pricing

Mobile Workload Pricing for z/OS helps ameliorate spikes caused by increased mobile usage – *and lowers costs!*

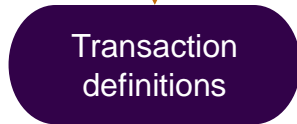
1 Measure LPAR peak with standard methodology

1,500 MSUs



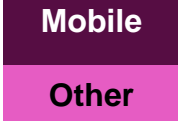
2 Measure CICS usage in new IBM reporting tool

300



3 Capture CICS transaction details and filter by transaction type, mobile or not

200



4 Subtract 60% of mobile usage: $-60\% * 200$

80

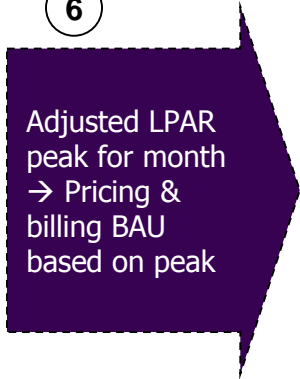


5 Adjust LPAR peak with new reporting tool

1,380 MSUs



6



Standard LPAR peak

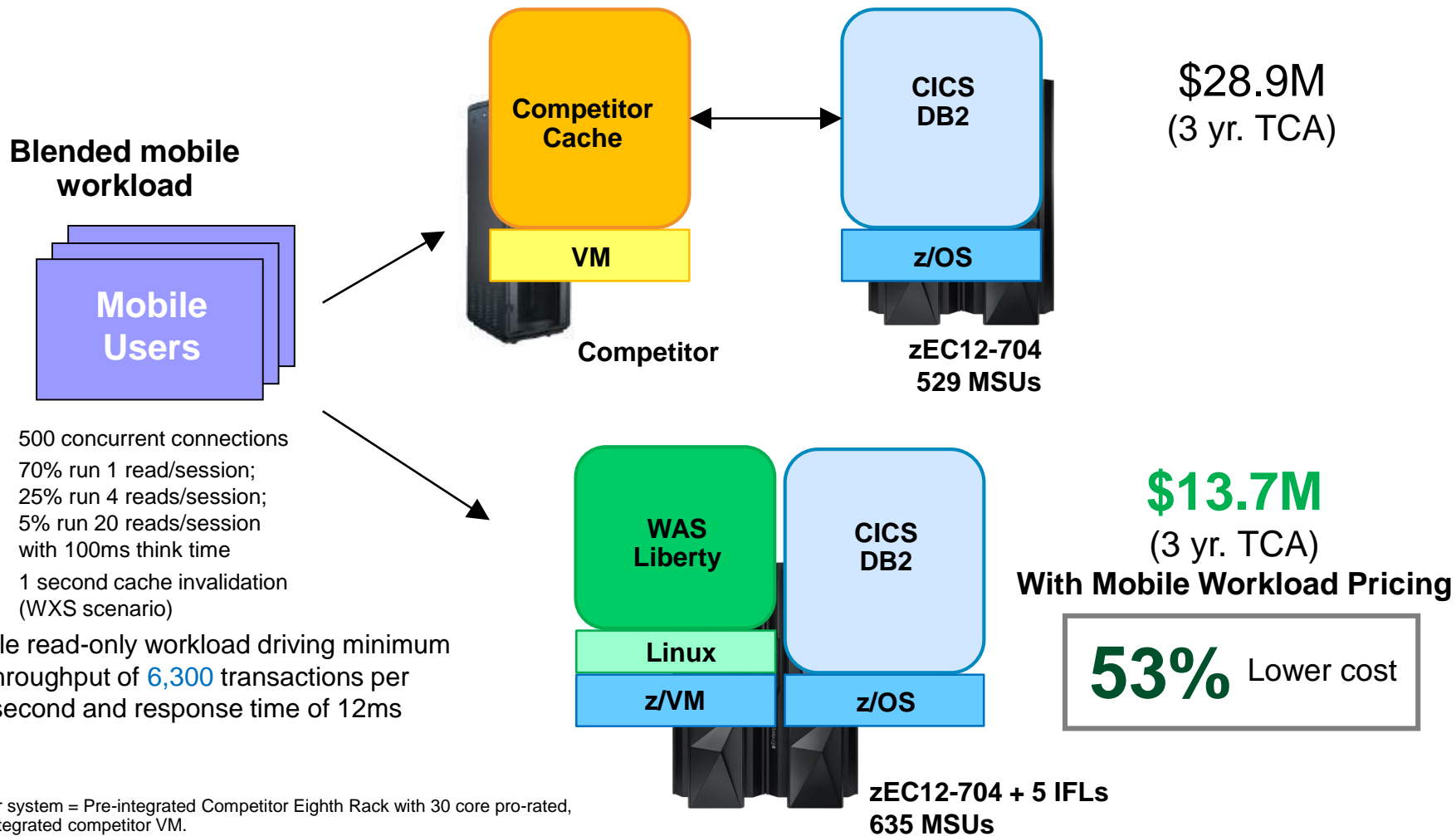
z/OS/Other 1,500
CICS 1,500

Adjusted LPAR peak for billing

z/OS/Other 1,380
CICS 1,380

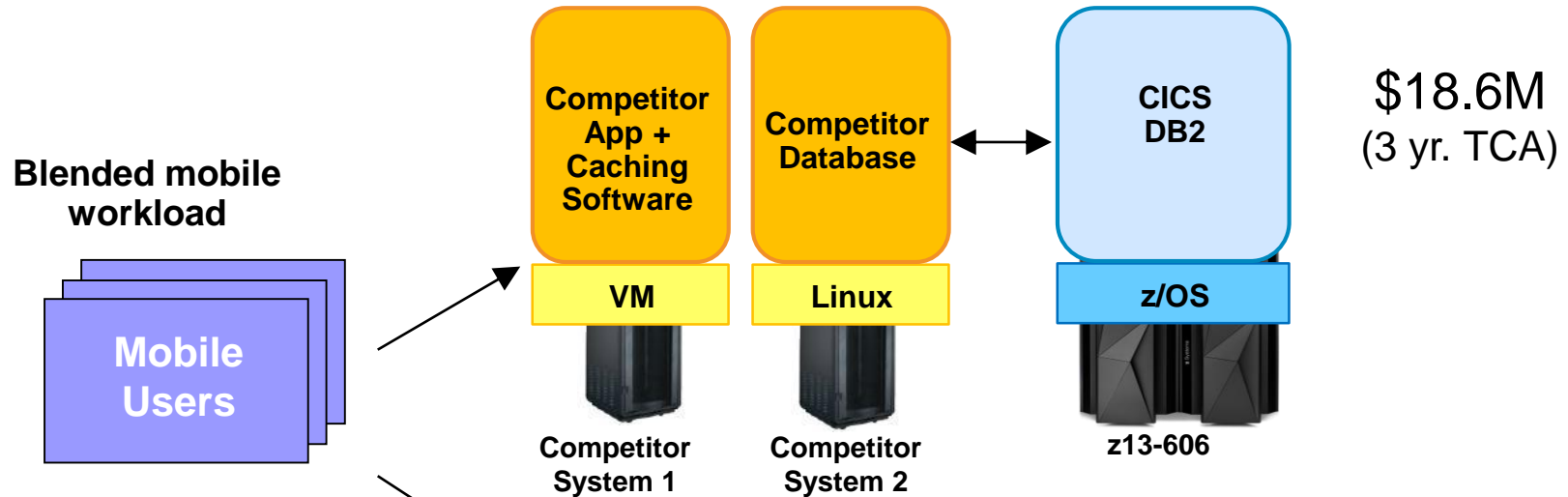
* Figures are for illustrative purposes only. Tracking process and records will vary by customer

Test show using co-located cache and Mobile Workload Pricing reduces costs for blended mobile workloads



Competitor system = Pre-integrated Competitor Eighth Rack with 30 core pro-rated, with pre-integrated competitor VM.
 Competitor cache performance projected from WXS Caching Test.
 * 3 yr. TCA (Prod + Dev/QA + DR)

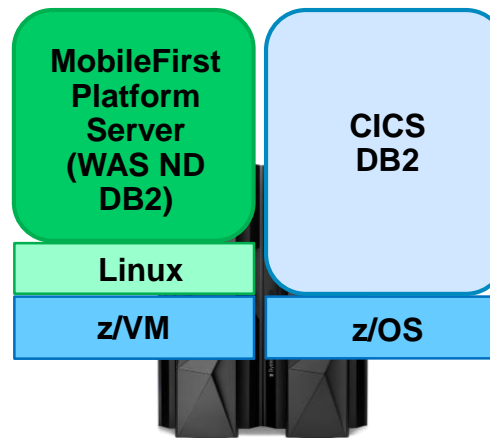
Tests show co-locating data and transactions with mobile front-end on z Systems is more cost-effective than offloading



\$18.6M
(3 yr. TCA)

- 500 concurrent connections
- 70% run 1 read/session;
25% run 4 reads/session;
5% run 20 reads/session
with 100ms think time
- 1 second cache invalidation

Mobile read-only workload driving minimum throughput of **6,300** transactions per second and response time of 12ms



\$11.2M
(3 yr. TCA)
With Mobile Workload Pricing

40% Lower cost

z13-606 + 4 IFLs

Competitor system 1= Pre-integrated Competitor Eighth Unit with 30 cores pro-rated, running pre-integrated competitor VM. Competitor system 2 = Pre-integrated Competitor Eighth Unit with 24 cores pro-rated, running Linux. Competitor Caching and Database sizing estimated from WebSphere Extreme Scale Caching Test. Estimated performance, sizing and cost for z13 based on tests conducted on zEC12.

* 3 yr. TCA (Prod + Dev/QA + DR)

z13 fully provides the capacity, efficiency, security and reliable to meet the challenges of mobile computing



Increased performance
Improves ability to handle workload spikes

SMT technology
Improves response time and throughput of transactional workloads

10 TB Memory & Faster I/O
Means faster transaction response times

Increase in # of LPARs
Balances growth, improves TCO

Faster Crypto
2x improvement in cryptography



z Systems customers around the world are mobile-enabling their businesses



"Running our mobile banking service on Linux on IBM z Systems® is another step forward in our continual evolution on the mainframe."

"The maturity flexibility of IBM z Systems makes it the ideal platform for achieving speed to market with mobile applications."



IBM MobileFirst Platform with IBM z Systems handles the new demands of the mobile enterprise

IBM MobileFirst –

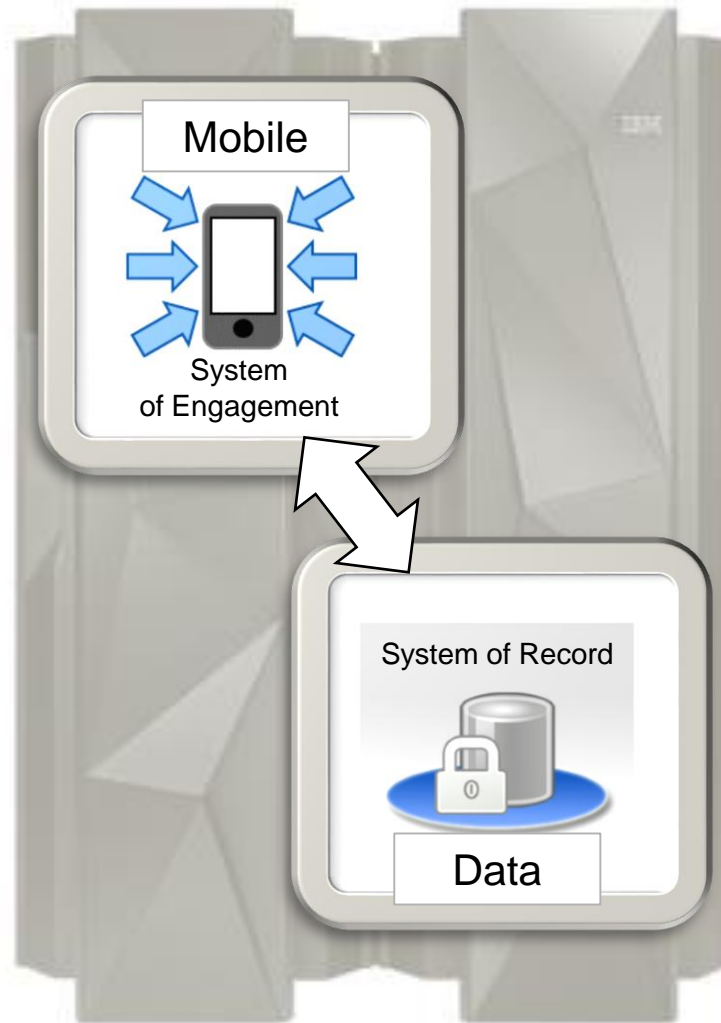
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141 Core Maximum per z13 server
111K+ MIPS

1.2M CICS tps every day

17% Lower cost per tps when MobileFirst runs on Linux on z

60% Reduction in costs with Mobile Workload Pricing